Name_____ Date _____

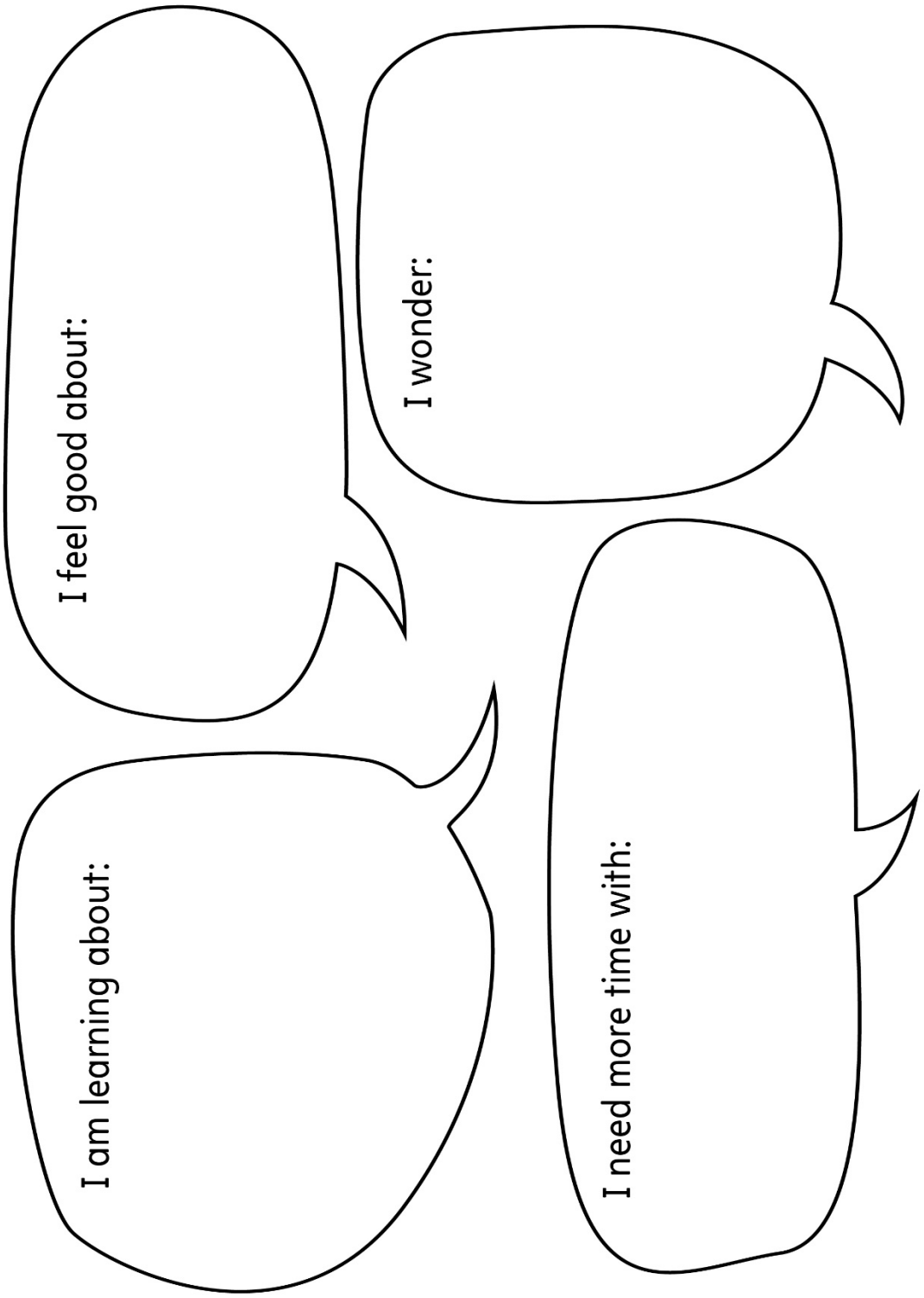
Math Mat
Master 1

Thinking Space

Name _____ Date _____

Math Mat
Master 2

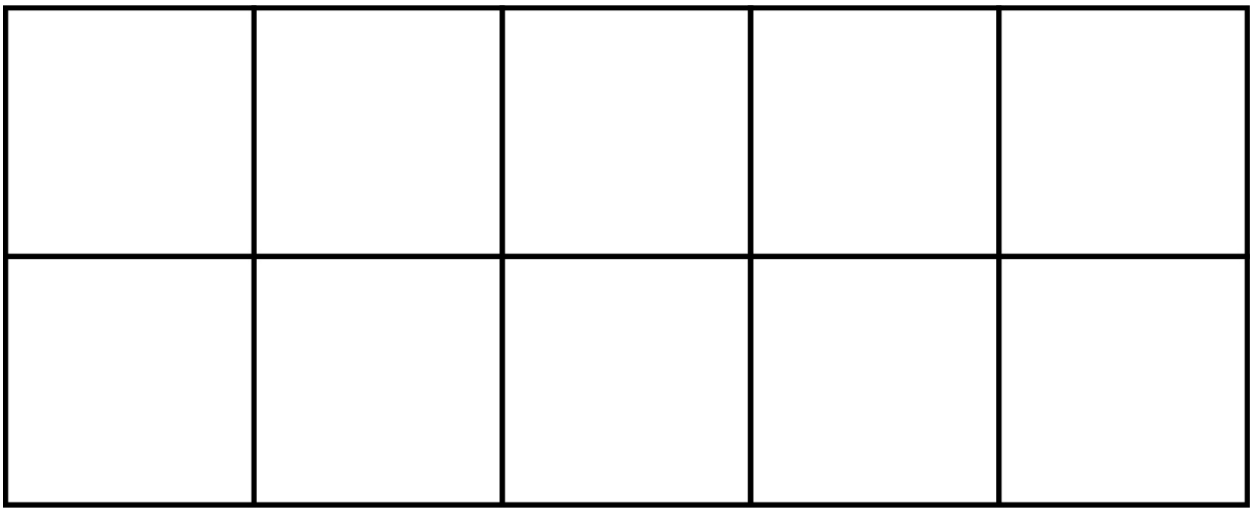
My Math Learning

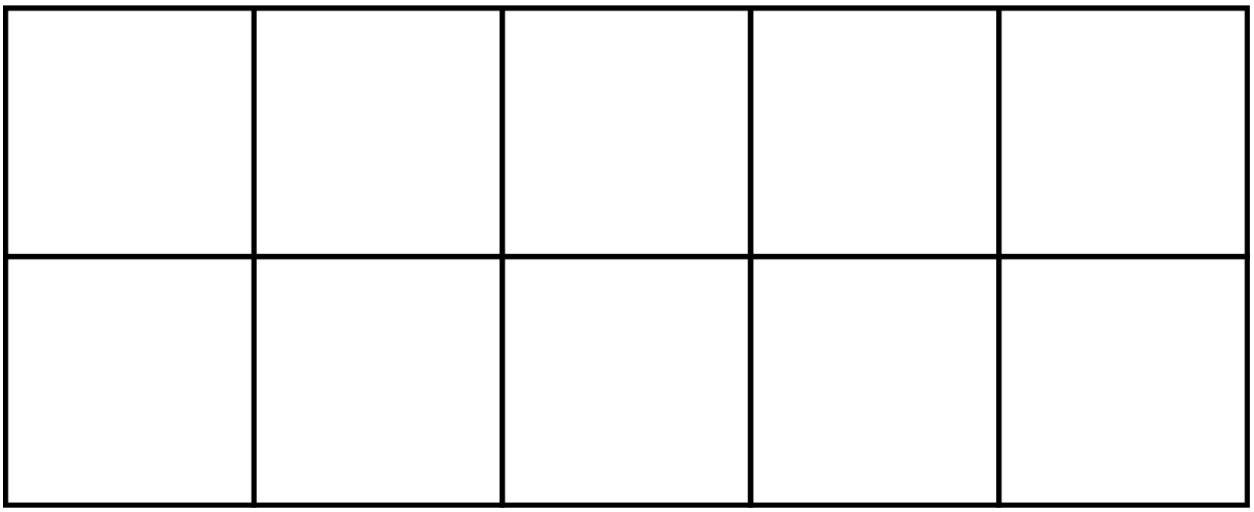


Name _____ Date _____

Math Mat Master 3

Ten-Frames





Name_____ Date _____

Math Mat
Master 4

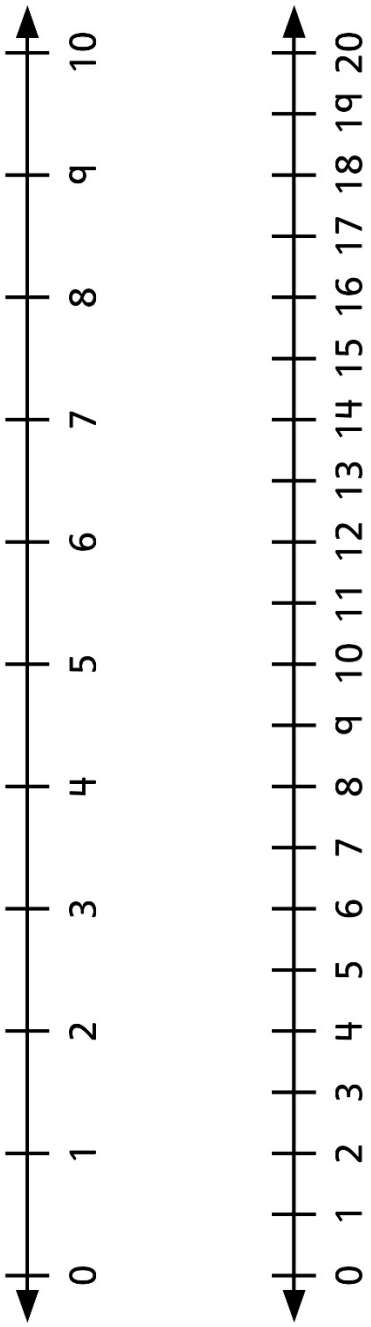
Hundred Chart

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Name_____ Date _____

Math Mat Master 5

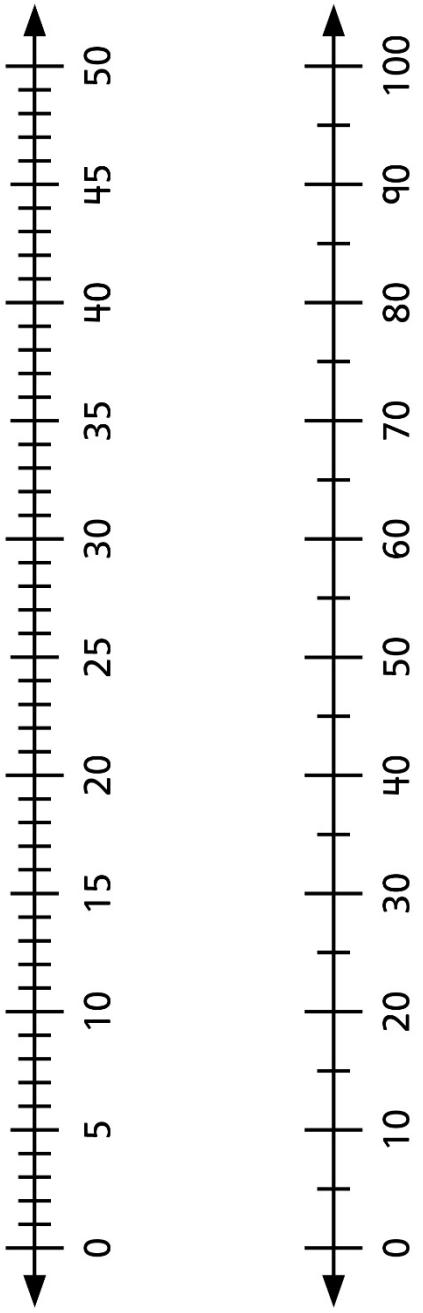
Number Lines



Name _____ Date _____

Math Mat Master 6

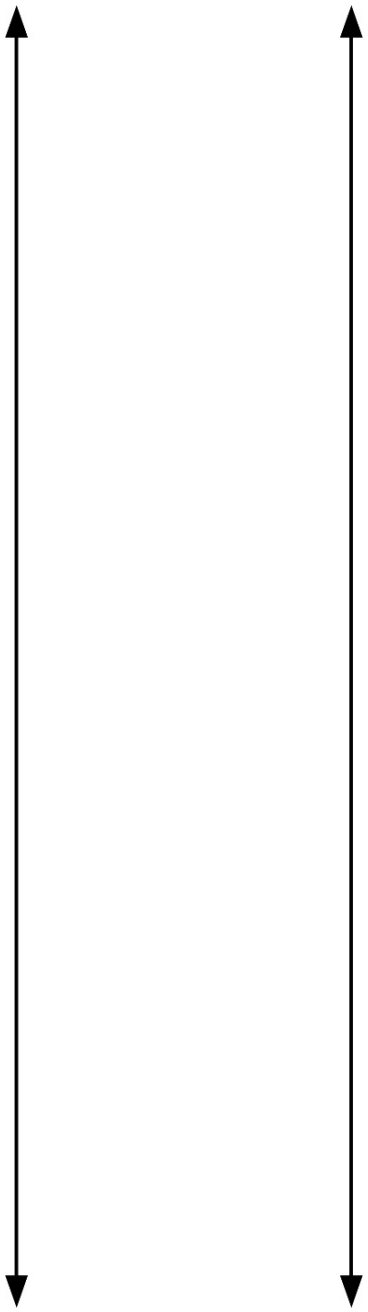
Number Lines



Name_____ Date _____

Math Mat
Master 7

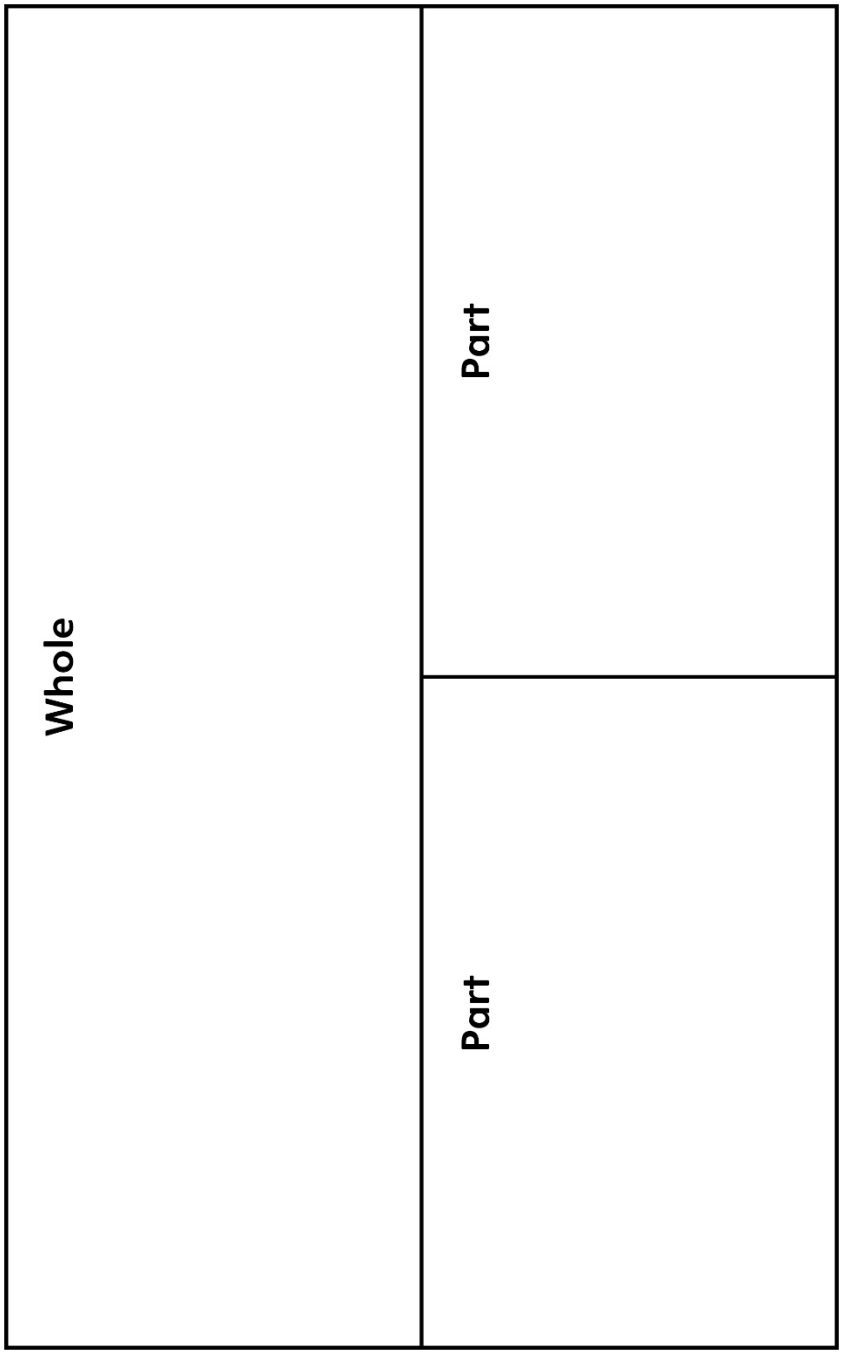
Open Number Lines



Name_____ Date _____

Math Mat
Master 8

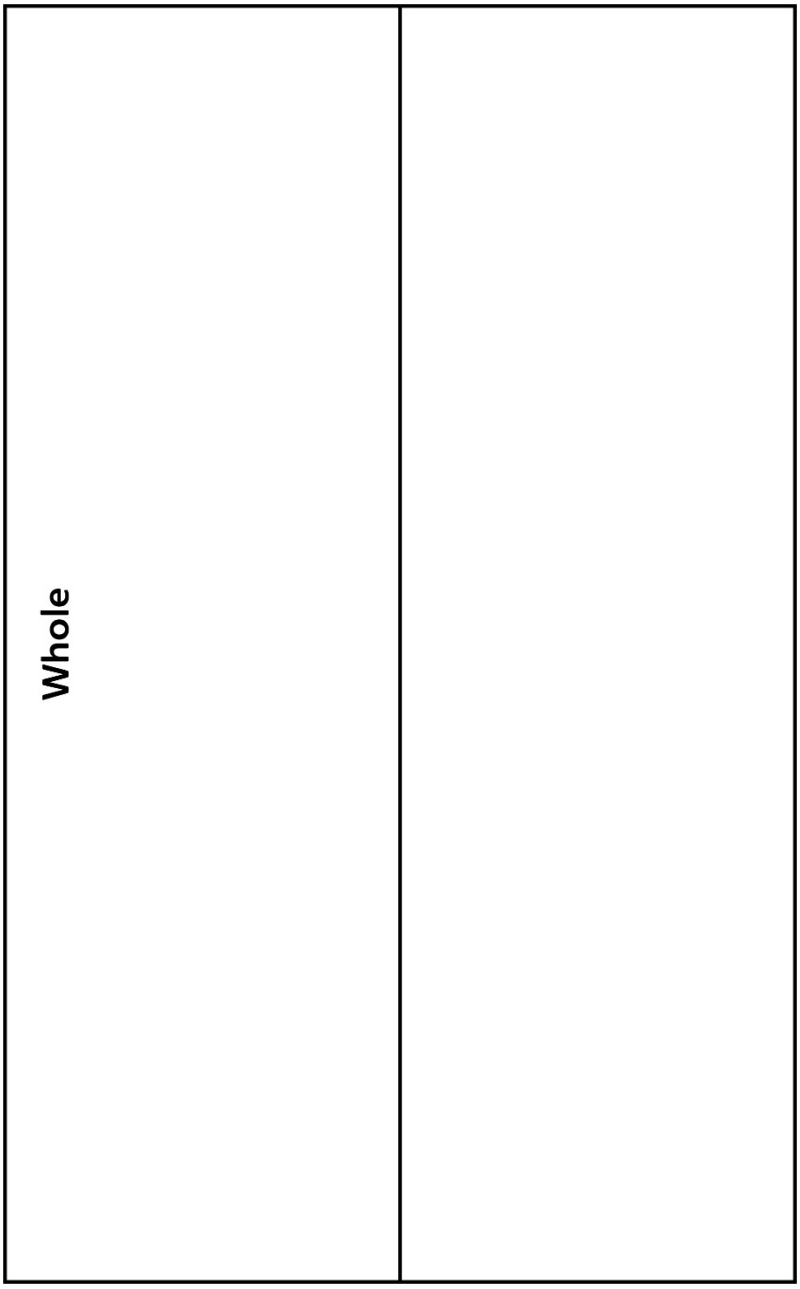
Part-Part-Whole Mat



Name_____ Date _____

Math Mat
Master 9

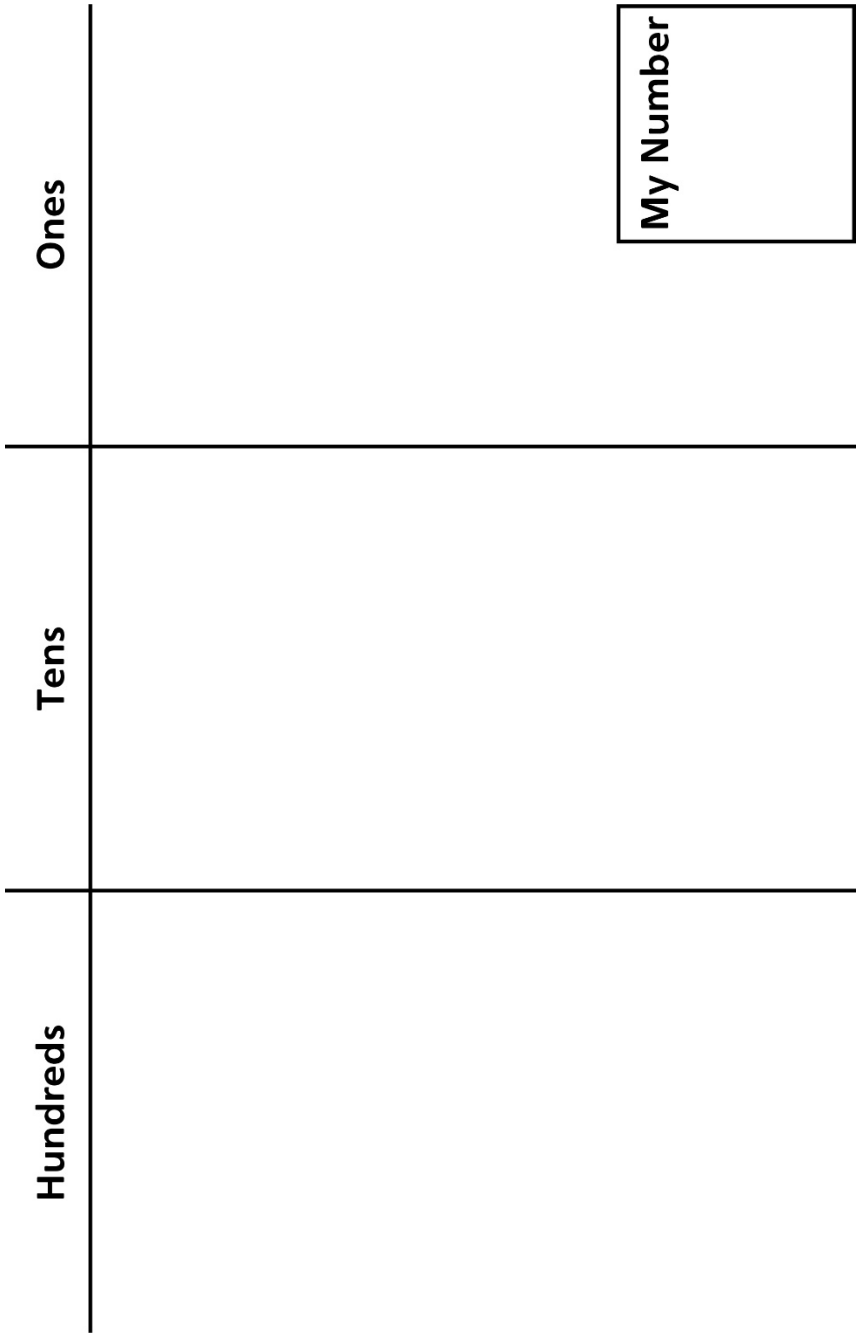
Parts-to-Whole Mat



Name _____ Date _____

Math Mat
Master 10

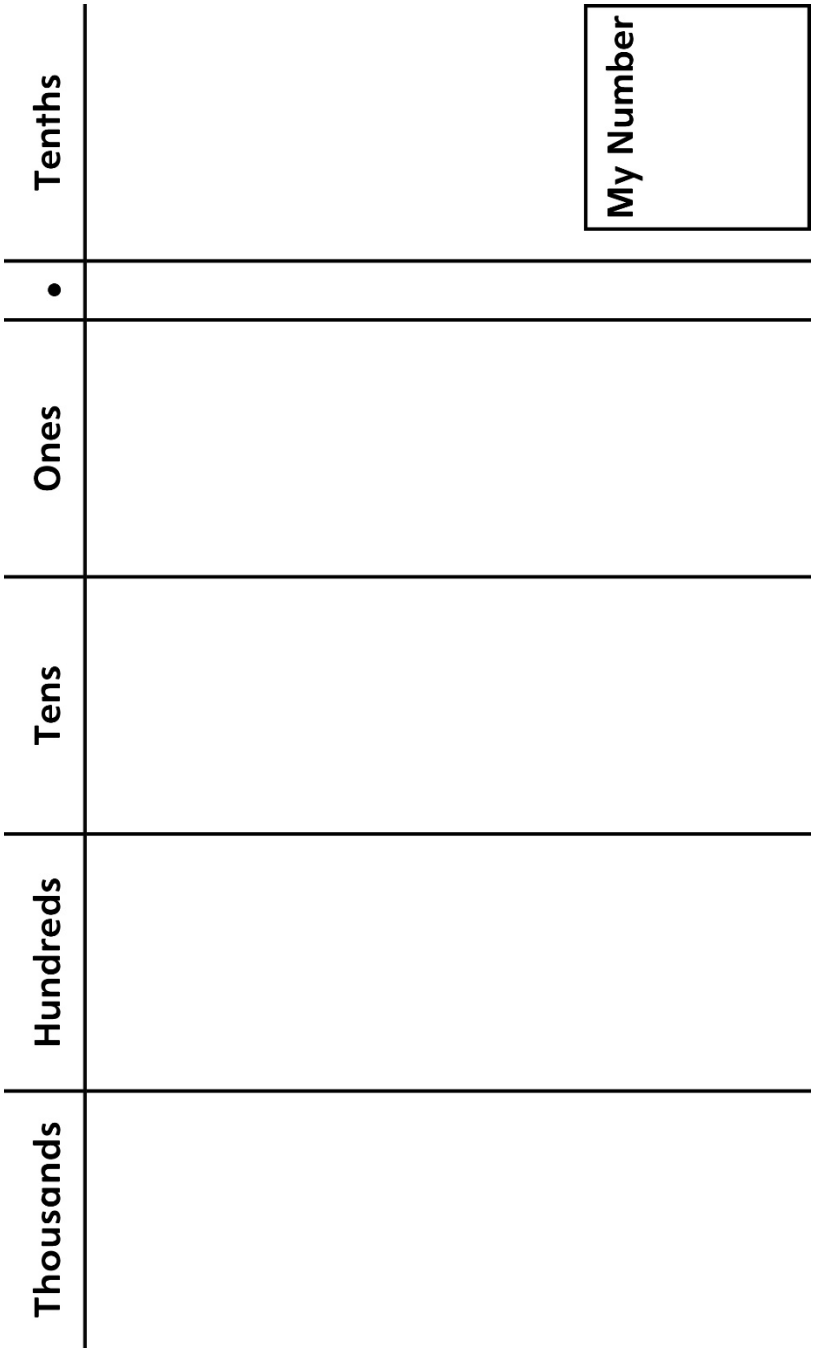
Place-Value Mat



Name _____ Date _____

Math Mat
Master 11

Place-Value Mat



Name _____ Date _____

Math Mat Master 12

10 + 10 Addition Chart

+	1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	11
2	3	4	5	6	7	8	9	10	11	12
3	4	5	6	7	8	9	10	11	12	13
4	5	6	7	8	9	10	11	12	13	14
5	6	7	8	9	10	11	12	13	14	15
6	7	8	9	10	11	12	13	14	15	16
7	8	9	10	11	12	13	14	15	16	17
8	9	10	11	12	13	14	15	16	17	18
9	10	11	12	13	14	15	16	17	18	19
10	11	12	13	14	15	16	17	18	19	20

Name_____ Date _____

Math Mat
Master 13

5 x 5 Multiplication Chart

×	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Name _____ Date _____

Math Mat Master 14

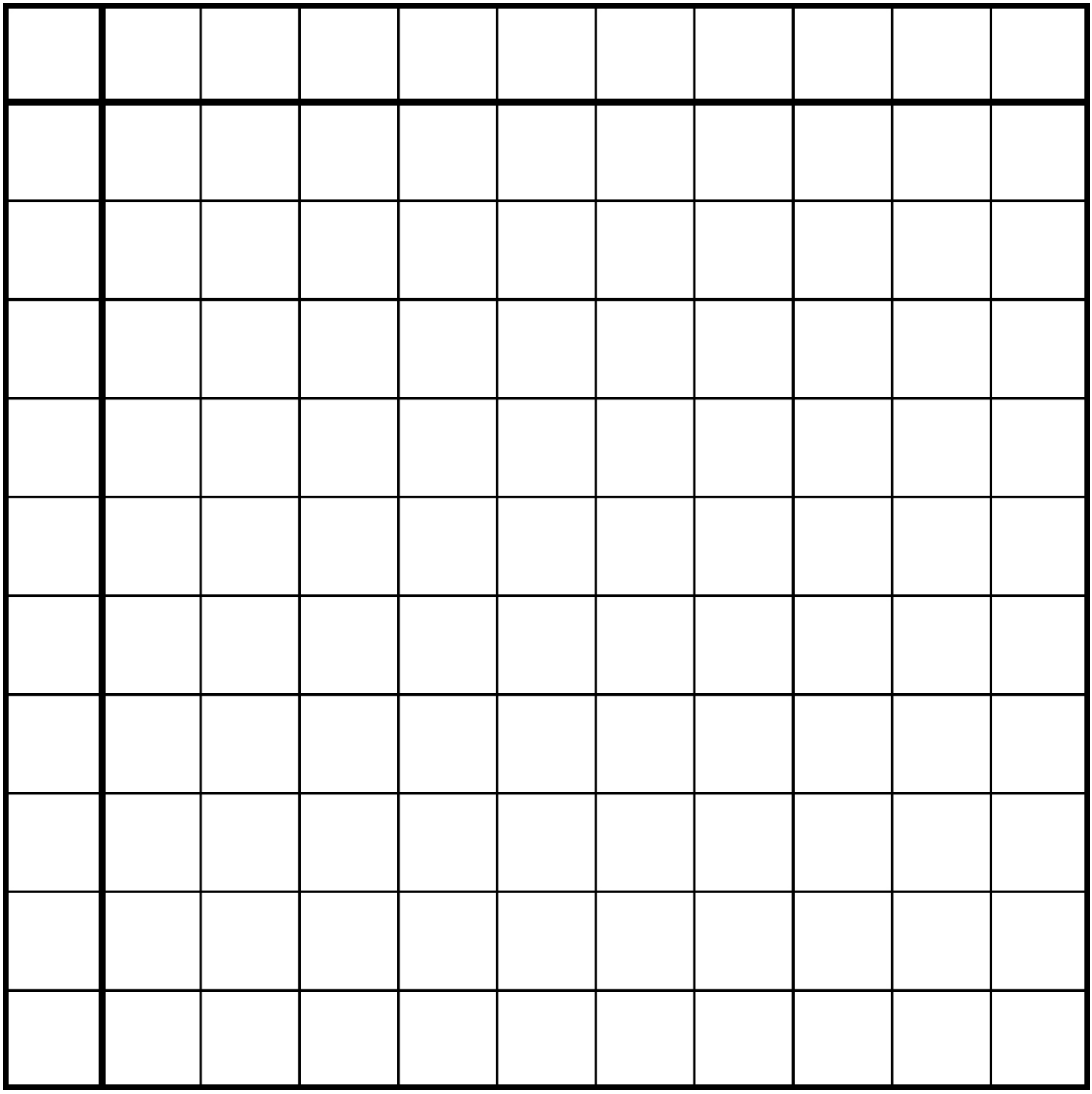
10 x 10 Multiplication Chart

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

Name_____ Date _____

Math Mat Master 15

10 by 10 Chart



Name _____ Date _____

Math Mat
Master 16

Estimation Mat

My Estimate

Name _____ Date _____

Math Mat
Master 17

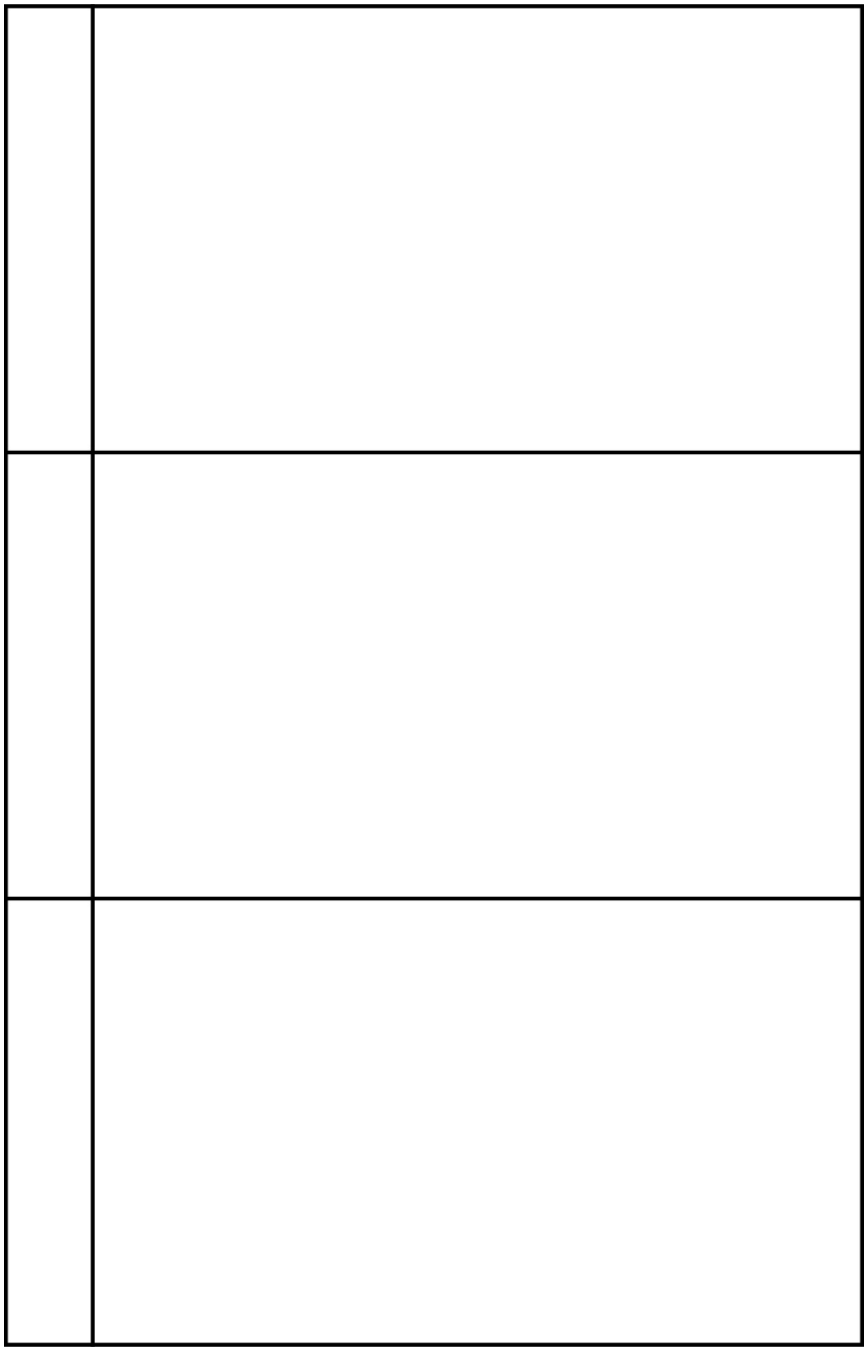
Sorting Mat

Yes	No

Name _____ Date _____

Math Mat
Master 18

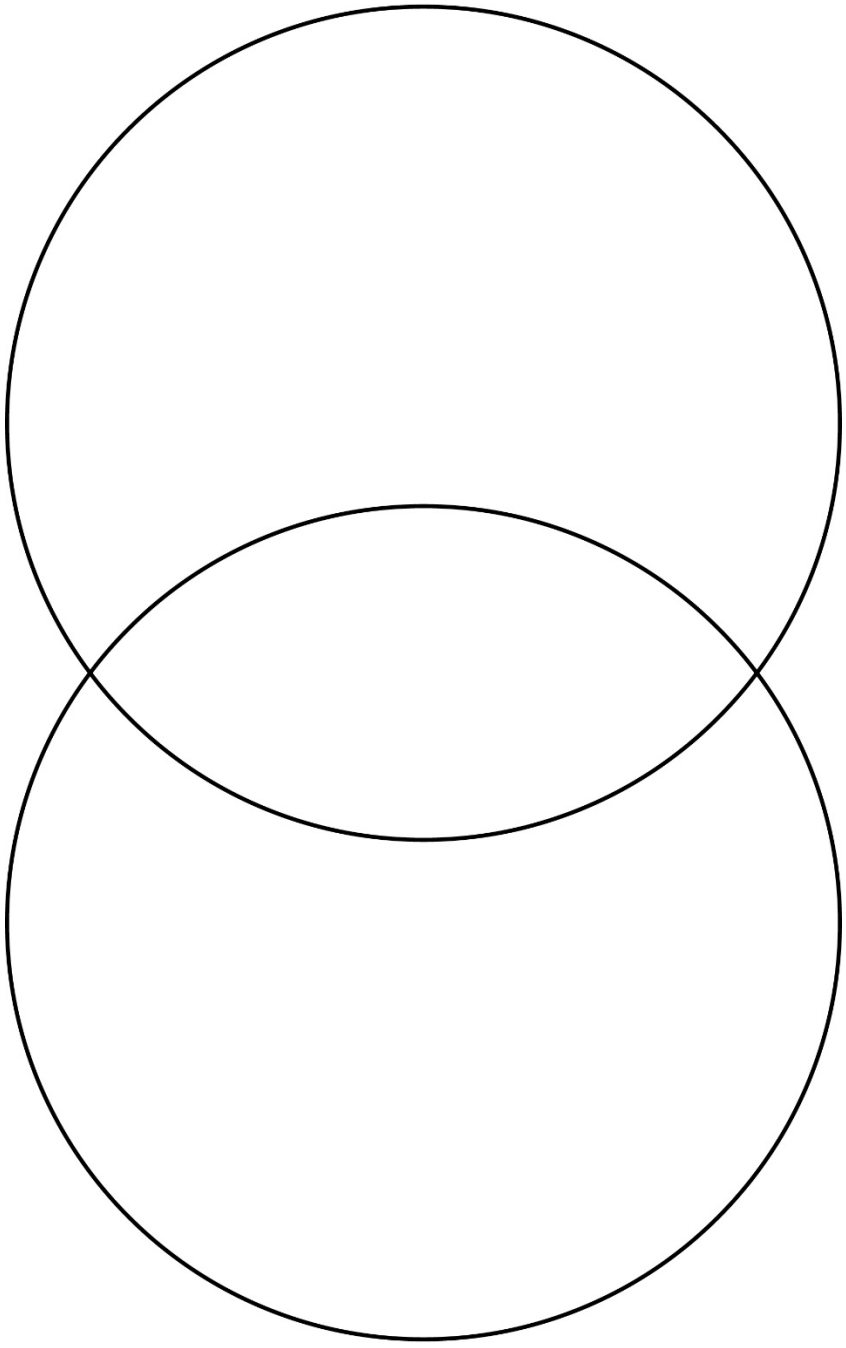
3-Column Chart



Name_____ Date _____

Math Mat
Master 19

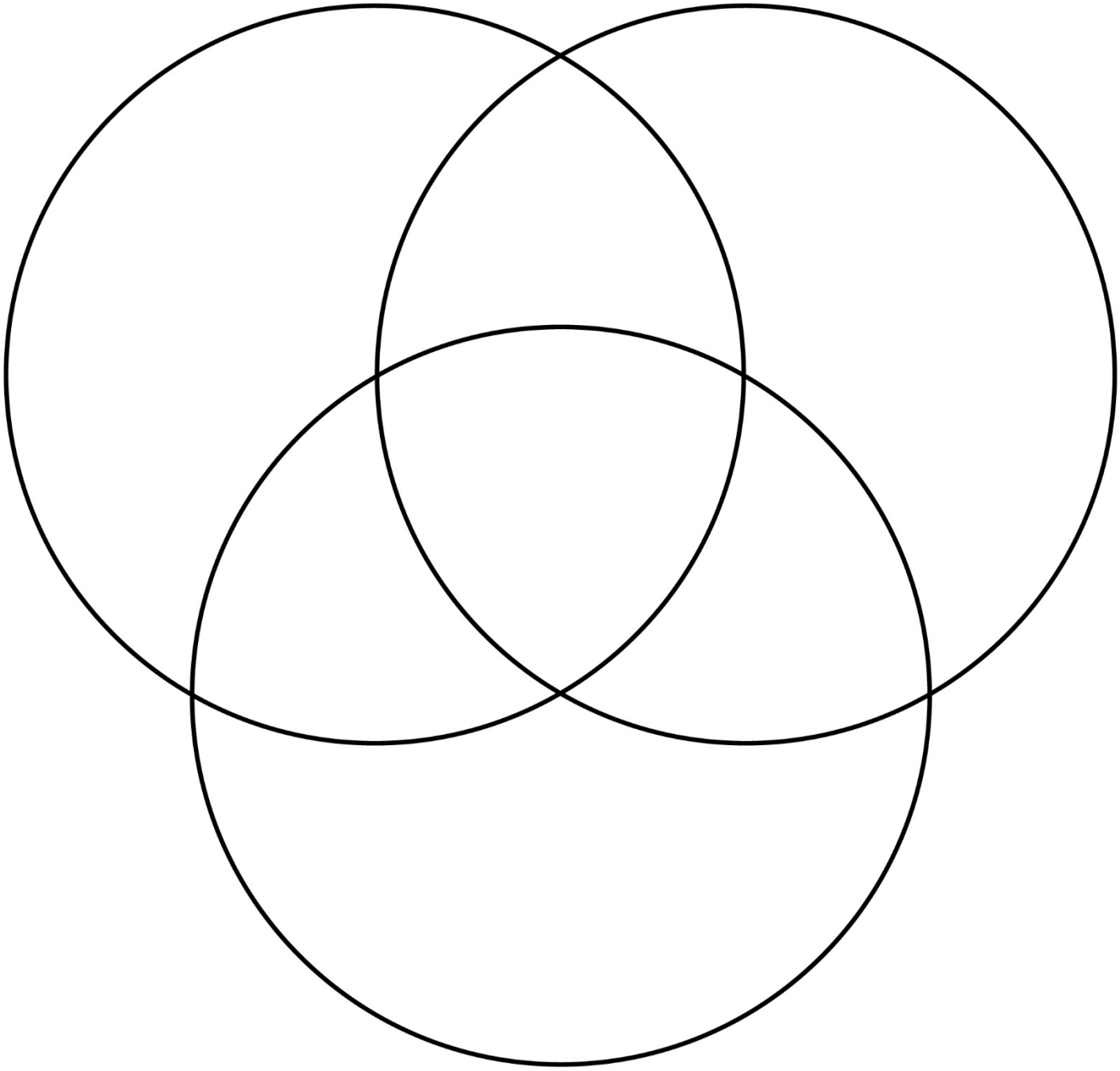
Venn Diagram



Name_____ Date _____

Math Mat
Master 20

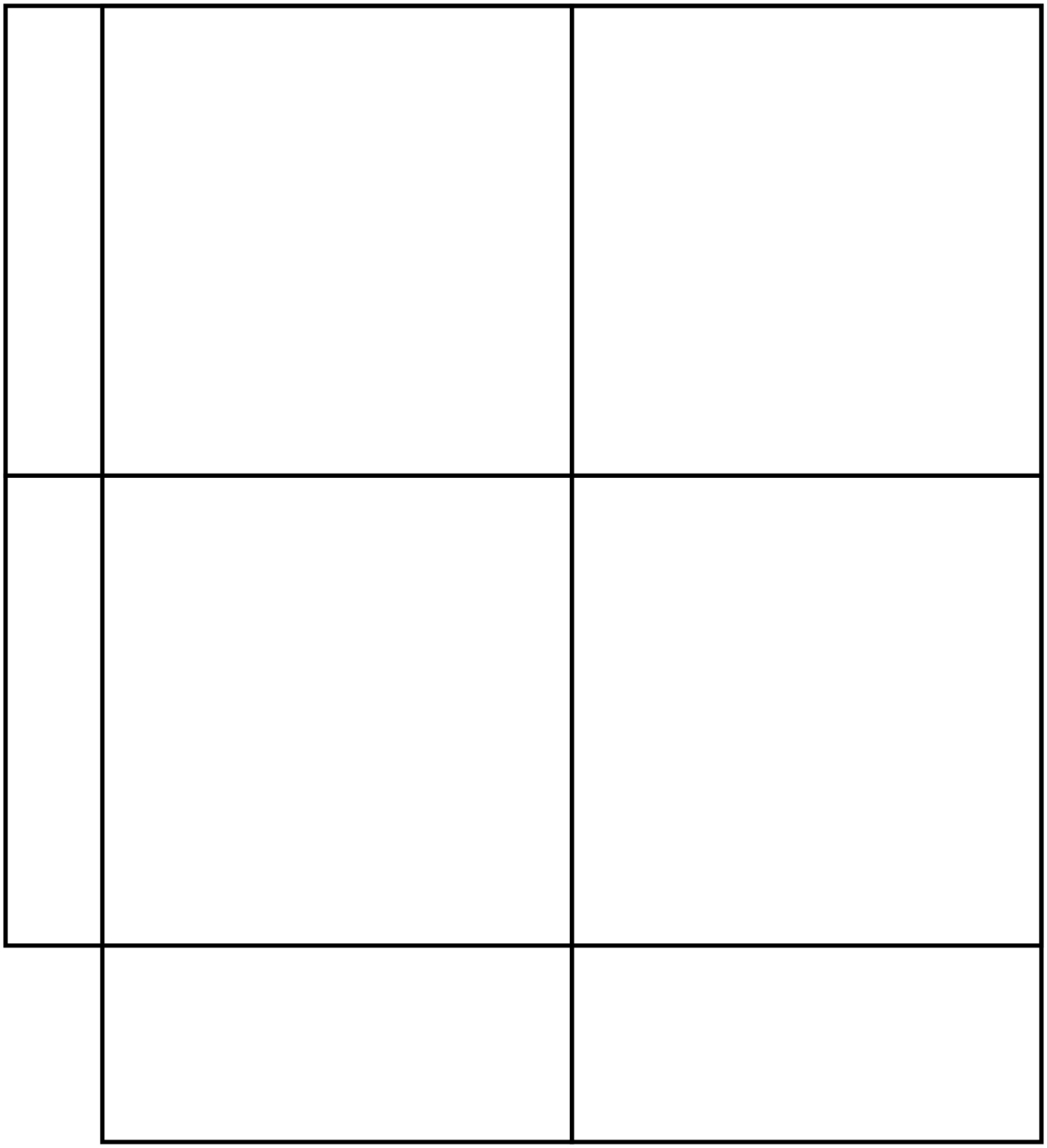
Venn Diagram



Name _____ Date _____

Math Mat
Master 21

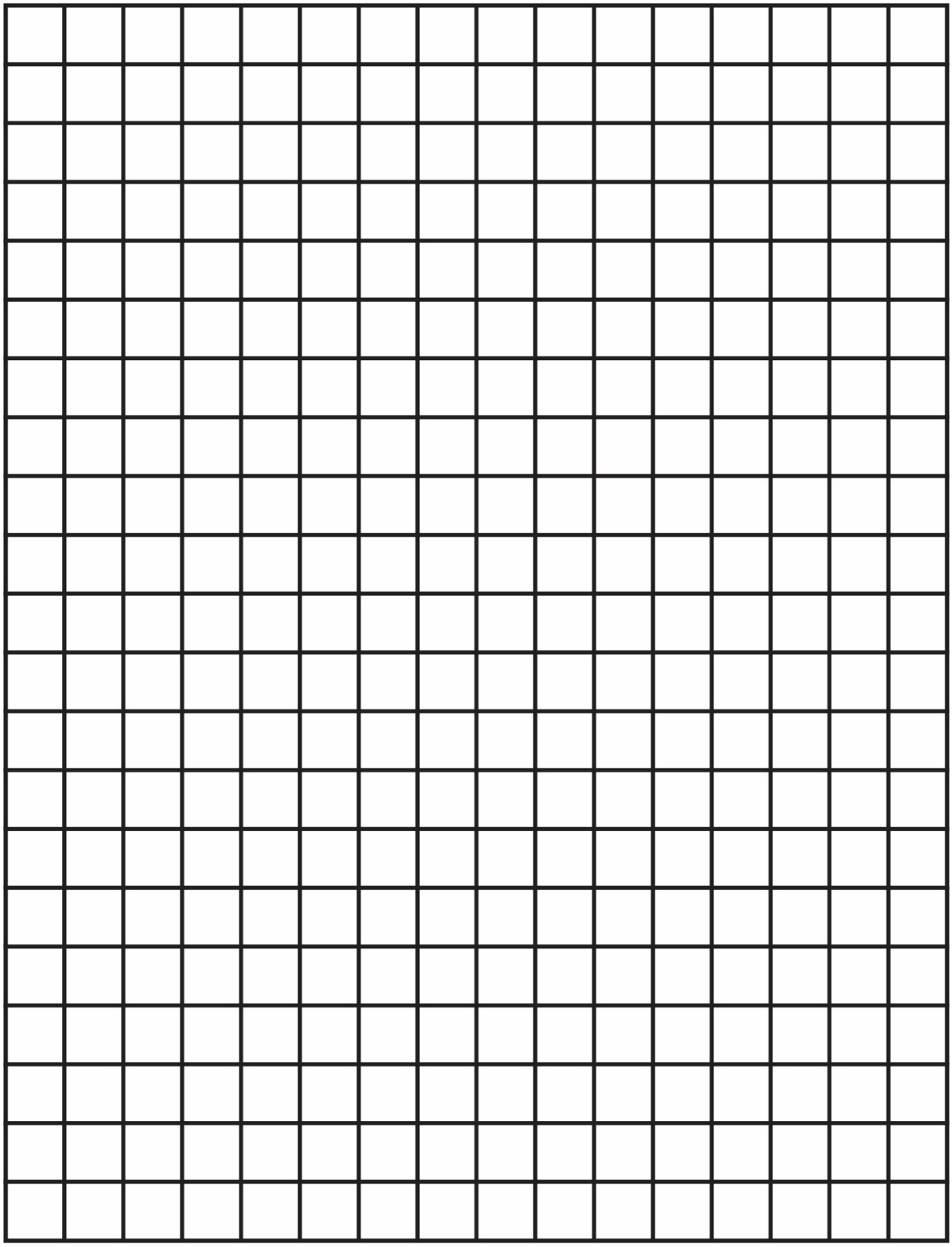
Carroll Diagram



Name _____ Date _____

Math Mat Master 22

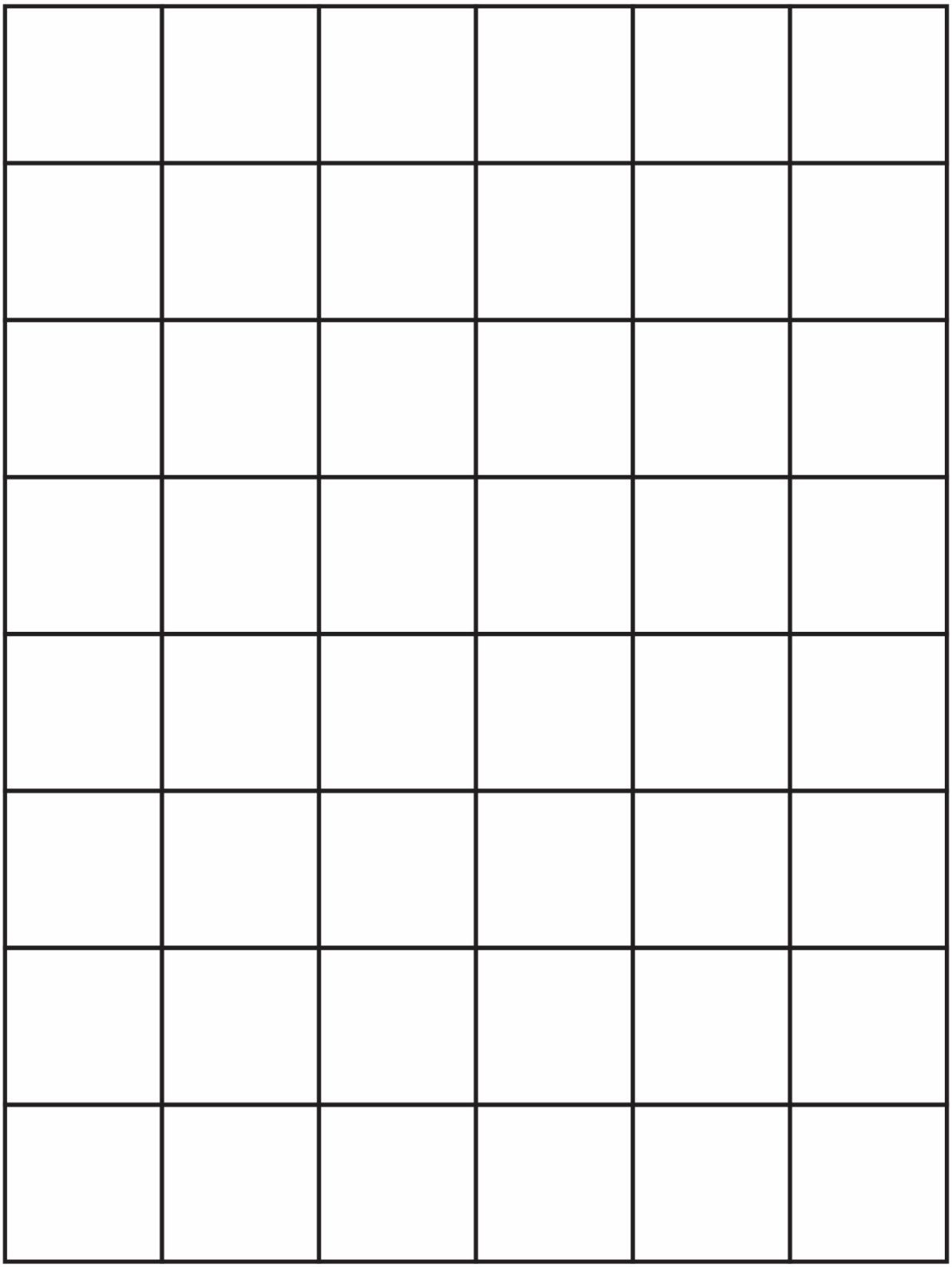
1-cm Grid Paper



Name_____ Date _____

Math Mat
Master 23

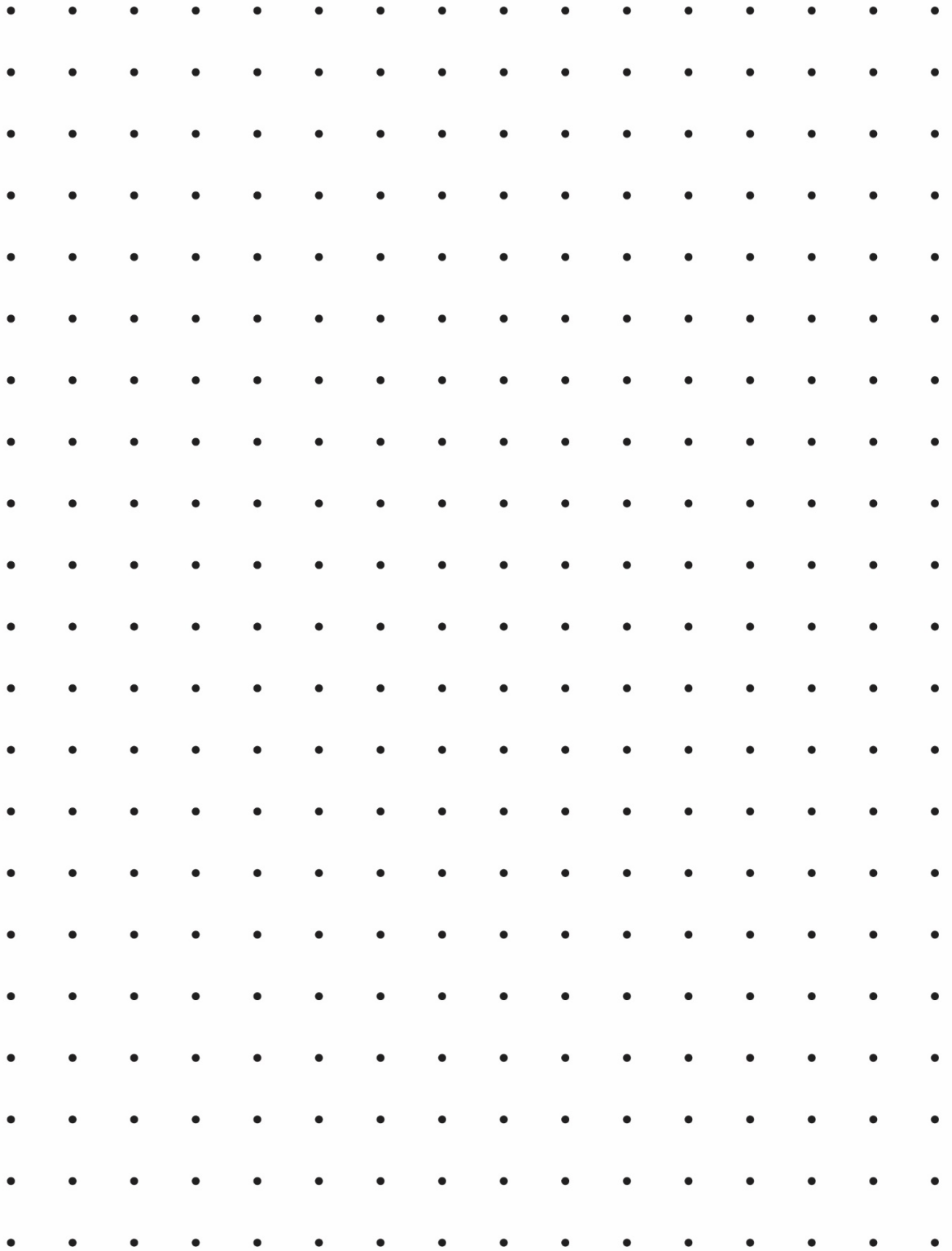
Colour Tile Grid



Name _____ Date _____

Math Mat
Master 24

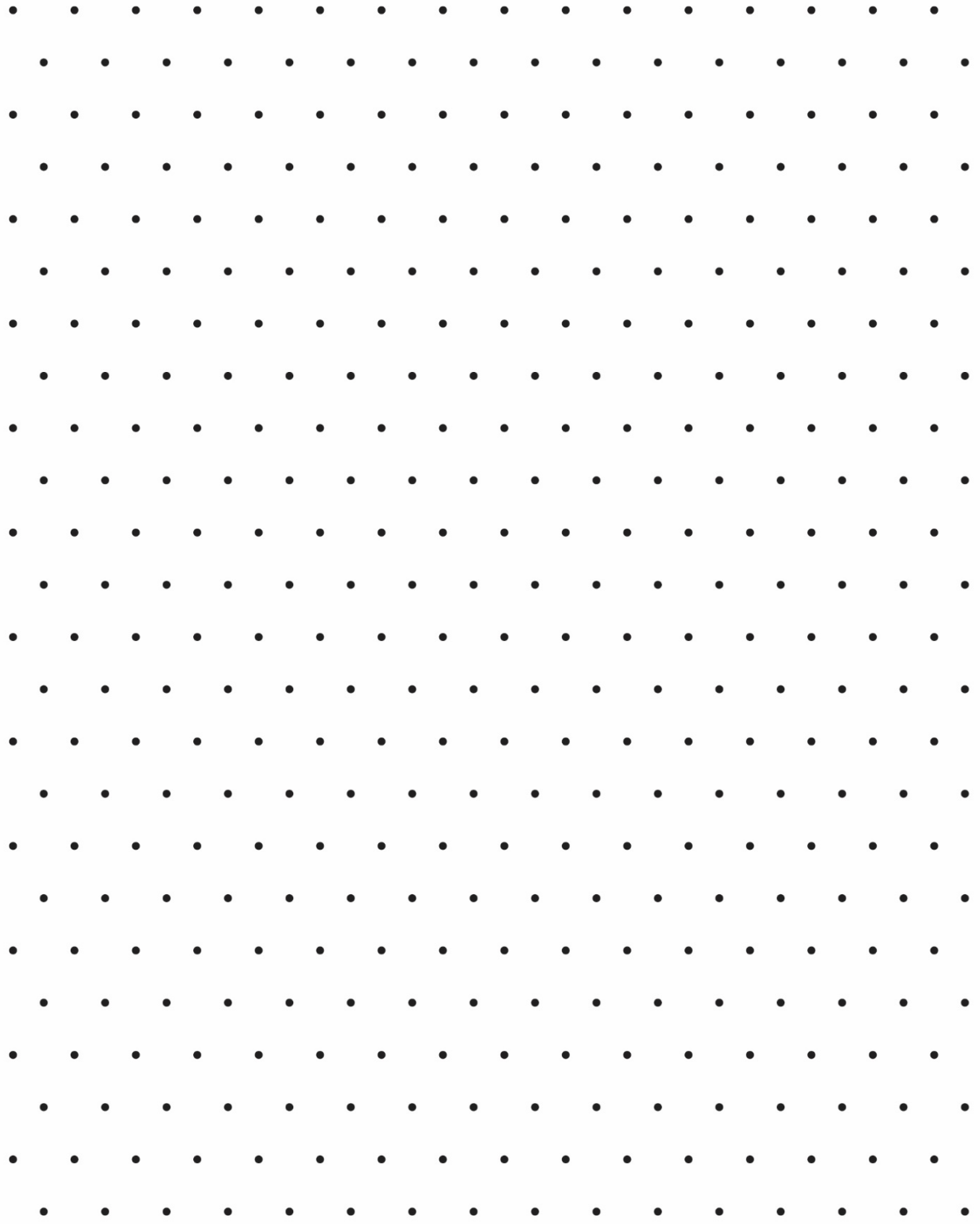
Square Dot Paper



Name _____ Date _____

Math Mat
Master 25

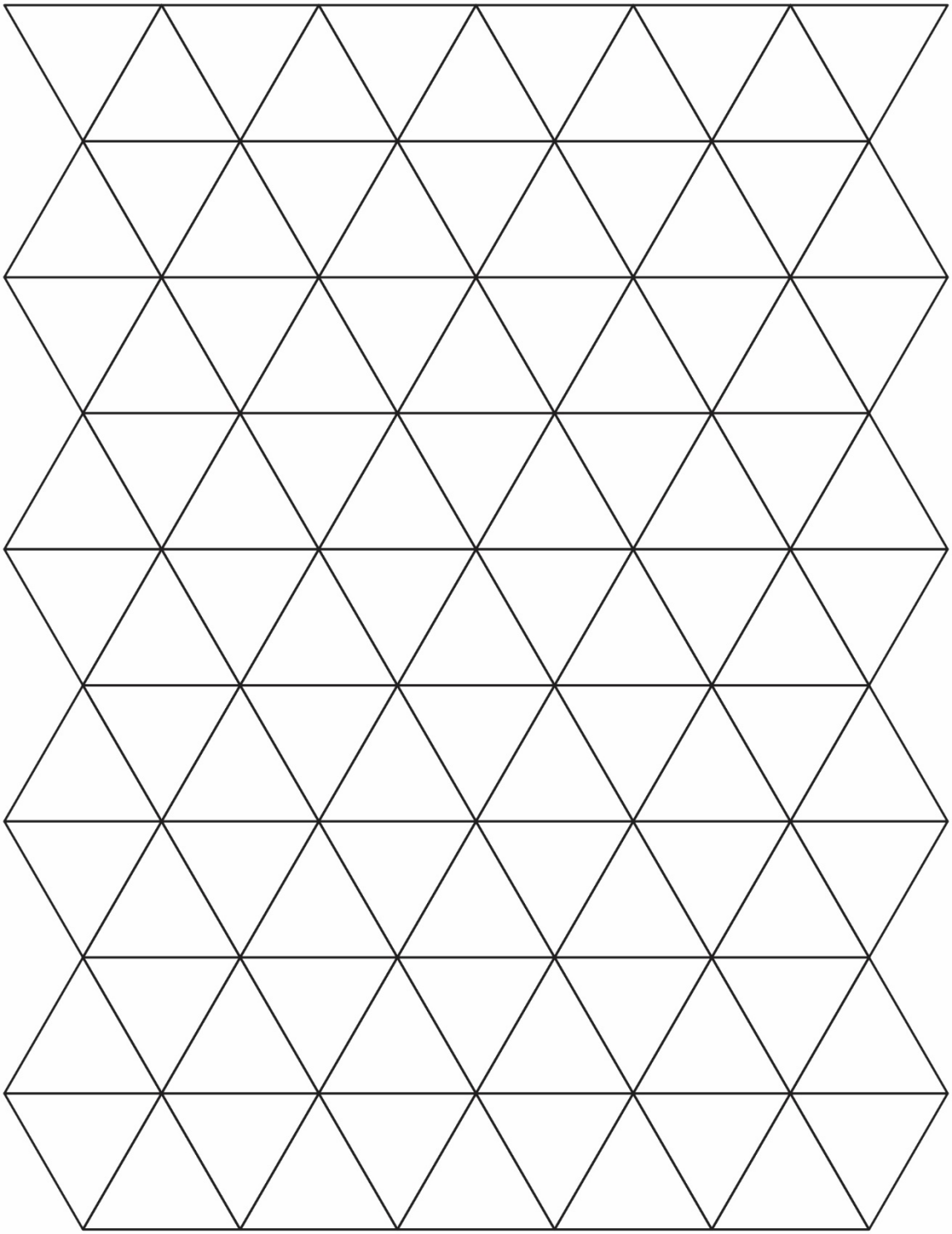
Triangular Dot Paper



Name _____ Date _____

Math Mat
Master 26

Triangular Grid Paper

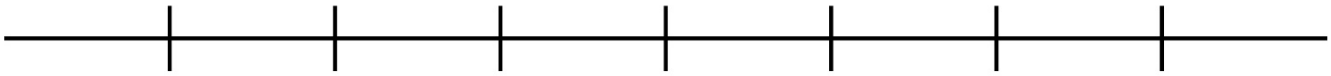


Name _____ Date _____

Math Mat
Master 27

Line Plot

Title _____

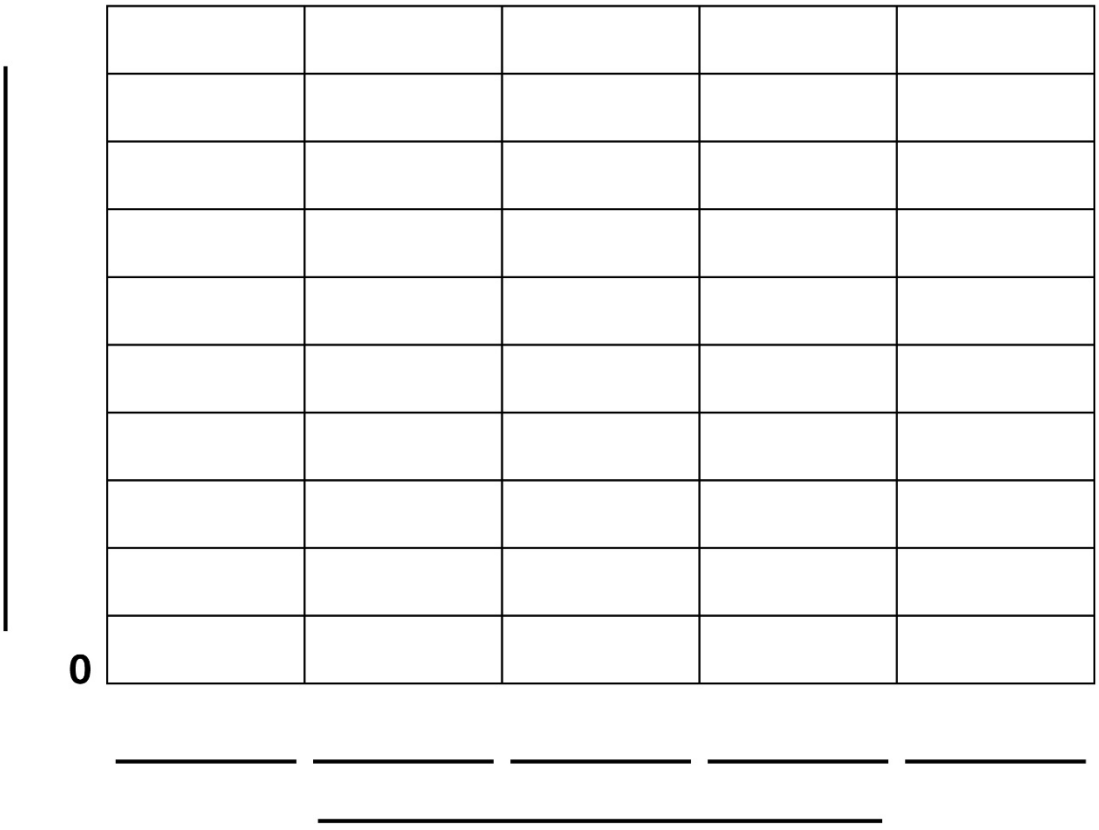


Name _____ Date _____

Math Mat
Master 28

Graphing Mat

Title _____

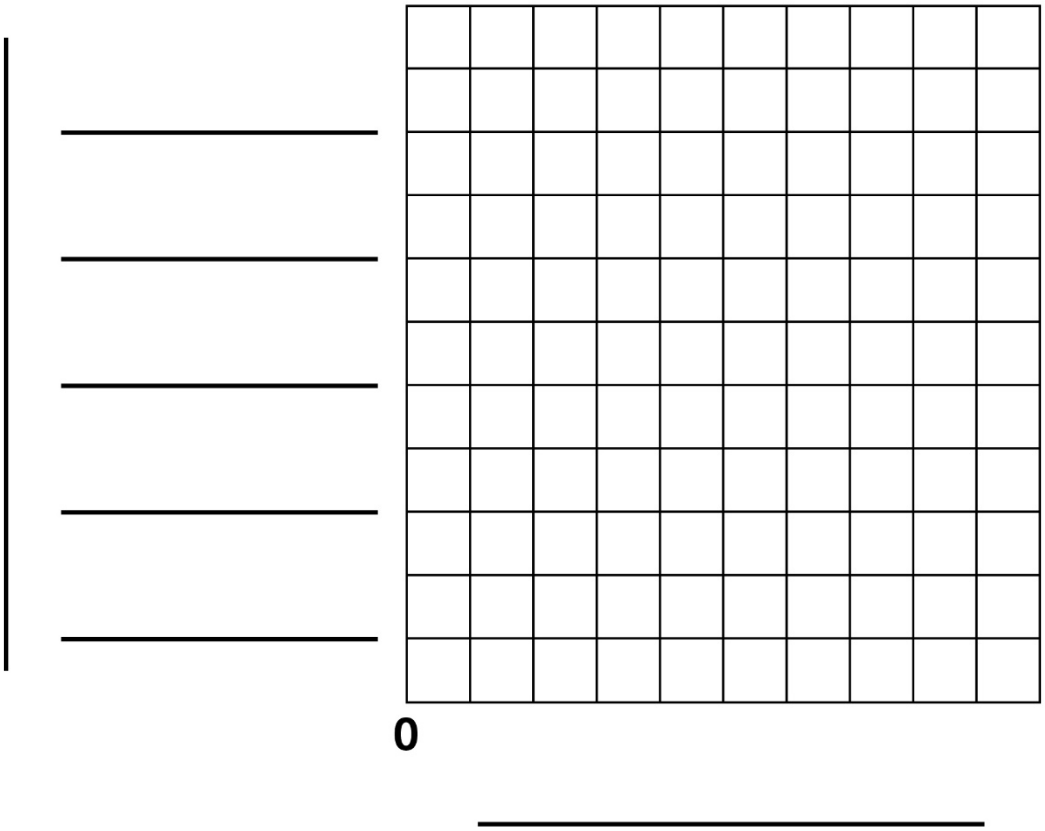


Name _____ Date _____

Math Mat
Master 29

Horizontal Graphing Mat

Title _____

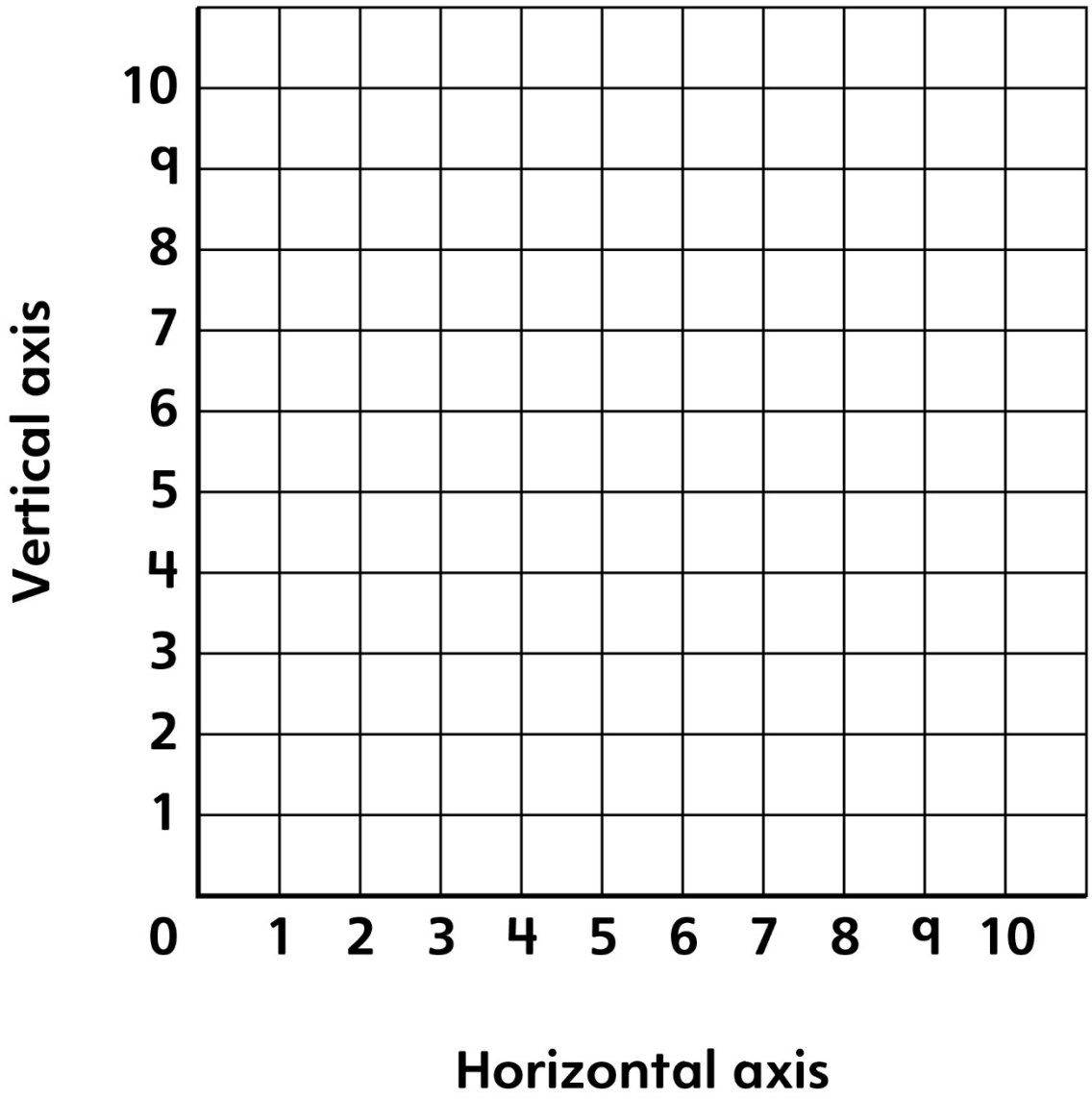


_____

Name_____ Date _____

Math Mat
Master 30

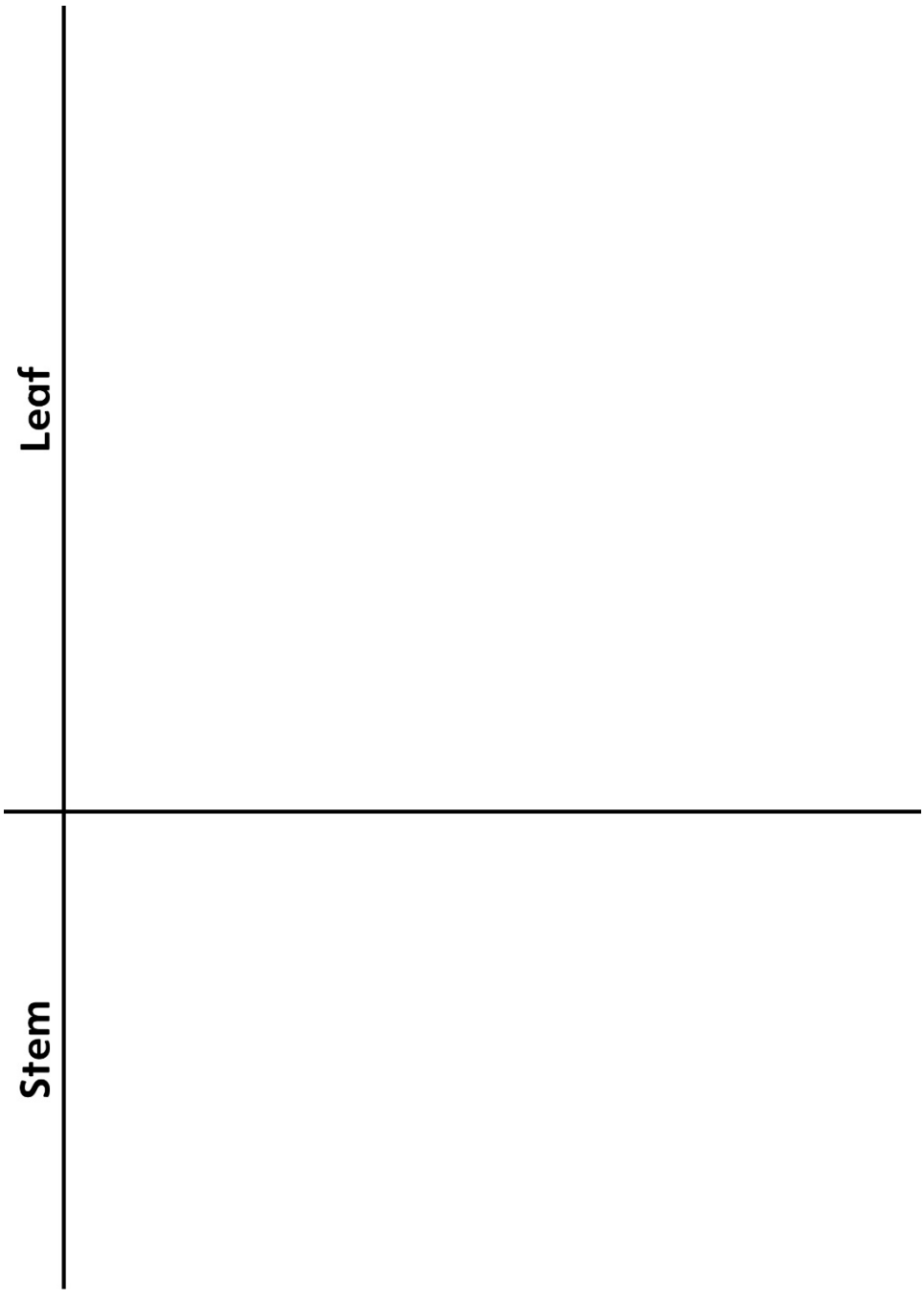
Coordinate Grid



Name _____ Date _____

Math Mat
Master 31

Stem-and-Leaf Plot



Name _____ Date _____

Math Mat Master 32

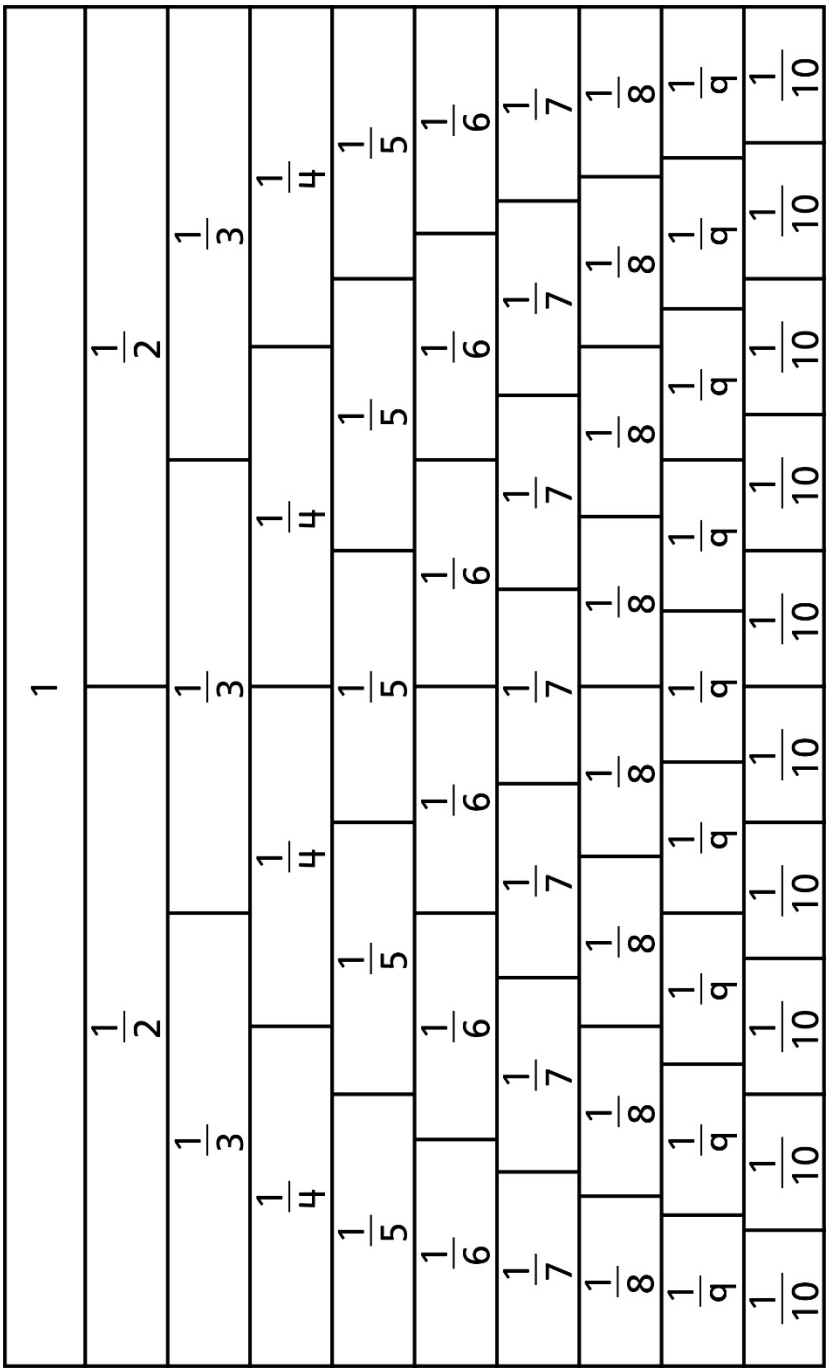
Calendar

Saturday					
Friday					
Thursday					
Wednesday					
Tuesday					
Monday					
Sunday					

Name _____ Date _____

Math Mat Master 33

Fraction Strips



Name _____ Date _____

Math Mat
Master 34

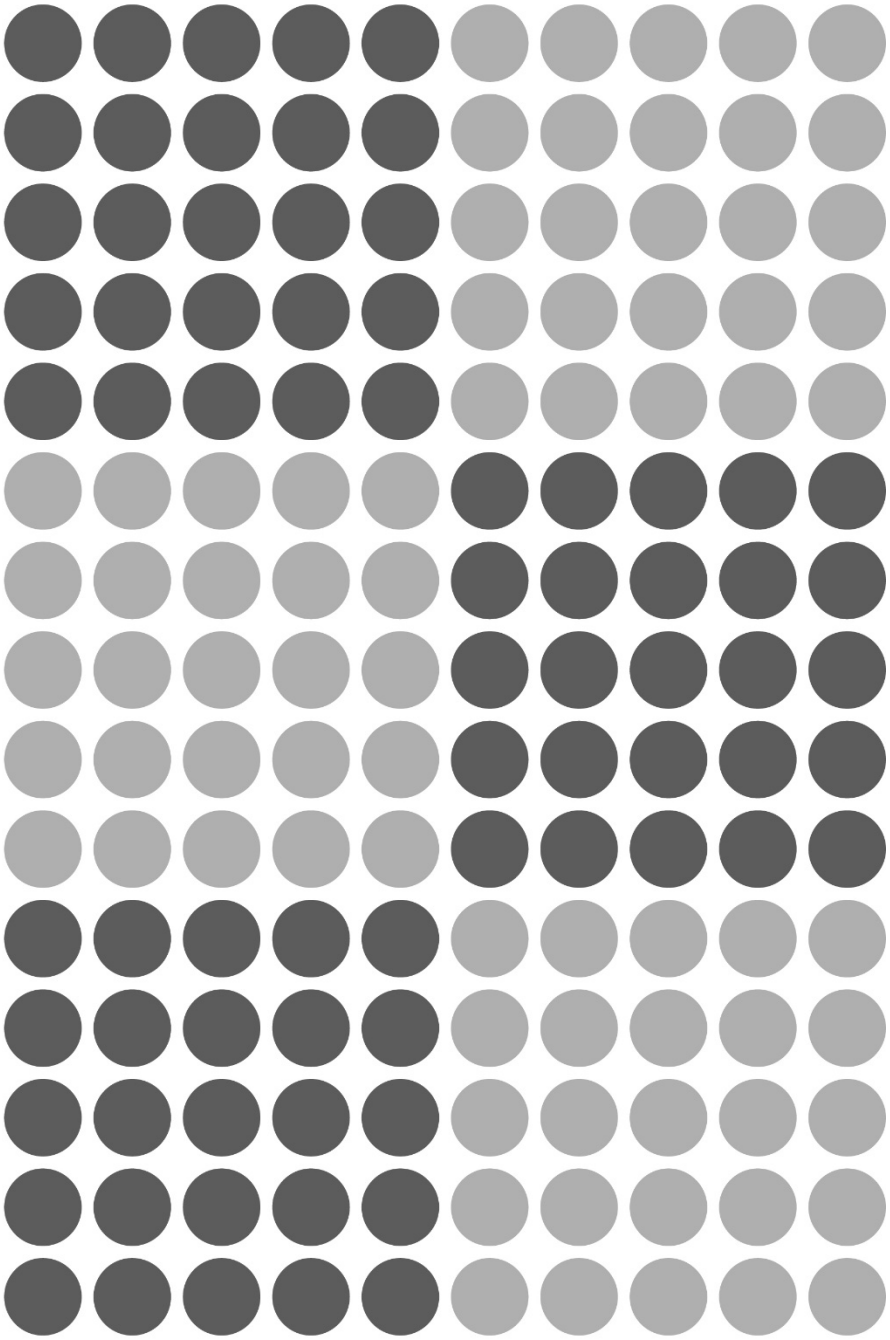
Money

Amount: _____

Name _____ Date _____

Math Mat
Master 35

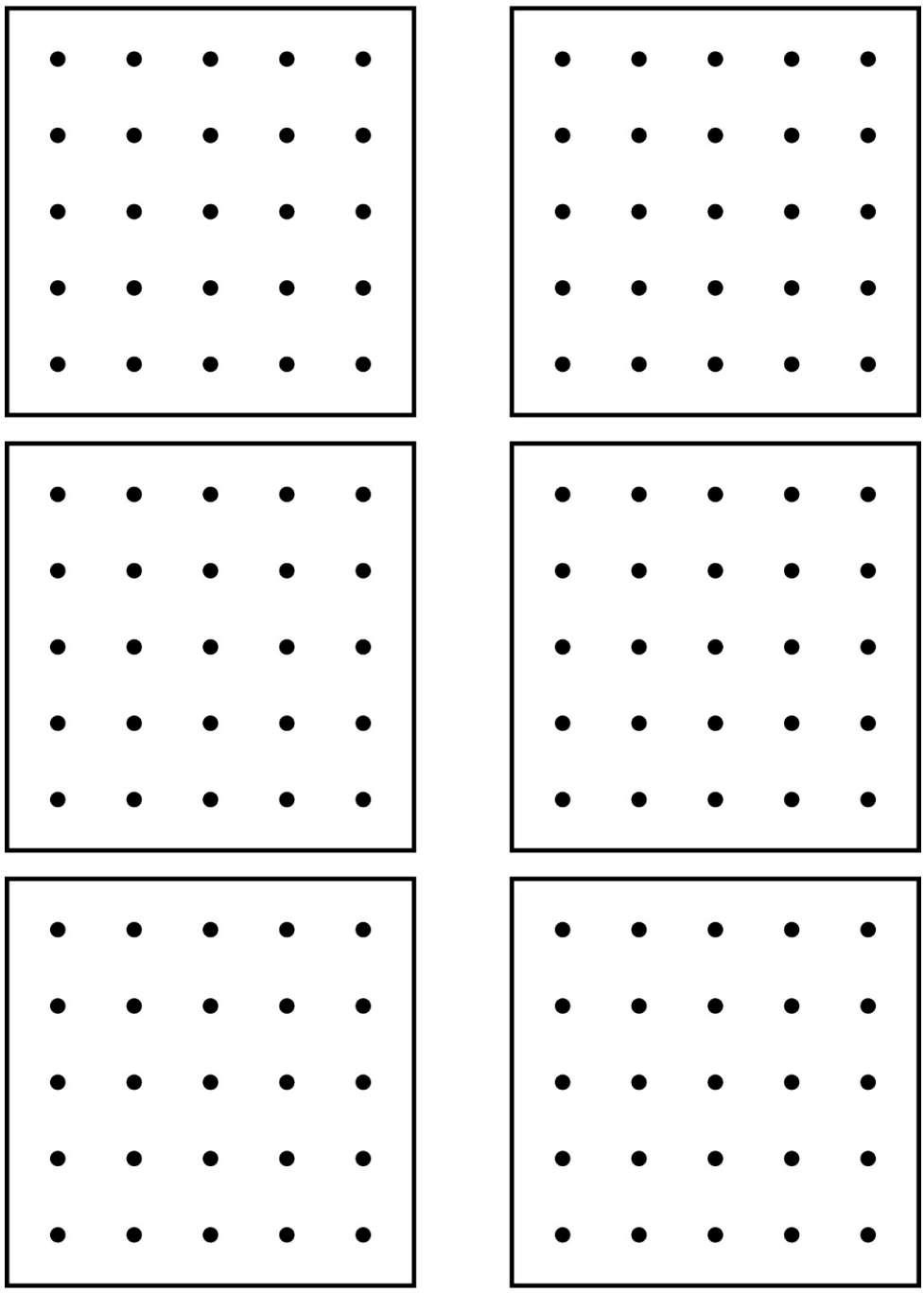
Dot Array



Name _____ Date _____

Math Mat
Master 36

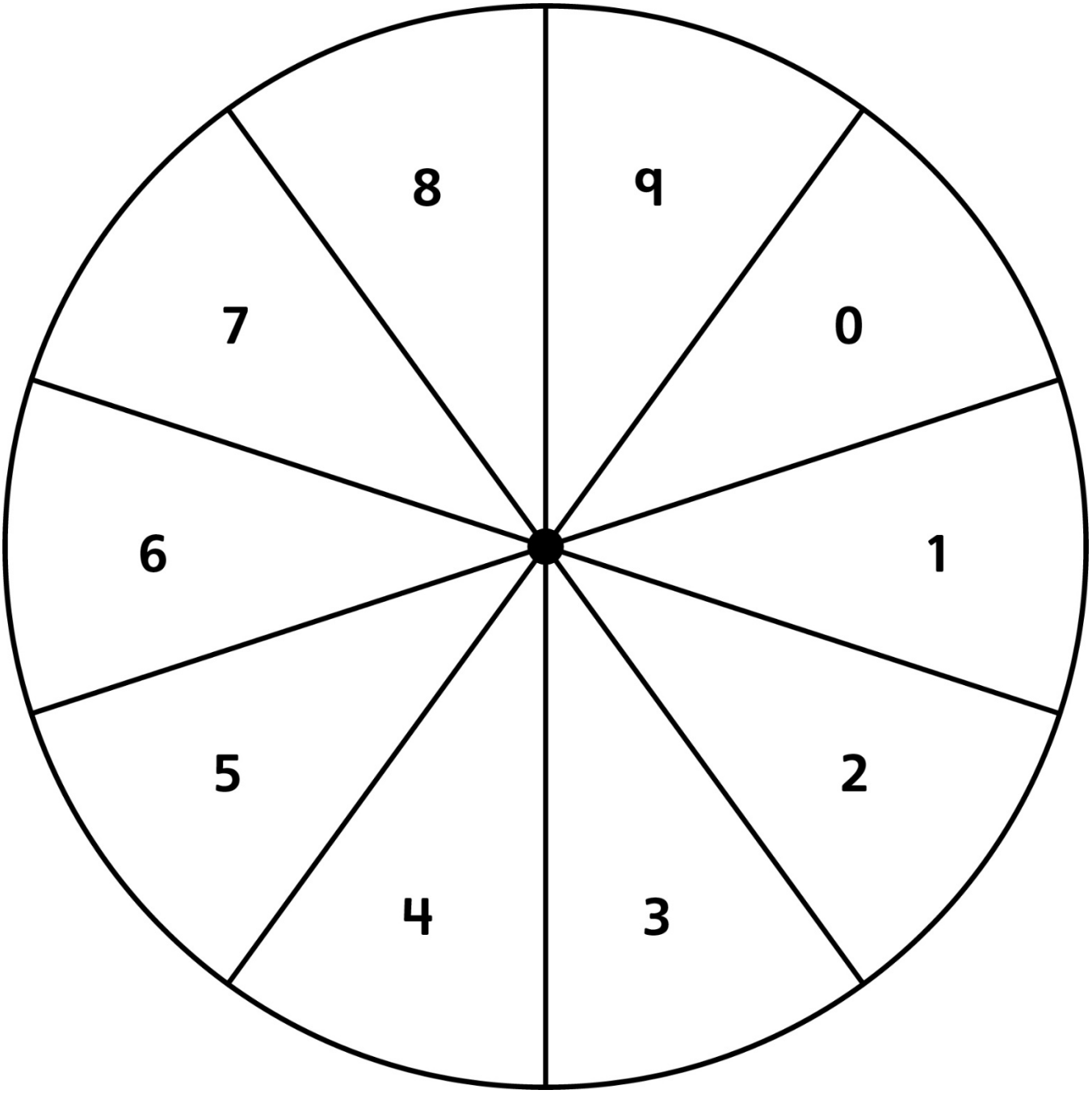
Geoboards



Name _____ Date _____

Math Mat
Master 37

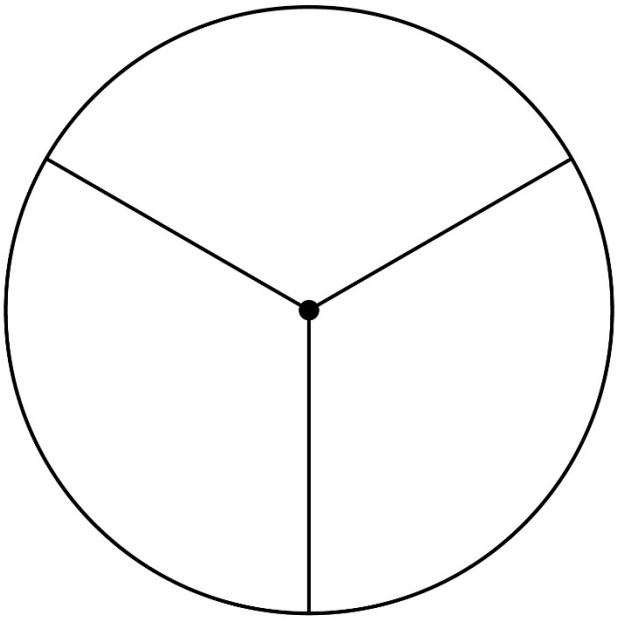
Spinner

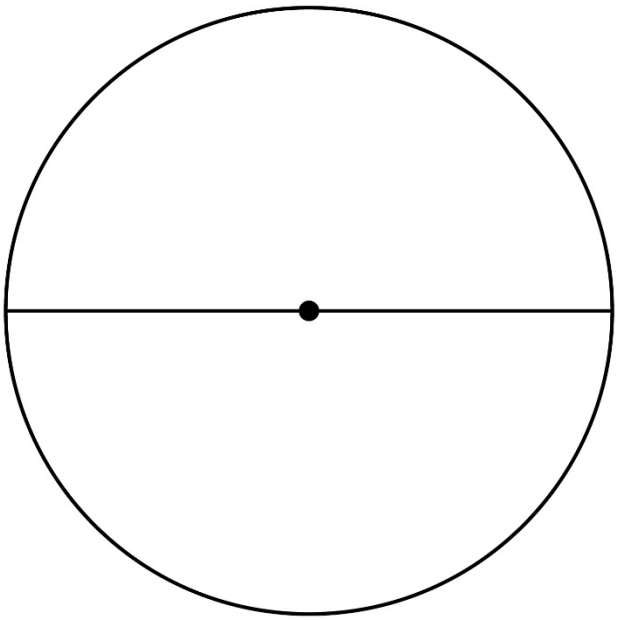


Name_____ Date _____

Math Mat Master 38

Spinners

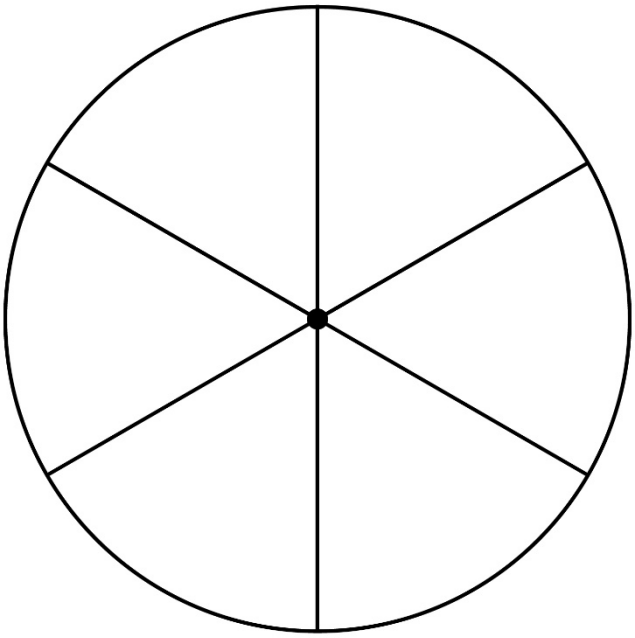


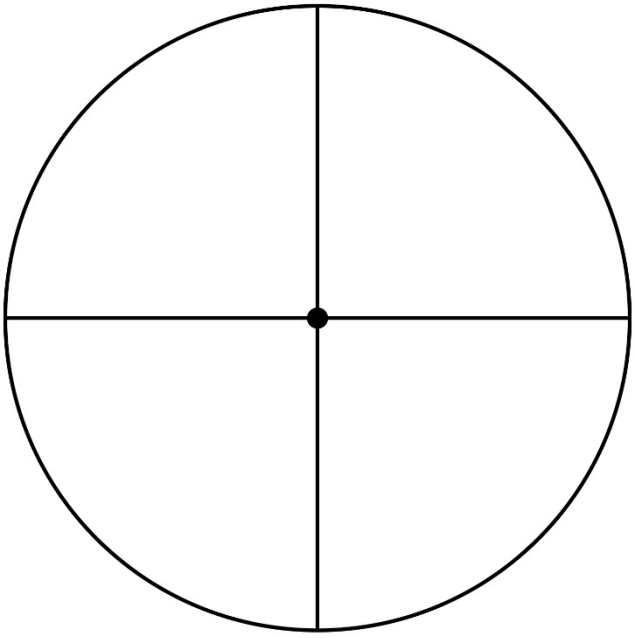


Name_____ Date _____

Math Mat
Master 39

Spinners

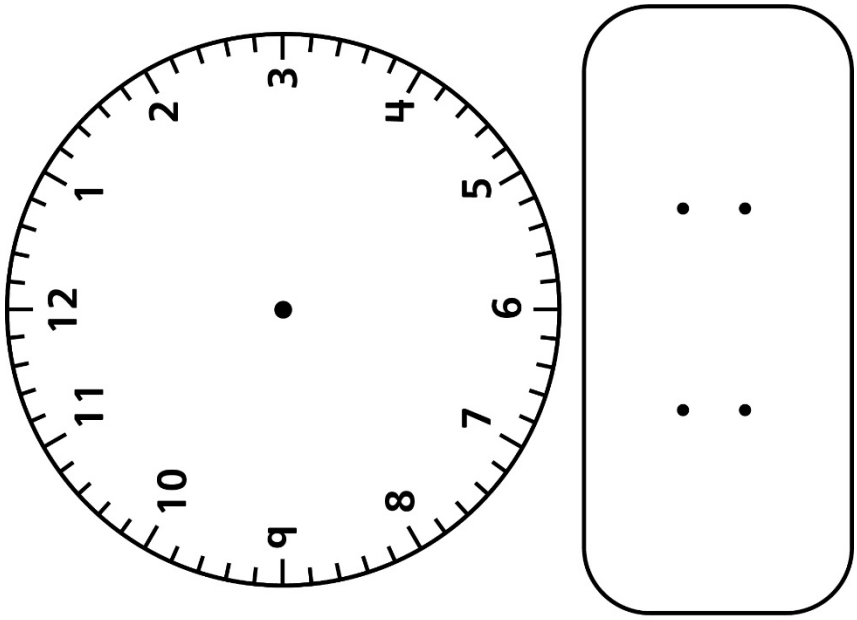


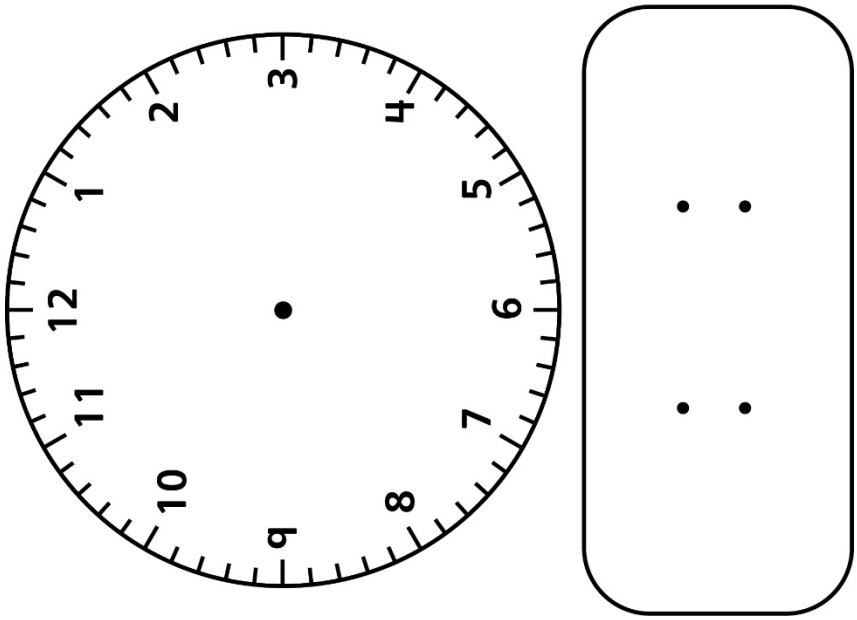


Name _____ Date _____

Math Mat Master 40

Clocks



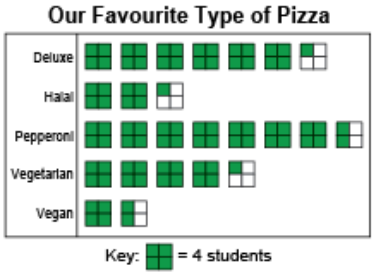
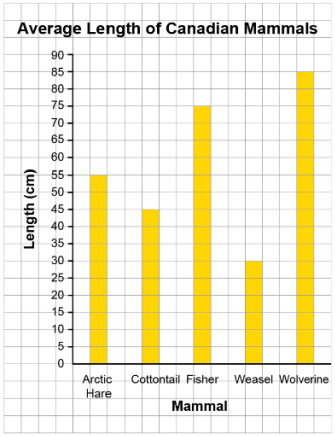
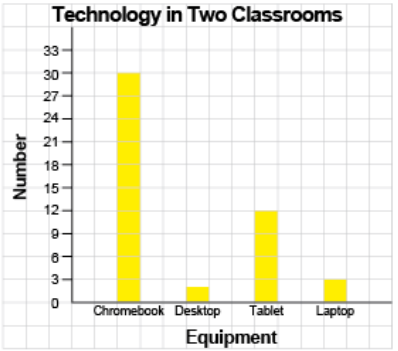


Data Management and Probability

Activity 1 Assessment

Interpreting and Drawing Pictographs

Describing and Representing Data

Describes given data using frequency counts.	Represents data using a pictograph using many-to-one correspondence.	Represents data using a bar graph using many-to-one correspondence.	Flexibly creates representations to show data using many-to-one correspondence.
Students in three Grade 4 classes were asked to choose their favourite pizza. **Pizza Type / Number of Students** Deluxe: 25 Halal: 9 Pepperoni: 30 Vegetarian: 17 Vegan: 6 "30 students chose Pepperoni as their favourite pizza. Only 6 students chose Vegan."	 "The key is 1 square represents 4 students. For 17 students: 17 ÷ 4 = 4 R1, so I drew 4 full squares, and one-fourth of another square."	 "I used the scale 1 square = 5 cm to represent animal lengths. All of the lengths were divisible by 5, so I divided each animal's length by 5 to find the number of squares in each bar."	 "I used a scale of 1 square = 3 pieces of equipment because most numbers are multiples of 3 and are in the skip-counting by 3s sequence. Other students will find it easy to interpret."

Observations/Documentation

Data Management and Probability

Activity 1 Assessment

Interpreting and Drawing Pictographs

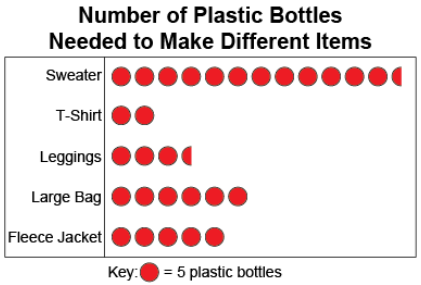
Interpreting Data and Making Informed Decisions

Draws conclusions based on data presented.

Item	Number of Bottles
Sweater	62.5
T-Shirt	10
Leggings	17.5
Large Bag	30
Fleece Jacket	25

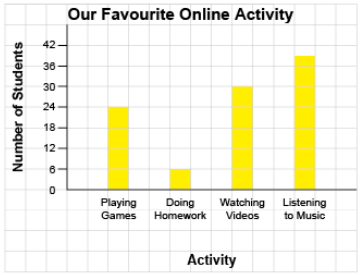
“A sweater uses about 6 times as many bottles as a t-shirt.”

Uses inferences to make predictions about future events.



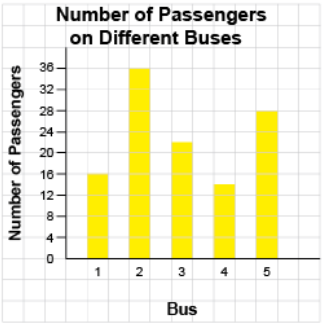
“More t-shirts could be made and sold with the fewest number of plastic bottles. I predict it would take less time to collect bottles and more money could be made. I think t-shirts should be sold for a fundraiser.”

Interprets the results of data presented graphically.



"The bar graphs shows 99 students took the survey: 24 + 6 + 30 + 39 = 99. 15 more students listen to music than play games on-line.”

Analyzes and interprets data to make convincing arguments and informed decisions.



“Since most passengers are on bus number 2, the bus company might add another bus to that route. The company could take one of the schedule times from bus number 4 and give it to bus 2 because it has the fewest number of passengers. It is important to meet the needs of the passengers.”

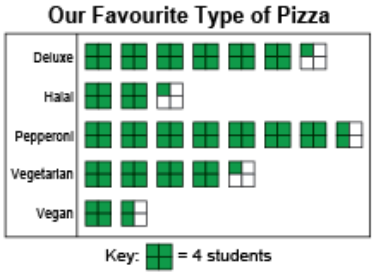
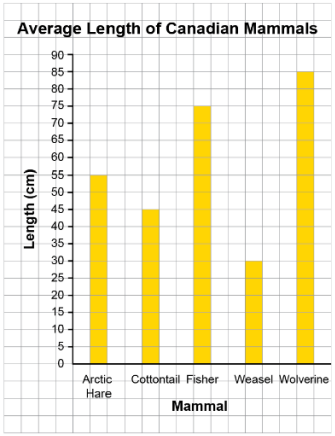
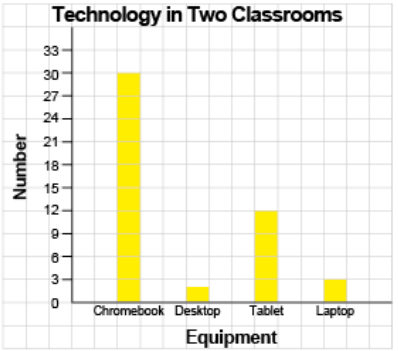
Observations/Documentation

Data Management and Probability

Activity 2 Assessment

Interpreting and Drawing Bar Graphs

Describing and Representing Data

Describes given data using frequency counts.	Represents data using a pictograph using many-to-one correspondence.	Represents data using a bar graph using many-to-one correspondence.	Flexibly creates representations to show data using many-to-one correspondence.
Students in three Grade 4 classes were asked to choose their favourite pizza. **Pizza Type / Number of Students** Deluxe: 25 Halal: 9 Pepperoni: 30 Vegetarian: 17 Vegan: 6 "30 students chose Pepperoni as their favourite pizza. Only 6 students chose Vegan."	 "The key is 1 square represents 4 students. For 17 students: 17 ÷ 4 = 4 R1, so I drew 4 full squares, and one-fourth of another square."	 "I used the scale 1 square = 5 cm to represent animal lengths. All of the lengths were divisible by 5, so I divided each animal's length by 5 to find the number of squares in each bar."	 "I used a scale of 1 square = 3 pieces of equipment because most numbers are multiples of 3 and are in the skip-counting by 3s sequence. Other students will find it easy to interpret."

Observations/Documentation

Data Management and Probability

Activity 2 Assessment

Interpreting and Drawing Bar Graphs

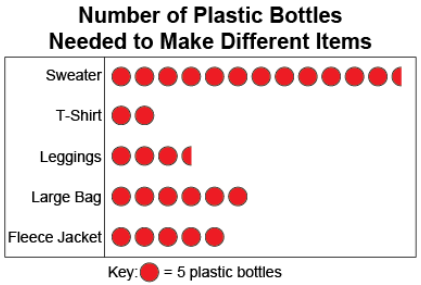
Interpreting Data and Making Informed Decisions

Draws conclusions based on data presented.

Item	Number of Bottles
Sweater	62.5
T-Shirt	10
Leggings	17.5
Large Bag	30
Fleece Jacket	25

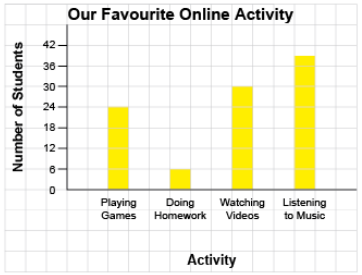
"A sweater uses about 6 times as many bottles as a t-shirt."

Uses inferences to make predictions about future events.



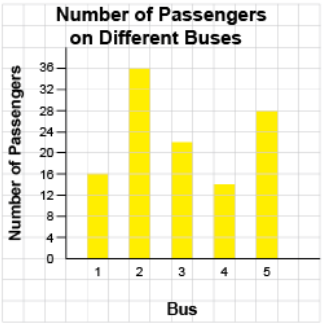
"More t-shirts could be made and sold with the fewest number of plastic bottles. I predict it would take less time to collect bottles and more money could be made. I think t-shirts should be sold for a fundraiser."

Interprets the results of data presented graphically.



"The bar graphs shows 99 students took the survey: 24 + 6 + 30 + 39 = 99. 15 more students listen to music than play games on-line."

Analyzes and interprets data to make convincing arguments and informed decisions.



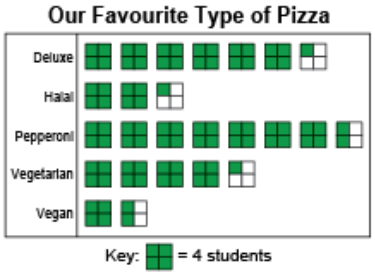
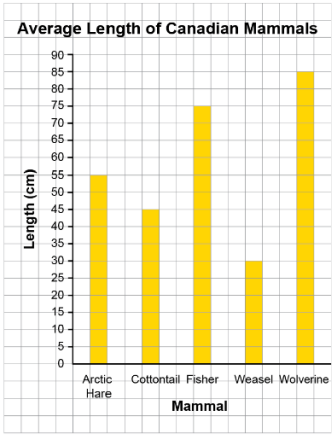
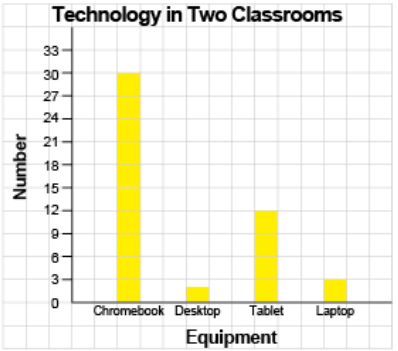
"Since most passengers are on bus number 2, the bus company might add another bus to that route. The company could take one of the schedule times from bus number 4 and give it to bus 2 because it has the fewest number of passengers. It is important to meet the needs of the passengers."

Observations/Documentation

Data Management and Probability

Activity 3 Assessment
Comparing Graphs

Describing and Representing Data

Describes given data using frequency counts.	Represents data using a pictograph using many-to-one correspondence.	Represents data using a bar graph using many-to-one correspondence.	Flexibly creates representations to show data using many-to-one correspondence.
Students in three Grade 4 classes were asked to choose their favourite pizza. **Pizza Type / Number of Students** Deluxe: 25 Halal: 9 Pepperoni: 30 Vegetarian: 17 Vegan: 6 "30 students chose Pepperoni as their favourite pizza. Only 6 students chose Vegan."	 "The key is 1 square represents 4 students. For 17 students: 17 ÷ 4 = 4 R1, so I drew 4 full squares, and one-fourth of another square."	 "I used the scale 1 square = 5 cm to represent animal lengths. All of the lengths were divisible by 5, so I divided each animal's length by 5 to find the number of squares in each bar."	 "I used a scale of 1 square = 3 pieces of equipment because most numbers are multiples of 3 and are in the skip-counting by 3s sequence. Other students will find it easy to interpret."

Observations/Documentation

Data Management and Probability

Activity 3 Assessment

Comparing Graphs

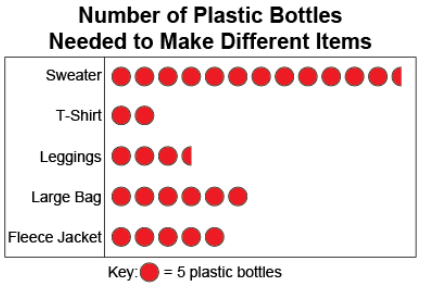
Interpreting Data and Making Informed Decisions

Draws conclusions based on data presented.

Item	Number of Bottles
Sweater	62.5
T-Shirt	10
Leggings	17.5
Large Bag	30
Fleece Jacket	25

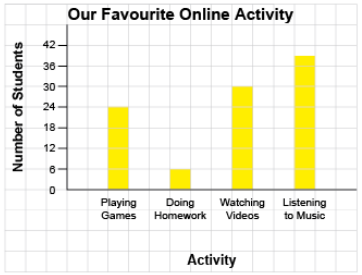
“A sweater uses about 6 times as many bottles as a t-shirt.”

Uses inferences to make predictions about future events.



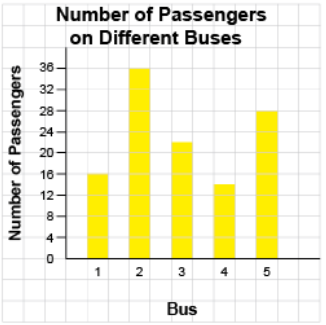
“More t-shirts could be made and sold with the fewest number of plastic bottles. I predict it would take less time to collect bottles and more money could be made. I think t-shirts should be sold for a fundraiser.”

Interprets the results of data presented graphically.



"The bar graphs shows 99 students took the survey: 24 + 6 + 30 + 39 = 99. 15 more students listen to music than play games on-line.”

Analyzes and interprets data to make convincing arguments and informed decisions.



“Since most passengers are on bus number 2, the bus company might add another bus to that route. The company could take one of the schedule times from bus number 4 and give it to bus 2 because it has the fewest number of passengers. It is important to meet the needs of the passengers.”

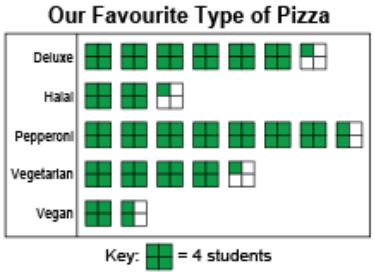
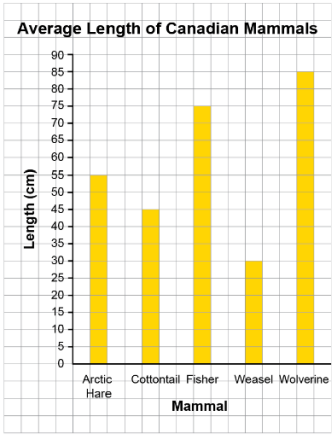
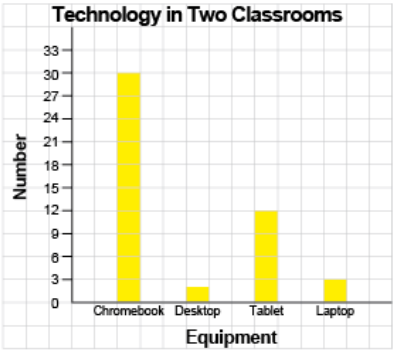
Observations/Documentation

Data Management and Probability

Activity 4 Assessment

Data Management Consolidation

Describing and Representing Data

Describes given data using frequency counts.	Represents data using a pictograph using many-to-one correspondence.	Represents data using a bar graph using many-to-one correspondence.	Flexibly creates representations to show data using many-to-one correspondence.
Students in three Grade 4 classes were asked to choose their favourite pizza. **Pizza Type / Number of Students** Deluxe: 25 Halal: 9 Pepperoni: 30 Vegetarian: 17 Vegan: 6 "30 students chose Pepperoni as their favourite pizza. Only 6 students chose Vegan."	 "The key is 1 square represents 4 students. For 17 students: 17 ÷ 4 = 4 R1, so I drew 4 full squares, and one-fourth of another square."	 "I used the scale 1 square = 5 cm to represent animal lengths. All of the lengths were divisible by 5, so I divided each animal's length by 5 to find the number of squares in each bar."	 "I used a scale of 1 square = 3 pieces of equipment because most numbers are multiples of 3 and are in the skip-counting by 3s sequence. Other students will find it easy to interpret."

Observations/Documentation

Data Management and Probability

Activity 4 Assessment

Data Management Consolidation

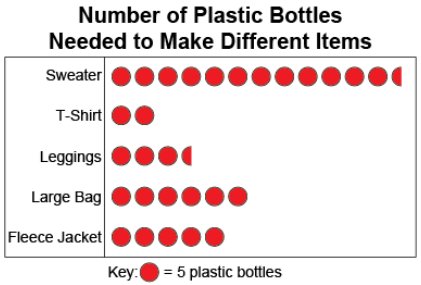
Interpreting Data and Making Informed Decisions

Draws conclusions based on data presented.

Item	Number of Bottles
Sweater	62.5
T-Shirt	10
Leggings	17.5
Large Bag	30
Fleece Jacket	25

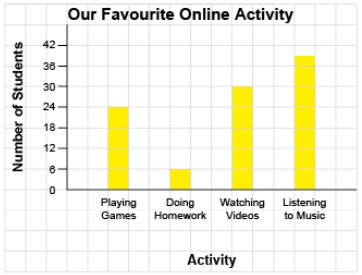
"A sweater uses about 6 times as many bottles as a t-shirt."

Uses inferences to make predictions about future events.



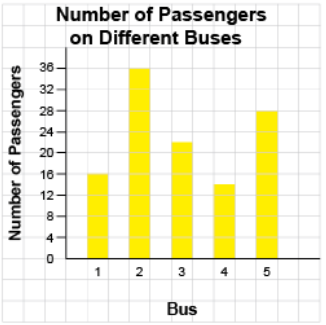
"More t-shirts could be made and sold with the fewest number of plastic bottles. I predict it would take less time to collect bottles and more money could be made. I think t-shirts should be sold for a fundraiser."

Interprets the results of data presented graphically.



"The bar graphs shows 99 students took the survey: 24 + 6 + 30 + 39 = 99. 15 more students listen to music than play games on-line."

Analyzes and interprets data to make convincing arguments and informed decisions.



"Since most passengers are on bus number 2, the bus company might add another bus to that route. The company could take one of the schedule times from bus number 4 and give it to bus 2 because it has the fewest number of passengers. It is important to meet the needs of the passengers."

Observations/Documentation

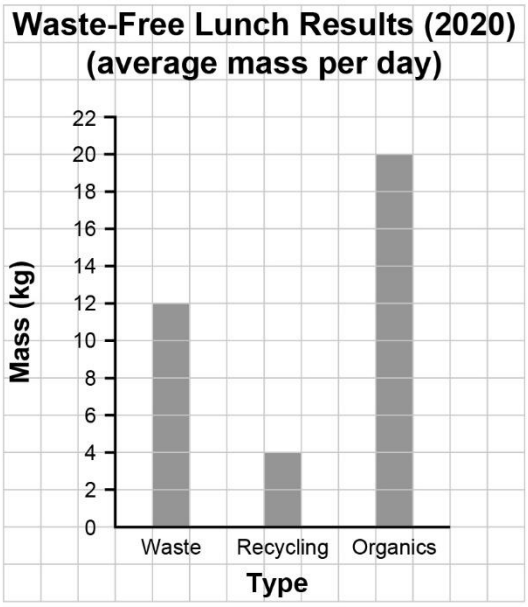
Name_____ Date_____

Data Management
Unit 1B Line Master 1a

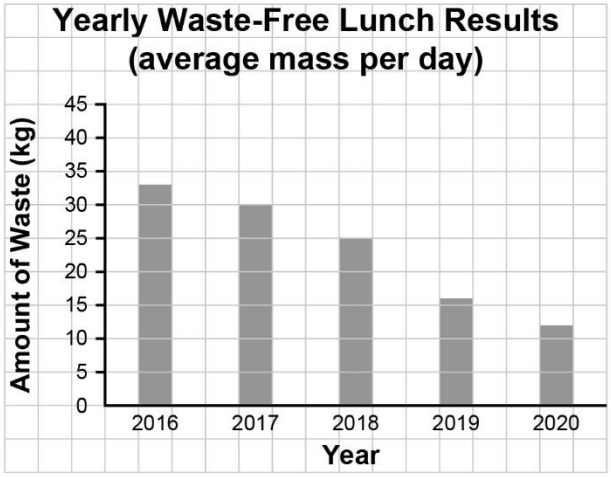
Waste-Free Lunch Graphs

Part A

Graph 1



Graph 2



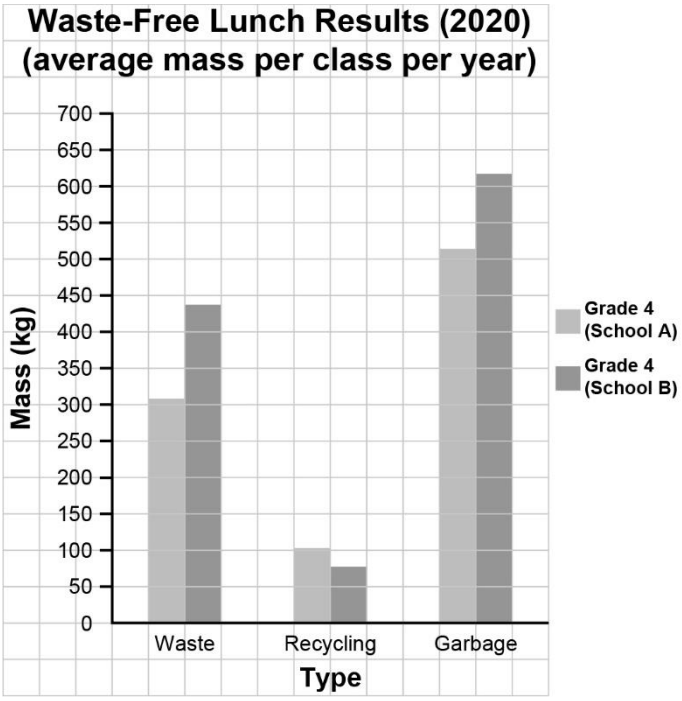
Name_____ Date_____

Data Management
Unit 1B Line Master 1b

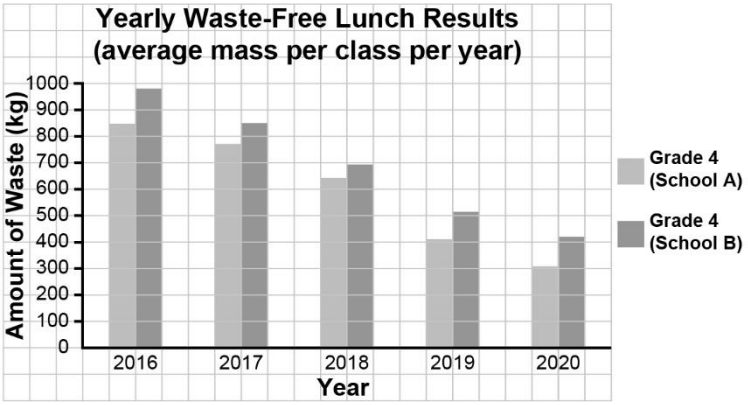
Waste-Free Lunch Graphs (cont'd)

Part B

Graph 3



Graph 4



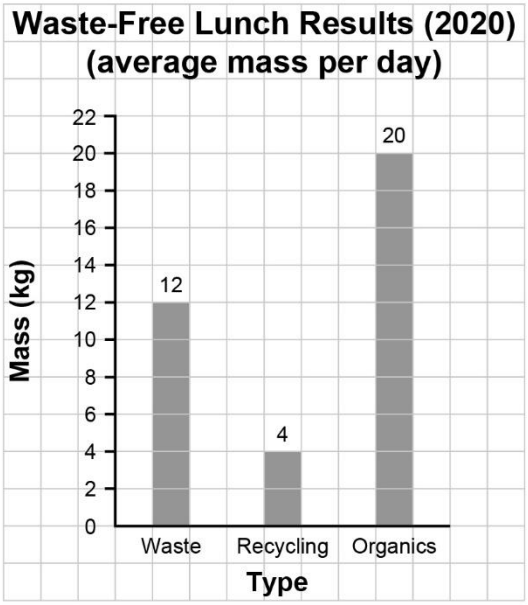
Name_____ Date_____

Data Management
Unit 1B Line Master 1c

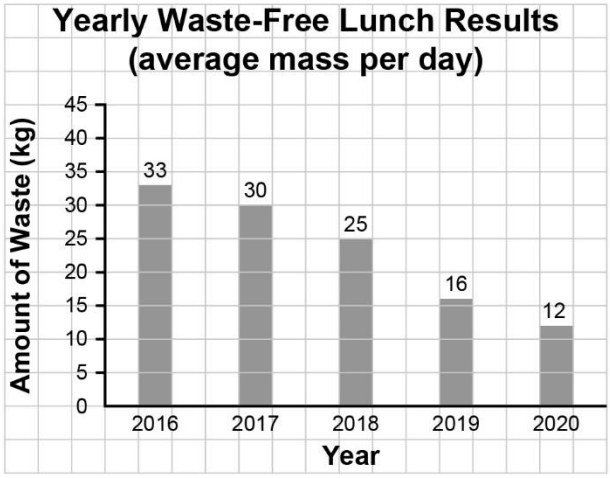
Waste-Free Lunch Graphs (cont'd)

Part A

Graph 1



Graph 2



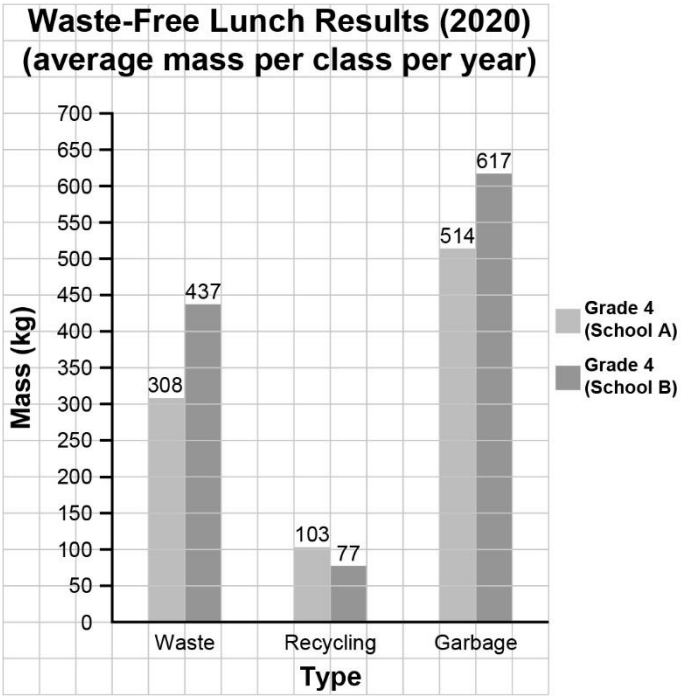
Name_____ Date_____

Data Management
Unit 1B Line Master 1d

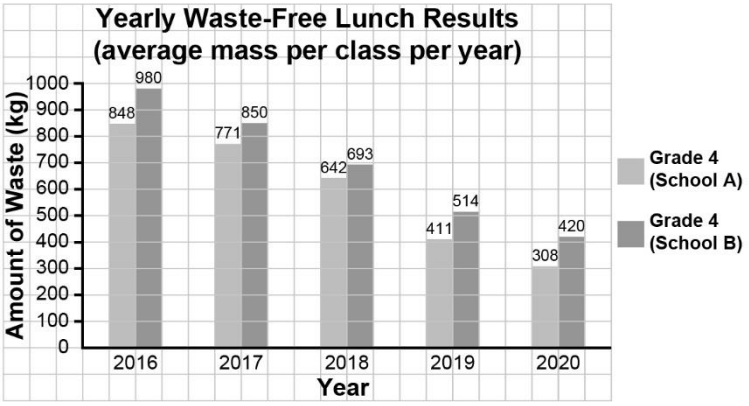
Waste-Free Lunch Graphs (cont'd)

Part B

Graph 3



Graph 4



Name_____ Date_____

Data Management
Unit 1B Line Master 2a

"Data" Challenge

Part A

Results of Our Class (Class A)

Number of Times	Tally
0–9	
10–19	
20–29	
30–39	
40–49	

Are your data primary or secondary?

Is it qualitative or quantitative?

Name_____ Date_____

Data Management
Unit 1B Line Master 2b

"Data" Challenge (cont'd)

Part B

Results of Class B

Number of Times	Tally
0–9	||
10–19	𝍸 𝍸 |
20–29	𝍸 𝍸 𝍸
30–39	||||
40–49	|

Are the data primary or secondary?

Compare with the results from your class.

Name_____ Date_____

Data Management
Unit 1B Line Master 2c

"Data" Challenge (cont'd)

Part C

Here are the data collected by the students in another class:

8, 30, 9, 11, 32, 31, 12, 14, 31, 25, 30, 15, 27, 10, 28,
22, 13, 3, 26, 17, 18, 32, 16, 24, 13, 10, 8, 7, 26, 22, 15

Organize the data in the frequency table.

Results of Class C

Number of Times	Tally
0–9	
10–19	
20–29	
30–39	
40–49	

Are the data primary or secondary?

Name_____ Date_____

Data Management
Unit 1B Line Master 2d

"Data" Challenge (cont'd)

Compare the data from your class (Class A), Class B, and Class C.

What conclusions can you make?

Name_____ Date_____

Data Management
Unit 1B Line Master 3a

How Many Skips?

Your Class

Order the numbers from least to greatest.

_____

_____

_____

Use the numbers to create a stem-and-leaf plot.

Title: _____

Stem	Leaf

Key:

Name_____ Date_____

Data Management
Unit 1B Line Master 3b

How Many Skips? (cont'd)

Another Class

Their collected data:

26, 31, 32, 7, 52, 51, 23, 35, 43, 34, 24, 51,
43, 6, 9, 47, 42, 37, 48, 29, 12, 16, 18

Order the numbers from least to greatest.

_____

_____

_____

Use the numbers to create a stem-and-leaf plot.

Title: _____

Stem	Leaf

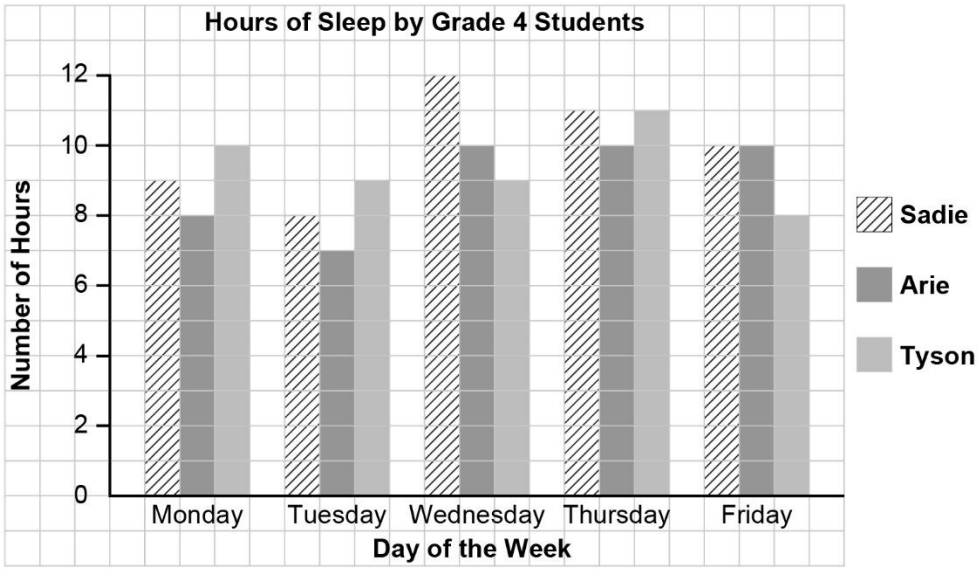
Key:

Name_____ Date_____

Data Management
Unit 1B Line Master 4a

How Many Hours of Sleep?

Your Class



Mode:

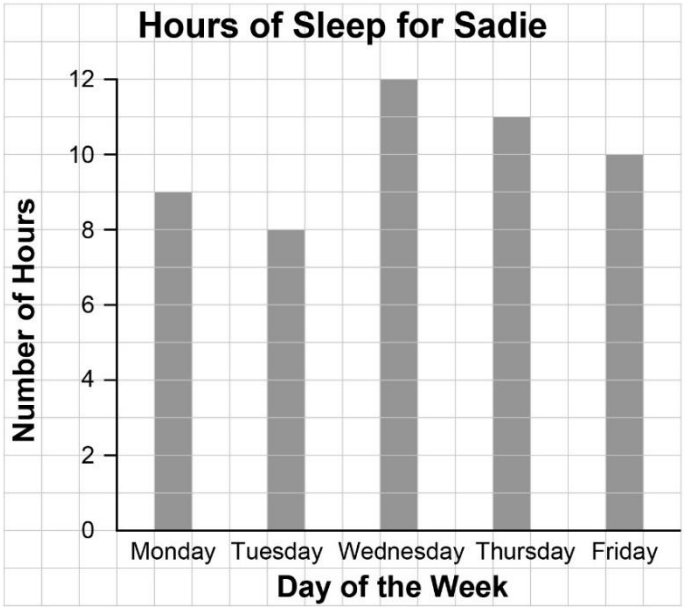
Mean:

Median:

Name_____ Date_____

Data Management
Unit 1B Line Master 4b

How Many Hours of Sleep? (cont'd)



Mode:

Mean:

Median:

Name_____ Date_____

Data Management
Unit 1B Line Master 5a

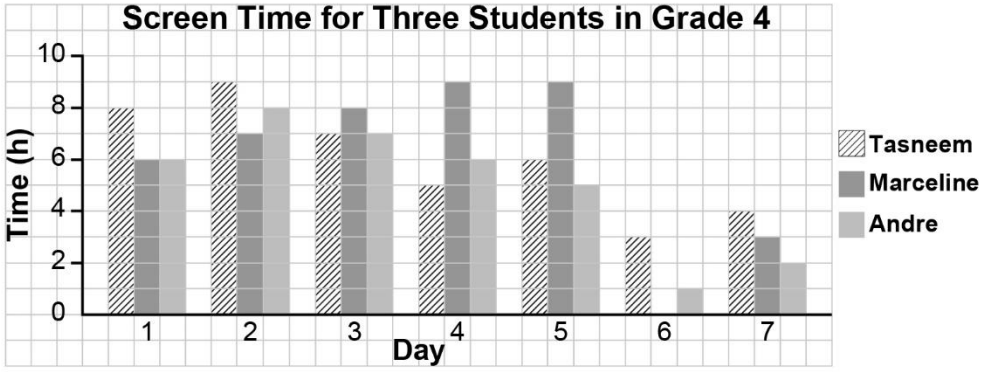
Do They Watch Too Much?

Part A

Three Grade 4 students recorded their screen times for one week.

Here are their data shown two ways.

	1	2	3	4	5	6	7
Tasneem	8	9	7	5	6	3	4
Marceline	6	7	8	9	9	0	3
Andre	6	8	7	6	5	1	2



Name_____ Date_____

Data Management
Unit 1B Line Master 5b

Do They Watch Too Much? (cont'd)

Part B

Students in a Grade 4 class used a stem-and-leaf plot to record their screen time, in hours, for one week.

Weekly Screen Time for Students in a Grade 4 Class (h)

Stem	Leaf
0	5 5
1	5 8 8 9 9
2	5 5 6 6 6 8 8 9 9
3	0 1 1 2 5 7
4	0 2 2 5

Key: 0|5 means 5 h

Name_____ Date_____

Data Management
Unit 1B Line Master 6

Grade 4 Exercise Data

Number of Minutes of Exercise in 1 Day for Grade 4 Students
9, 25, 30, 20, 44, 60, 81, 65, 32, 55, 55, 54, 24, 38, 70, 75, 5, 15, 40, 55, 18, 62, 66, 38, 42, 55, 22, 52

Favourite Exercise of Grade 4 Students	
Walking	𝍸
Running	𝍸 ||
Skipping	𝍸 ||
Biking	𝍸 ||||
Aerobics	||

Number of Breaths by Grade 4 Students			
Student	**Before Exercise**	**During Exercise**	**After Exercise**
Lamont	18	42	30
Abigail	29	60	46
Aleena	24	52	44
Lenny	24	50	43

Data Management and Probability

Activity 1 Assessment

Qualitative and Quantitative Data

Collecting, Organizing, and Representing Data

Creates questions of interest that generate qualitative and/or quantitative data.

What types of waste do you have after eating your lunch: waste, recycling, organic?

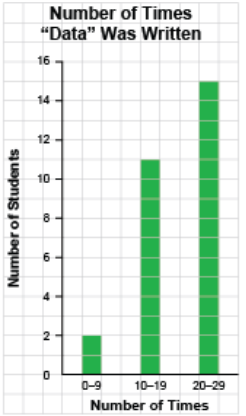
"I will get qualitative data because the possible answers are categories."

Collects data using appropriate organizers (e.g., frequency tables, stem-and-leaf plots).

Number of times "data" written	Frequency
0–9	2
10–19	11
20–29	15

"I organized the data using a frequency table to I can see the number of times most students wrote the word data"

Represents results using various tools.



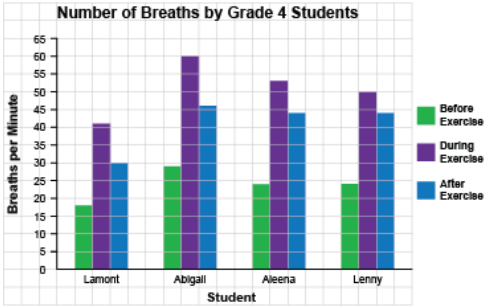
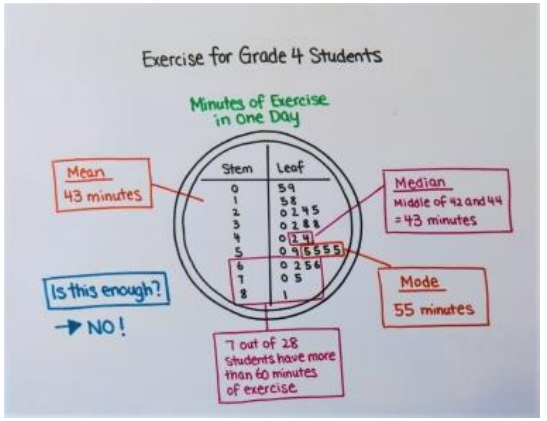
"I showed the data on a bar graph using many-to-one correspondence."

Observations/Documentation

Activity 1 Assessment

Qualitative and Quantitative Data

Collecting, Organizing, and Representing Data (cont'd)

Differentiates between primary and secondary data. "When I collect information, it is primary data. When I use data collected by someone else, it is secondary data."	Represents data graphically using many-to-one correspondence with appropriate scales and intervals.  "I showed the data on a multiple-bar graph using many-to-one correspondence."	Creates infographics to show data in appropriate ways and incorporates relevant information for a specific audience.  "I want Grade 4 students to use the data to decide if they get enough exercise."

Observations/Documentation

Data Management and Probability

Activity 2 Assessment

Collecting and Organizing Data

Collecting, Organizing, and Representing Data

Creates questions of interest that generate qualitative and/or quantitative data.

What types of waste do you have after eating your lunch: waste, recycling, organic?

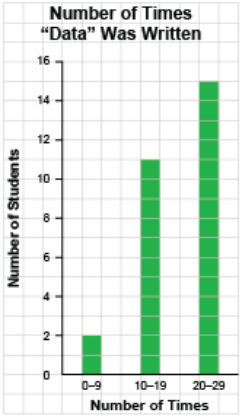
"I will get qualitative data because the possible answers are categories."

Collects data using appropriate organizers (e.g., frequency tables, stem-and-leaf plots).

Number of times "data" written	Frequency
0–9	2
10–19	11
20–29	15

"I organized the data using a frequency table to I can see the number of times most students wrote the word data"

Represents results using various tools.



"I showed the data on a bar graph using many-to-one correspondence."

Observations/Documentation

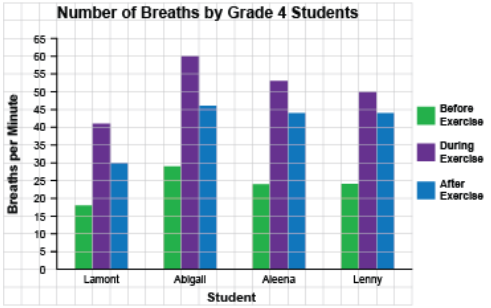
Activity 2 Assessment
Collecting and Organizing Data

Collecting, Organizing, and Representing Data (cont'd)

Differentiates between primary and secondary data.

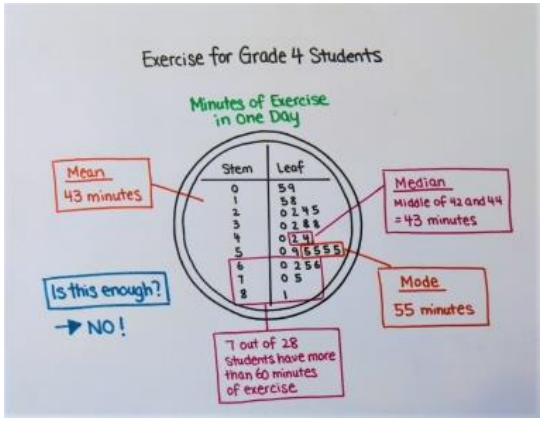
"When I collect information, it is primary data. When I use data collected by someone else, it is secondary data."

Represents data graphically using many-to-one correspondence with appropriate scales and intervals.



"I showed the data on a multiple-bar graph using many-to-one correspondence."

Creates infographics to show data in appropriate ways and incorporates relevant information for a specific audience.



"I want Grade 4 students to use the data to decide if they get enough exercise."

Observations/Documentation

Data Management and Probability

Activity 3 Assessment

Exploring Stem-and-Leaf Plots and Multiple-Bar Graphs

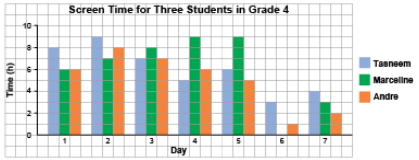
Interpreting Data and Making Informed Decisions

Draws conclusions based on data presented.

Screen Time for Three Students in Grade 4							
Day	1	2	3	4	5	6	7
Tasneem	8	9	7	5	6	3	4
Marceline	6	7	8	9	9	0	3
Andre	6	8	7	6	5	1	2

"The maximum recommended screen time is 5 h. All three students usually exceed that time."

Uses inferences to make predictions about future events.



"On the weekend, the screen time is less. The students might be busy with other activities. Maybe they should find other activities to do during the week."

Interprets data from primary and secondary resources presented graphically.

Weekly Screen Time for Students in a Grade 4 Class

Stem	Leaf
0	5 5
1	5 8 8 9 9
2	5 5 6 6 6 8 8 9 9
3	0 1 1 2 5 7
4	0 2 2 5

Key: 0\|5 means 5 h

"I can use the stem-and-leaf plot to determine the mode, mean, and median, then make inferences based on the data."

Uses data to draw conclusions and make convincing arguments/informed decisions.

Number of Batteries Collected for Recycling

Stem	Leaf
1	9
2	2
3	4 6 9

Key: 3\|4 = 34 batteries

"The greatest number collected is 39. the least number is 19, and the median is 34. All the batteries will be recycled and will help stop electronic waste from going to landfill sites."

Observations/Documentation

Data Management and Probability

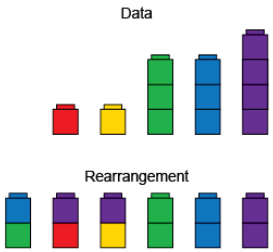
Activity 4 Assessment

Determining Mean, Median, and Mode

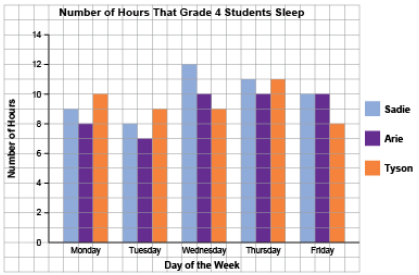
Determining the Mean, Median, and Mode

Reads and interprets data displays to determine mode and mean.

Number of siblings for a group of Grade 4 students: 0, 1, 1, 3, 3, 4
- the mode: 1 and 3
- the mean is 2



Visualizes and determines the median value as a middle measure.

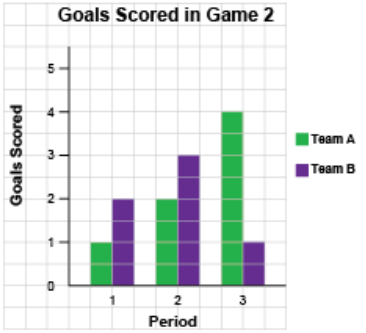


"For Sadie, I order the number of hours from least to greatest: 8, 9, 10, 11, 12. The middle number is 10, so the median is 10 h."

Compares distribution of data sets represented on the same data display.

	Mode	Mean	Median
Sadie	No mode	10 h	10 h
Arie	10 h	9 h	10 h
Tyson	8 h and 9 h	9 h	9 h

Fluently and flexibly finds the mode, mean, and median and explains what each indicates.



"Team B: no mode;
mean: 2 goals;
median: 2 goals.
Team B, on average,
scores 2 goals in each period."

Observations/Documentation

Data Management and Probability

Activity 5 Assessment
Analyzing Data

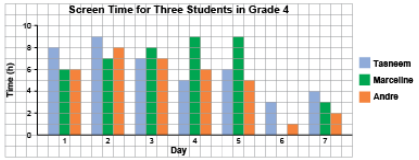
Interpreting Data and Making Informed Decisions

Draws conclusions based on data presented.

Screen Time for Three Students in Grade 4							
Day	1	2	3	4	5	6	7
Tasneem	8	9	7	5	6	3	4
Marceline	6	7	8	9	9	0	3
Andre	6	8	7	6	5	1	2

"The maximum recommended screen time is 5 h. All three students usually exceed that time."

Uses inferences to make predictions about future events.



"On the weekend, the screen time is less. The students might be busy with other activities. Maybe they should find other activities to do during the week."

Interprets data from primary and secondary resources presented graphically.

Weekly Screen Time for Students in a Grade 4 Class

Stem	Leaf
0	5 5
1	5 8 8 9 9
2	5 5 6 6 6 8 8 9 9
3	0 1 1 2 5 7
4	0 2 2 5

Key: 0\|5 means 5 h

"I can use the stem-and-leaf plot to determine the mode, mean, and median, then make inferences based on the data."

Uses data to draw conclusions and make convincing arguments/informed decisions.

Number of Batteries Collected for Recycling

Stem	Leaf
1	9
2	2
3	4 6 9

Key: 3\|4 = 34 batteries

"The greatest number collected is 39. the least number is 19, and the median is 34. All the batteries will be recycled and will help stop electronic waste from going to landfill sites."

Observations/Documentation

Data Management and Probability

Activity 6 Assessment

Creating Infographics

Collecting, Organizing, and Representing Data

Creates questions of interest that generate qualitative and/or quantitative data.

What types of waste do you have after eating your lunch: waste, recycling, organic?

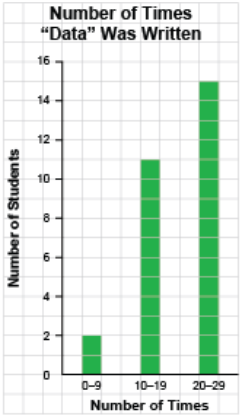
"I will get qualitative data because the possible answers are categories."

Collects data using appropriate organizers (e.g., frequency tables, stem-and-leaf plots).

Number of times "data" written	Frequency
0–9	2
10–19	11
20–29	15

"I organized the data using a frequency table to I can see the number of times most students wrote the word data"

Represents results using various tools.



"I showed the data on a bar graph using many-to-one correspondence."

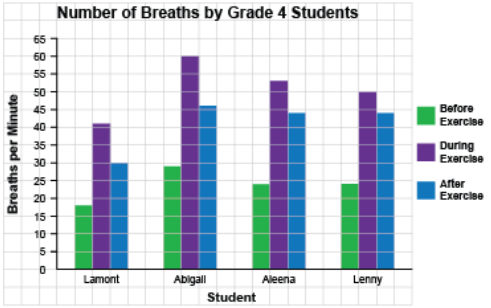
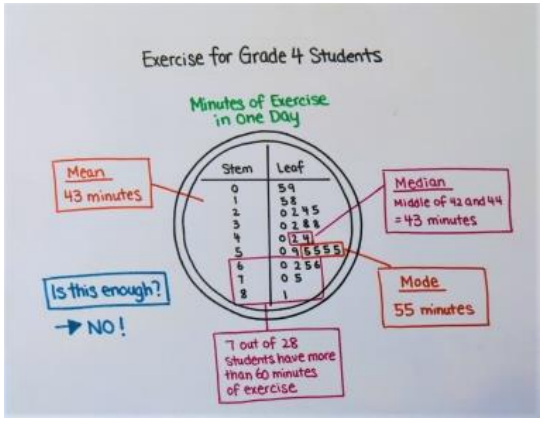
Observations/Documentation

Data Management and Probability

Activity 6 Assessment

Creating Infographics

Collecting, Organizing, and Representing Data (cont'd)

Differentiates between primary and secondary data.	Represents data graphically using many-to-one correspondence with appropriate scales and intervals.	Creates infographics to show data in appropriate ways and incorporates relevant information for a specific audience.
"When I collect information, it is primary data. When I use data collected by someone else, it is secondary data."	 "I showed the data on a multiple-bar graph using many-to-one correspondence."	 "I want Grade 4 students to use the data to decide if they get enough exercise."

Observations/Documentation

Data Management and Probability

Activity 7 Assessment

Data Management Consolidation

Collecting, Organizing, and Representing Data

Creates questions of interest that generate qualitative and/or quantitative data.

What types of waste do you have after eating your lunch: waste, recycling, organic?

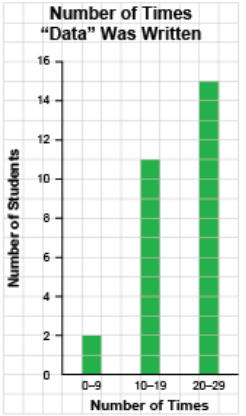
"I will get qualitative data because the possible answers are categories."

Collects data using appropriate organizers (e.g., frequency tables, stem-and-leaf plots).

Number of times "data" written	Frequency
0–9	2
10–19	11
20–29	15

"I organized the data using a frequency table to I can see the number of times most students wrote the word data"

Represents results using various tools.



"I showed the data on a bar graph using many-to-one correspondence."

Observations/Documentation

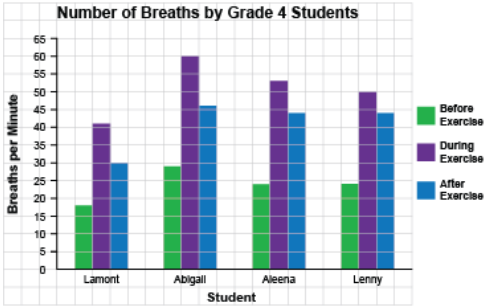
Activity 7 Assessment
Data Management Consolidation

Collecting, Organizing, and Representing Data (cont'd)

Differentiates between primary and secondary data.

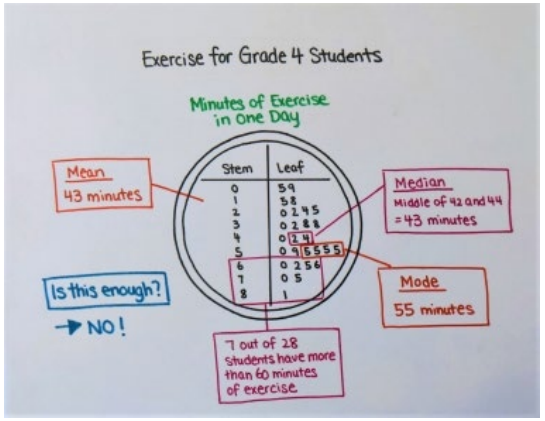
"When I collect information, it is primary data. When I use data collected by someone else, it is secondary data."

Represents data graphically using many-to-one correspondence with appropriate scales and intervals.



"I showed the data on a multiple-bar graph using many-to-one correspondence."

Creates infographics to show data in appropriate ways and incorporates relevant information for a specific audience.



"I want Grade 4 students to use the data to decide if they get enough exercise."

Observations/Documentation

Data Management and Probability

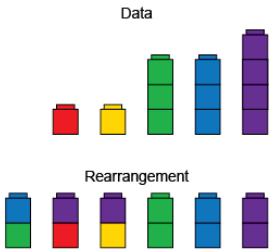
Activity 7 Assessment

Data Management Consolidation

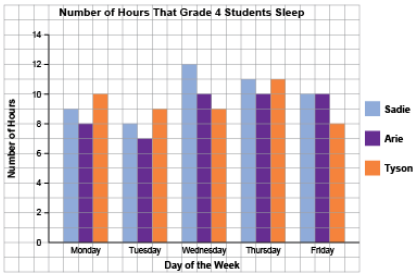
Determining the Mean, Median, and Mode

Reads and interprets data displays to determine mode and mean.

Number of siblings for a group of Grade 4 students: 0, 1, 1, 3, 3, 4
- the mode: 1 and 3
- the mean is 2



Visualizes and determines the median value as a middle measure.

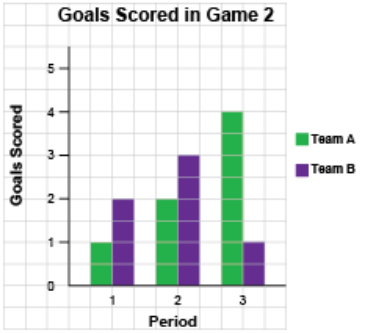


"For Sadie, I order the number of hours from least to greatest: 8, 9, 10, 11, 12. The middle number is 10, so the median is 10 h."

Compares distribution of data sets represented on the same data display.

	Mode	Mean	Median
Sadie	No mode	10 h	10 h
Arie	10 h	9 h	10 h
Tyson	8 h and 9 h	9 h	9 h

Fluently and flexibly finds the mode, mean, and median and explains what each indicates.



"Team B: no mode;
mean: 2 goals;
median: 2 goals.
Team B, on average,
scores 2 goals in each period."

Observations/Documentation

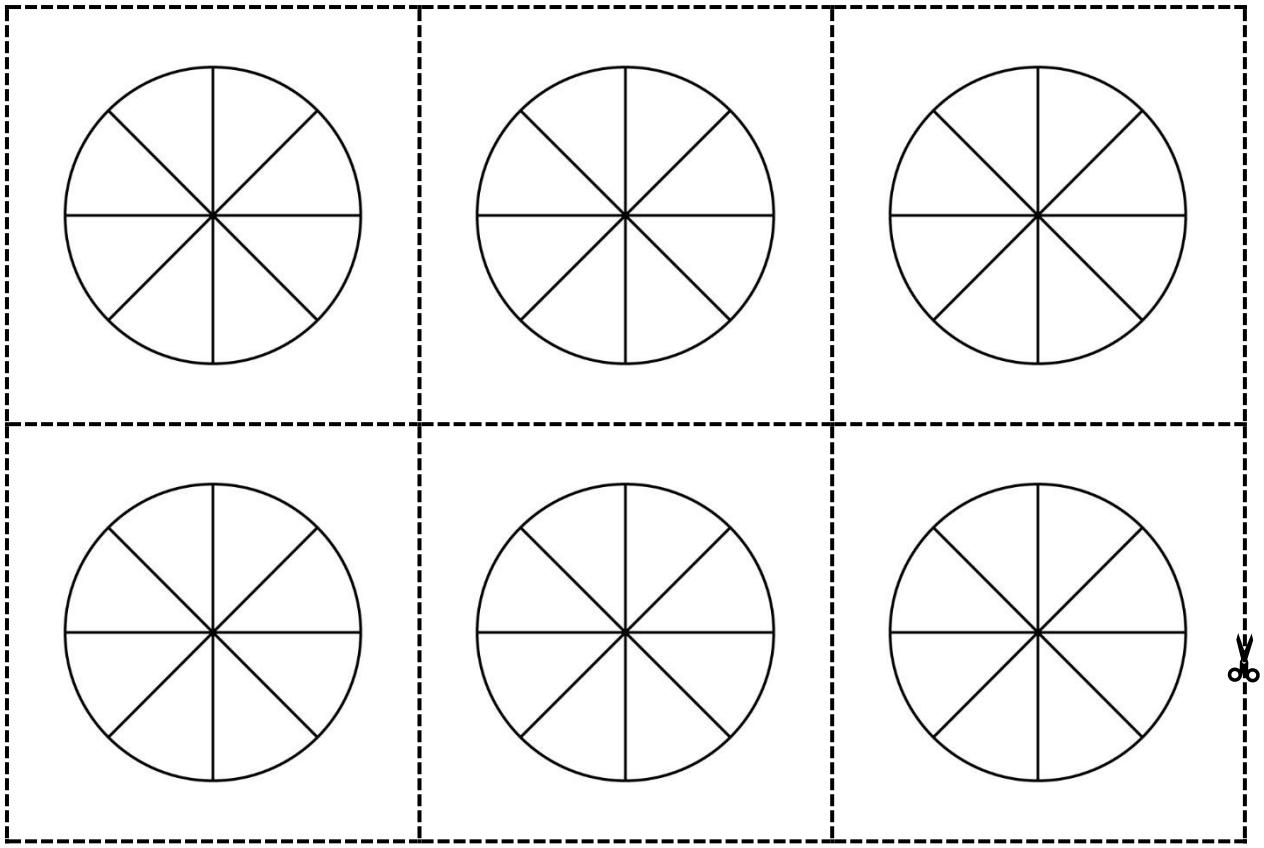
Name_____ Date_____

Data Management
Unit 2 Line Master 1

Spinner Cards

Colour a spinner to show each likelihood:

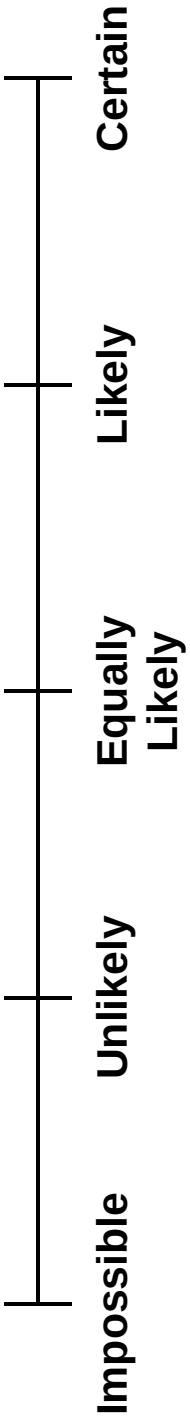
likely, unlikely, equally likely, certain, impossible



Name_____ Date_____

Data Management
Unit 2 Line Master 2

Probability Line



Name_____ Date_____

Data Management
Unit 2 Line Master 3

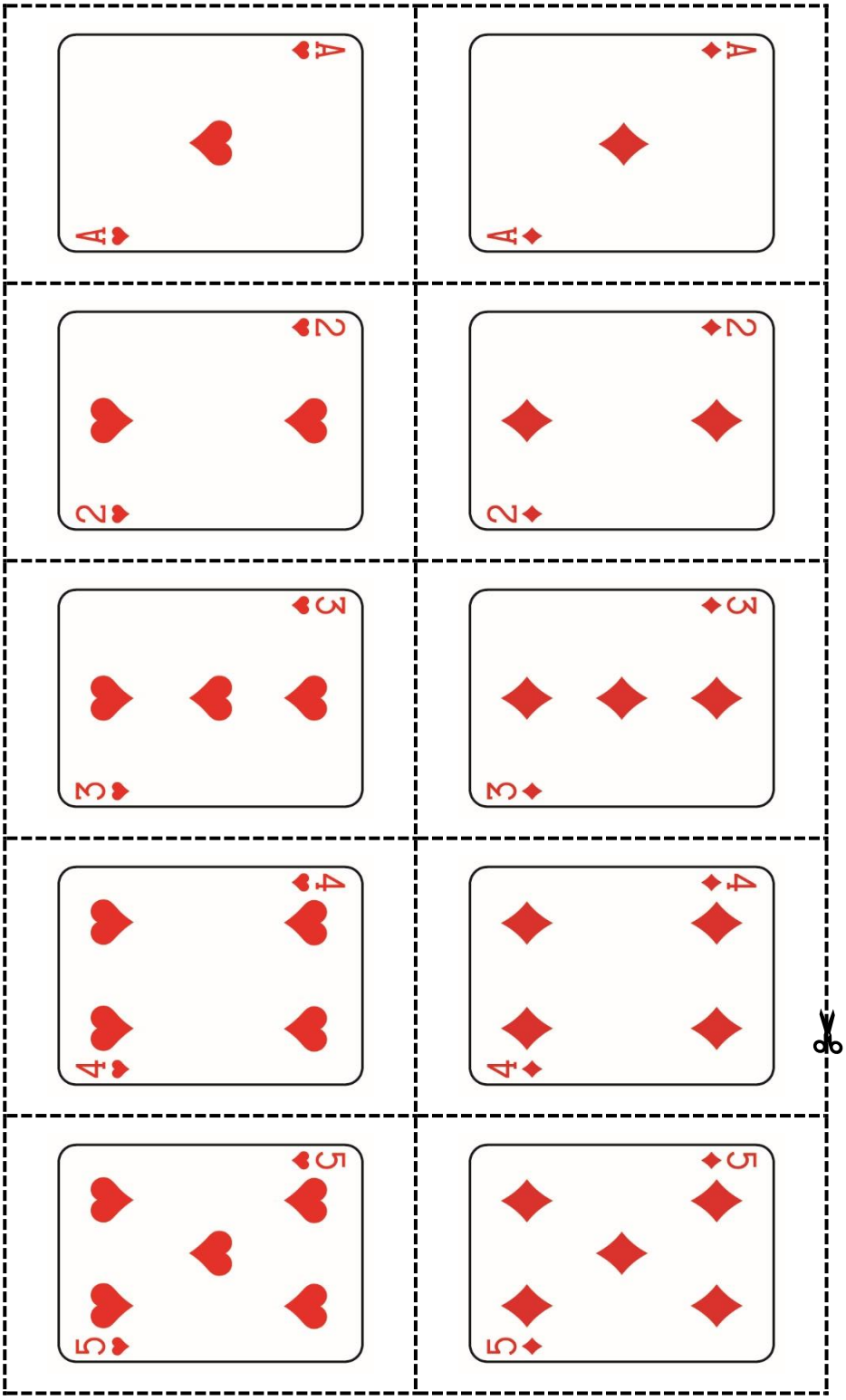
What Is the Likelihood?

Possible Outcomes (when turning over a card)	Likelihood	
	_____ out of _____	Fraction and/or Decimal
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Name_____ Date_____

Data Management
Unit 2 Line Master 4a

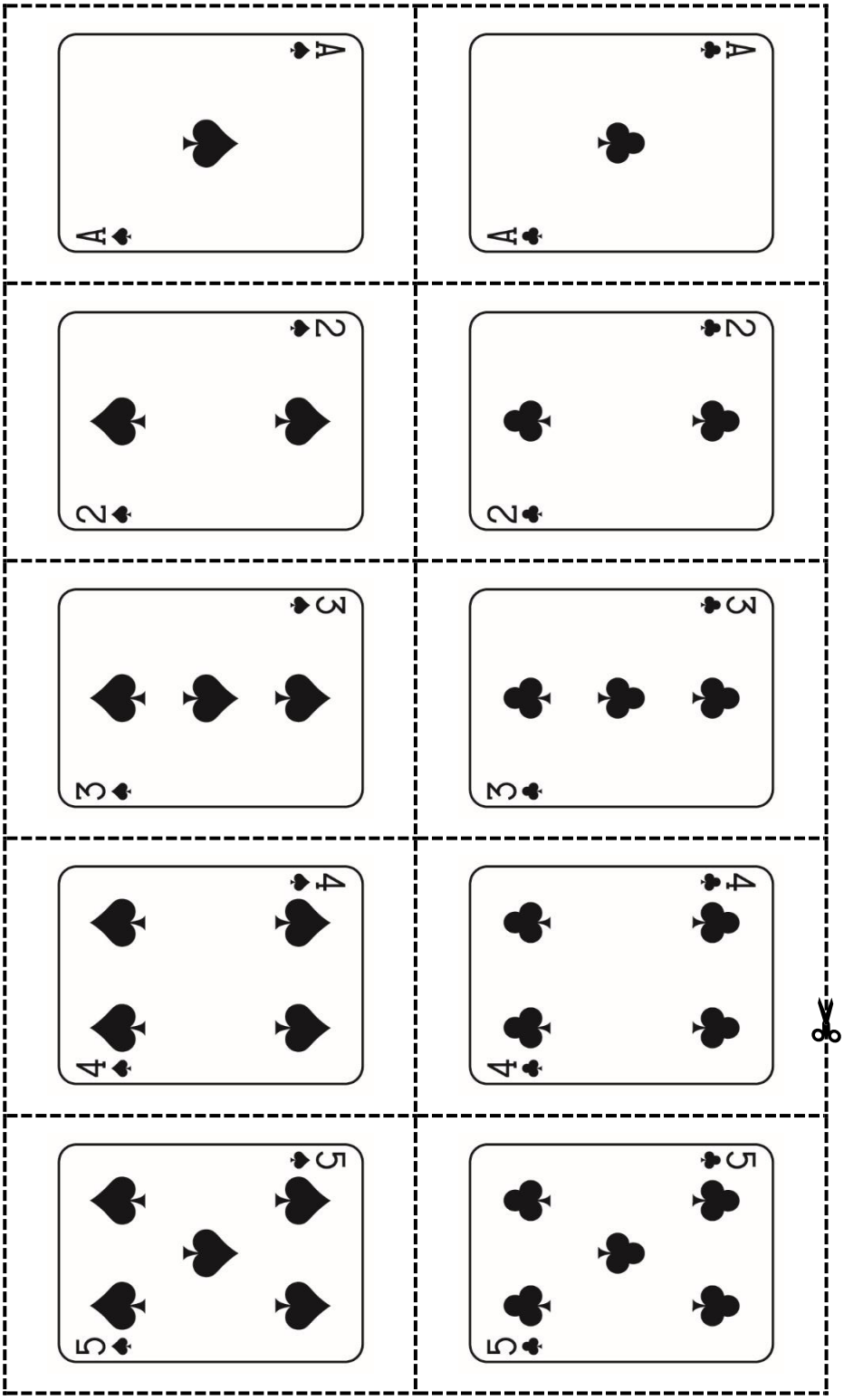
Playing Cards



Name_____ Date_____

Data Management
Unit 2 Line Master 4b

Playing Cards (cont'd)



Name_____ Date_____

Data Management
Unit 2 Line Master 5

Predict and Check

Record the likelihood of taking each number from the bag.

Predict how many times you will draw each number from the bag in 40 trials.

Conduct the experiment. Use tally marks to record the results.

Outcome	Likelihood	Predictions	Results
1			
2			
3			

Name_____ Date_____

Data Management
Unit 2 Line Master 6

Number Cards

1	1
2	2
2	3
3	3
3	3

Name_____ Date_____

Data Management
Unit 2 Line Master 7

Time to Get to School

"How many minutes does it take you to get to school?"

Data, in minutes, from 10 Grade 4 students of the other class:

5, 10, 30, 20, 25, 10, 10, 2, 3, 5

Mode	Median	Mean

You are going to ask 10 classmates the same question.

- Predict the likelihood that the mean, median, and mode will be the same as for the other Grade 4 class.

- Ask the question to 10 classmates. Record the data collected.

Find the mode, median, and mean of the collected data.

Mode	Median	Mean

Compare the results with your predictions.

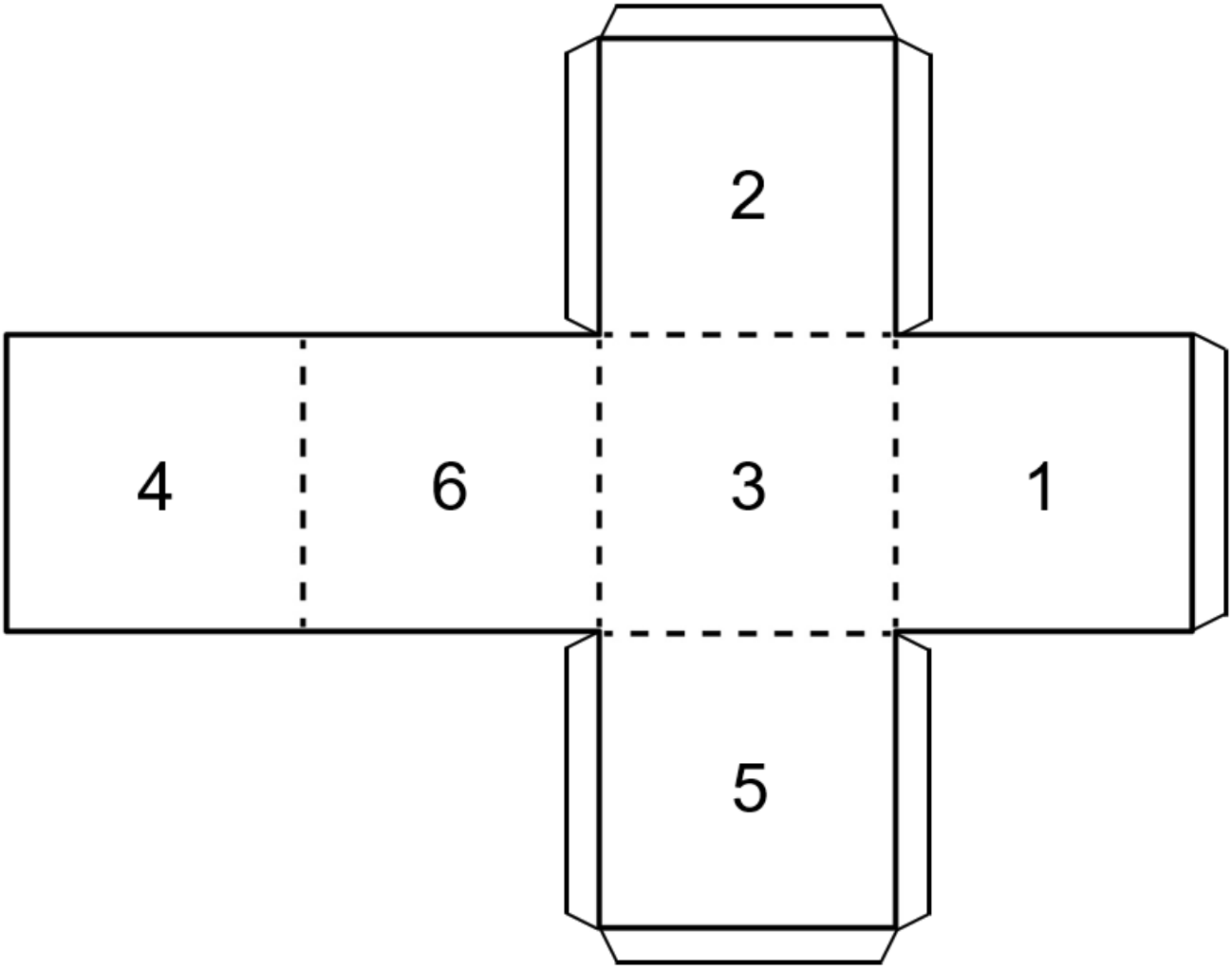
- Discuss possible reasons for any differences.

Name_____ Date_____

Data Management
Unit 2 Line Master 8a

Number Cubes

Number Cube 1

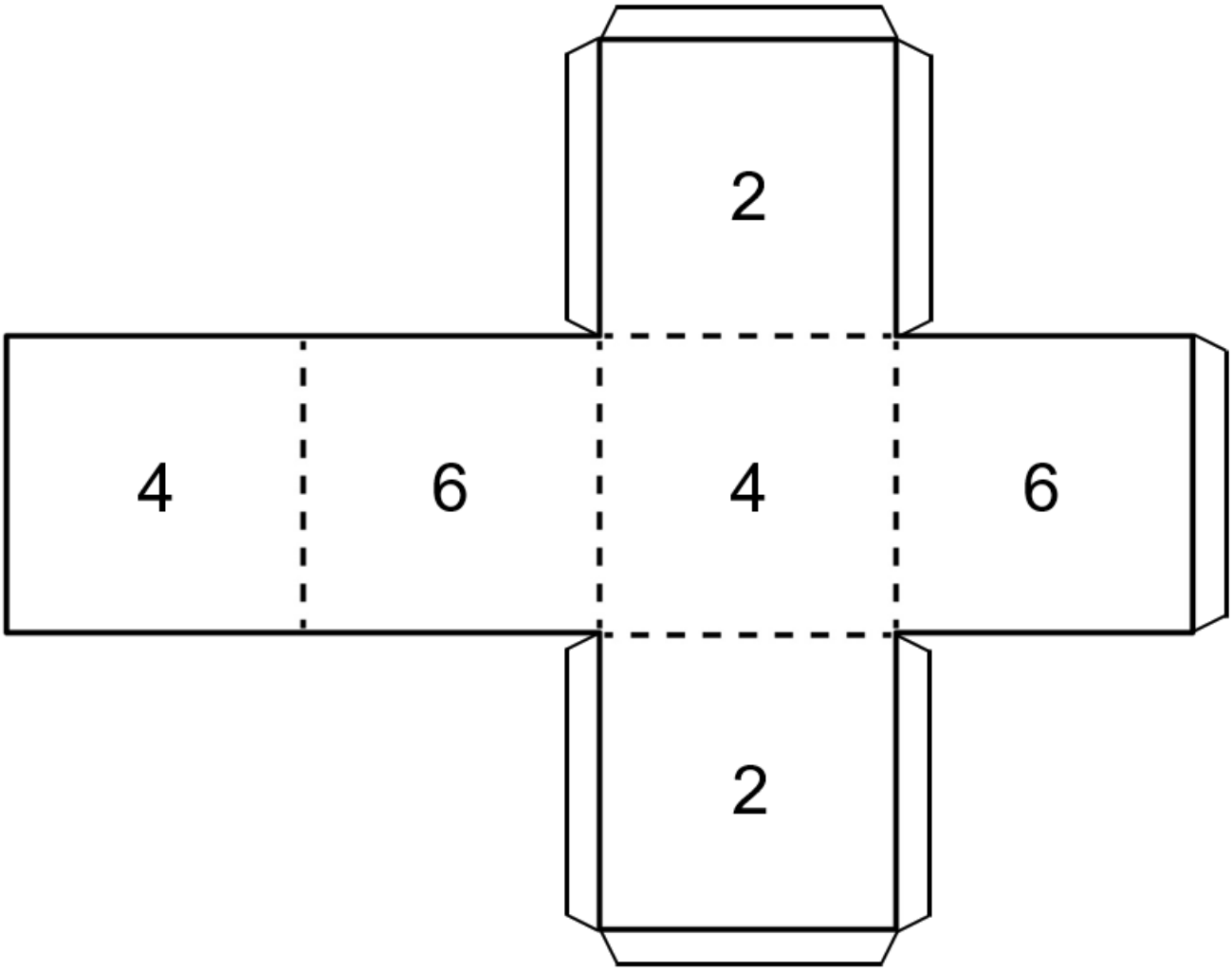


Name_____ Date_____

Data Management
Unit 2 Line Master 8b

Number Cubes (cont'd)

Number Cube 2

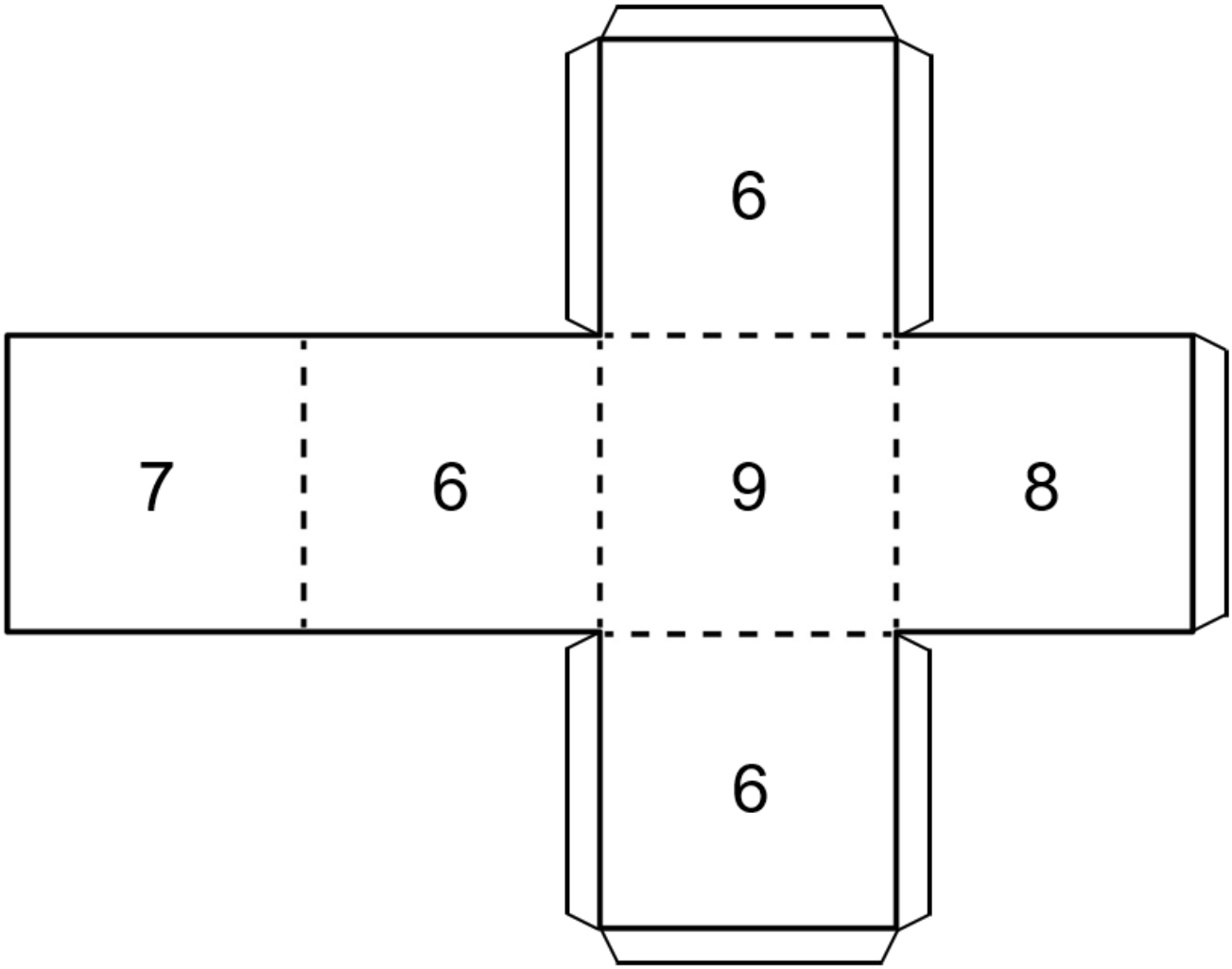


Name_____ Date_____

Data Management
Unit 2 Line Master 8c

Number Cubes (cont'd)

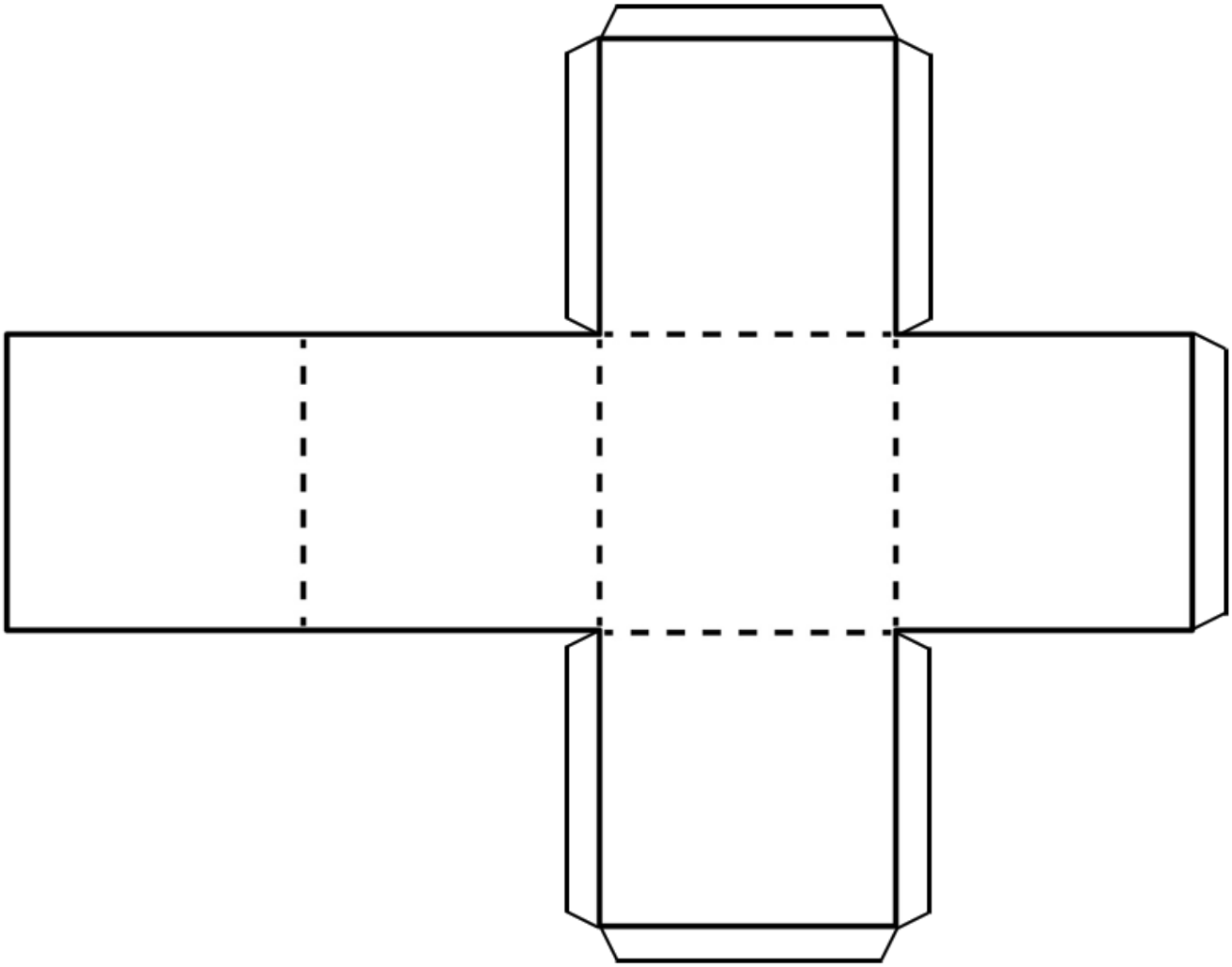
Number Cube 3



Name_____ Date_____

Data Management
Unit 2 Line Master 9

Net of Number Cube



Name_____ Date_____

Data Management
Unit 2 Line Master 10

Our Probability Experiment

Number of Trials: _____

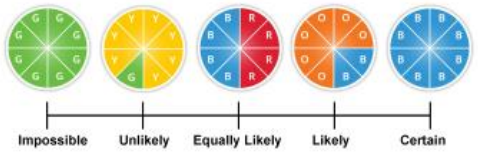
Possible Outcomes	Likelihood	Predictions	Results

How do your predicted results compare with your actual results?

Data Management and Probability

Activity 5 Assessment

Describing Likelihood of Events

Describing and Predicting Likelihood of Outcomes		
Describes the likelihood of an outcome using language of probability (e.g., impossible, likely, equally likely).  "Landing on red and landing on blue are equally likely."	Makes comparisons to order the likelihoods of outcomes (on a probability line).  	Identifies the likelihood of an outcome for an experiment using words.  "The likelihood of landing on blue is 2 out of 8."
Observations/Documentation		

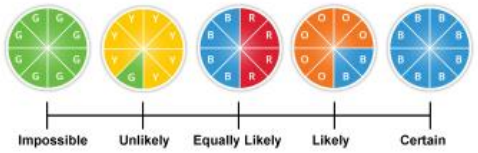
Activity 5 Assessment
Describing Likelihood of Events

Describing and Predicting Likelihood of Outcomes (cont'd)		
Makes predictions based on likelihoods.  "The likelihood of landing on blue is 2 out of 8, so in 40 trials, I think it will land on blue 10 times."	Conducts experiments to check predictions about likelihood of outcomes.  "I performed the experiment and the pointer landed on orange 23 times and on blue 17 times. That's not what I predicted. I thought I would get orange 30 times."	Conducts experiments and realizes that as more trials are conducted, the closer the results will likely be to the predictions.  "I performed the experiment 100 times and the results were much closer to my predictions."
Observations/Documentation		

Data Management and Probability

Activity 6 Assessment

Predicting Outcomes of an Event

Describing and Predicting Likelihood of Outcomes		
Describes the likelihood of an outcome using language of probability (e.g., impossible, likely, equally likely).  "Landing on red and landing on blue are equally likely."	Makes comparisons to order the likelihoods of outcomes (on a probability line).  	Identifies the likelihood of an outcome for an experiment using words.  "The likelihood of landing on blue is 2 out of 8."
Observations/Documentation		

Data Management and Probability

Activity 6 Assessment

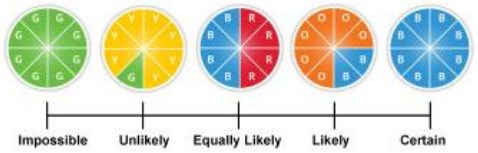
Predicting Outcomes of an Event

Describing and Predicting Likelihood of Outcomes (cont'd)		
Makes predictions based on likelihoods.  "The likelihood of landing on blue is 2 out of 8, so in 40 trials, I think it will land on blue 10 times."	Conducts experiments to check predictions about likelihood of outcomes.  "I performed the experiment and the pointer landed on orange 23 times and on blue 17 times. That's not what I predicted. I thought I would get orange 30 times."	Conducts experiments and realizes that as more trials are conducted, the closer the results will likely be to the predictions.  "I performed the experiment 100 times and the results were much closer to my predictions."
Observations/Documentation		

Data Management and Probability

Activity 7 Assessment

Conducting Experiments to Check Predictions

Describing and Predicting Likelihood of Outcomes		
Describes the likelihood of an outcome using language of probability (e.g., impossible, likely, equally likely).  "Landing on red and landing on blue are equally likely."	Makes comparisons to order the likelihoods of outcomes (on a probability line).  	Identifies the likelihood of an outcome for an experiment using words.  "The likelihood of landing on blue is 2 out of 8."
Observations/Documentation		

Activity 7 Assessment

Conducting Experiments to Check Predictions

Describing and Predicting Likelihood of Outcomes (cont'd)		
Makes predictions based on likelihoods.  "The likelihood of landing on blue is 2 out of 8, so in 40 trials, I think it will land on blue 10 times."	Conducts experiments to check predictions about likelihood of outcomes.  "I performed the experiment and the pointer landed on orange 23 times and on blue 17 times. That's not what I predicted. I thought I would get orange 30 times."	Conducts experiments and realizes that as more trials are conducted, the closer the results will likely be to the predictions.  "I performed the experiment 100 times and the results were much closer to my predictions."
Observations/Documentation		

Data Management and Probability

Activity 8 Assessment

Making and Testing Predictions

Predicting Likelihoods Involving Mean, Median, and Mode

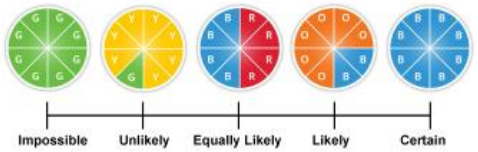
Identifies mode, median, and mean of a data set.	Predict likelihood of mean, median and mode being the same for another data set.	Collects data for a second population, then compares results with predictions.	Understands that measures of central tendency from a different population may be different.
Minutes to get to school for 10 Grade 4 students: 5, 10, 30, 20, 25, 10, 10, 2, 3, 5 "Mode: 10 min; Median: 10 min, Mean: 12 min."	"I think they will be the same because the students are in the same grade."	<table><tr><th></th><th>Mode</th><th>Median</th><th>Mean</th></tr><tr><td>Class A</td><td>10</td><td>10</td><td>12</td></tr><tr><td>Class B</td><td>5</td><td>8</td><td>7</td></tr></table> "The results are not what I predicted. I thought the mode, median, and mean would be the same for both classes."	"A lot of students in my class live in a building that is close to the school. So, it takes them less time to get to school than the students in the other class."

Observations/Documentation

Data Management and Probability

Activity 8 Assessment

Describing Likelihood of Outcomes

Describing and Predicting Likelihood of Outcomes		
Describes the likelihood of an outcome using language of probability (e.g., impossible, likely, equally likely).  "Landing on red and landing on blue are equally likely."	Makes comparisons to order the likelihoods of outcomes (on a probability line).  	Identifies the likelihood of an outcome for an experiment using words, fractions, or decimals.  "The likelihood of landing on blue is 2 out of 8, or $\frac{2}{8}$, or 0.25."
Observations/Documentation		

Data Management and Probability

Activity 8 Assessment

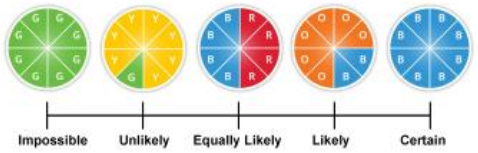
Describing Likelihood of Outcomes

Describing and Predicting Likelihood of Outcomes (cont'd)		
Makes predictions based on likelihoods.  "The likelihood of landing on blue is 2 out of 8, so in 40 trials, I think it will land on blue 10 times."	Conducts experiments to check predictions about likelihood of outcomes.  "I performed the experiment and the pointer landed on orange 23 times and on blue 17 times. That's not what I predicted. I thought I would get orange 30 times."	Conducts experiments and realizes that as more trials are conducted, the closer the results will likely be to the predictions.  "I performed the experiment 100 times and the results were much closer to my predictions."
Observations/Documentation		

Data Management and Probability

Activity 9 Assessment

Predicting Outcomes

Describing and Predicting Likelihood of Outcomes		
Describes the likelihood of an outcome using language of probability (e.g., impossible, likely, equally likely).  "Landing on red and landing on blue are equally likely."	Makes comparisons to order the likelihoods of outcomes (on a probability line).  	Identifies the likelihood of an outcome for an experiment using words, fractions, or decimals.  "The likelihood of landing on blue is 2 out of 8, or $\frac{2}{8}$, or 0.25."
Observations/Documentation		

Activity 9 Assessment

Predicting Outcomes

Describing and Predicting Likelihood of Outcomes (cont'd)		
Makes predictions based on likelihoods.  "The likelihood of landing on blue is 2 out of 8, so in 40 trials, I think it will land on blue 10 times."	Conducts experiments to check predictions about likelihood of outcomes.  "I performed the experiment and the pointer landed on orange 23 times and on blue 17 times. That's not what I predicted. I thought I would get orange 30 times."	Conducts experiments and realizes that as more trials are conducted, the closer the results will likely be to the predictions.  "I performed the experiment 100 times and the results were much closer to my predictions."
Observations/Documentation		

Data Management and Probability

Activity 10 Assessment

Conducting Experiments to Check Predictions

Describing and Predicting Likelihood of Outcomes		
Describes the likelihood of an outcome using language of probability (e.g., impossible, likely, equally likely).  "Landing on red and landing on blue are equally likely."	Makes comparisons to order the likelihoods of outcomes (on a probability line).  	Identifies the likelihood of an outcome for an experiment using words, fractions, or decimals.  "The likelihood of landing on blue is 2 out of 8, or $\frac{2}{8}$, or 0.25."
Observations/Documentation		

Data Management and Probability

Activity 10 Assessment

Conducting Experiments to Check Predictions

Describing and Predicting Likelihood of Outcomes (cont'd)		
Makes predictions based on likelihoods.  "The likelihood of landing on blue is 2 out of 8, so in 40 trials, I think it will land on blue 10 times."	Conducts experiments to check predictions about likelihood of outcomes.  "I performed the experiment and the pointer landed on orange 23 times and on blue 17 times. That's not what I predicted. I thought I would get orange 30 times."	Conducts experiments and realizes that as more trials are conducted, the closer the results will likely be to the predictions.  "I performed the experiment 100 times and the results were much closer to my predictions."
Observations/Documentation		

Data Management and Probability

Activity 11 Assessment

Making and Testing Predictions

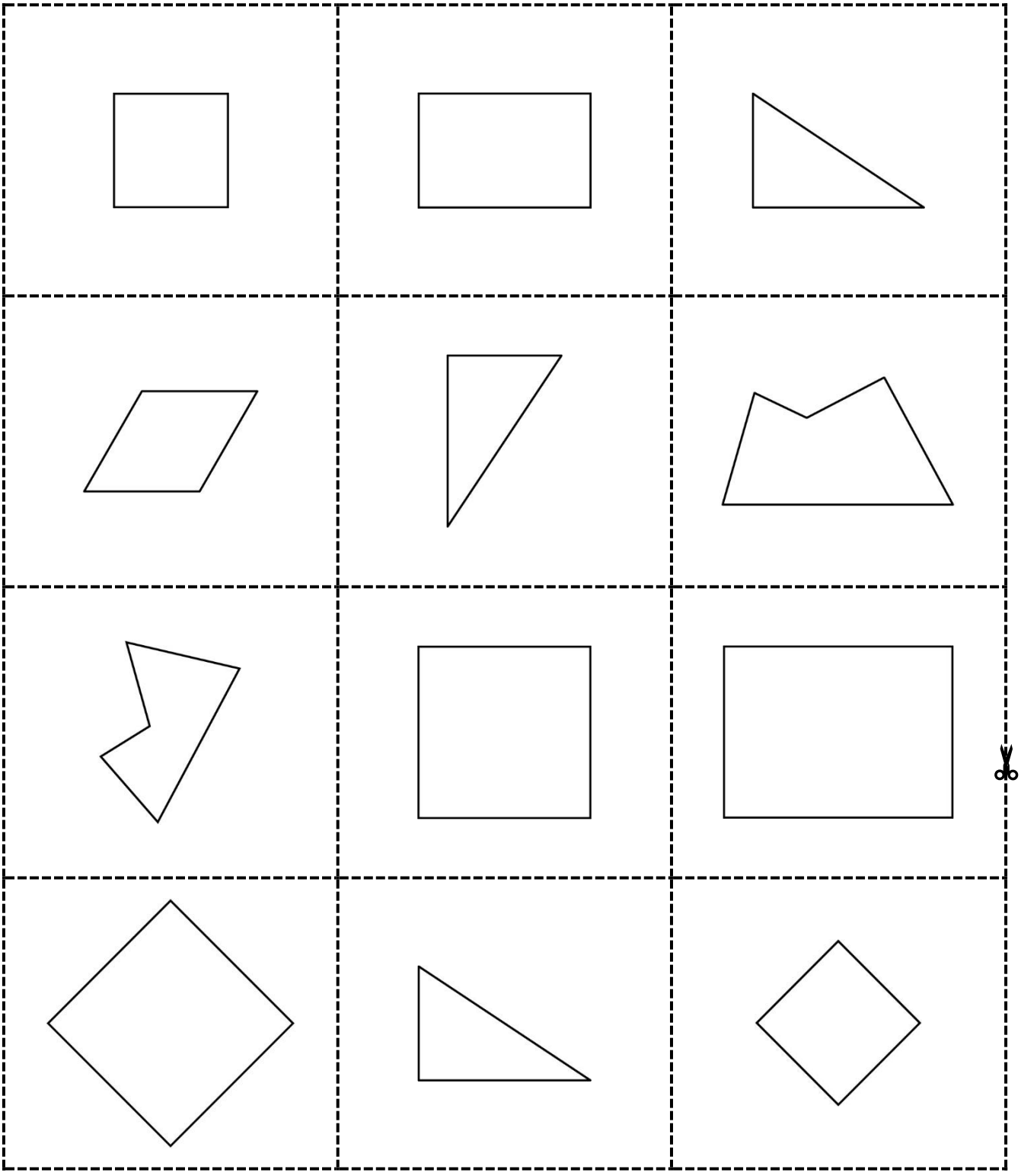
Predicting Likelihoods Involving Mean, Median, and Mode			
Identifies mode, median, and mean of a data set. Minutes to get to school for 10 Grade 4 students: 5, 10, 30, 20, 25, 10, 10, 2, 3, 5 "Mode: 10 min; Median: 10 min, Mean: 12 min."	Predict likelihood of mean, median and mode being the same for another data set. "I think they will be the same because the students are in the same grade."	Collects data for a second population, then compares results with predictions. "The results are not what I predicted. I thought the mode, median, and mean would be the same for both classes."	Understands that measures of central tendency from a different population may be different. "A lot of students in my class live in a building that is close to the school. So, it takes them less time to get to school than the students in the other class."
Observations/Documentation			

	Mode	Median	Mean
Class A	10	10	12
Class B	5	8	7

Name_____ Date_____

Geometry
Unit 1A Line Master 1a

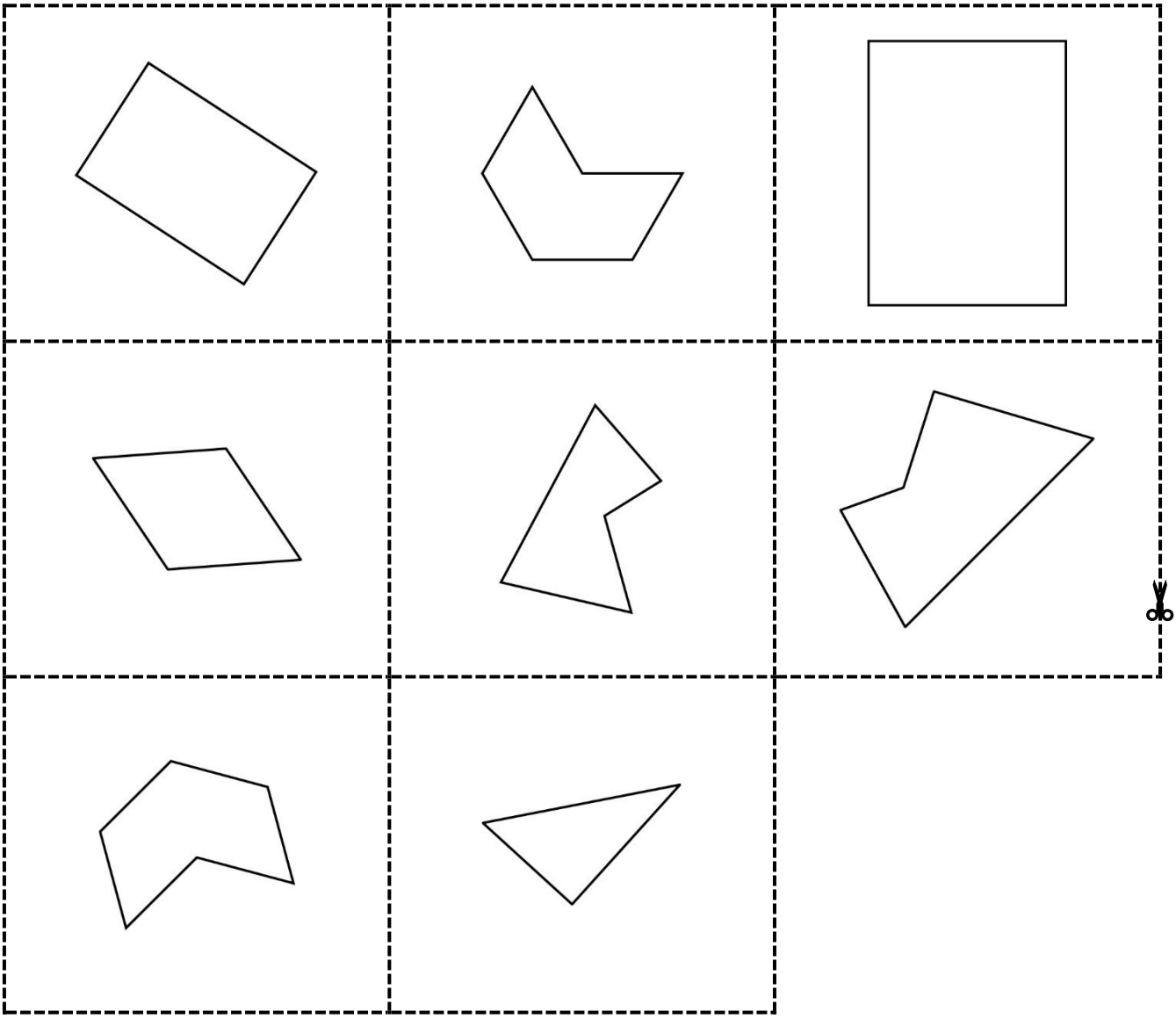
Matching Shapes



Name_____ Date_____

Geometry
Unit 1A Line Master 1b

Matching Shapes (cont'd)

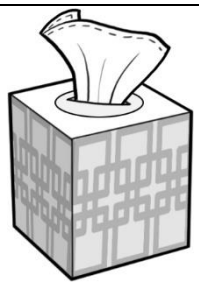


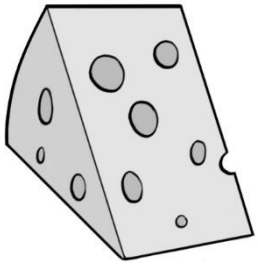
Name_____ Date_____

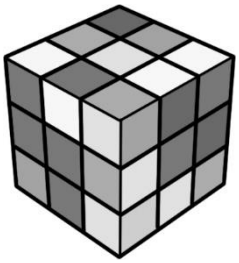
Geometry
Unit 1A Line Master 2

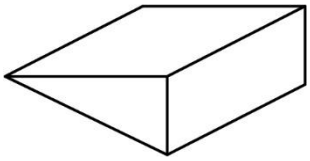
What Am I?

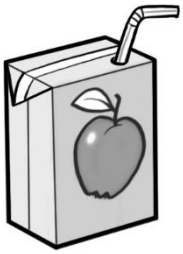
Gameboard

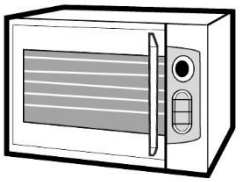


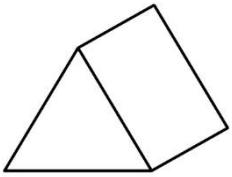


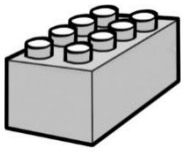












Start
Finish

Name_____ Date_____

Geometry
Unit 1A Line Master 3

What Am I?

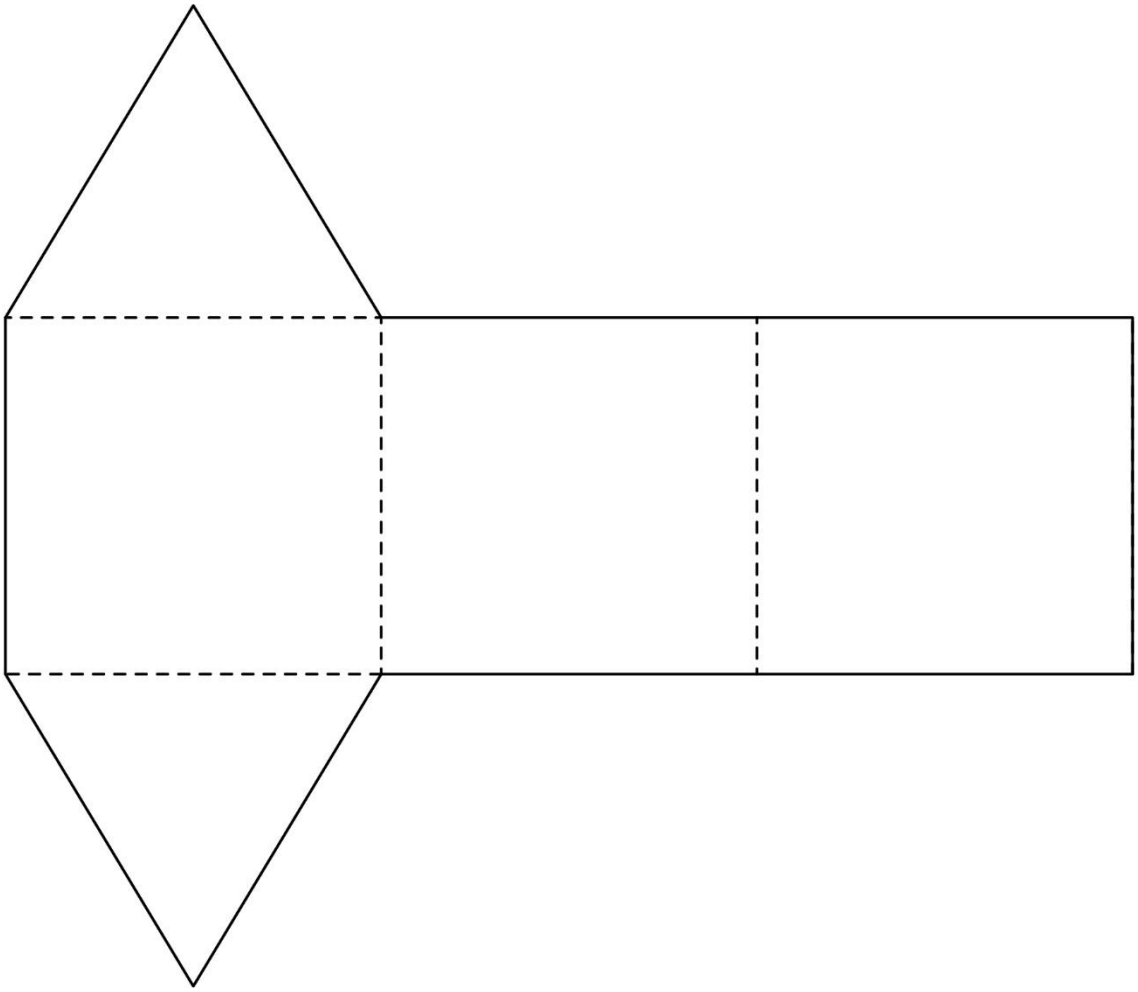
Game Cards

Triangular prism	Triangular prism	Rectangular prism	Rectangular prism
8 vertices	8 vertices	6 vertices	6 vertices
12 edges	12 edges	9 edges	9 edges
2 triangular faces and 3 rectangular faces	2 triangular faces and 3 rectangular faces	6 rectangular faces	6 rectangular faces

Name_____ Date_____

Geometry
Unit 1A Line Master 4

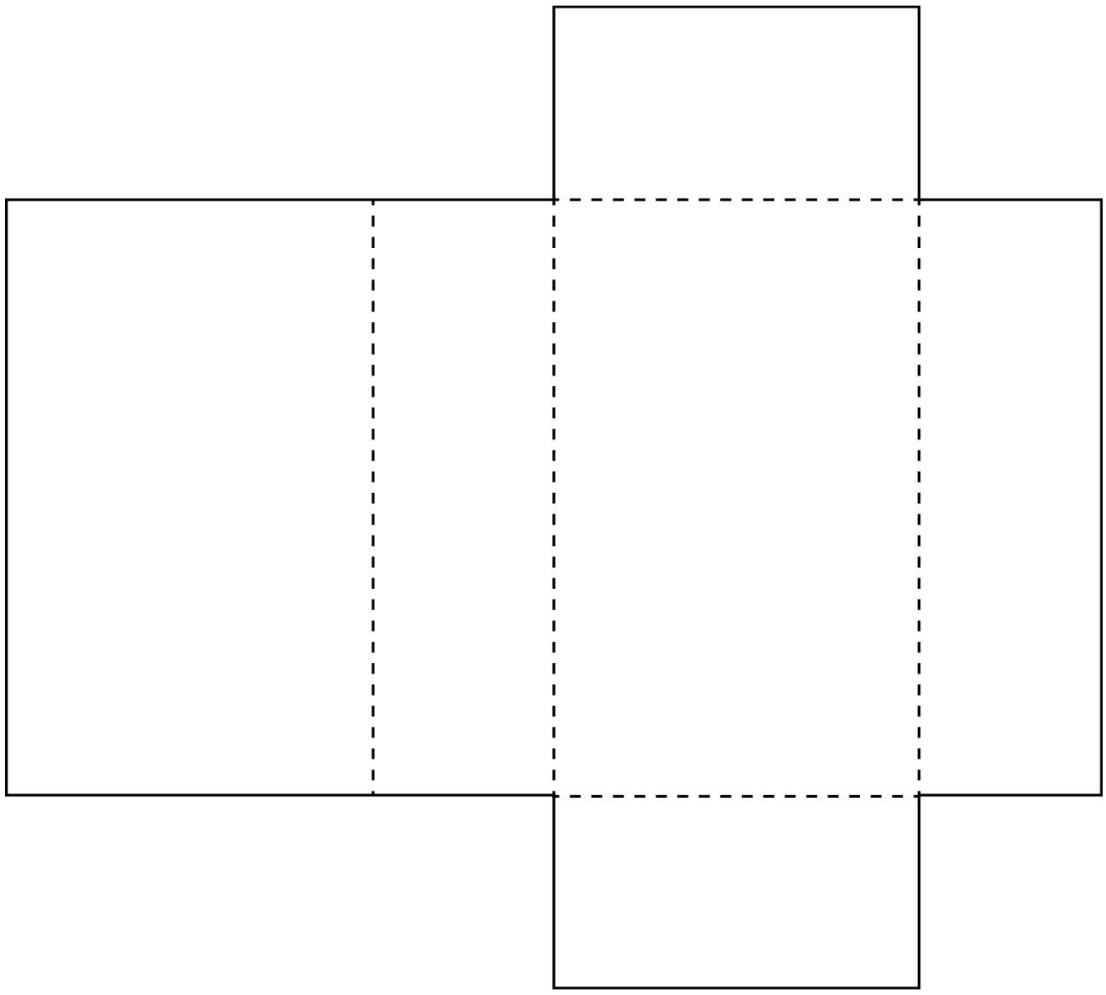
Net of a Triangular Prism



Name_____ Date_____

Geometry
Unit 1A Line Master 5

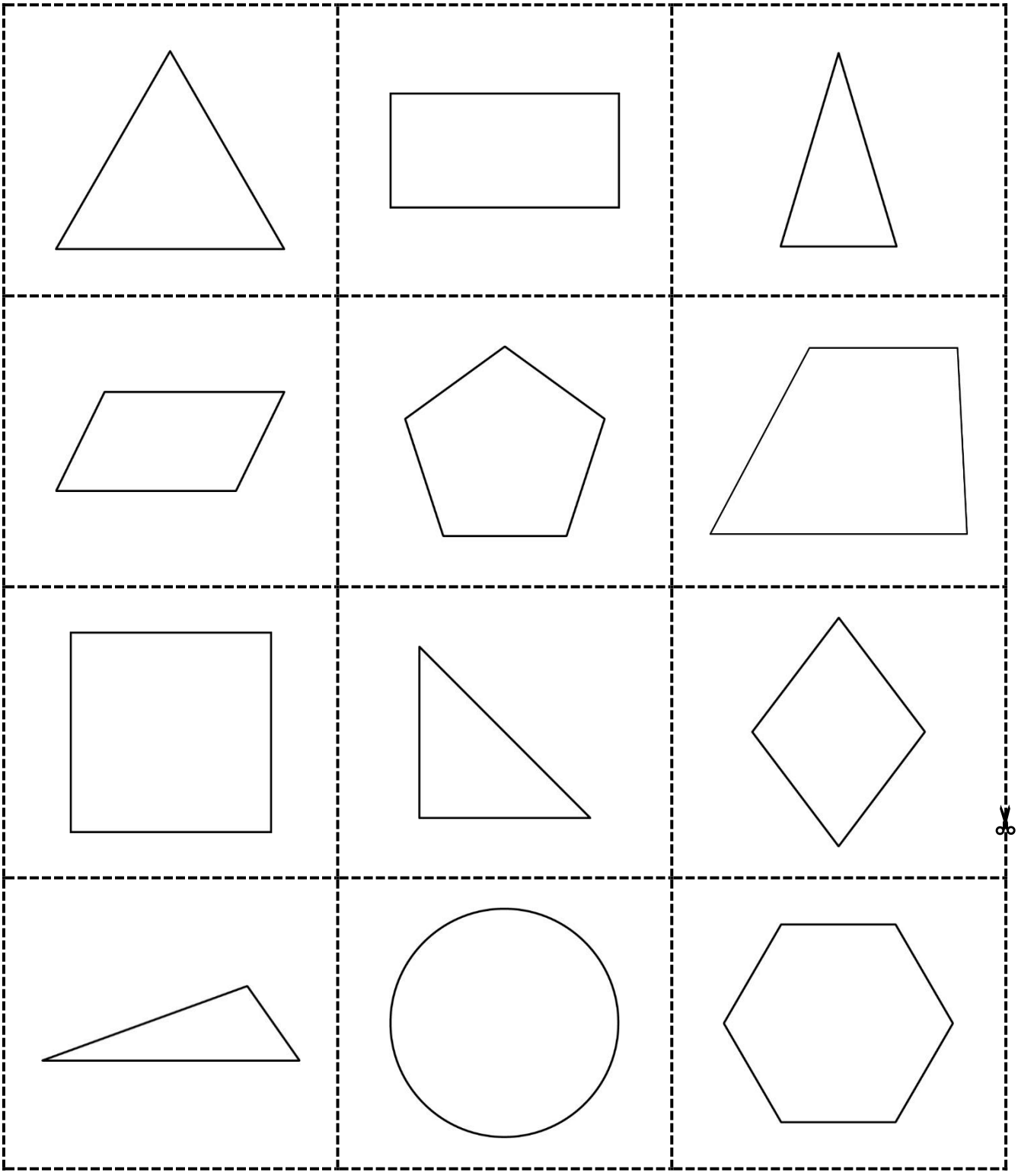
Net of a Rectangular Prism



Name_____ Date_____

Geometry
Unit 1A Line Master 6a

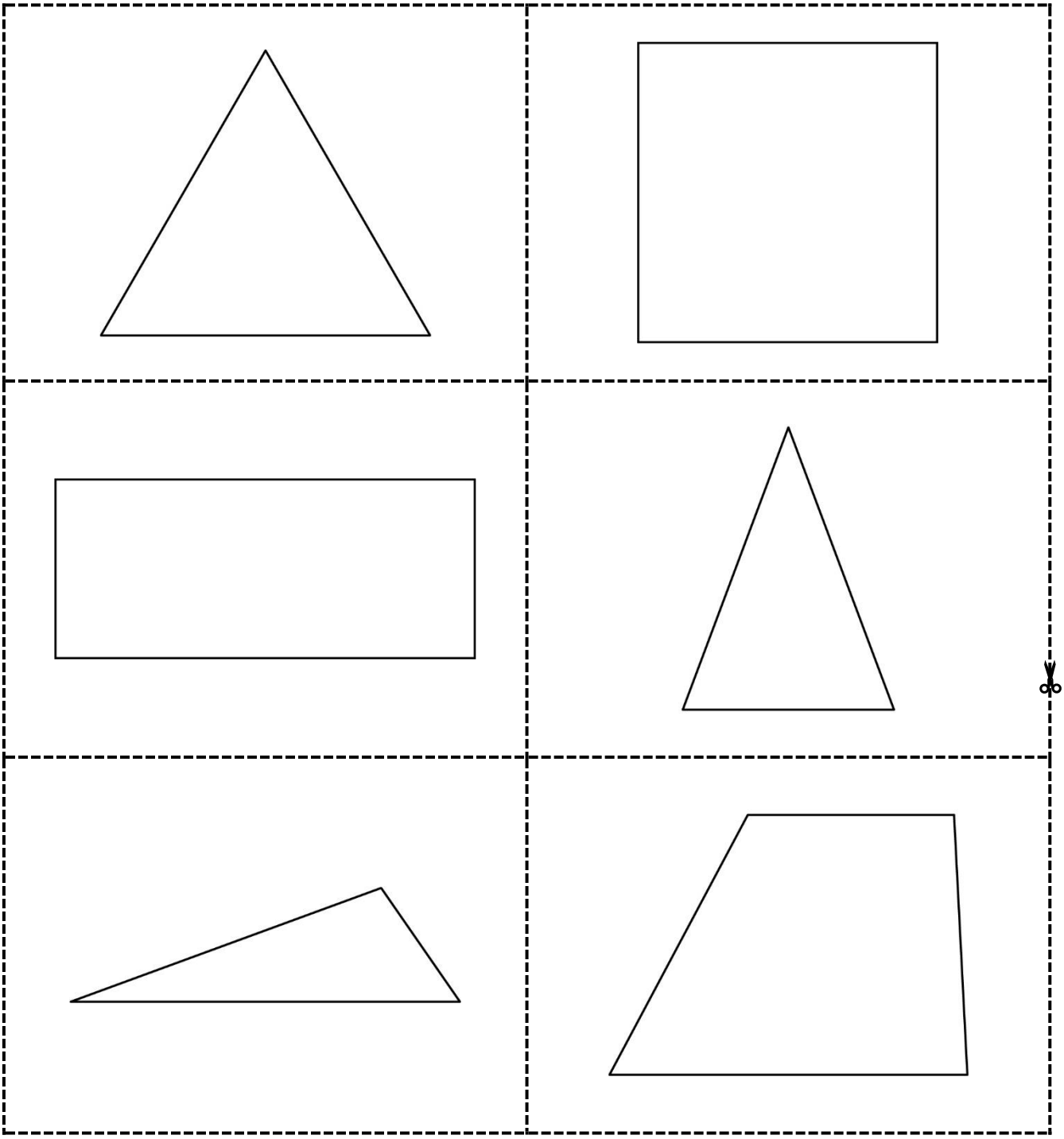
Is It Symmetrical?



Name_____ Date_____

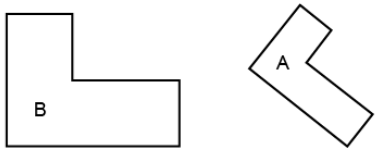
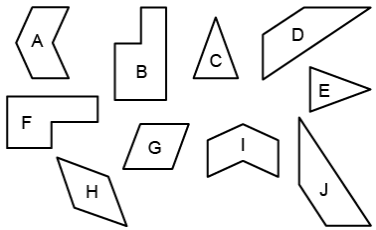
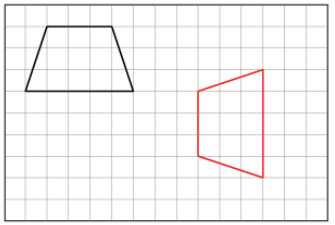
Geometry
Unit 1A Line Master 6b

Is It Symmetrical? (cont'd)



Geometry

Activity 1 Assessment
Exploring Congruence

Exploring Congruence with 2-D Shapes			
Identifies congruent 2-D shapes concretely and pictorially.  "These shapes are congruent because when I place them on top of each other, they are the same size and shape."	Determines congruent 2-D shapes using visualization strategies.  "These shapes are not congruent because I can see that one shape is larger than the other."	Flexibly identifies congruent 2-D shapes in a collection with different orientations.  "I used a ruler and tracing paper to identify congruent shapes. I know matching sides and angles have the same measure."	Creates a shape that is congruent to a given 2-D shape.  "I used the grid and a ruler to create a congruent shape in a different orientation."
Observations/Documentation			

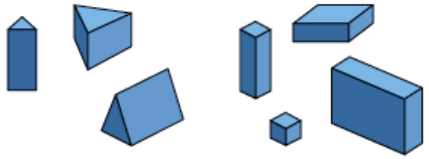
Geometry

Activity 2 Assessment

Identifying and Describing Prisms

Describing and Constructing Regular and Triangular Prisms

Recognizes and names common attributes of rectangular and triangular prisms.

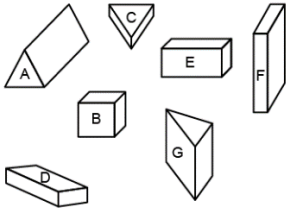


"Triangular prisms have some faces that are triangles. Rectangular prisms have faces that are rectangles."

Describes attributes of rectangular and triangular prisms.

Rectangular Prism	Triangular Prism
6 rectangular faces	2 triangular faces
8 vertices	3 rectangular faces
12 edges	6 vertices
opposite faces congruent	9 edges
	triangular faces congruent

Sorts a set of rectangular and triangular prisms using the shape of the base.



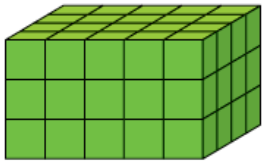
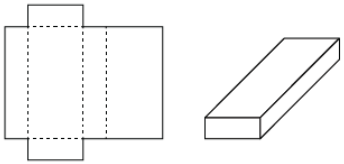
"When the shape of the base is a triangle, it's a triangular prism."

Observations/Documentation

Geometry

Activity 2 Assessment

Identifying and Describing Prisms

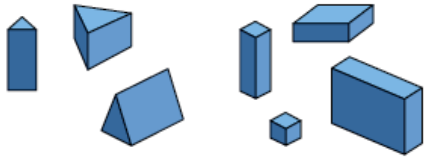
Describing and Constructing Regular and Triangular Prisms (cont'd)		
Constructs and describes models of rectangular and triangular prisms using various materials.  "I made a rectangular prism using linking cubes. All the faces are rectangles and there are 8 vertices."	Constructs rectangular and triangular prisms from their nets.  "I knew this would make a rectangular prism because there are 3 pairs of congruent rectangles and when I visualized folding the net, they were opposite each other."	Makes and applies generalizations about rectangular and triangular prisms to objects in the environment.  "A tent shaped like a triangular prism only needs one pole in the centre to support it and there is easy access through the triangular-faced door. The rectangular faces make it sturdy."
Observations/Documentation		

Geometry

Activity 3 Assessment
Constructing Models of Prisms

Describing and Constructing Regular and Triangular Prisms

Recognizes and names common attributes of rectangular and triangular prisms.

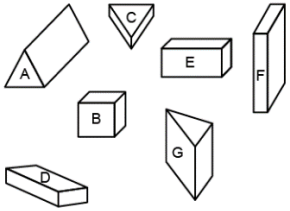


"Triangular prisms have some faces that are triangles. Rectangular prisms have faces that are rectangles."

Describes attributes of rectangular and triangular prisms.

Rectangular Prism	Triangular Prism
6 rectangular faces	2 triangular faces
8 vertices	3 rectangular faces
12 edges	6 vertices
opposite faces congruent	9 edges
	triangular faces congruent

Sorts a set of rectangular and triangular prisms using the shape of the base.

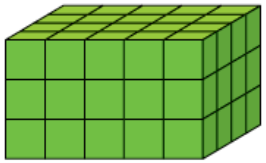
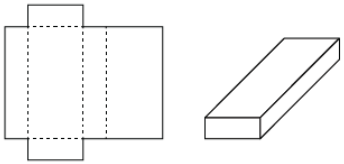


"When the shape of the base is a triangle, it's a triangular prism."

Observations/Documentation

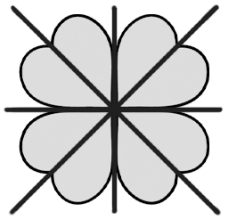
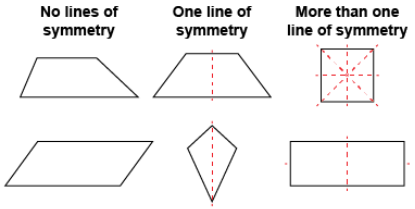
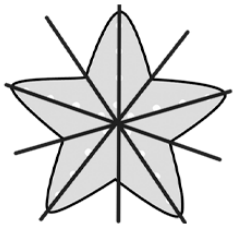
Geometry

Activity 3 Assessment
Constructing Models of Prisms

Describing and Constructing Regular and Triangular Prisms (cont'd)		
Constructs and describes models of rectangular and triangular prisms using various materials.  "I made a rectangular prism using linking cubes. All the faces are rectangles and there are 8 vertices."	Constructs rectangular and triangular prisms from their nets.  "I knew this would make a rectangular prism because there are 3 pairs of congruent rectangles and when I visualized folding the net, they were opposite each other."	Makes and applies generalizations about rectangular and triangular prisms to objects in the environment.  "A tent shaped like a triangular prism only needs one pole in the centre to support it and there is easy access through the triangular-faced door. The rectangular faces make it sturdy."
Observations/Documentation		

Geometry

Activity 4 Assessment
Understanding Line Symmetry

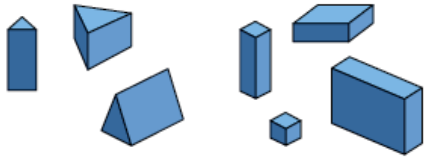
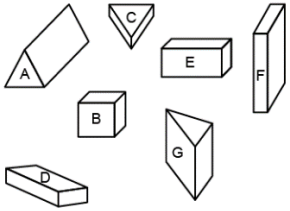
Understanding Line Symmetry			
Identifies a line of symmetry on 2-D shapes using various tools.  "I used a Mira to find the line of symmetry. When I folded the ladybug in half along the line, the two halves matched exactly."	Identifies more than one line of symmetry on 2-D shapes.  "The clover has 4 lines of symmetry. I could prove it by folding, using a Mira, or cutting and laying parts on top of each other."	Sorts shapes according to the number of lines of symmetry; none, one, or more than one.  "Some shapes don't have a line of symmetry and are not symmetrical. Other shapes have more than one line of symmetry."	Recognizes symmetry in the environment and makes connection to congruence.  "A starfish has 5 lines of symmetry and for each line, the two halves are congruent."
Observations/Documentation			

Geometry

Activity 5 Assessment

2-D Shapes and 3-D Solids Consolidation

Describing and Constructing Regular and Triangular Prisms

Recognizes and names common attributes of rectangular and triangular prisms.	Describes attributes of rectangular and triangular prisms.	Sorts a set of rectangular and triangular prisms using the shape of the base.
		
"Triangular prisms have some faces that are triangles. Rectangular prisms have faces that are rectangles."		"When the shape of the base is a triangle, it's a triangular prism."

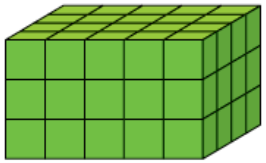
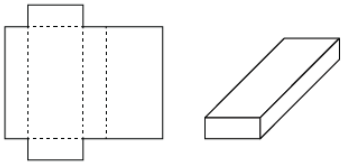
Rectangular Prism	Triangular Prism
6 rectangular faces	2 triangular faces
8 vertices	3 rectangular faces
12 edges	6 vertices
opposite faces congruent	9 edges
	triangular faces congruent

Observations/Documentation

Geometry

Activity 5 Assessment

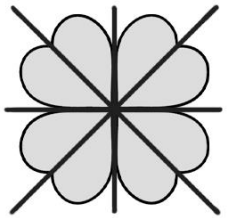
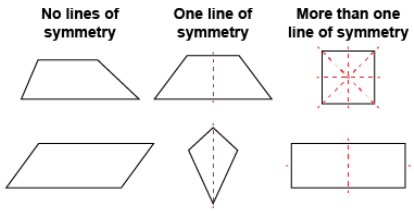
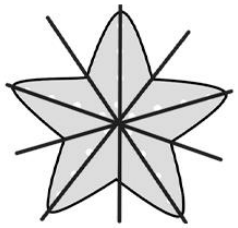
2-D Shapes and 3-D Solids Consolidation

Describing and Constructing Regular and Triangular Prisms (cont'd)		
Constructs and describes models of rectangular and triangular prisms using various materials.  "I made a rectangular prism using linking cubes. All the faces are rectangles and there are 8 vertices."	Constructs rectangular and triangular prisms from their nets.  "I knew this would make a rectangular prism because there are 3 pairs of congruent rectangles and when I visualized folding the net, they were opposite each other."	Makes and applies generalizations about rectangular and triangular prisms to objects in the environment.  "A tent shaped like a triangular prism only needs one pole in the centre to support it and there is easy access through the triangular-faced door. The rectangular faces make it sturdy."
Observations/Documentation		

Geometry

Activity 5 Assessment

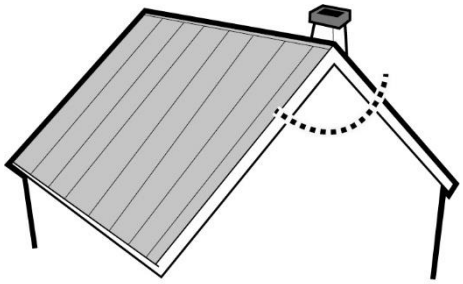
2-D Shapes and 3-D Solids Consolidation

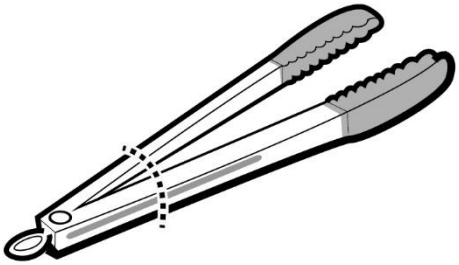
Understanding Line Symmetry			
Identifies a line of symmetry on 2-D shapes using various tools.  "I used a Mira to find the line of symmetry. When I folded the ladybug in half along the line, the two halves matched exactly."	Identifies more than one line of symmetry on 2-D shapes.  "The clover has 4 lines of symmetry. I could prove it by folding, using a Mira, or cutting and laying parts on top of each other."	Sorts shapes according to the number of lines of symmetry; none, one, or more than one.  "Some shapes don't have a line of symmetry and are not symmetrical. Other shapes have more than one line of symmetry."	Recognizes symmetry in the environment and makes connection to congruence.  "A starfish has 5 lines of symmetry and for each line, the two halves are congruent."
Observations/Documentation			

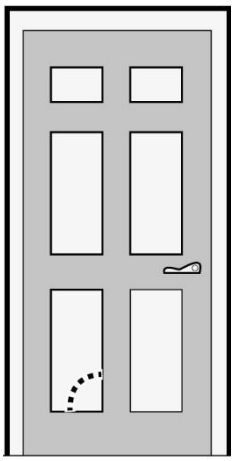
Name_____ Date_____

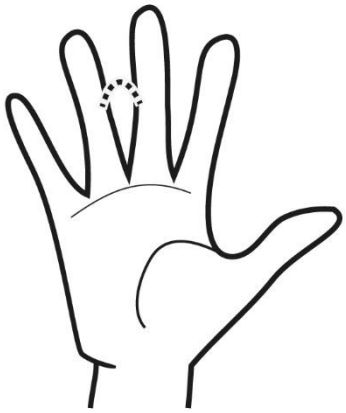
Geometry
Unit 1B Line Master 1a

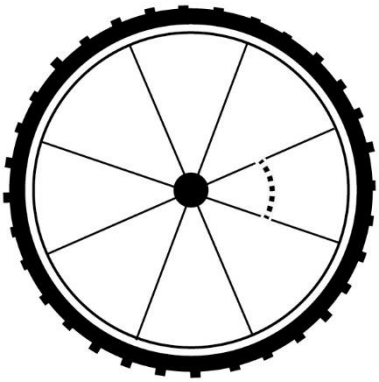
Name the Angles







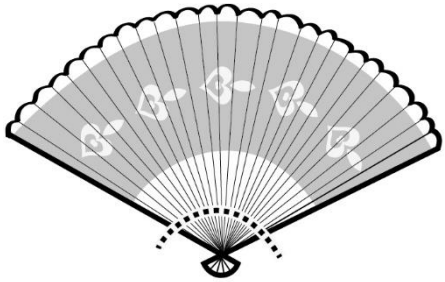


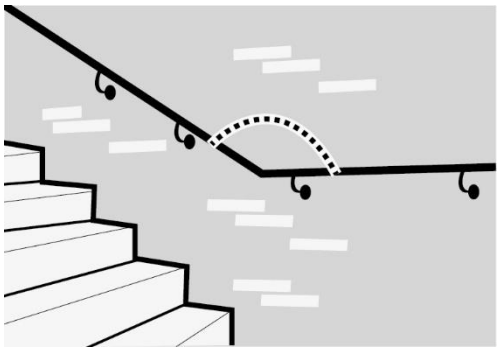


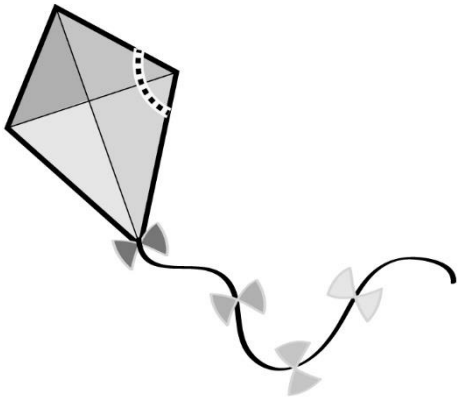
Name_____ Date_____

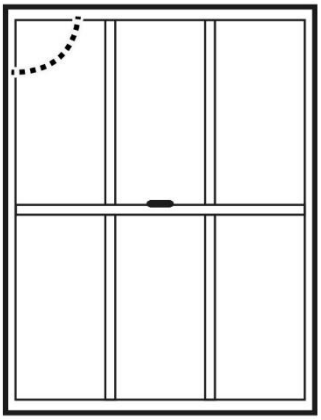
Geometry
Unit 1B Line Master 1b

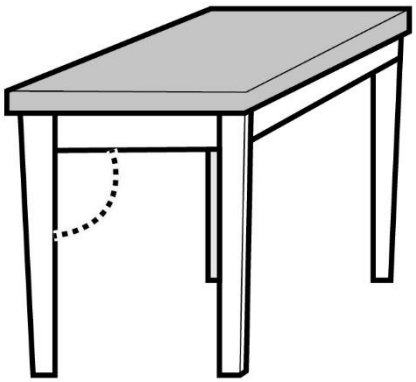
Name the Angles (cont'd)

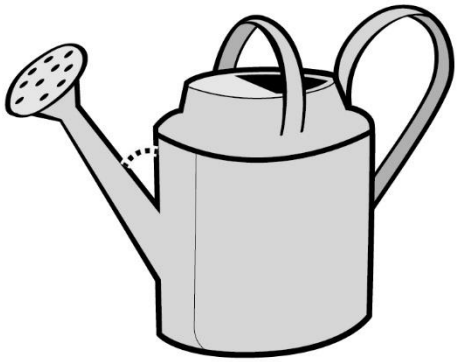








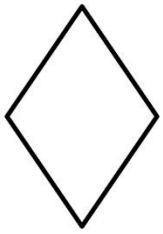
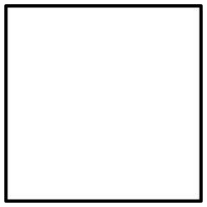




Name_____ Date_____

Geometry
Unit 1B Line Master 2

What Makes a Rectangle?

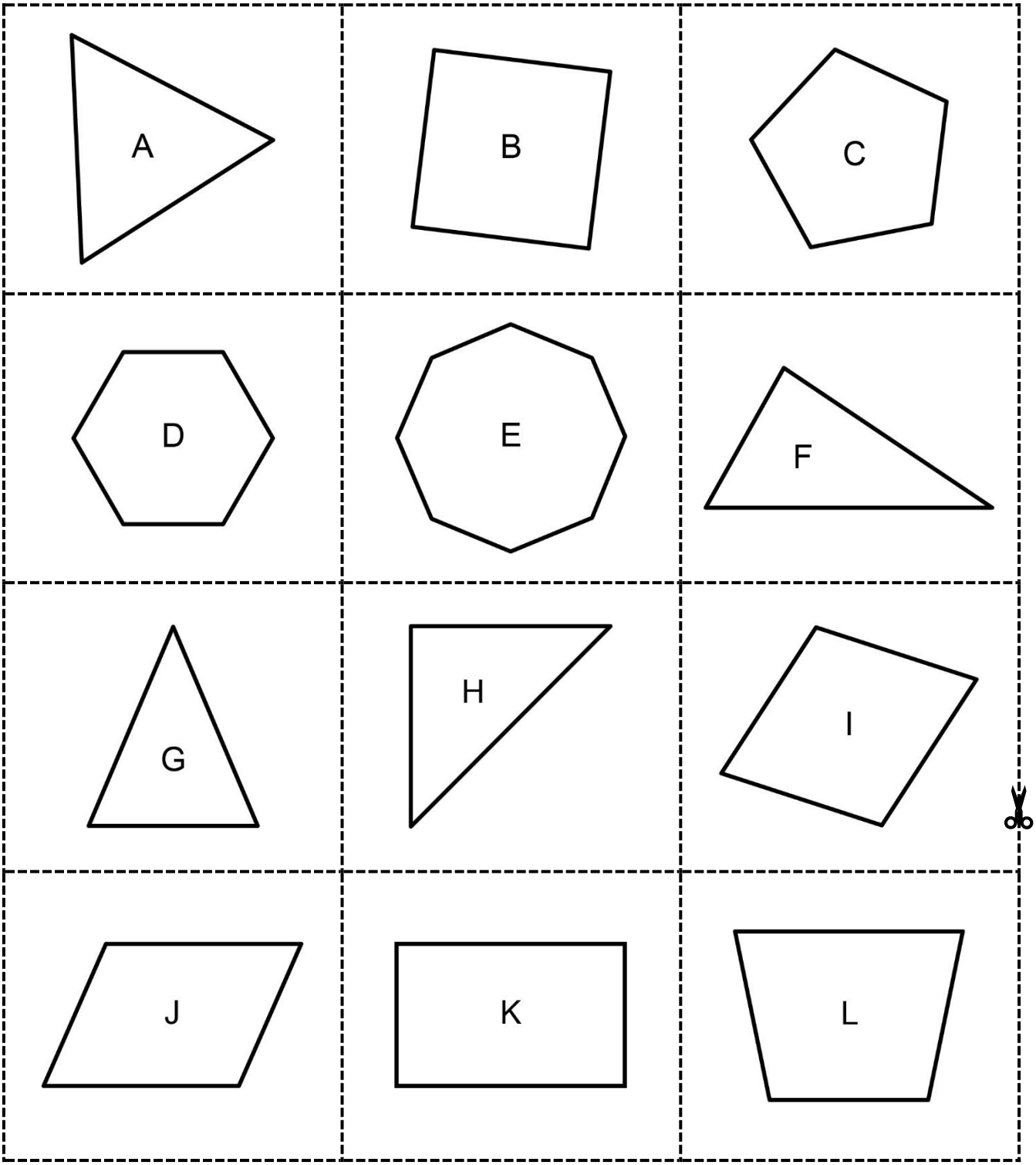
	Like a rectangle	Different from a rectangle
Parallelogram 		
Rhombus 		
Square 		
Trapezoid 		

What is true about all rectangles?

Name_____ Date_____

Geometry
Unit 1B Line Master 3a

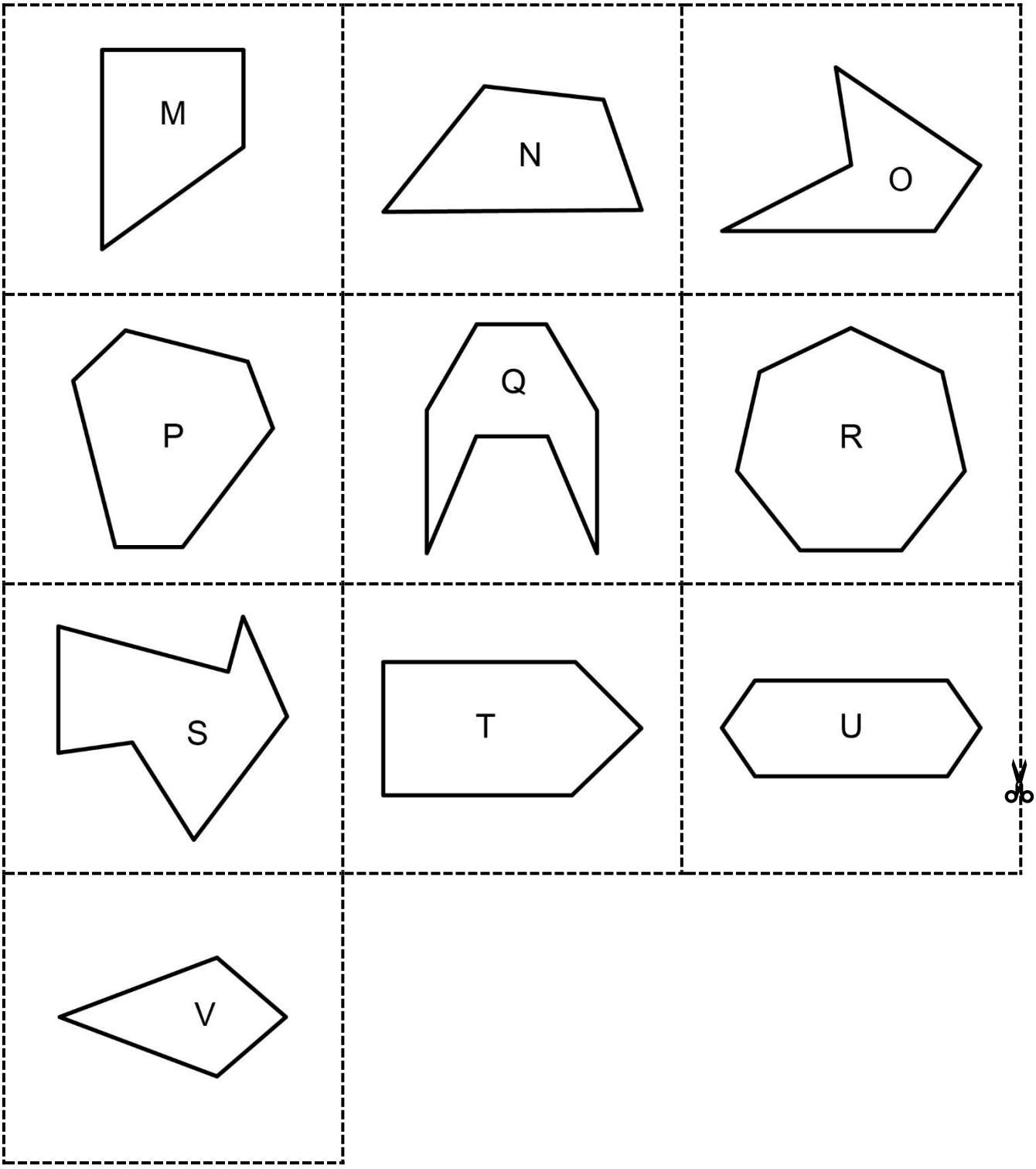
Polygons



Name_____ Date_____

Geometry
Unit 1B Line Master 3b

Polygons (cont'd)



Name_____ Date_____

Geometry
Unit 1B Line Master 4

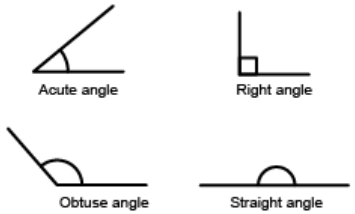
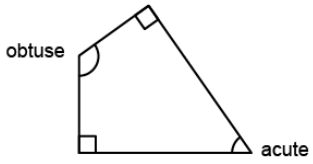
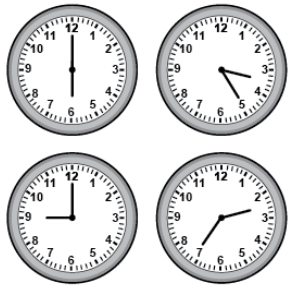
Attribute Cards

Has acute angles	Has 3 sides
Has right angles	Has 4 sides
Has obtuse angles	Has 5 sides
Has parallel sides	Has 6 sides
Has perpendicular sides	Has all sides equal
Has 1 line of symmetry	Has opposite sides equal
Has more than 1 line of symmetry	A regular polygon
Has all angles equal	An irregular polygon

Geometry

Activity 1 Assessment
Exploring Benchmark Angles

Identifying and Classifying Angles

Identifies and classifies angles as right, obtuse, acute or straight.  "I know that a right angle has perpendicular lines that make a 90° angle."	Identifies and classifies angles within shapes.  "This shape has 2 right angles, 1 obtuse angle, and 1 acute angle."	Identifies and classifies angles in the real world.  "Clocks can show different types of angles and can be used as benchmarks to classify objects."	Flexibly locates, identifies, and classifies angles in the real world. "I can find all 4 types of angles in this window and doorway." 

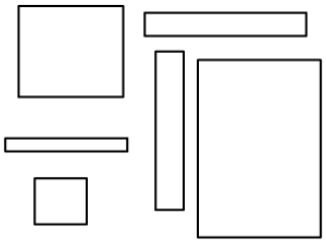
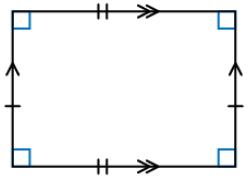
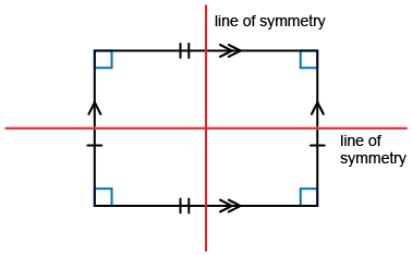
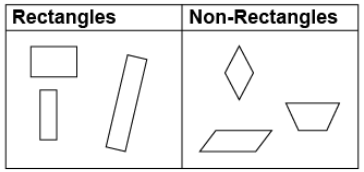
Observations/Documentation

Geometry

Activity 2 Assessment

Properties of Rectangles

Identifying and Classifying Angles

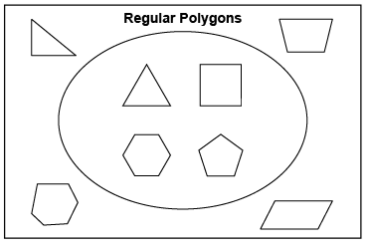
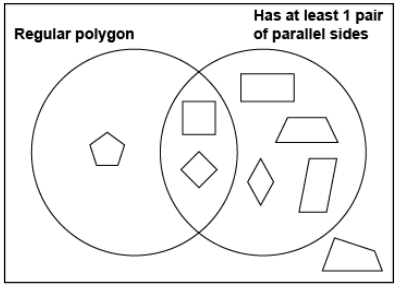
Recognizes a rectangle by the number of sides and right angles.	Understands that rectangles have opposite sides that are parallel and equal.	Understands that a rectangle has 2 lines of symmetry.	Uses properties to sort quadrilaterals into rectangles and non-rectangles.
			
"I know that these are rectangles because they have 4 sides and 4 right angles."	"A rectangle must have opposite sides that are parallel and equal in length."	"Every rectangle will have 2 lines of symmetry. You could check by folding the shape or by using a Mira."	"All rectangles must have 4 sides, 4 right angles, opposite sides equal and parallel, and 2 lines of symmetry. A trapezoid isn't a rectangle because opposite sides are not always the same length."

Observations/Documentation

Geometry

Activity 3 Assessment
Investigating Polygons

Sorting Polygons

Recognizes a polygon as a closed shape with straight lines.	Understands that regular polygons have equal sides and equal angles.	Describes differences and similarities between regular and irregular polygons.	Flexibly identifies and classifies polygons.
		**Regular and Irregular Polygons** **Name** / **Regular** / **Irregular** Triangle Quadrilateral Pentagon Hexagon Octagon	
"I know these are polygons because they are closed shapes with straight sides."	"The shapes inside the loop are regular polygons because they have equal sides and equal angles."	"The polygons in the second row are both quadrilaterals because they both have 4 sides. The square is a regular polygon because it has 4 equal sides and 4 equal angles, but the other quadrilateral is irregular because it does not have any equal sides."	"I sorted the polygons using the Venn diagram. The irregular quadrilateral is outside of the loops because it has neither attribute."

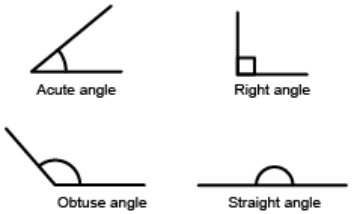
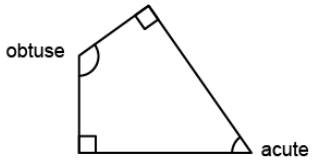
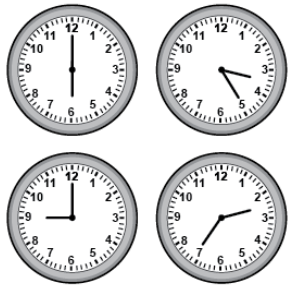
Observations/Documentation

Geometry

Activity 4 Assessment

2-D Shapes and Angles Consolidation

Identifying and Classifying Angles

Identifies and classifies angles as right, obtuse, acute or straight.	Identifies and classifies angles within shapes.	Identifies and classifies angles in the real world.	Flexibly locates, identifies, and classifies angles in the real world.
 "I know that a right angle has perpendicular lines that make a 90° angle."	 "This shape has 2 right angles, 1 obtuse angle, and 1 acute angle."	 "Clocks can show different types of angles and can be used as benchmarks to classify objects."	"I can find all 4 types of angles in this window and doorway." 

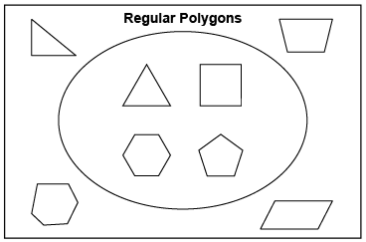
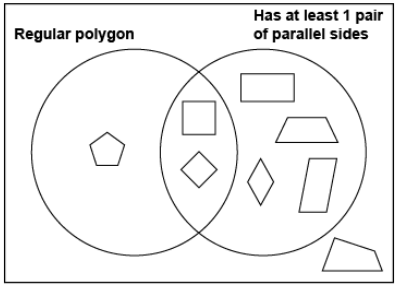
Observations/Documentation

Geometry

Activity 4 Assessment

2-D Shapes and Angles Consolidation

Sorting Polygons

Recognizes a polygon as a closed shape with straight lines.	Understands that regular polygons have equal sides and equal angles.	Describes differences and similarities between regular and irregular polygons.	Flexibly identifies and classifies polygons.
		**Regular and Irregular Polygons**	
"I know these are polygons because they are closed shapes with straight sides."	"The shapes inside the loop are regular polygons because they have equal sides and equal angles."	"The polygons in the second row are both quadrilaterals because they both have 4 sides. The square is a regular polygon because it has 4 equal sides and 4 equal angles, but the other quadrilateral is irregular because it does not have any equal sides."	"I sorted the polygons using the Venn diagram. The irregular quadrilateral is outside of the loops because it has neither attribute."

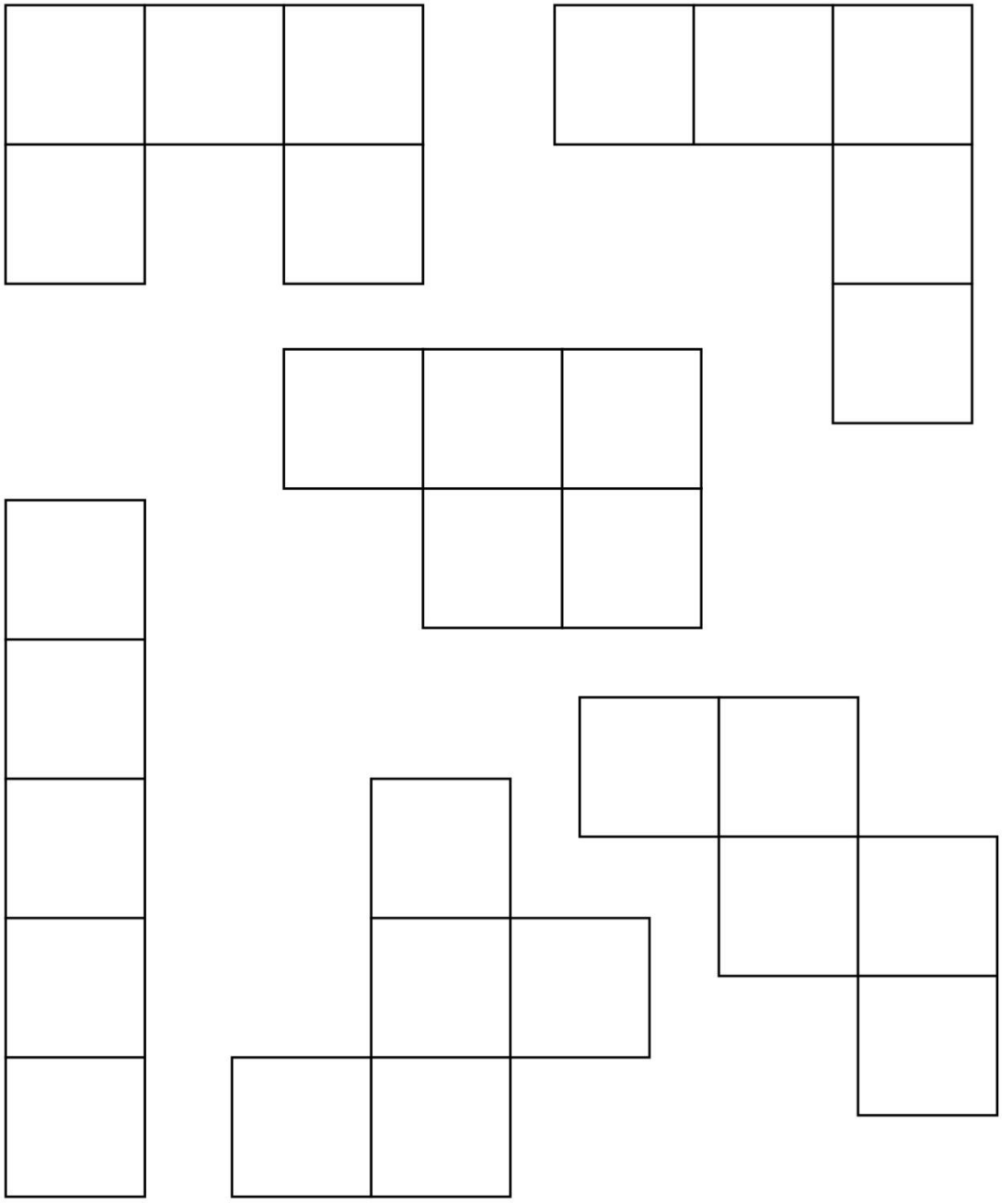
Name	Regular	Irregular
Triangle		
Quadrilateral		
Pentagon		
Hexagon		
Octagon		

Observations/Documentation

Name_____ Date_____

Geometry
Unit 2 Line Master 1a

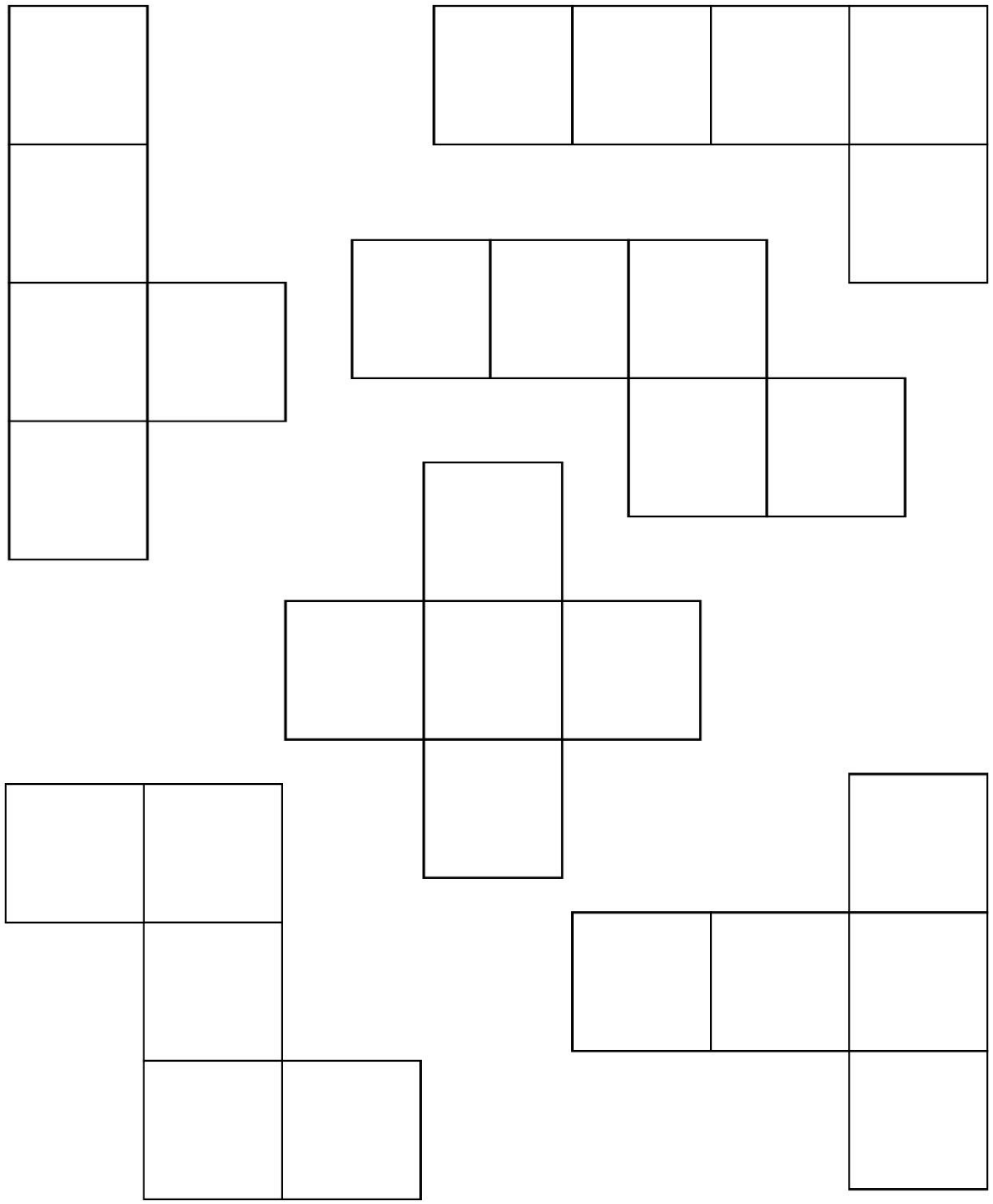
Pentominoes



Name_____ Date_____

Geometry
Unit 2 Line Master 1b

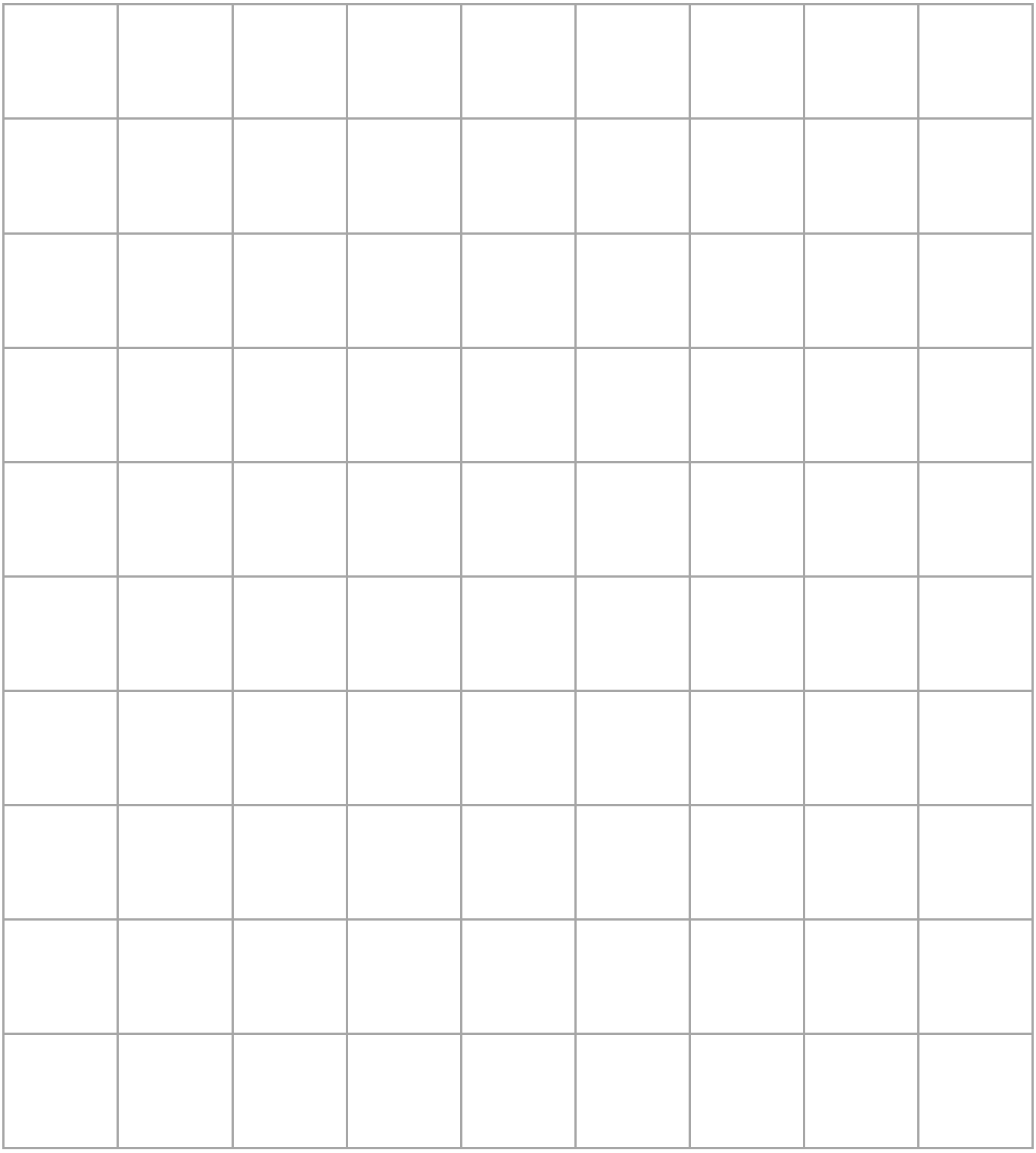
Pentominoes (cont'd)



Name_____ Date_____

Geometry
Unit 2 Line Master 2

2-cm Grid Paper

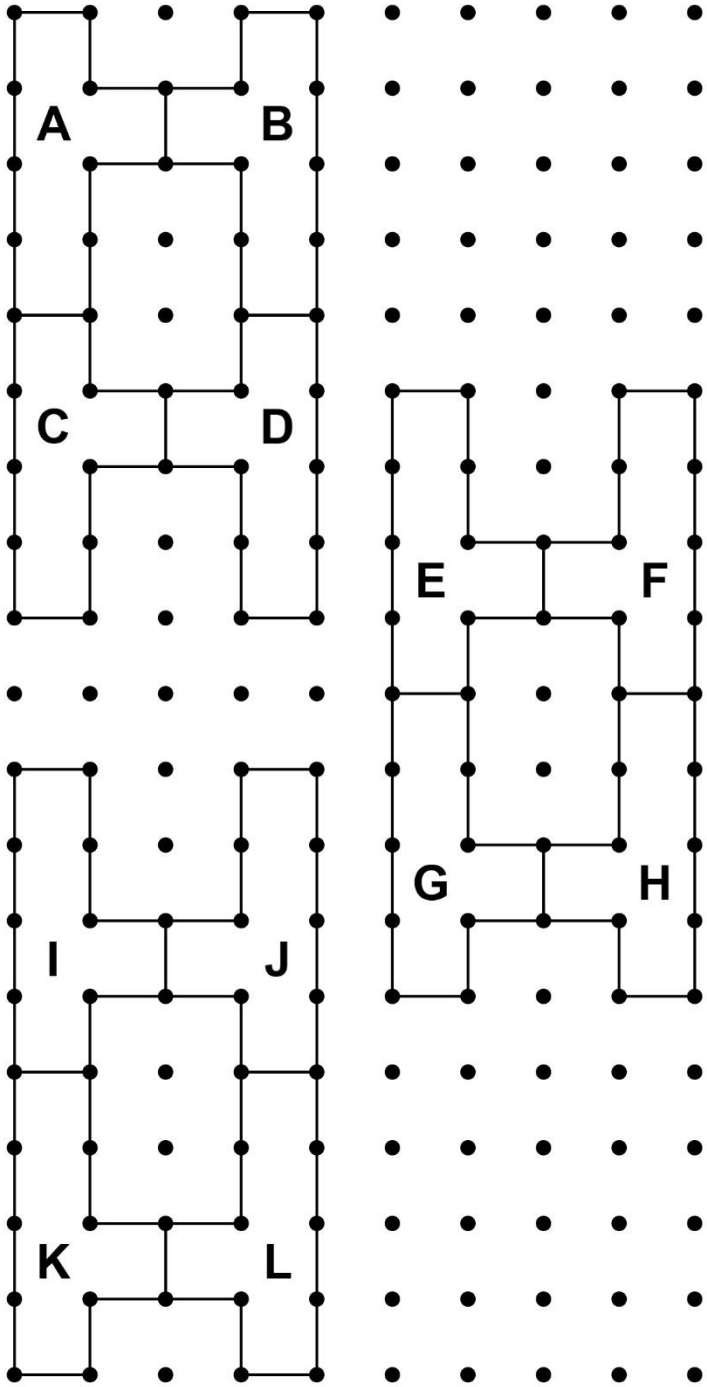


Name_____ Date_____

Geometry
Unit 2 Line Master 3a

Transformation Designs

Design 1

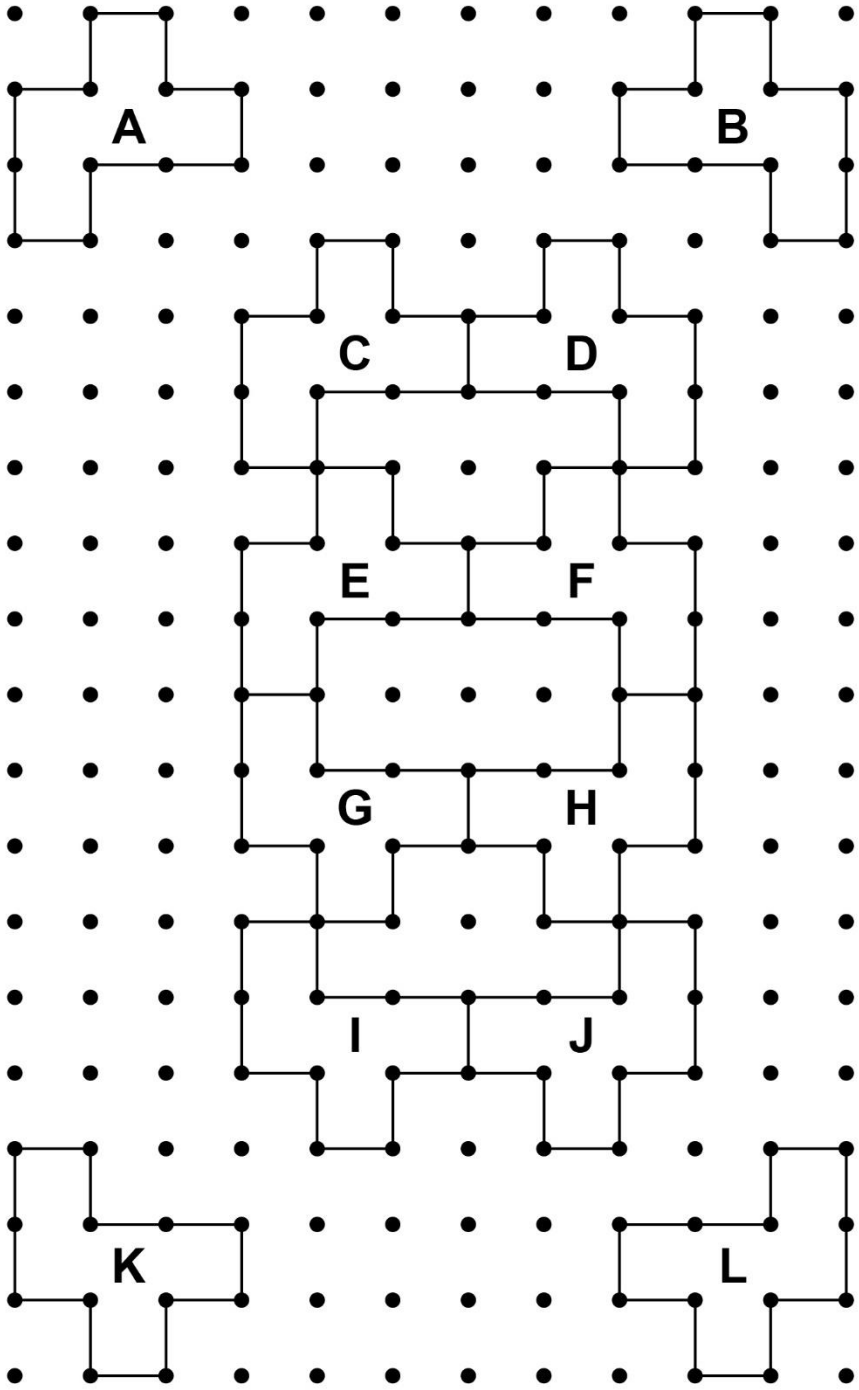


Name_____ Date_____

Geometry
Unit 2 Line Master 3b

Transformation Designs (cont'd)

Design 2

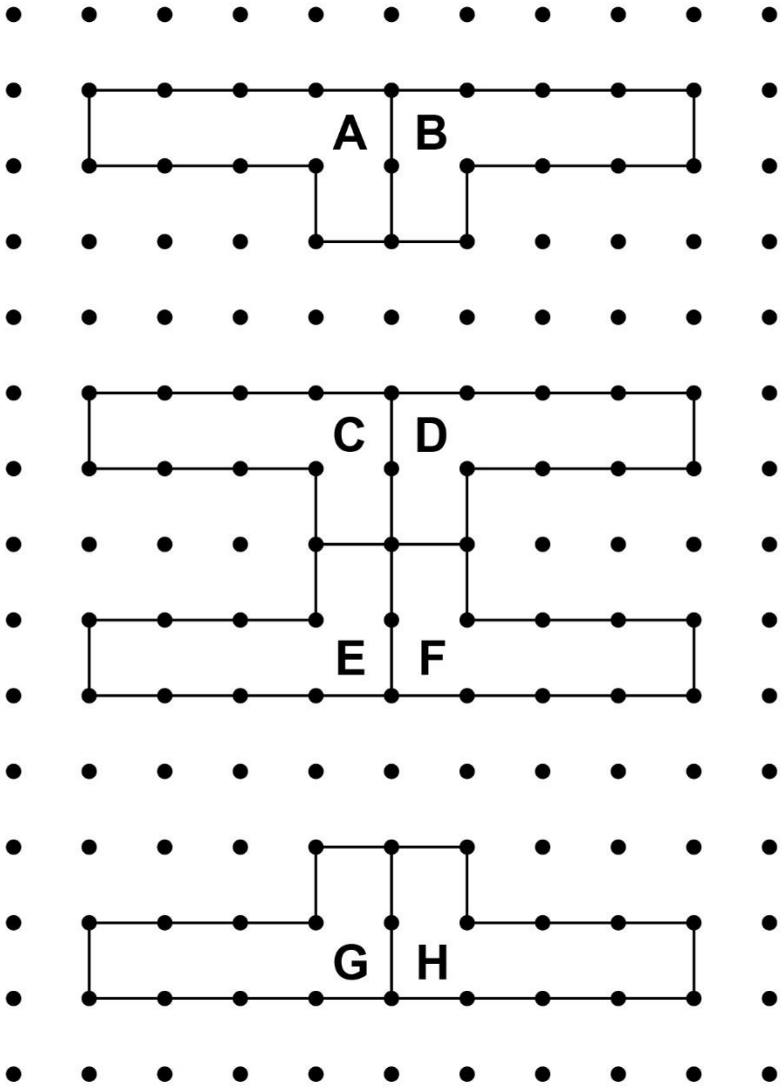


Name_____ Date_____

Geometry
Unit 2 Line Master 3c

Transformation Designs (cont'd)

Design 3

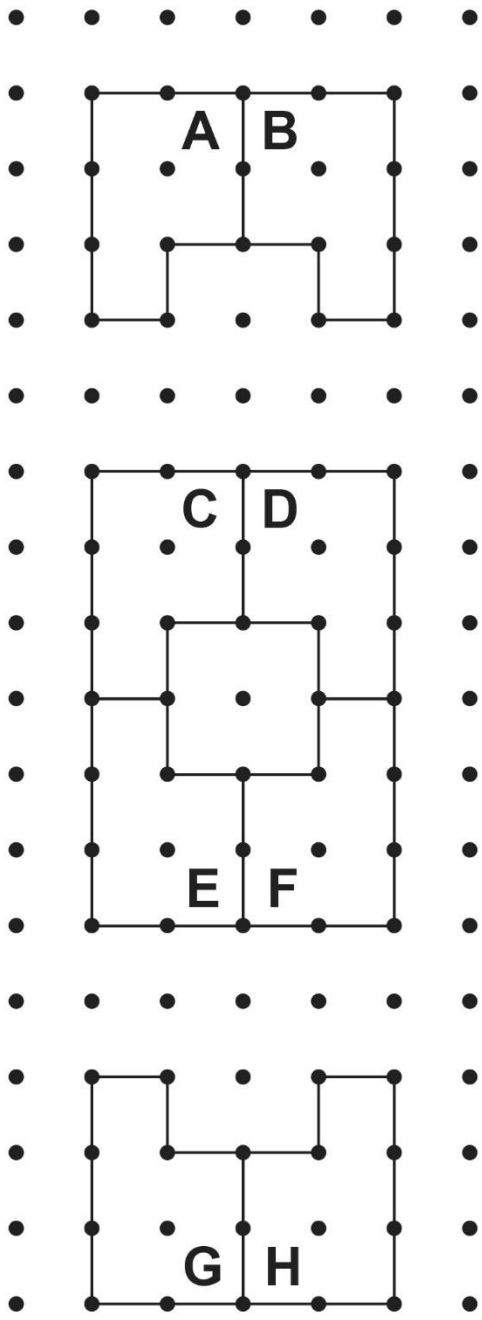


Name_____ Date_____

Geometry
Unit 2 Line Master 3d

Transformation Designs (cont'd)

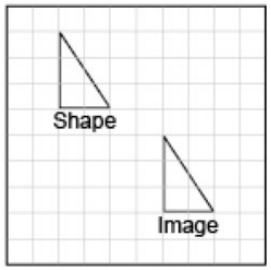
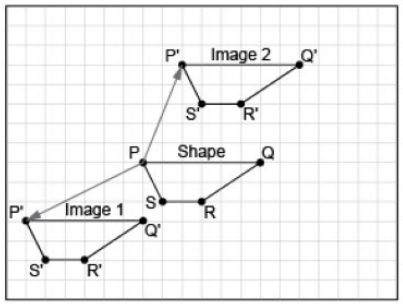
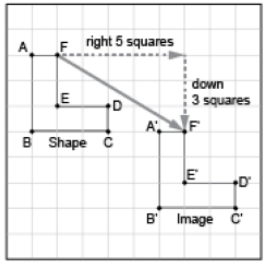
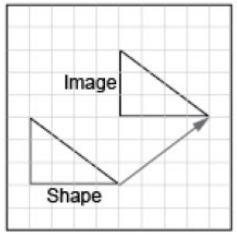
Design 4



Geometry

Activity 5 Assessment
Investigating Translations

Exploring 2-D Shapes by Applying and Visualizing Translations

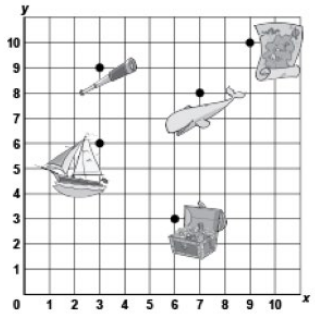
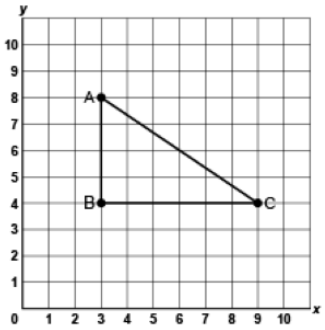
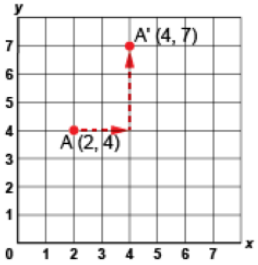
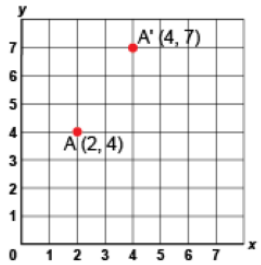
Performs reflections using labelled vertices over various lines of reflection.	Recognizes that a shape can be translated by moving it horizontally and vertically.	Describes translations by counting grid squares and using directional language.	Visualizes and predicts where the image of a shape will be after a translation.
			
"This shows a translation because the two shapes are the same size and face the same way."	"I moved the shape to different places by moving it left or right and up or down."	"I moved the shape right 5 squares and down 3 squares."	"I can picture moving the triangle right 4 squares and up 3 squares to its image."

Observations/Documentation

Geometry

Activity 6 Assessment

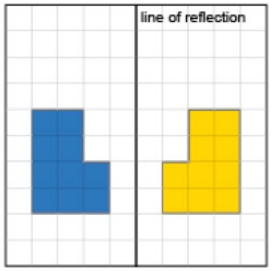
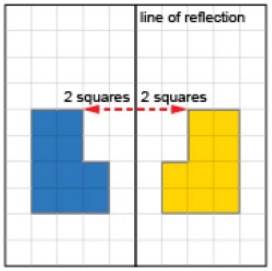
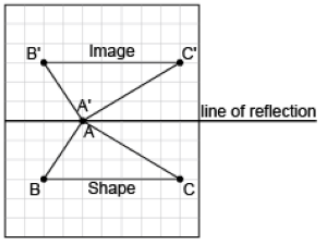
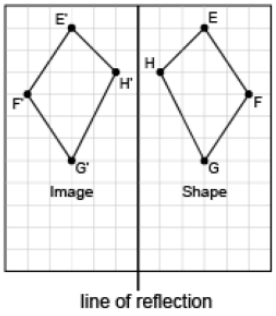
Plotting and Reading Coordinates

Locating and Plotting Points in First Quadrant of Cartesian Plane			
Uses coordinates to describe the location of points on a grid.  "The treasure chest is located at (6, 3)."	Plots, locates, and labels points on a grid to make 2-D shapes.  "I plotted A(3,8), B(3,4) and C(9,4) to create a right triangle."	Translates a point and identifies coordinates of its image.  "I moved Point A right 2 squares, then up 3 squares. The image of Point A after the translation is A'(4, 7)."	Flexibly predicts the location and coordinates of a point after a translation.  "The translation was right 2 squares and up 3 squares. So, I added 2 to the x-coordinate and 3 to the y-coordinate: (2 + 2, 4 + 3) → A'(4, 7)."
Observations/Documentation			

Geometry

Activity 7 Assessment
Plotting and Reading Coordinates

Exploring 2-D Shapes by Applying and Visualizing Reflections

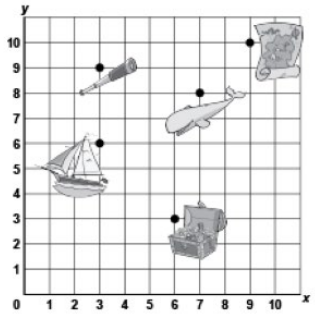
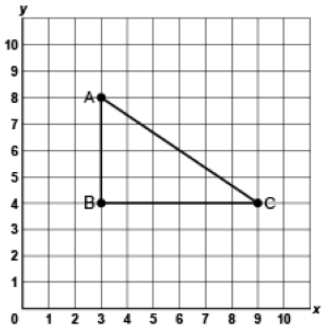
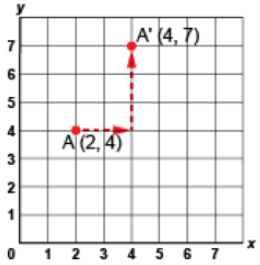
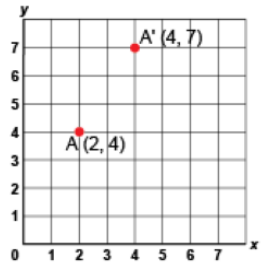
Recognizes a reflection on a grid and identifies the line of reflection.	Counts squares to show that matching vertices are the same distance from line of reflection.	Performs reflections using labelled vertices over various lines of reflection.	Visualizes, predicts, and describes where the image of a shape will be after a reflection.
			
"The shape and its image are congruent and they are mirror images of each other."	"These matching vertices are both 2 squares from the line of reflection."	"I labelled matching vertices with the same letter. The vertices of the image have prime symbols."	"I can picture the image on the other side of the line, so that matching vertices are the same distance from the line of reflection."

Observations/Documentation

Geometry

Activity 8 Assessment

Grids and Transformations Consolidation

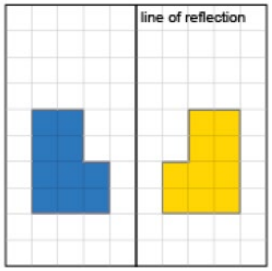
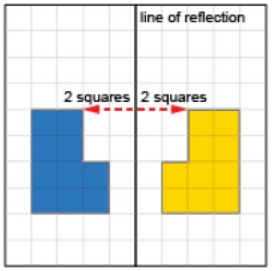
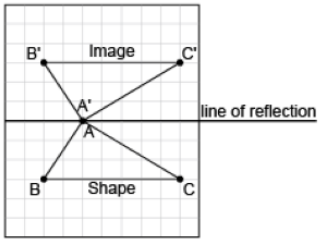
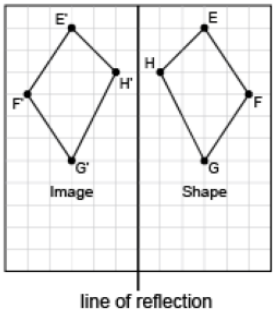
Locating and Plotting Points in First Quadrant of Cartesian Plane			
Uses coordinates to describe the location of points on a grid.  "The treasure chest is located at (6, 3)."	Plots, locates, and labels points on a grid to make 2-D shapes.  "I plotted A(3,8), B(3,4) and C(9,4) to create a right triangle."	Translates a point and identifies coordinates of its image.  "I moved Point A right 2 squares, then up 3 squares. The image of Point A after the translation is A'(4, 7)."	Flexibly predicts the location and coordinates of a point after a translation.  "The translation was right 2 squares and up 3 squares. So, I added 2 to the x-coordinate and 3 to the y-coordinate: (2 + 2, 4 + 3) → A'(4, 7)."
Observations/Documentation			

Geometry

Activity 8 Assessment

Grids and Transformations Consolidation

Exploring 2-D Shapes by Applying and Visualizing Reflections

Recognizes a reflection on a grid and identifies the line of reflection.	Counts squares to show that matching vertices are the same distance from line of reflection.	Performs reflections using labelled vertices over various lines of reflection.	Visualizes, predicts, and describes where the image of a shape will be after a reflection.
			
"The shape and its image are congruent and they are mirror images of each other."	"These matching vertices are both 2 squares from the line of reflection."	"I labelled matching vertices with the same letter. The vertices of the image have prime symbols."	"I can picture the image on the other side of the line, so that matching vertices are the same distance from the line of reflection."

Observations/Documentation

Name_____ Date_____

Measurement
Unit 1 Line Master 1

Our Measures

Object	Length, Width, or Height	Estimate	Measure

Name_____ Date_____

Measurement
Unit 1 Line Master 2

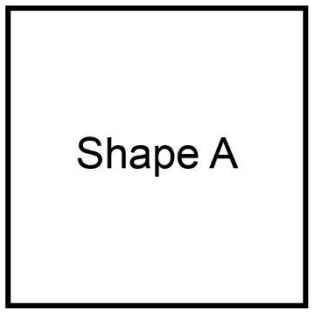
Which Unit is Best?

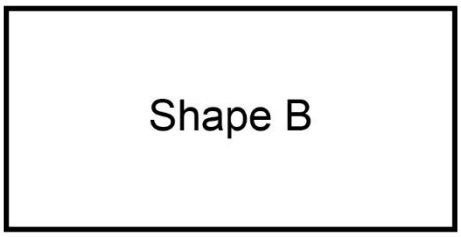
Length of a shoe (cm)	Length of a new pencil (cm)	Width of a book (cm)	Height of a chair (cm)	Distance around a roll of tape (cm)
Thickness of a nickel (mm)	Thickness of a cellphone (mm)	Width of a fingernail on a baby finger (mm)	Width of a shoelace (mm)	Thickness of a line drawn by a marker (mm)
Length of a soccer field (m)	Length of the class floor (m)	Height of a door (m)	Length of a hallway (m)	Height of a streetlight (m)
Distance from Winnipeg to Regina (km)	Distance from home to school (km)	Distance across Lake Ontario (km)	Distance from Halifax to Vancouver (km)	Distance from my home to the community centre (km)

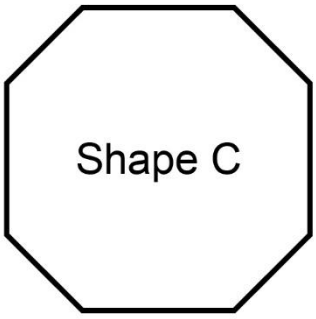
Name_____ Date_____

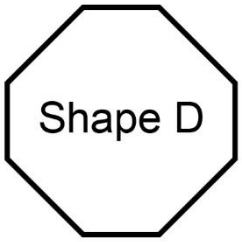
Measurement
Unit 1 Line Master 3a

What's the Area?





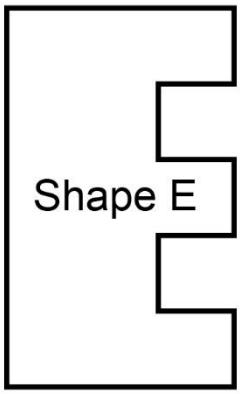


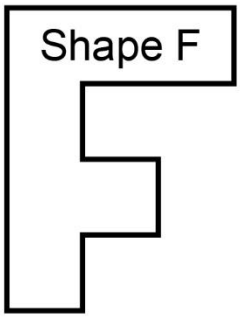


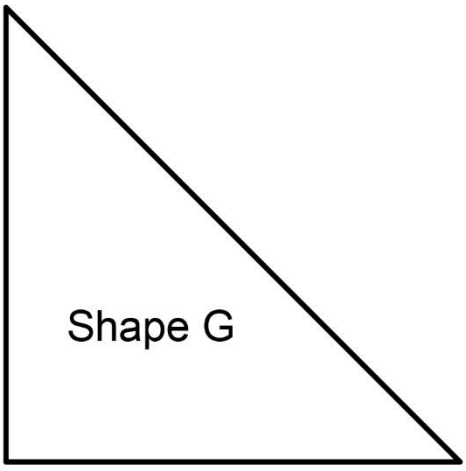
Name_____ Date_____

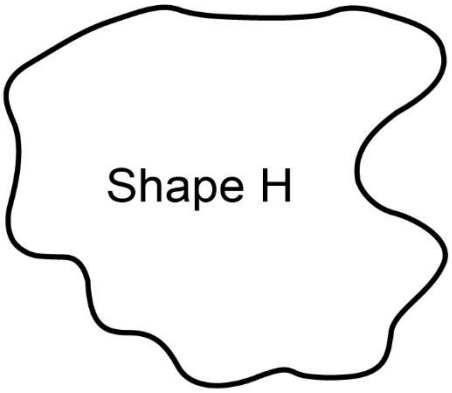
Measurement
Unit 1 Line Master 3b

What's the Area? (cont'd)









Name_____ Date_____

Measurement
Unit 1 Line Master 4

What's the Area?

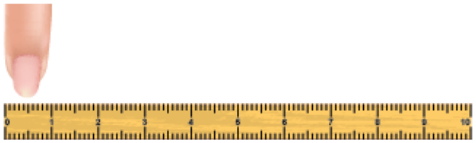
Recording Sheet

Shape	Estimated Area (cm^2)	Measured Area (cm^2)
A		
B		
C		
D		
E		
F		
G		
H		

Measurement

Activity 1 Assessment

Estimating and Measuring in Millimetres

Investigating Length		
Identifies which metric unit should be used to measure the length of an object. "I would measure the length I walk everyday using kilometres and the length of a pencil using centimetres."	Uses benchmarks to estimate length using metric units, then measures to check.  1 cm "A finger width is about 1 cm. I estimated that a new pencil is about 18 cm long. The pencil measured 19 cm."	Chooses an appropriate metric unit to estimate and measure the length of objects and explains reasoning. "I would use metres to measure the height of the door because I know the height of the door is longer than its width, which is about 1 metre."
Observations/Documentation		

Activity 1 Assessment

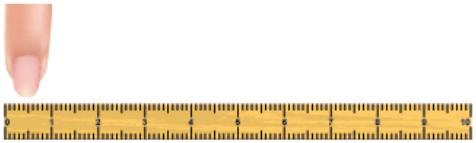
Estimating and Measuring in Millimetres

Investigating Length (cont'd)		
Explains the relationships among millimetres, centimetres, metres, and kilometres and converts between units. "I know that 1 dm = 10 cm. So, if my arm is 6 dm long, then I know that my arm is also 60 cm and 0.6 m long."	Compares and orders objects by length when measures are given in different units.  *h* = 5 cm *h* = 12 mm *h* = 0.64 m "I converted the height of each object to centimetres: 12 ÷ 10 = 1.2 and 0.64 × 100 = 64. The order from tallest to shortest is: number cube (1.2 cm), domino (5 cm), table (64 cm)."	Flexibly solves problems in various contexts where measures of length are given in different units. A person must be at least 137 cm tall to go on a ride. Jamal is 1.4 m tall. Would Jamal be allowed on the ride? "I know there are 100 cm in 1 m, so 1.4 m = 100 cm + 40 cm, or 140 cm. Since 140 cm > 137 cm, Jamal can go on the ride."
Observations/Documentation		

Measurement

Activity 2 Assessment

Measuring Length in Different Units

Investigating Length		
Identifies which metric unit should be used to measure the length of an object. "I would measure the length I walk everyday using kilometres and the length of a pencil using centimetres."	Uses benchmarks to estimate length using metric units, then measures to check.  1 cm "A finger width is about 1 cm. I estimated that a new pencil is about 18 cm long. The pencil measured 19 cm."	Chooses an appropriate metric unit to estimate and measure the length of objects and explains reasoning. "I would use metres to measure the height of the door because I know the height of the door is longer than its width, which is about 1 metre."
Observations/Documentation		

Activity 2 Assessment

Measuring Length in Different Units

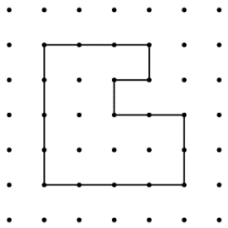
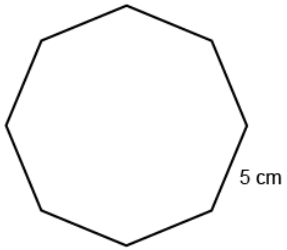
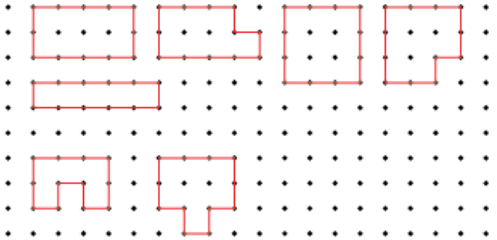
Investigating Length (cont'd)		
Explains the relationships among millimetres, centimetres, metres, and kilometres and converts between units. "I know that 1 dm = 10 cm. So, if my arm is 6 dm long, then I know that my arm is also 60 cm and 0.6 m long."	Compares and orders objects by length when measures are given in different units.  *h* = 5 cm *h* = 12 mm *h* = 0.64 m "I converted the height of each object to centimetres: 12 ÷ 10 = 1.2 and 0.64 × 100 = 64. The order from tallest to shortest is: number cube (1.2 cm), domino (5 cm), table (64 cm)."	Flexibly solves problems in various contexts where measures of length are given in different units. A person must be at least 137 cm tall to go on a ride. Jamal is 1.4 m tall. Would Jamal be allowed on the ride? "I know there are 100 cm in 1 m, so 1.4 m = 100 cm + 40 cm, or 140 cm. Since 140 cm > 137 cm, Jamal can go on the ride."
Observations/Documentation		

Measurement

Activity 3 Assessment

Measuring the Perimeter of Polygons

Investigating Perimeter

Uses standard units to measure the perimeter of irregular polygons by adding the lengths of its sides	Uses standard units to calculate the perimeter of regular polygons.	Constructs different polygons for a given perimeter.
	 Regular Octagon	Perimeter = 12 cm 
”The polygon is on 1-cm dot paper. I added the lengths of the sides: 3 cm + 4 cm + 4 cm + 2 cm + 2 cm + 1 cm + 1 cm + 1 cm = 18 cm; The perimeter of the shape is 18 cm.”	“In a regular octagon, all sides are the same length. To find the perimeter, I multiply the length of one side by the number of sides: 5 cm × 8= 40 cm. The perimeter is 40 cm.”	“I created these irregular and regular polygons, each with perimeter 12 cm. With irregular polygons, I added all the side lengths to check. The square is a regular polygon, so I multiplied the length of one side by 4.”

Observations/Documentation

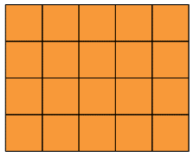
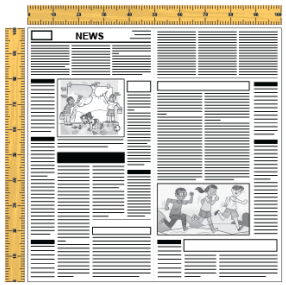
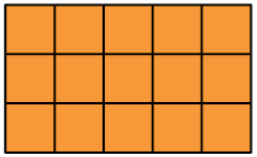
Activity 3 Assessment
Measuring the Perimeter of Polygons

Investigating Perimeter (cont'd)		
Chooses an appropriate metric unit to estimate and measure perimeter of objects and explains reasoning. "I used metres to measure the perimeter of the carpet because the carpet is longer and wider than the width of a door. Length: 3 m, Width: 2.5 m. Perimeter: 3 m + 2.5 m + 3 m + 2.5 m = 11 m."	Understands the relationships among standard units of length and justifies when an exact measure of perimeter is needed.  How much trim is needed to go around the door? "An exact measure is needed so that the trim fits without gaps or overlaps. I would use metres and centimetres. Height: 2 m 54 cm, Width: 1 m 6 cm Perimeter: 2 m 54 cm + 2 m 54 cm + 1 m 6 cm + 1 m 6 cm = 6 m 120 cm, or 7 m 20 cm."	Fluently solves problems in various contexts involving the perimeter of irregular and regular polygons. Rashad wants to build a fence to make a rectangular pen for the rabbits using 24 m of fencing, in 1-m lengths. Which dimensions would you choose for the pen? "The sum of a length and a width is one-half of 24 m, or 12 m. The possible dimensions are: 1 m by 11 m; 2 m by 10 m; 3 m by 9 cm; 4 m and 8 m; 5 m by 7 m; 6 m by 6 m. I would choose 6 m by 6 m to make a square pen that would fit in my backyard."
Observations/Documentation		

Measurement

Activity 4 Assessment

Estimating and Measuring Area in Square Metres

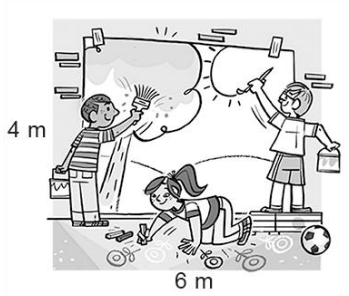
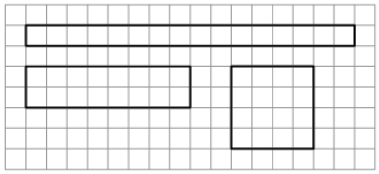
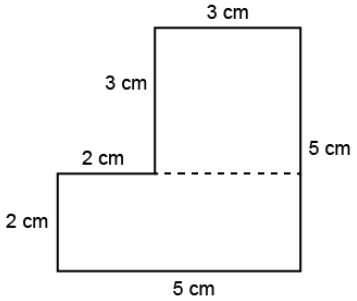
Estimating and Investigating Area			
Recognizes that area is measured using square units.  "I covered the rectangle with square tiles and determined the area to be 20 square units."	Uses referents to estimate area of regular and irregular shapes, then measures to check.  "I chose a square piece of newspaper as a referent for 1 m^2. I used the referent to estimate and measure the area of the blackboard. I estimated the area to be 25 m^2 and it was actually 32 m^2."	Determines area by counting squares, using square metres and/or square centimetres.  "On the grid, each square represents 1 square centimetre. There are 15 squares, so the area of the rectangle is 15 cm^2."	Determines the area of regular shapes by counting whole and half squares.  "I counted squares on the 1-cm grid: 12 whole squares and 4 half squares, which make 2 whole squares, so the area is 14 cm."
Observations/Documentation			

Measurement

Activity 4 Assessment

Estimating and Measuring Area in Square Metres

Estimating and Investigating Area (cont'd)

Uses row and column structure of an array to determine area of a rectangle.  "I traced the shape on a grid and let each square represent 1 m^2. The rectangle forms an array with 4 rows of 6 squares: 4 × 6 = 24; the area of the mural is 24 m^2."	Constructs different rectangles for a given area (square centimetres or square metres). Area of rectangle = 16 cm^2  "I constructed 3 different rectangles: A square with side length 4 cm: 4 cm × 4 cm = 16 cm^2. A 2-cm by 8-cm rectangle: 2 cm × 8 cm = 16 cm^2 A 1-cm by 16- cm rectangle: 1 cm × 16 cm = 16 cm^2"	Determines the area of irregular shapes by decomposing into known shapes.  "I decomposed the shape into a square with side length 3 cm and a rectangle with length 5 cm and width 2 cm. Area square: A = 3 cm × 3 cm = 9 cm^2 Area rectangle: A = 5 cm × 2 cm = 10 cm^2 Area of shape: A = 9 cm^2 + 10 cm^2 = 19 cm^2"	Flexibly determines the area of regular and irregular shapes and solves problems. A driveway is made from 1 m2 tiles. It is a rectangle with area 75 m2. The driveway is 5 m wide. How long is it? "I know A = l × w, so I solved the equation 75 = l × 5. I know 15 × 5 = 75, so the driveway is 15 m long."

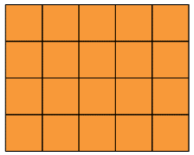
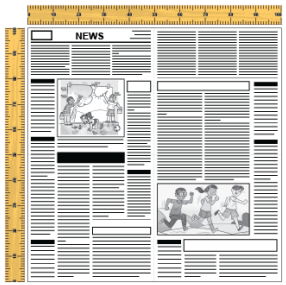
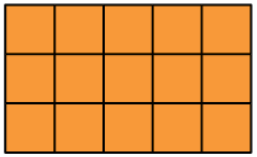
Observations/Documentation

Measurement

Activity 5 Assessment

Estimating and Measuring Area in Square Centimetres

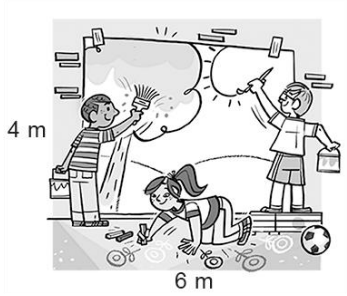
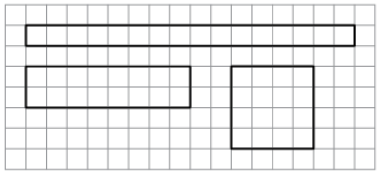
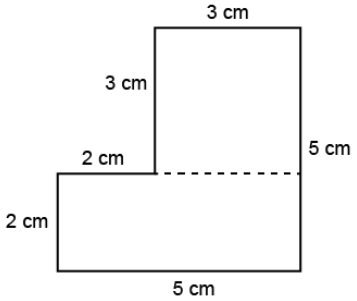
Estimating and Investigating Area

Recognizes that area is measured using square units.  ”I covered the rectangle with square tiles and determined the area to be 20 square units.”	Uses referents to estimate area of regular and irregular shapes, then measures to check.  “I chose a square piece of newspaper as a referent for 1 m^2. I used the referent to estimate and measure the area of the blackboard. I estimated the area to be 25 m^2 and it was actually 32 m^2.”	Determines area by counting squares, using square metres and/or square centimetres.  “On the grid, each square represents 1 square centimetre. There are 15 squares, so the area of the rectangle is 15 cm^2.”	Determines the area of regular shapes by counting whole and half squares.  “I counted squares on the 1-cm grid: 12 whole squares and 4 half squares, which make 2 whole squares, so the area is 14 cm.”
Observations/Documentation			

Activity 5 Assessment

Estimating and Measuring Area in Square Centimetres

Estimating and Investigating Area (cont'd)

Uses row and column structure of an array to determine area of a rectangle.	Constructs different rectangles for a given area (square centimetres or square metres).	Determines the area of irregular shapes by decomposing into known shapes.	Flexibly determines the area of regular and irregular shapes and solves problems.
	Area of rectangle = 16 cm^2 		A driveway is made from 1 m^2 tiles. It is a rectangle with area 75 m^2. The driveway is 5 m wide. How long is it?
"I traced the shape on a grid and let each square represent 1 m^2. The rectangle forms an array with 4 rows of 6 squares: 4 × 6 = 24; the area of the mural is 24 m^2."	"I constructed 3 different rectangles: A square with side length 4 cm: 4 cm × 4 cm = 16 cm^2. A 2-cm by 8-cm rectangle: 2 cm × 8 cm = 16 cm^2 A 1-cm by 16- cm rectangle: 1 cm × 16 cm = 16 cm^2"	"I decomposed the shape into a square with side length 3 cm and a rectangle with length 5 cm and width 2 cm. Area square: A = 3 cm × 3 cm = 9 cm^2 Area rectangle: A = 5 cm × 2 cm = 10 cm^2 Area of shape: A = 9 cm^2 + 10 cm^2 = 19 cm^2"	"I know $A = l \times w$, so I solved the equation 75 = l × 5. I know 15 × 5 = 75, so the driveway is 15 m long."

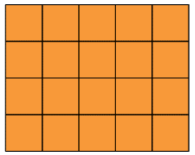
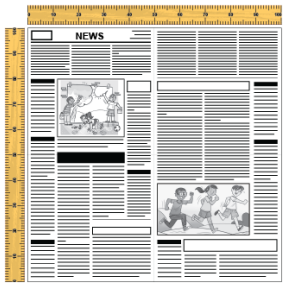
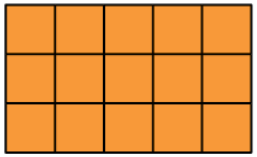
Observations/Documentation

Measurement

Activity 6 Assessment

Exploring the Area of Rectangles

Estimating and Investigating Area

Recognizes that area is measured using square units.	Uses referents to estimate area of regular and irregular shapes, then measures to check.	Determines area by counting squares, using square metres and/or square centimetres.	Determines the area of regular shapes by counting whole and half squares.
			
”I covered the rectangle with square tiles and determined the area to be 20 square units.”	“I chose a square piece of newspaper as a referent for 1 m^2. I used the referent to estimate and measure the area of the blackboard. I estimated the area to be 25 m^2 and it was actually 32 m^2.”	“On the grid, each square represents 1 square centimetre. There are 15 squares, so the area of the rectangle is 15 cm^2.”	“I counted squares on the 1-cm grid: 12 whole squares and 4 half squares, which make 2 whole squares, so the area is 14 cm.”

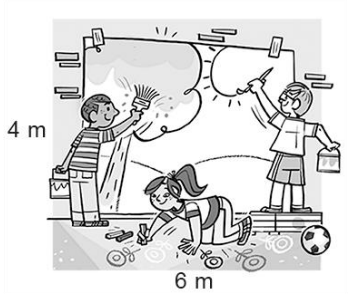
Observations/Documentation

Measurement

Activity 6 Assessment
Exploring the Area of Rectangles

Estimating and Investigating Area (cont'd)

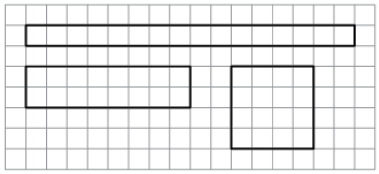
Uses row and column structure of an array to determine area of a rectangle.



"I traced the shape on a grid and let each square represent 1 m^2. The rectangle forms an array with 4 rows of 6 squares: 4 × 6 = 24; the area of the mural is 24 m^2."

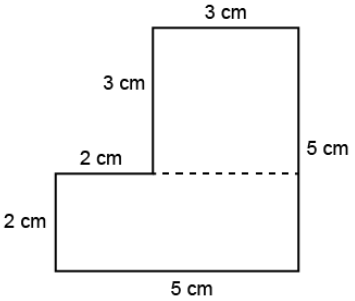
Constructs different rectangles for a given area (square centimetres or square metres).

Area of rectangle = 16 cm^2



"I constructed 3 different rectangles:
A square with side length 4 cm:
4 cm × 4 cm = 16 cm^2.
A 2-cm by 8-cm rectangle:
2 cm × 8 cm = 16 cm^2
A 1-cm by 16- cm rectangle:
1 cm × 16 cm = 16 cm^2"

Determines the area of irregular shapes by decomposing into known shapes.



"I decomposed the shape into a square with side length 3 cm and a rectangle with length 5 cm and width 2 cm.
Area square:
A = 3 cm × 3 cm = 9 cm^2
Area rectangle:
A = 5 cm × 2 cm = 10 cm^2
Area of shape:
A = 9 cm^2 + 10 cm^2 = 19 cm^2"

Flexibly determines the area of regular and irregular shapes and solves problems.

A driveway is made from 1 m^2 tiles. It is a rectangle with area 75 m^2. The driveway is 5 m wide. How long is it?

"I know $A = l \times w$, so I solved the equation $75 = l \times 5$. I know $15 \times 5 = 75$, so the driveway is 15 m long."

Observations/Documentation

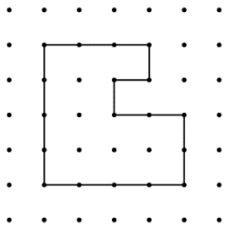
Measurement

Activity 7 Assessment

Length, Perimeter, and Area Consolidation

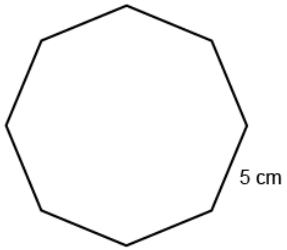
Investigating Perimeter

Uses standard units to measure the perimeter of irregular polygons by adding the lengths of its sides



”The polygon is on 1-cm dot paper. I added the lengths of the sides: 3 cm + 4 cm + 4 cm + 2 cm + 2 cm + 1 cm + 1 cm + 1 cm = 18 cm; The perimeter of the shape is 18 cm.”

Uses standard units to calculate the perimeter of regular polygons.

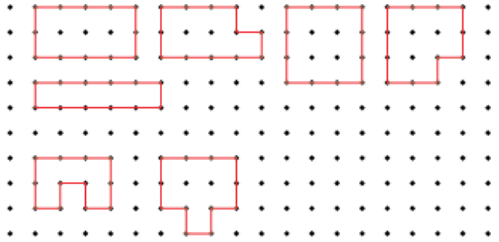


Regular Octagon

“In a regular octagon, all sides are the same length. To find the perimeter, I multiply the length of one side by the number of sides: 5 cm × 8= 40 cm. The perimeter is 40 cm.”

Constructs different polygons for a given perimeter.

Perimeter = 12 cm



“I created these irregular and regular polygons, each with perimeter 12 cm. With irregular polygons, I added all the side lengths to check. The square is a regular polygon, so I multiplied the length of one side by 4.”

Observations/Documentation

Activity 7 Assessment

Length, Perimeter, and Area Consolidation

Investigating Perimeter (cont'd)

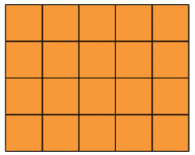
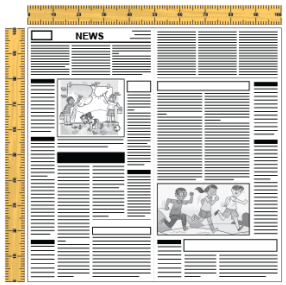
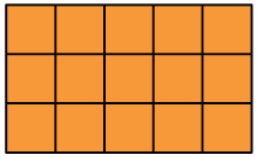
Chooses an appropriate metric unit to estimate and measure perimeter of objects and explains reasoning. "I used metres to measure the perimeter of the carpet because the carpet is longer and wider than the width of a door. Length: 3 m, Width: 2.5 m. Perimeter: 3 m + 2.5 m + 3 m + 2.5 m = 11 m."	Understands the relationships among standard units of length and justifies when an exact measure of perimeter is needed.  How much trim is needed to go around the door? "An exact measure is needed so that the trim fits without gaps or overlaps. I would use metres and centimetres. Height: 2 m 54 cm, Width: 1 m 6 cm Perimeter: 2 m 54 cm + 2 m 54 cm + 1 m 6 cm + 1 m 6 cm = 6 m 120 cm, or 7 m 20 cm."	Fluently solves problems in various contexts involving the perimeter of irregular and regular polygons. Rashad wants to build a fence to make a rectangular pen for the rabbits using 24 m of fencing, in 1-m lengths. Which dimensions would you choose for the pen? "The sum of a length and a width is one-half of 24 m, or 12 m. The possible dimensions are: 1 m by 11 m; 2 m by 10 m; 3 m by 9 cm; 4 m and 8 m; 5 m by 7 m; 6 m by 6 m. I would choose 6 m by 6 m to make a square pen that would fit in my backyard."

Observations/Documentation

Measurement

Activity 7 Assessment

Length, Perimeter, and Area Consolidation

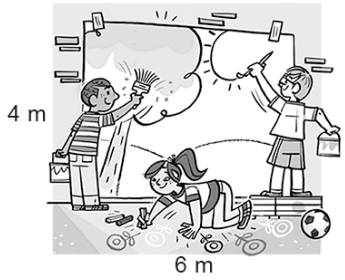
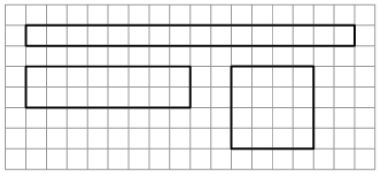
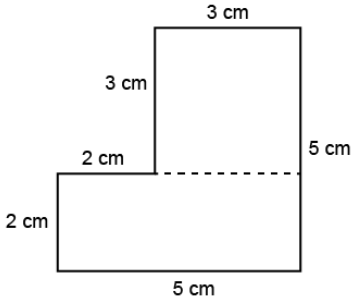
Estimating and Investigating Area			
Recognizes that area is measured using square units.  "I covered the rectangle with square tiles and determined the area to be 20 square units."	Uses referents to estimate area of regular and irregular shapes, then measures to check.  "I chose a square piece of newspaper as a referent for 1 m^2. I used the referent to estimate and measure the area of the blackboard. I estimated the area to be 25 m^2 and it was actually 32 m^2."	Determines area by counting squares, using square metres and/or square centimetres.  "On the grid, each square represents 1 square centimetre. There are 15 squares, so the area of the rectangle is 15 cm^2."	Determines the area of regular shapes by counting whole and half squares.  "I counted squares on the 1-cm grid: 12 whole squares and 4 half squares, which make 2 whole squares, so the area is 14 cm."
Observations/Documentation			

Measurement

Activity 7 Assessment

Length, Perimeter, and Area Consolidation

Estimating and Investigating Area (cont'd)

Uses row and column structure of an array to determine area of a rectangle.  "I traced the shape on a grid and let each square represent 1 m^2. The rectangle forms an array with 4 rows of 6 squares: 4 × 6 = 24; the area of the mural is 24 m^2."	Constructs different rectangles for a given area (square centimetres or square metres). Area of rectangle = 16 cm^2  "I constructed 3 different rectangles: A square with side length 4 cm: 4 cm × 4 cm = 16 cm^2. A 2-cm by 8-cm rectangle: 2 cm × 8 cm = 16 cm^2 A 1-cm by 16- cm rectangle: 1 cm × 16 cm = 16 cm^2"	Determines the area of irregular shapes by decomposing into known shapes.  "I decomposed the shape into a square with side length 3 cm and a rectangle with length 5 cm and width 2 cm. Area square: A = 3 cm × 3 cm = 9 cm^2 Area rectangle: A = 5 cm × 2 cm = 10 cm^2 Area of shape: A = 9 cm^2 + 10 cm^2 = 19 cm^2"	Flexibly determines the area of regular and irregular shapes and solves problems. A driveway is made from 1 m2 tiles. It is a rectangle with area 75 m2. The driveway is 5 m wide. How long is it? "I know A = l × w, so I solved the equation 75 = l × 5. I know 15 × 5 = 75, so the driveway is 15 m long."

Observations/Documentation

Name_____ Date_____

Measurement
Unit 2 Line Master 1

Over or Under Mass

Recording Sheet

Referent Mass	Object	Over or Under	Estimate	Actual Mass	Difference
1 g					
25 g					
50 g					
100 g					
500 g					
1 kg					
5 kg					
10 kg					

List two or three relationships among the masses of the different objects you measured.

Name_____ Date_____

Measurement
Unit 2 Line Master 2

Over or Under Capacity

Recording Sheet

Referent Capacity	Object	Over or Under	Estimate	Actual Capacity	Difference
5 mL					
15 mL					
200 mL					
350 mL					
1 L					
2 L					
5 mL					
15 mL					

List two or three relationships among the capacities of the different objects you measured.

Name_____ Date_____

Measurement
Unit 2 Line Master 3

Name It Another Way

Item	Mass or Capacity	Measure Using a Different Prefix

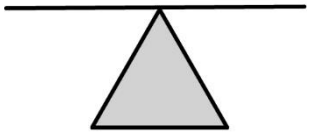
Larger capacity: _____ Smaller capacity: _____
How many of the smaller item would equal the capacity of the larger item?

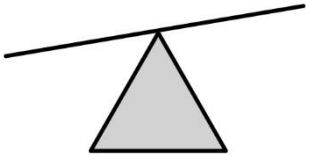
Larger mass: _____ Smaller mass: _____
How many of the smaller item would equal the mass of the larger item?

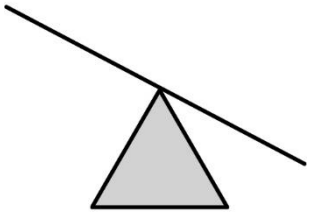
Name_____ Date_____

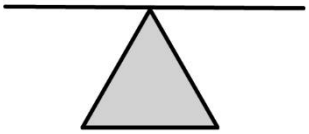
Measurement
Unit 2 Line Master 4

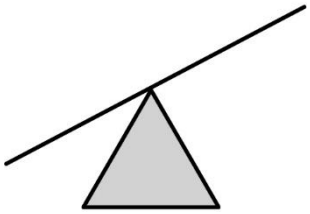
Balance Scales

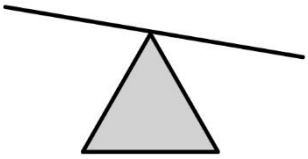








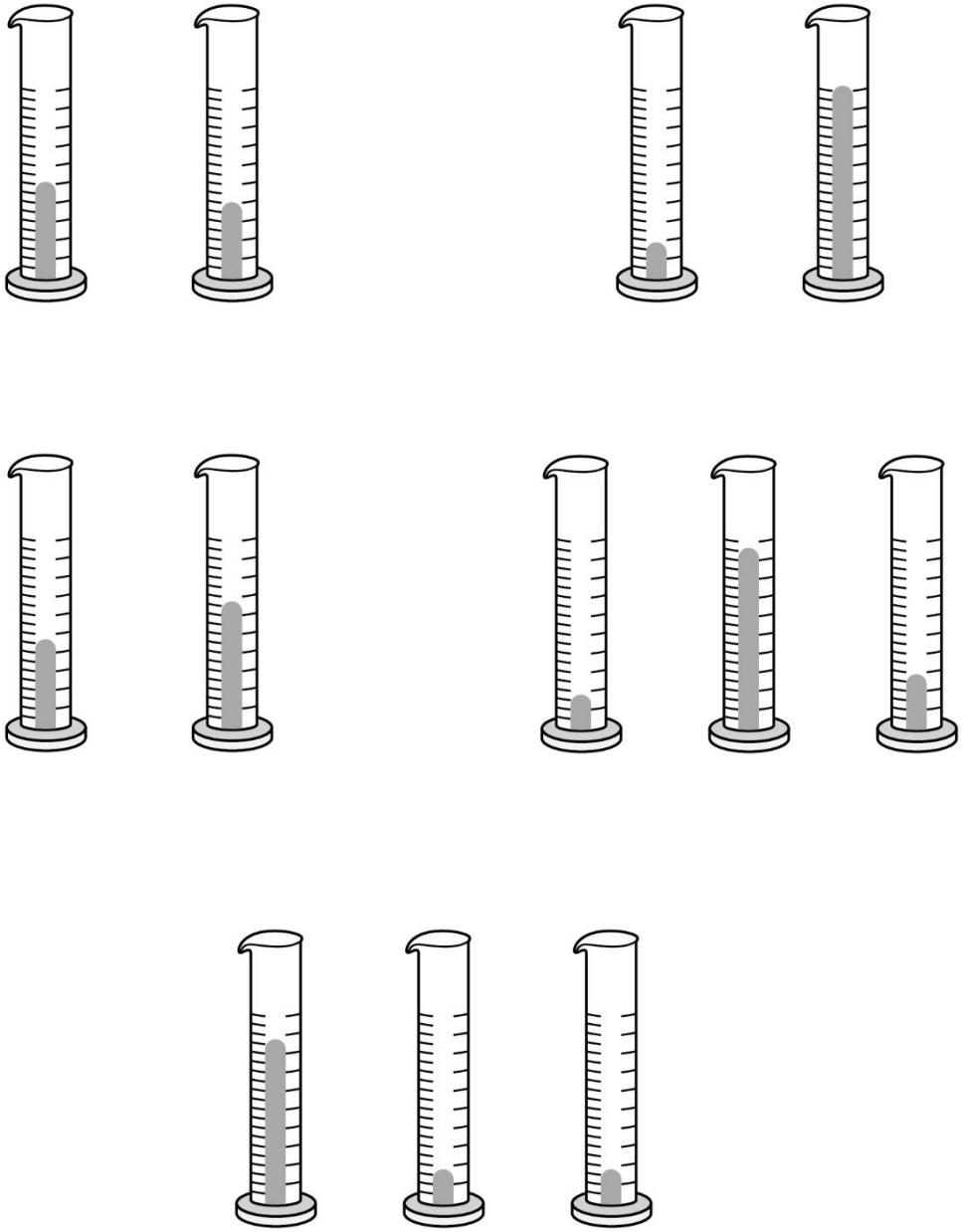




Name_____ Date_____

Measurement
Unit 2 Line Master 5

Graduated Cylinders



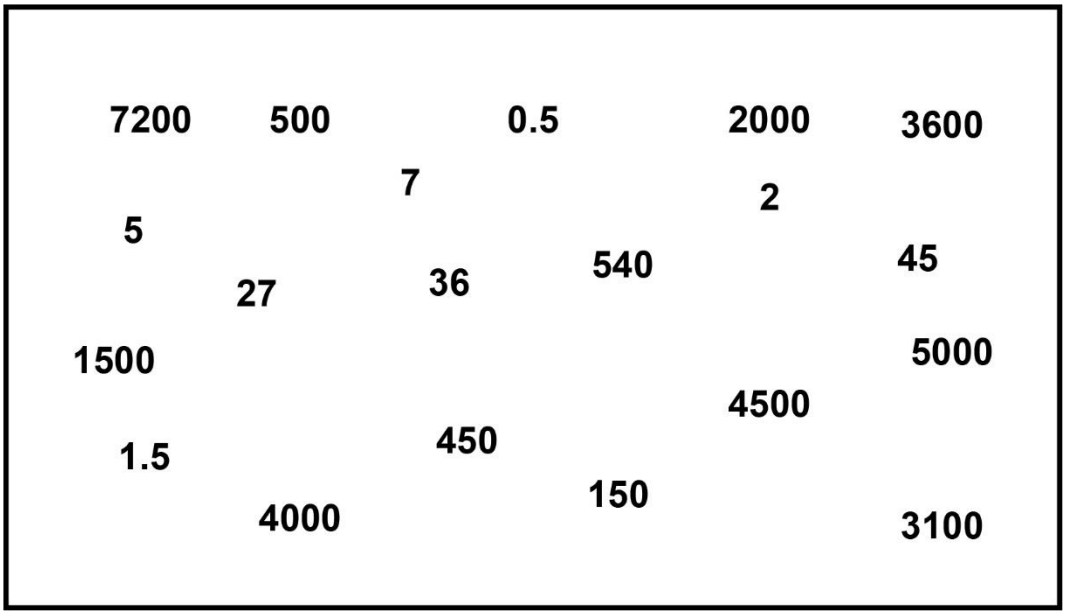
Name_____ Date_____

Measurement
Unit 2 Line Master 6

Our Measures

Assign units to the values as required:

grams, kilograms, millilitres, litres



Measurement

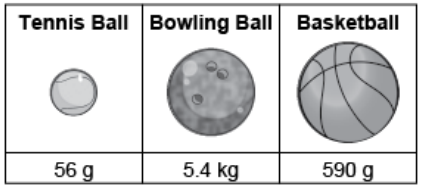
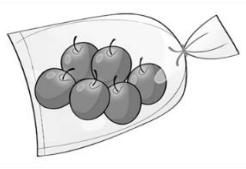
Activity 8 Assessment

Investigating Mass

Investigating Mass		
Identifies which metric unit should be used to measure the mass of an object.  "I would use grams to measure the mass of the chipmunk and kilograms to measure the mass of the German Shephard."	Uses benchmarks to estimate mass using metric units.  "A paperclip is about 1 g. I estimated that a pencil is about 6 grams. When I used a balance scale, it took about 6 paper clips to balance the pencil."	Chooses an appropriate metric unit to estimate and measure mass of objects and explains reasoning.  "I would use kilograms to measure the mass of the tire because I know that a tire would weigh about the same as a 10 kg bag of potatoes."
Observations/Documentation		

Activity 8 Assessment
Investigating Mass

Investigating Mass (cont'd)

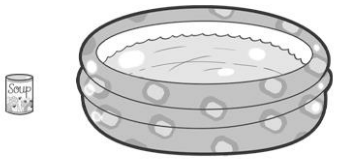
Explains the relationship between grams and kilograms and converts between units of measure.  **Cat A has a mass of 2.3 kg.**  **Cat B has a mass of 2200 g.** "I know 1000 g = 1 kg and 2.3 kg = 1000 g × 2.3, or 2300 g. Since 2300 g > 2200 g, Cat A has the greater mass."	Compares and orders objects with masses given in different units.  "I converted the mass of the bowling ball to grams: 1 kg = 1000 g and 5.4 kg = 5.4 × 1000 g = 5400 g. The order from least to greatest mass is tennis ball, basketball, bowling ball."	Flexibly solves problems in various contexts where measures of mass are given in different units. There are 6 apples in a bag. The mass of the bag of apples is 1 kg. About how much is the mass of 1 apple?  "The bag of apples is 1000 g; 6 × 150 = 900 and 6 × 15 = 90, which totals about 1000. The mass of each apple is about 150 g + 15 g = 165 g."

Observations/Documentation

Measurement

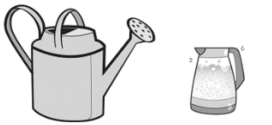
Activity 9 Assessment

Investigating Capacity

Investigating Capacity		
Identifies which metric unit should be used to measure the capacity of an object.  "I would use millilitres to measure the capacity of the can of soup and litres to measure the capacity of the swimming pool."	Uses benchmarks to estimate capacity using metric units.  200 mL "I would estimate that it would take about 5 juice boxes to fill the jug, so the jug has a capacity of about 1 L because 5 × 200 mL = 1000 mL = 1 L."	Chooses an appropriate metric unit to estimate and measure capacity of objects and explains reasoning.  "I would use litres to measure the capacity of the sink because I know that the sink has a capacity much greater than that of a 1-L carton of milk."
Observations/Documentation		

Activity 9 Assessment
Investigating Capacity

Investigating Capacity (cont'd)

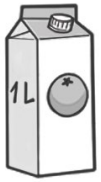
Explains the relationship between millilitres and litres and converts between units of measure.  8.2 L 2550 mL "I know 1000 mL = 1 L and 8.2 L = 1000 mL × 8.2, or 8200 mL. Since 8200 mL > 2550 mL, the watering can has the greater capacity."	Compares and orders objects with capacities given in different units.  2550 mL 1.2 L 1 L "I converted the capacity of the kettle to litres: 1 L = 1000 mL and 2550 mL = 2550 ÷ 1000 = 2.55 L. The order from least to greatest capacity is juice boxes, fishbowl, kettle."	Flexibly solves problems in various contexts where measures of capacity are given in different units. How many 250 mL cups of water will it take to fill a 2.75 L jug? "I know 4 × 250 mL = 1000 mL; 8 × 250 mL = 2000 mL, and 250 mL × 3 = 750 mL; 2000 mL + 750 mL = 2750 mL; 8 + 3 = 11; It would take eleven 250 mL cups to fill the 2.75- L jug."

Observations/Documentation

Measurement

Activity 10 Assessment

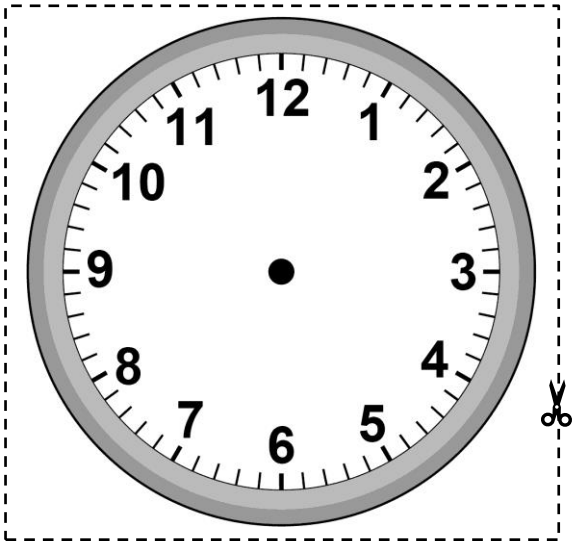
Exploring Metric Prefixes

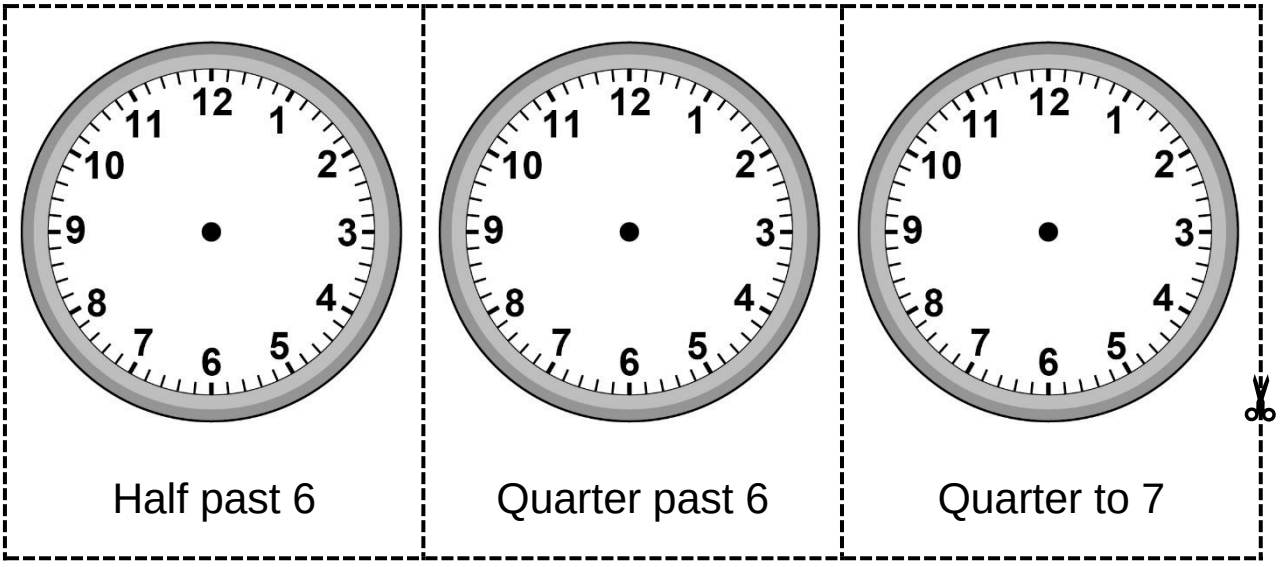
Understanding Relationships Among Metric Units			
Understands the relationship between grams and kilograms and millilitres and litres.  "A 1- L carton of juice holds 1000 mL."	Understands the relationships among metric units and uses them to convert between units.  5.4 kg = ? g "I know that 1 kg = 1000 g. 1000 g + 1000 g + 1000 g + 1000 g + 1000 g = 5000 g, and 0.4 kg = 400 g: 5000 g + 400 g = 5400 g. The pumpkin's mass is 5400 g."	Applies the multiplicative relationships among metric units to convert between units. Mika's cousin weighed 4.13 kg at birth. How many decigrams did Mika's cousin weigh? "To convert kilograms to decigrams, multiply by 10 000: 4.13 × 10 000 = 41 300. Mika's cousin weighed 41 300 dg."	Flexibly and fluently uses the relationships among metric units to solve problems. How many 325-mL containers could be filled from a 1-L bottle of mustard? "I know that 325 × 3 = 975; 975 is close to 1000; 1 L = 1000 mL: 1000 mL - 975 mL = 25 mL. Three 325-mL containers could be filled and there would be 25 mL left over."
Observations/Documentation			

Name_____ Date_____

Measurement
Unit 3 Line Master 1

Clock Faces





Name_____ Date_____

Measurement
Unit 3 Line Master 2

Telling Time

A

The time is _____.

B

The time is _____.

C

The time is _____.

D

The time is _____.

E

The time is _____.

F

The time is _____.

Name_____ Date_____

Measurement
Unit 3 Line Master 3

Time Task A

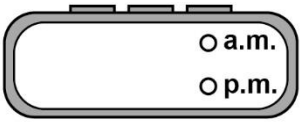
Match each time with a clock, then write the time on a digital clock.

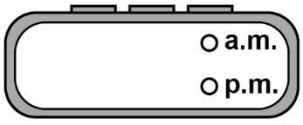
Times

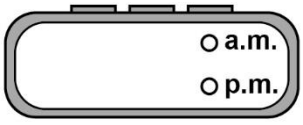
a) two forty-two
b) 34 minutes before 5
c) 10 minutes to 7
d) six fifty
e) 18 minutes to 3
f) 26 minutes past 4

Clocks





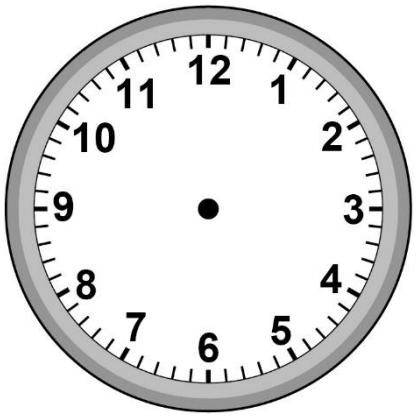




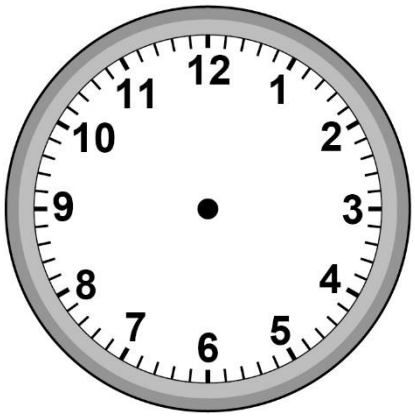
Name_____ Date_____

Measurement
Unit 3 Line Master 4a

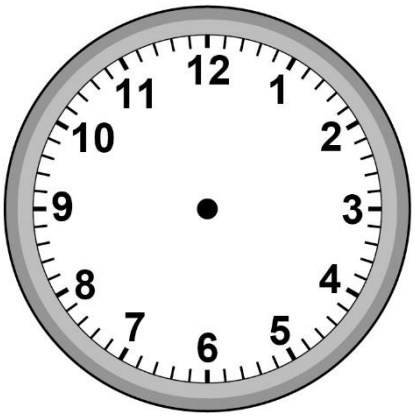
Time Task B



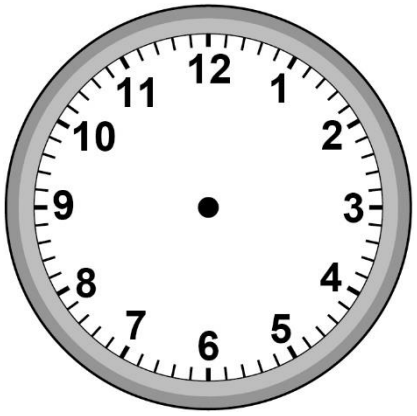
Five past three



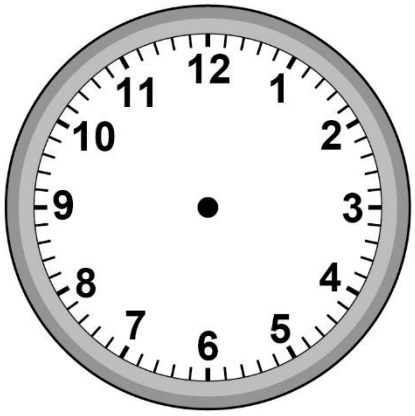
Four thirty-six



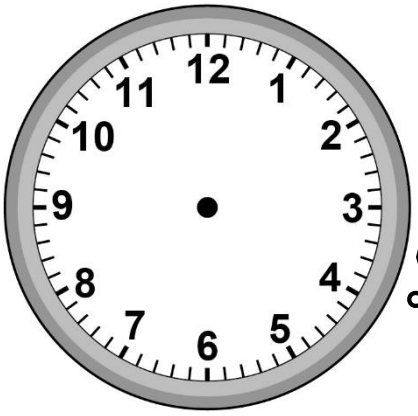
Twelve thirty



Eight minutes to two



Seven fifteen



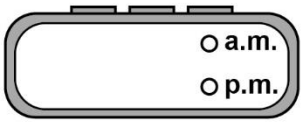
Twenty-five to four

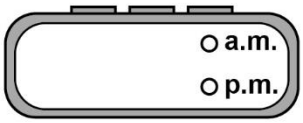
Name_____ Date_____

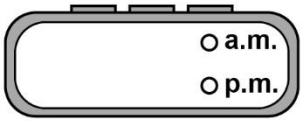
Measurement
Unit 3 Line Master 4b

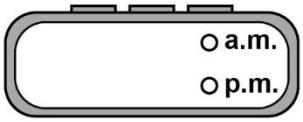
Time Task B (cont'd)

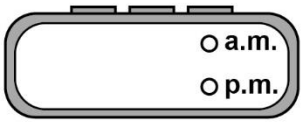
Digital Clocks

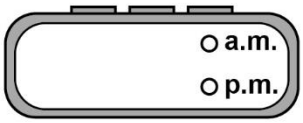










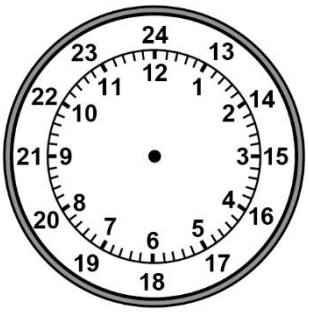


Name_____ Date_____

Measurement
Unit 3 Line Master 5

Schedule My Day

Use the 24-hour clock to make a schedule for one day. Include at least 3 morning activities, 3 afternoon activities, and 3 evening activities.



24-hour time	12-hour time	Activity

Name_____ Date_____

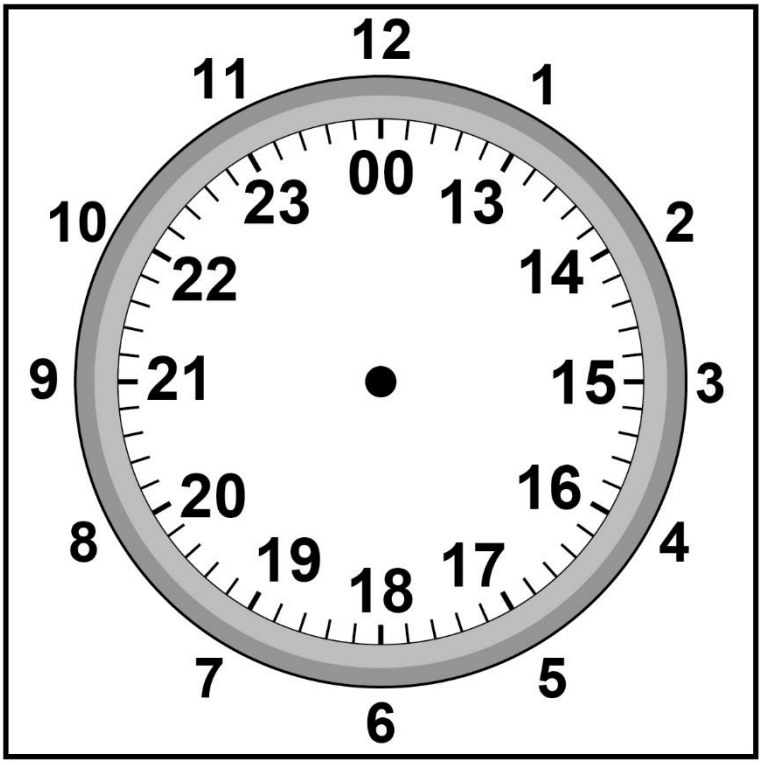
Measurement
Unit 3 Line Master 6

Time Conversion Clock

Use this clock to convert 24-hour times to 12-hour times.

Look at the inside numbers to find the hour of the 24-hour time (for example, 13 of 13:59).

Use the matching outside number as the hour of the 12-hour time and add the same number of minutes (for example, 1 and 59 minutes is 1:59).

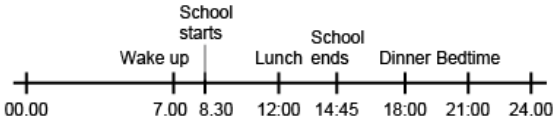


Measurement

Activity 12 Assessment

Exploring Time

Using Measurement of Time

Tells time using fractions.	Tells time using one- and five-minute intervals on analogue and digital clocks.	Tells time using 24-hour clocks.
 "It is quarter to three or two forty-five."	 "Both the analogue and digital clocks read: Seven fifty-eight, or 2 minutes before 8. In 2 minutes, the clocks will read 8:00."	 "I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."

Observations/Documentation

Activity 12 Assessment
Exploring Time

Using Measurement of Time (cont'd)

Solves problems using elapsed time and the relationships among units of time.

Buses leave at 14:15, 14:26, 14:47, and 14:58.
Each trip back takes 1 hour and 11 minutes.
Dara needs to be back by 3:45 p.m.
Which buses can Dara take?

"I converted 3:45 p.m. to 24-hour time by adding 12 hours: 15:45. I added 1 hour and 11 minutes to each departure time to get the arrival time: 15:26, 15:37, 15:58, 16:09. Two of the buses arrive before 15:45. So, Dara can take the 14:15 or 14:26 bus."

Reads and records calendar dates in different formats.

September						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 Labour Day	3 Back to School	4	5 Drop-in badminton	6 Movie Night 6:30 p.m.	7 Lunch with dad 12:00 p.m.
8 Family Dinner 5:30 p.m.	9	10	11 Picture Day	12 Drop-in badminton	13	14
15	16 Dance class 5 p.m.	17 Project Due All About Me	18	19 No badminton	20 Book Club at lunch	21 Aunt Jen's birthday
22	23 Dance class 5 p.m.	24 Study for Math Quiz	25 Math Quiz	26 Drop-in badminton	27	28 Nature Walk (all day)
29	30 National Day for Truth and Reconciliation					

"The National Day for Truth and Reconciliation is on September 30, 2024.
That date could also be recorded as: 09/30/2024, 2024/09/30, or 30/09/2024."

Flexibly solves problems involving time using various strategies and the relationships among units.

Over a week, Axel got 56 h of sleep, Sadie got 3000 min of sleep, and Piper got $2\frac{1}{2}$ days of sleep.
Who got the most sleep?

"I converted all the times to hours. Sadie: 60 min = 1 h, and 3000 min ÷ 60 min = 50.
So, 3000 min = 50 h.
Piper: 1 day = 24 h, 2 days = 48 h, and one-half of a day is 24 h ÷ 2 = 12 h.
So, $2\frac{1}{2}$ days = 48 h + 12 h = 60 h.
60 h > 56 h > 50 h.
Piper got the most sleep."

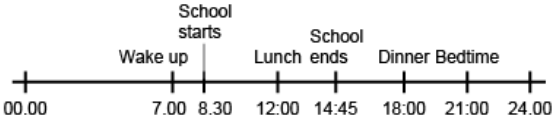
Observations/Documentation

Measurement

Activity 13 Assessment

Telling Time in One- and Five-Minute Intervals

Using Measurement of Time

Tells time using fractions.	Tells time using one- and five-minute intervals on analogue and digital clocks.	Tells time using 24-hour clocks.
		
"It is quarter to three or two forty-five."	"Both the analogue and digital clocks read: Seven fifty-eight, or 2 minutes before 8. In 2 minutes, the clocks will read 8:00."	"I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."

Observations/Documentation

Activity 13 Assessment

Telling Time in One- and Five-Minute Intervals

Using Measurement of Time (cont'd)

Solves problems using elapsed time and the relationships among units of time. Buses leave at 14:15, 14:26, 14:47, and 14:58. Each trip back takes 1 hour and 11 minutes. Dara needs to be back by 3:45 p.m. Which buses can Dara take? "I converted 3:45 p.m. to 24-hour time by adding 12 hours: 15:45. I added 1 hour and 11 minutes to each departure time to get the arrival time: 15:26, 15:37, 15:58, 16:09. Two of the buses arrive before 15:45. So, Dara can take the 14:15 or 14:26 bus."	Reads and records calendar dates in different formats.  "The National Day for Truth and Reconciliation is on September 30, 2024. That date could also be recorded as: 09/30/2024, 2024/09/30, or 30/09/2024."	Flexibly solves problems involving time using various strategies and the relationships among units. Over a week, Axel got 56 h of sleep, Sadie got 3000 min of sleep, and Piper got $2\frac{1}{2}$ days of sleep. Who got the most sleep? "I converted all the times to hours. Sadie: 60 min = 1 h, and 3000 min ÷ 60 min = 50. So, 3000 min = 50 h. Piper: 1 day = 24 h, 2 days = 48 h, and one-half of a day is 24 h ÷ 2 = 12 h. So, $2\frac{1}{2}$ days = 48 h + 12 h = 60 h. 60 h > 56 h > 50 h. Piper got the most sleep."

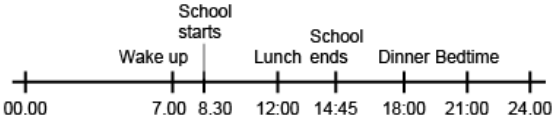
Observations/Documentation

Measurement

Activity 14 Assessment

Telling Time on a 24-Hour Clock

Using Measurement of Time

Tells time using fractions.	Tells time using one- and five-minute intervals on analogue and digital clocks.	Tells time using 24-hour clocks.
		
"It is quarter to three or two forty-five."	"Both the analogue and digital clocks read: Seven fifty-eight, or 2 minutes before 8. In 2 minutes, the clocks will read 8:00."	"I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."

Observations/Documentation

Activity 14 Assessment

Telling Time on a 24-Hour Clock

Using Measurement of Time (cont'd)

Solves problems using elapsed time and the relationships among units of time. Buses leave at 14:15, 14:26, 14:47, and 14:58. Each trip back takes 1 hour and 11 minutes. Dara needs to be back by 3:45 p.m. Which buses can Dara take? "I converted 3:45 p.m. to 24-hour time by adding 12 hours: 15:45. I added 1 hour and 11 minutes to each departure time to get the arrival time: 15:26, 15:37, 15:58, 16:09. Two of the buses arrive before 15:45. So, Dara can take the 14:15 or 14:26 bus."	Reads and records calendar dates in different formats.  "The National Day for Truth and Reconciliation is on September 30, 2024. That date could also be recorded as: 09/30/2024, 2024/09/30, or 30/09/2024."	Flexibly solves problems involving time using various strategies and the relationships among units. Over a week, Axel got 56 h of sleep, Sadie got 3000 min of sleep, and Piper got $2\frac{1}{2}$ days of sleep. Who got the most sleep? "I converted all the times to hours. Sadie: 60 min = 1 h, and 3000 min ÷ 60 min = 50. So, 3000 min = 50 h. Piper: 1 day = 24 h, 2 days = 48 h, and one-half of a day is 24 h ÷ 2 = 12 h. So, $2\frac{1}{2}$ days = 48 h + 12 h = 60 h. 60 h > 56 h > 50 h. Piper got the most sleep."

Observations/Documentation

Measurement

Activity 15 Assessment

Relationships Between Units of Time

Using Measurement of Time

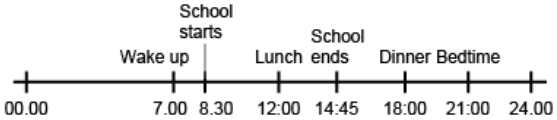
Tells time using fractions.

"It is quarter to three or two forty-five."

Tells time using one- and five-minute intervals on analogue and digital clocks.

"Both the analogue and digital clocks read: Seven fifty-eight, or 2 minutes before 8. In 2 minutes, the clocks will read 8:00."

Tells time using 24-hour clocks.



"I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."

Observations/Documentation

Activity 15 Assessment

Relationships Between Units of Time

Using Measurement of Time (cont'd)

Solves problems using elapsed time and the relationships among units of time. Buses leave at 14:15, 14:26, 14:47, and 14:58. Each trip back takes 1 hour and 11 minutes. Dara needs to be back by 3:45 p.m. Which buses can Dara take? "I converted 3:45 p.m. to 24-hour time by adding 12 hours: 15:45. I added 1 hour and 11 minutes to each departure time to get the arrival time: 15:26, 15:37, 15:58, 16:09. Two of the buses arrive before 15:45. So, Dara can take the 14:15 or 14:26 bus."	Reads and records calendar dates in different formats.  "The National Day for Truth and Reconciliation is on September 30, 2024. That date could also be recorded as: 09/30/2024, 2024/09/30, or 30/09/2024."	Flexibly solves problems involving time using various strategies and the relationships among units. Over a week, Axel got 56 h of sleep, Sadie got 3000 min of sleep, and Piper got $2\frac{1}{2}$ days of sleep. Who got the most sleep? "I converted all the times to hours. Sadie: 60 min = 1 h, and 3000 min ÷ 60 min = 50. So, 3000 min = 50 h. Piper: 1 day = 24 h, 2 days = 48 h, and one-half of a day is 24 h ÷ 2 = 12 h. So, $2\frac{1}{2}$ days = 48 h + 12 h = 60 h. 60 h > 56 h > 50 h. Piper got the most sleep."

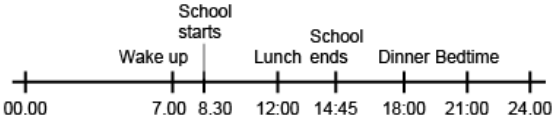
Observations/Documentation

Measurement

Activity 16 Assessment

Exploring Elapsed Time

Using Measurement of Time

Tells time using fractions.	Tells time using one- and five-minute intervals on analogue and digital clocks.	Tells time using 24-hour clocks.
		
"It is quarter to three or two forty-five."	"Both the analogue and digital clocks read: Seven fifty-eight, or 2 minutes before 8. In 2 minutes, the clocks will read 8:00."	"I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."

Observations/Documentation

Activity 16 Assessment
Exploring Elapsed Time

Using Measurement of Time (cont'd)

Solves problems using elapsed time and the relationships among units of time.

Buses leave at 14:15, 14:26, 14:47, and 14:58.
Each trip back takes 1 hour and 11 minutes.
Dara needs to be back by 3:45 p.m.
Which buses can Dara take?

"I converted 3:45 p.m. to 24-hour time by adding 12 hours: 15:45. I added 1 hour and 11 minutes to each departure time to get the arrival time: 15:26, 15:37, 15:58, 16:09. Two of the buses arrive before 15:45. So, Dara can take the 14:15 or 14:26 bus."

Reads and records calendar dates in different formats.

September						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 Labour Day	3 Back to School	4	5 Drop-in badminton	6 Movie Night 6:30 p.m.	7 Lunch with dad 12:00 p.m.
8 Family Dinner 5:30 p.m.	9	10	11 Picture Day	12 Drop-in badminton	13	14
15	16 Dance class 5 p.m.	17 Project Due All About Me	18	19 No badminton	20 Book Club at lunch	21 Aunt Jen's birthday
22	23 Dance class 5 p.m.	24 Study for Math Quiz	25 Math Quiz	26 Drop-in badminton	27	28 Nature Walk (all day)
29	30 National Day for Truth and Reconciliation					

"The National Day for Truth and Reconciliation is on September 30, 2024.
That date could also be recorded as: 09/30/2024, 2024/09/30, or 30/09/2024."

Flexibly solves problems involving time using various strategies and the relationships among units.

Over a week, Axel got 56 h of sleep, Sadie got 3000 min of sleep, and Piper got $2\frac{1}{2}$ days of sleep.
Who got the most sleep?

"I converted all the times to hours. Sadie: 60 min = 1 h, and 3000 min ÷ 60 min = 50.
So, 3000 min = 50 h.
Piper: 1 day = 24 h, 2 days = 48 h, and one-half of a day is 24 h ÷ 2 = 12 h.
So, $2\frac{1}{2}$ days = 48 h + 12 h = 60 h.
60 h > 56 h > 50 h.
Piper got the most sleep."

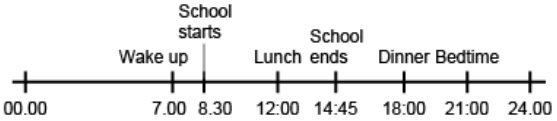
Observations/Documentation

Measurement

Activity 17 Assessment

Exploring Calendar Dates

Using Measurement of Time

Tells time using fractions.	Tells time using one- and five-minute intervals on analogue and digital clocks.	Tells time using 24-hour clocks.
		
"It is quarter to three or two forty-five."	"Both the analogue and digital clocks read: Seven fifty-eight, or 2 minutes before 8. In 2 minutes, the clocks will read 8:00."	"I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."

Observations/Documentation

Activity 17 Assessment
Exploring Calendar Dates

Using Measurement of Time (cont'd)

Solves problems using elapsed time and the relationships among units of time.

Buses leave at 14:15, 14:26, 14:47, and 14:58.
Each trip back takes 1 hour and 11 minutes.
Dara needs to be back by 3:45 p.m.
Which buses can Dara take?

"I converted 3:45 p.m. to 24-hour time by adding 12 hours: 15:45. I added 1 hour and 11 minutes to each departure time to get the arrival time: 15:26, 15:37, 15:58, 16:09. Two of the buses arrive before 15:45. So, Dara can take the 14:15 or 14:26 bus."

Reads and records calendar dates in different formats.

September						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2 Labour Day	3 Back to School	4	5 Drop-in badminton	6 Movie Night 6:30 p.m.	7 Lunch with dad 12:00 p.m.
8 Family Dinner 5:30 p.m.	9	10	11 Picture Day	12 Drop-in badminton	13	14
15	16 Dance class 5 p.m.	17 Project Due All About Me	18	19 No badminton	20 Book Club at lunch	21 Aunt Jen's birthday
22	23 Dance class 5 p.m.	24 Study for Math Quiz	25 Math Quiz	26 Drop-in badminton	27	28 Nature Walk (all day)
29	30 National Day for Truth and Reconciliation					

"The National Day for Truth and Reconciliation is on September 30, 2024.
That date could also be recorded as: 09/30/2024, 2024/09/30, or 30/09/2024."

Flexibly solves problems involving time using various strategies and the relationships among units.

Over a week, Axel got 56 h of sleep, Sadie got 3000 min of sleep, and Piper got $2\frac{1}{2}$ days of sleep.
Who got the most sleep?

"I converted all the times to hours. Sadie: 60 min = 1 h, and 3000 min ÷ 60 min = 50.
So, 3000 min = 50 h.
Piper: 1 day = 24 h, 2 days = 48 h, and one-half of a day is 24 h ÷ 2 = 12 h.
So, $2\frac{1}{2}$ days = 48 h + 12 h = 60 h.
60 h > 56 h > 50 h.
Piper got the most sleep."

Observations/Documentation

Name_____ Date_____

Number
Unit 1 Line Master 1a

Place-Value Chart

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

Name_____ Date_____

Number
Unit 1 Line Master 1b

Place-Value Chart (cont'd)

Ten Thousands	Thousands	Hundreds	Tens	Ones

Ten Thousands	Thousands	Hundreds	Tens	Ones

Ten Thousands	Thousands	Hundreds	Tens	Ones

Name_____ Date_____

Number
Unit 1 Line Master 2a

Place-Value Game Cards

Numerals

4342	6528	1205
1089	1204	8867
9625	2084	3412

Name_____ Date_____

Number
Unit 1 Line Master 2b

Place-Value Game Cards

Expanded Form

4000 + 300 + 40 + 2	6000 + 500 + 20 + 8	1000 + 200 + 5
1000 + 80 + 9	1000 + 200 + 4	8000 + 800 + 60 + 7
9000 + 600 + 20 + 5	2000 + 80 + 4	3000 + 400 + 10 + 2

Name_____ Date_____

Number
Unit 1 Line Master 2c

Place-Value Game Cards

Words

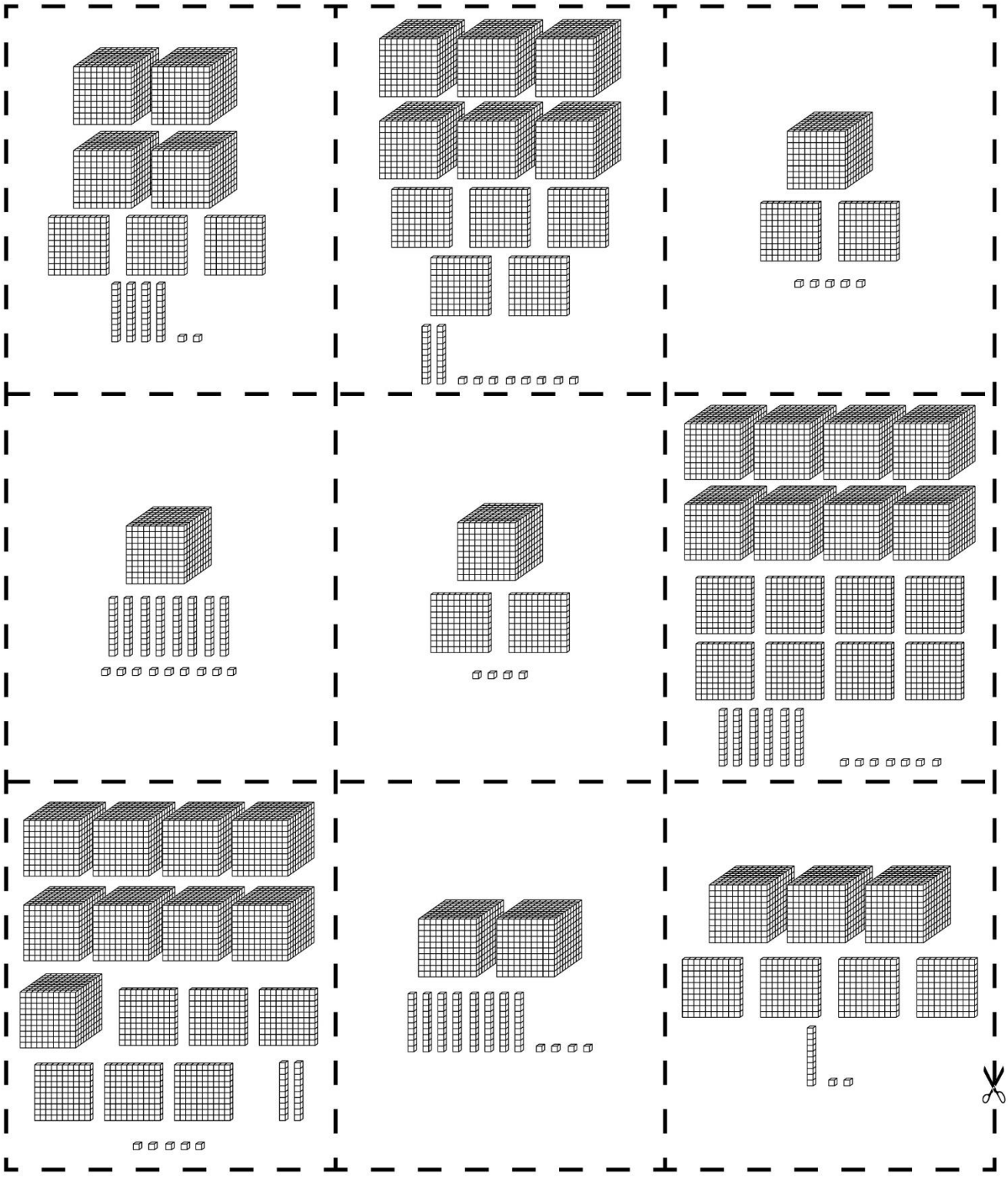
Four thousand three hundred forty-two	Six thousand five hundred twenty-eight	One thousand two hundred five
One thousand eighty-nine	One thousand two hundred four	Eight thousand eight hundred sixty-seven
Nine thousand six hundred twenty-five	Two thousand eighty-four	Three thousand four hundred twelve

Name_____ Date_____

Number
Unit 1 Line Master 2d

Place-Value Game Cards

Base Ten Blocks



Name_____ Date_____

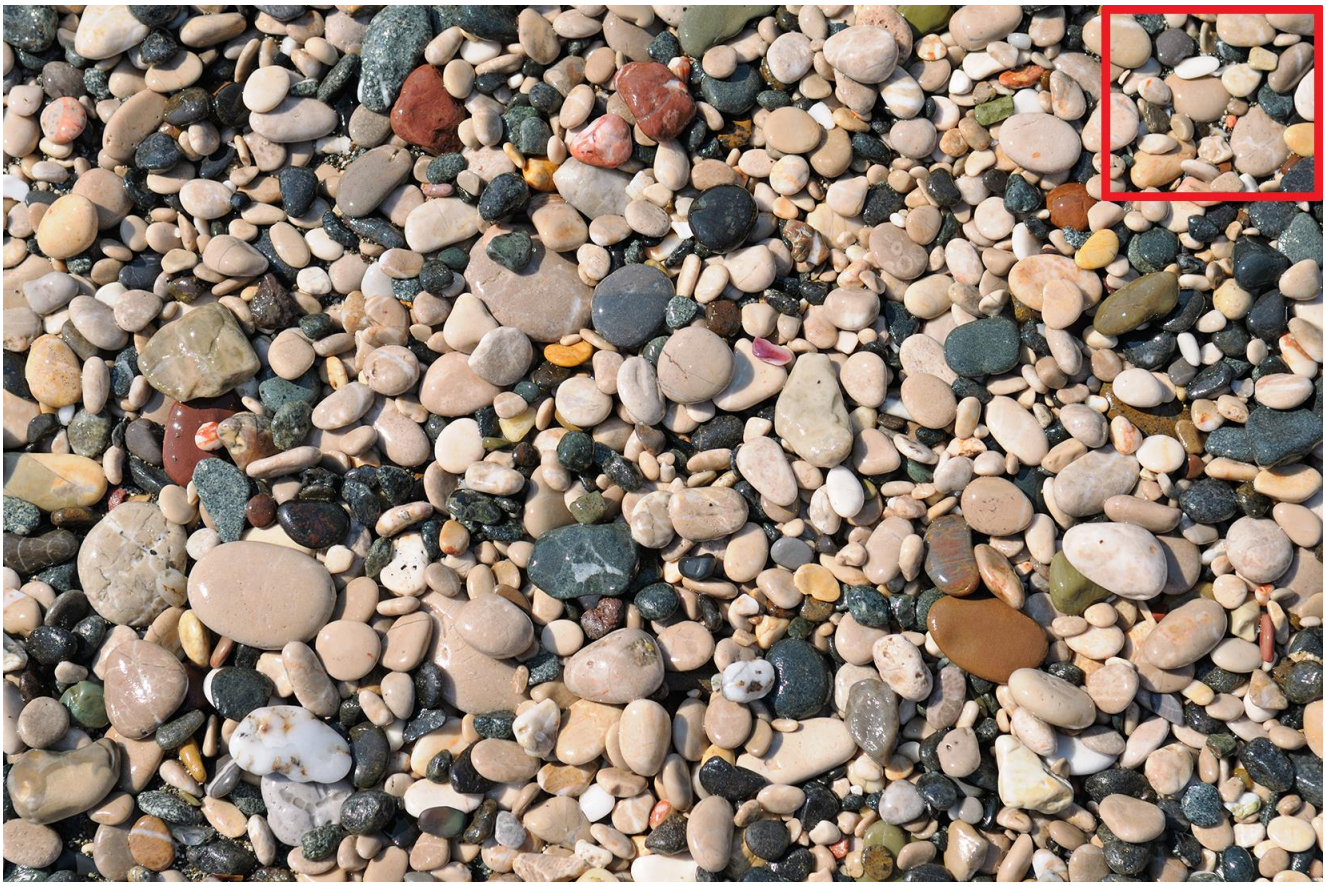
Number
Unit 1 Line Master 3

Open Number Line

Name_____ Date_____

Number
Unit 1 Line Master 4

Pebbles on a Beach



Name_____ Date_____

Number
Unit 1 Line Master 5a

Fill the Card! (ON only)

A number between 2780 and 2899 _____	**A number greater than 6534** _____	**A number less than 3000** _____
A number with 7 in the hundreds place _____	**A number that rounds to 4000** _____	**A number with 2 in the tens place** _____
A number between 1000 and 1999 _____	**A number that has "+ 400" when written in expanded form** _____	**A number that rounds to 2400** _____

A number between 2780 and 2899 _____	**A number greater than 6534** _____	**A number less than 3000** _____
A number with 7 in the hundreds place _____	**A number that rounds to 4000** _____	**A number with 2 in the tens place** _____
A number between 1000 and 1999 _____	**A number that has "+ 400" when written in expanded form** _____	**A number that rounds to 2400** _____

Name_____ Date_____

Number
Unit 1 Line Master 5b

Fill the Card! (not ON)

A number between 2780 and 2899 _____	**A number greater than 6534** _____	**A number less than 3000** _____
A number with 7 in the hundreds place _____	**A number that has "+50" when written in expanded form** _____	**A number with 2 in the tens place** _____
A number between 1000 and 1999 _____	**A number that has "+ 400" when written in expanded form** _____	**A number with 8 in the thousands place** _____

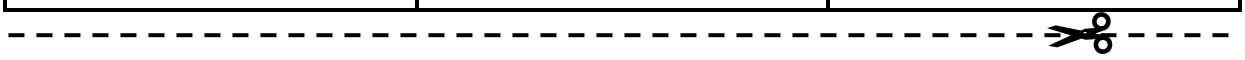
A number between 2780 and 2899 _____	**A number greater than 6534** _____	**A number less than 3000** _____
A number with 7 in the hundreds place _____	**A number that has "+50" when written in expanded form** _____	**A number with 2 in the tens place** _____
A number between 1000 and 1999 _____	**A number that has "+ 400" when written in expanded form** _____	**A number with 8 in the thousands place** _____

Name_____ Date_____

Number
Unit 1 Line Master 5c

Fill the Card! (Make Your Own)

_____	_____	_____
_____	_____	_____
_____	_____	_____



_____	_____	_____
_____	_____	_____
_____	_____	_____

Name_____ Date_____

Number
Unit 1 Line Master 6

Number Cards (0 – 9)

0	1	2	3	4
5	6	7	8	9

Name_____ Date_____

Number
Unit 1 Line Master 7

Fill the Card!

Make Your Own

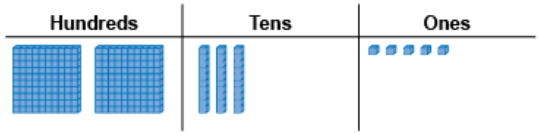
Number

Activity 1 Assessment

Representing Numbers to 10 000

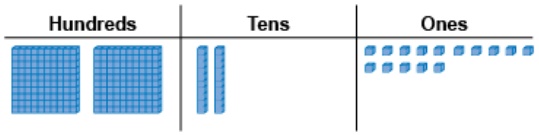
Representing Numbers Using Place Value

Models 3-digit number using Base Ten Blocks (decomposes in one way)



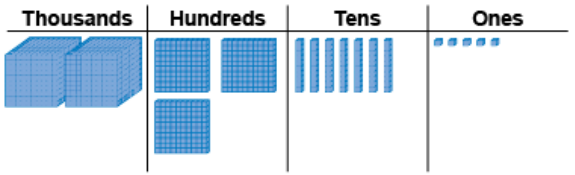
"I modelled 235. I used the digits of the number to tell me how many of each block I needed."

Models 3-digit number (decomposes in more than one way) and records using place-value names



"two hundred thirty-five:
I can also show it as 2 hundreds,
2 tens and 15 ones if I trade 1 ten for 10 ones."

Models 4-digit number using Base Ten Blocks (decomposes in one way)



"I modelled 2375. I used the digits of the number to tell me how many of each block I needed."

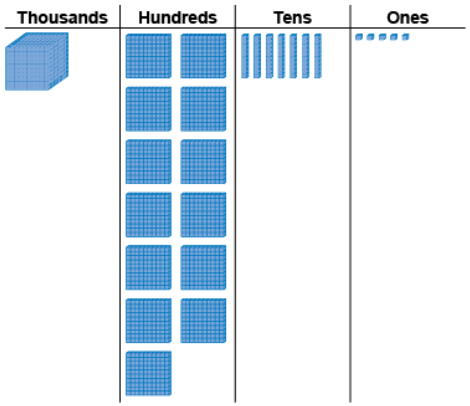
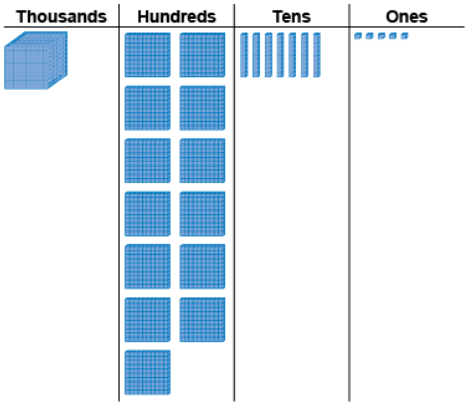
Observations/Documentation

Number

Activity 1 Assessment

Representing Numbers to 10 000

Representing Numbers Using Place Value (cont'd)

Systematically models 4-digit number in more than one way using patterns and place-value relationships	Models 4-digit number in more than one way and records each way in expanded form	Represents numbers flexibly using place-value relationships
 "I traded one thousand cube for 10 hundred flats."	 "2375 = 1000 + 1300 + 70 + 5"	"2375 = 2000 + 300 + 70 + 5 2375 = 2000 + 300 + 60 + 15 2375 = 2000 + 300 + 50 + 25 2 thousands, 3 hundreds, 4 tens, 35 ones

Observations/Documentation

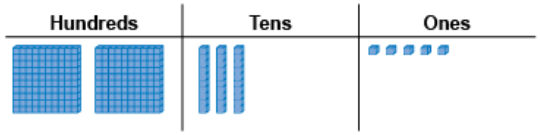
Number

Activity 2 Assessment

Composing and Decomposing Larger Numbers

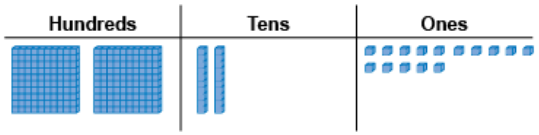
Representing Numbers Using Place Value

Models number using Base Ten Blocks (decomposes in one way)



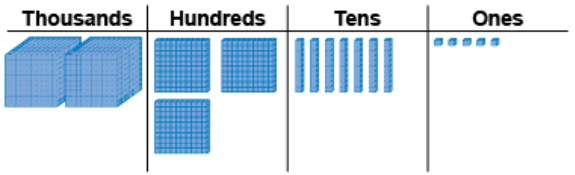
"I modelled 235. I used the digits of the number to tell me how many of each block I needed."

Models 3-digit number (decomposes in more than one way) and records using place-value names



"two hundred thirty-five:
I can also show it as 2 hundreds,
2 tens and 15 ones if I trade 1 ten for 10 ones."

Models 4-digit number using Base Ten Blocks (decomposes in one way)



"I modelled 2375. I used the digits of the number to tell me how many of each block I needed."

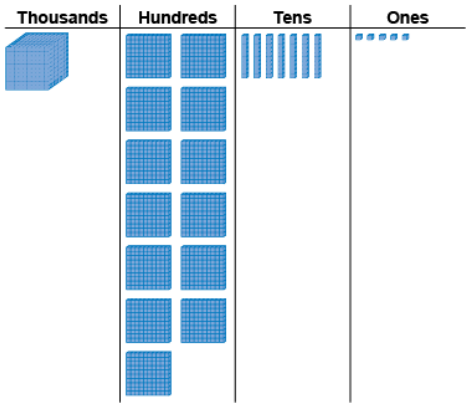
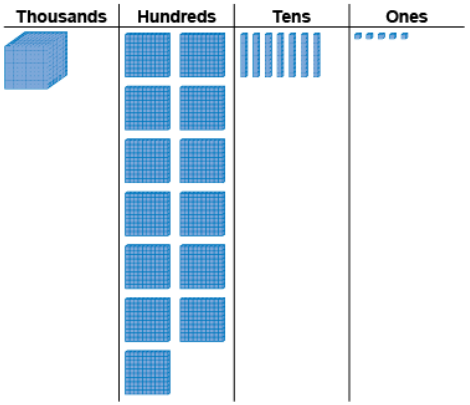
Observations/Documentation

Number

Activity 2 Assessment

Composing and Decomposing Larger Numbers

Representing Numbers Using Place Value (cont'd)

Systematically models 4-digit number in more than one way using patterns and place-value relationships	Models 4-digit number in more than one way and records each way in expanded form	Represents numbers flexibly using place-value relationships
 "I traded one thousand cube for 10 hundred flats."	 "2375 = 1000 + 1300 + 70 + 5"	"2375 = 2000 + 300 + 70 + 5 2375 = 2000 + 300 + 60 + 15 2375 = 2000 + 300 + 50 + 25 2 thousands, 3 hundreds, 4 tens, 35 ones

Observations/Documentation

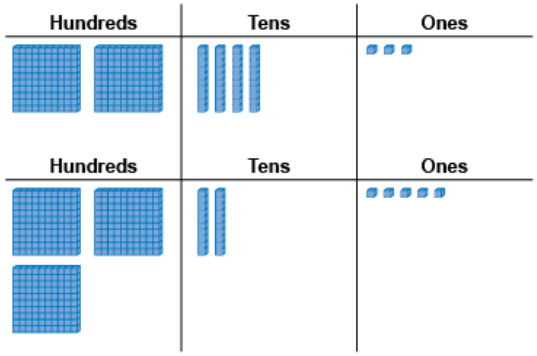
Number

Activity 4 Assessment

Comparing and Ordering Numbers

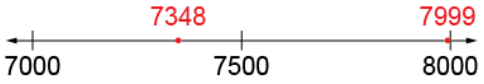
Comparing and Ordering Quantities

Models numbers and compares blocks



"325 has one more hundred flat, so it is greater than 243."

Compares numbers with benchmarks



"I compared the numbers to 7500. 7348 is less than 7500 and 7999 is almost 8000. So, 7999 is greater."

Visualizes benchmarks on a number line to compare

"I picture 7999 farther to the right on the line than 7348. So, 7999 is greater than 7348."

Observations/Documentation

Number

Activity 4 Assessment
Comparing and Ordering Numbers

Comparing and Ordering Quantities (cont'd)		
Uses place value understanding to compare numbers, digit by digit  "Both start with 7. 3 hundreds is less than 9 hundreds, 4 tens is less than 9 tens, and 8 ones is less than 9 ones. So, 7348 is less than 7999."	Compares and orders three or more numbers using a variety of strategies **5031 4008 7999 7438** "I first compare using thousands, then compare 7999 and 7438 using hundreds."	Compares numbers flexibly and records comparisons symbolically (<, =, >) **3467 > 3267** "Both numbers have 3 thousands, but 3467 has more hundreds."
Observations/Documentation		

Number

Activity 5 Assessment

Estimating to Solve Problems

Estimating Quantities			
Counts to get an exact answer "I used a timer and counted the number of blinks in 10 min. I counted 190 blinks."	Adjusts count to an unreasonable friendly number before estimating "I counted 21 blinks in 1 min. I rounded that to 50, a friendly number that I like to work with: 50 × 10 = 500. I estimate about 500 blinks in 10 min."	Gives estimate as a range "15 blinks in 1 min: 15 × 10 = 150 20 blinks in 1 min: 20 × 10 = 200 I think my partner will blink between 150 and 200 times in 10 min."	Uses place value understanding to round estimate (to nearest ten, hundred, or thousand) My estimate is 9425. "I can round it to the nearest: thousand: 9000 hundred: 9400 ten: 9430."
Observations/Documentation			

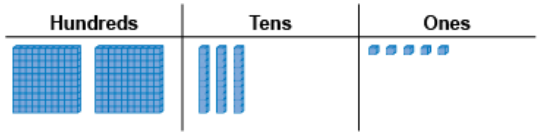
Number

Activity 6 Assessment

Number Relationships and Place Value Consolidation

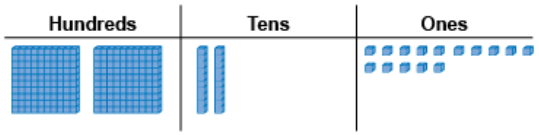
Representing Numbers Using Place Value

Models 3-digit number using Base Ten Blocks (decomposes in one way)



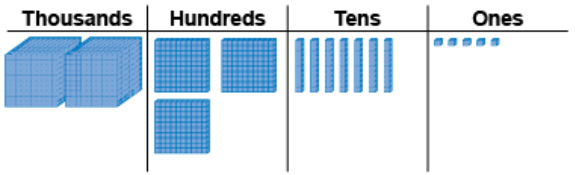
"I modelled 235. I used the digits of the number to tell me how many of each block I needed."

Models 3-digit number (decomposes in more than one way) and records using place-value names



"two hundred thirty-five:
I can also show it as 2 hundreds,
2 tens and 15 ones if I trade 1 ten for 10 ones."

Models 4-digit number using Base Ten Blocks (decomposes in one way)



"I modelled 2375. I used the digits of the number to tell me how many of each block I needed."

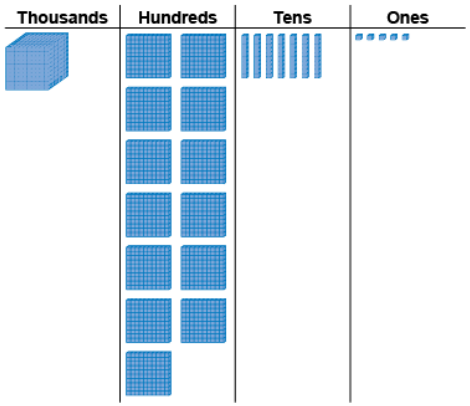
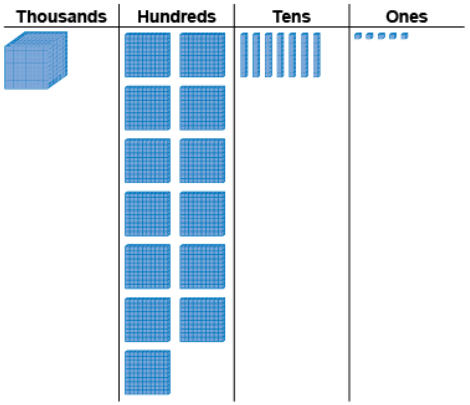
Observations/Documentation

Number

Activity 6 Assessment

Number Relationships and Place Value Consolidation

Representing Numbers Using Place Value (con't)

Systematically models 4-digit number in more than one way using patterns and place-value relationships	Models 4-digit number in more than one way and records each way in expanded form	Represents numbers flexibly using place-value relationships
 "I traded one thousand cube for 10 hundred flats."	 "2375 = 1000 + 1300 + 70 + 5"	"2375 = 2000 + 300 + 70 + 5 2375 = 2000 + 300 + 60 + 15 2375 = 2000 + 300 + 50 + 25 2 thousands, 3 hundreds, 4 tens, 35 ones

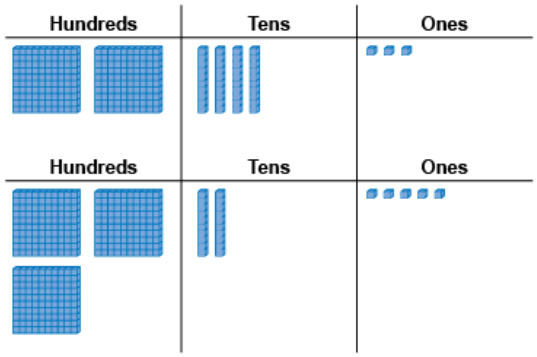
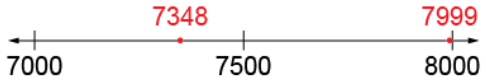
Observations/Documentation

Number

Activity 6 Assessment

Number Relationships and Place Value Consolidation

Comparing and Ordering Quantities

Models numbers and compares blocks	Compares numbers with benchmarks	Visualizes benchmarks on a number line to compare
 "325 has one more hundred flat, so it is greater than 243."	 "I compared the numbers to 7500. 7348 is less than 7500 and 7999 is almost 8000. So, 7999 is greater."	"I picture 7999 farther to the right on the line than 7348. So, 7999 is greater than 7348."

Observations/Documentation

Number

Activity 6 Assessment

Number Relationships and Place Value Consolidation

Comparing and Ordering Quantities (con't)		
Uses place value understanding to compare numbers, digit by digit  "Both start with 7. 3 hundreds is less than 9 hundreds, 4 tens is less than 9 tens, and 8 ones is less than 9 ones. So, 7348 is less than 7999."	Compares and orders three or more numbers using a variety of strategies **5031 4008 7999 7438** "I first compare using thousands, then compare 7999 and 7438 using hundreds."	Compares numbers flexibly and records comparisons symbolically (<, =, >) **3467 > 3267** "Both numbers have 3 thousands, but 3467 has more hundreds."
Observations/Documentation		

Name_____ Date_____

Number
Unit 2 Line Master 1a

Domino Cards

18 + 18	22 + 14	93 – 19	88 – 14
100 – 51	37 + 25	93 – 13	13 + 36

29 + 51	43 + 37	42 + 25	97 – 30
22 + 27	18 + 53	45 + 17	77 – 24

82 – 33	75 – 26	30 + 19	68 – 19
88 – 21	62 – 17	90 – 10	29 + 24

Name_____ Date_____

Number
Unit 2 Line Master 1b

Domino Cards (cont'd)

34 + 37	83 – 12	37 + 16	41 + 12
13 + 49	27 + 31	99 – 37	51 + 16

58 + 0	91 – 33	85 – 27	79 – 21
100 – 20	87 – 42	57 – 21	90 – 19

62 – 0	85 – 23	76 – 31	32 + 13
41 + 30	90 – 37	62 + 18	79 – 12

Name_____ Date_____

Number
Unit 2 Line Master 1c

Domino Cards (cont'd)

95 – 15	35 + 45	93 – 26	18 + 49
_____	_____	_____	_____
27 + 18	41 + 17	35 + 23	33 + 41

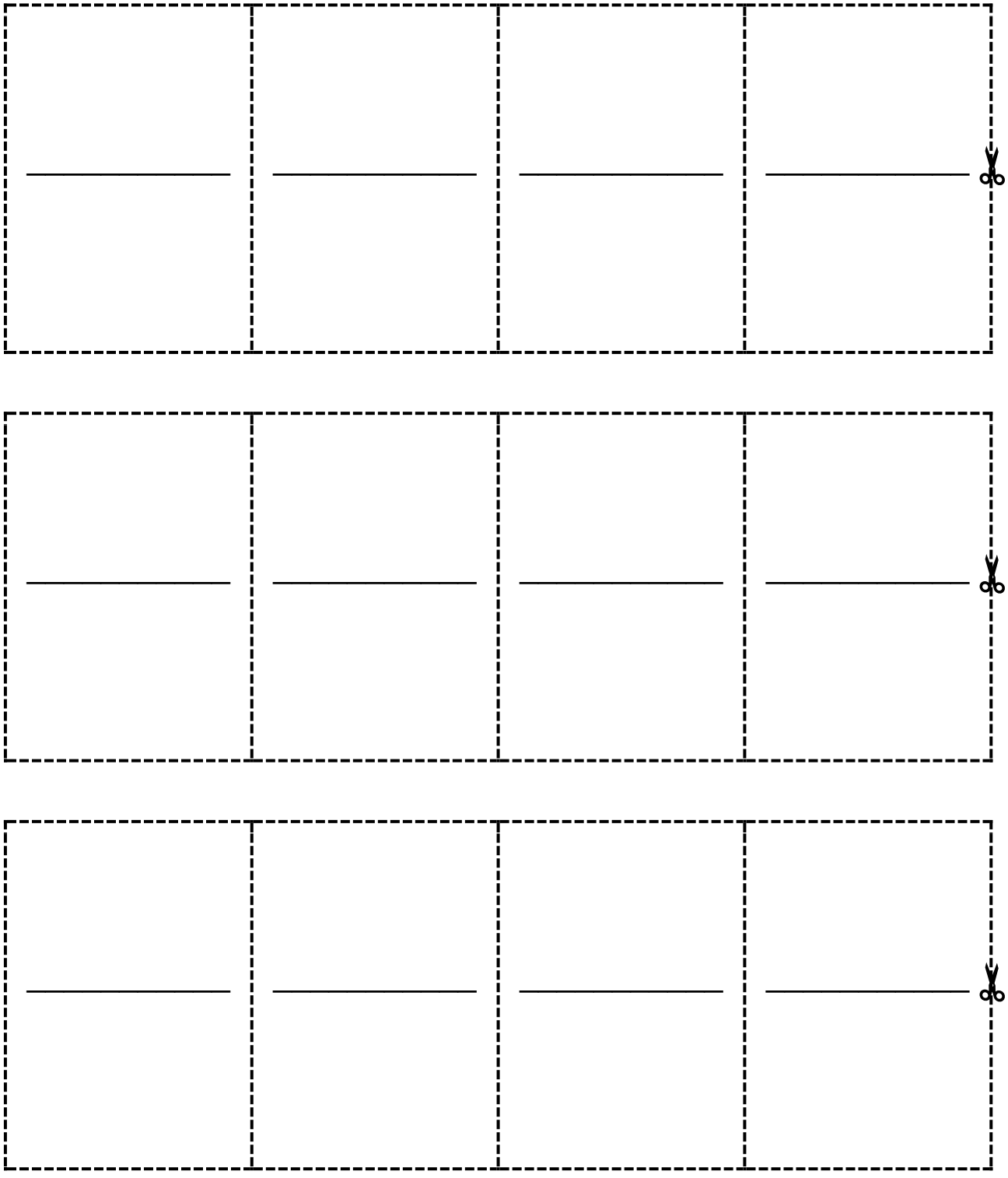
97 – 26	46 + 25	82 – 29	20 + 33
_____	_____	_____	_____
35 + 32	45 – 9	23 + 22	16 + 33

21 + 41	79 – 17	31 + 14	98 – 53
_____	_____	_____	_____
99 – 41	88 – 35	88 – 17	18 + 56

Name_____ Date_____

Number
Unit 2 Line Master 1d

Domino Cards (cont'd)



Name_____ Date_____

Number
Unit 2 Line Master 2

Conquer the Obstacles!

Gameboard

1 Start	2	3	4	5	6	7	8	9	10
20	19	18	17	16	15	14	13	12	11
21	22	23	24	25	26	27	28	29	30
40	39	38	37	36	35	34	33	32	31
41	42	43	44	45	46	47	48	49	50
60	59	58	57	56	55	54	53	52	51
61	62	63	64	65	66	67	68	69	70
80 Finish	79	78	77	76	75	74	73	72	71

Name_____ Date_____

Number
Unit 2 Line Master 3a

Conquer the Obstacles!

Game Cards

There are 160 tennis balls in a bin in the gym. The gym teacher adds 25 new tennis balls to the bin. How many tennis balls are there now?	There are 438 students in the school. There are 224 Primary students. The rest of the students are Junior students. How many Junior students are there?	On opening night, 4214 people came to see the play. On the second night, 3187 people came. How many people saw the play in total?
The school has a bag of 125 pinnies. The gym teacher used 35 pinnies for an activity. How many pinnies are still in the bag?	The school library has a collection of building blocks. The library loans 2355 blocks to one class. There are 4220 blocks left. How many blocks are in the collection?	There are 326 players in the local junior soccer league. The hockey league has 542 players. How many more hockey players are there?
The school raised $1426 for the Terry Fox run. Your class raises some more money. The total is now $1581. How much money did your class raise?	The art club has 452 markers. A community group donated another 212 markers. How many markers do they have now?	A family drives 137 km before stopping for a break. Then, they drive another 84 km. How many kilometres was the drive?

Name_____ Date_____

Number
Unit 2 Line Master 3b

Conquer the Obstacles! (cont'd)

Game Cards

Estimate 3539 − 1521	Estimate 2732 + 5238	Estimate 881 − 227
Estimate 998 − 111	Estimate 789 + 221	Estimate 4502 − 2225
Calculate 1316 + 452	Calculate 6871 − 1154	Calculate 678 + 32

Name_____ Date_____

Number
Unit 2 Line Master 3c

Conquer the Obstacles! (cont'd)

Game Cards

Calculate 544 − 273	Calculate 7118 − 5396	Calculate 925 − 740
Calculate 181 + 512	Calculate 4229 + 3863	Calculate 1477 – 398
Calculate 1243 + 7466	Calculate 2864 − 1575	Calculate 276 + 198

Name_____ Date_____

Number
Unit 2 Line Master 3d

Conquer the Obstacles! (cont'd)

Game Cards

There are 80 tennis balls in a bin in the gym. The gym teacher adds 15 new tennis balls to the bin. How many tennis balls are there now?	The school has a bag of 75 pinnies. The gym teacher used 30 pinnies for an activity. How many pinnies are still in the bag?	The art club has 122 markers. A community group donated another 70 markers. How many markers do they have now?
A family drives 97 km before stopping for a break. Then, they drive another 63 km. How many kilometres was the drive?	The school library has a collection of Chromebooks. The library loans 35 to one class. There are 105 Chromebooks left. How many are in the collection?	Class A raised $78 for the Terry Fox run. Your class raises some more money. The total is now $138. How much money did your class raise?
The school raised $1426 for the Terry Fox run. Your class raises some more money. The total is now $1581. How much money did your class raise?	The art club has 452 markers. A community group donated another 212 markers. How many markers do they have now?	A family drives 137 km before stopping for a break. Then, they drive another 84 km. How many kilometres was the drive?

Name_____ Date_____

Number
Unit 2 Line Master 3e

Conquer the Obstacles! (cont'd)

Game Cards

Estimate 139 − 21	Estimate 132 + 138	Estimate 281 − 97
Estimate 298 − 111	Estimate 189 + 221	Estimate 302 − 88
Calculate 116 + 52	Calculate 271 − 36	Calculate 148 + 32

Name_____ Date_____

Number
Unit 2 Line Master 3f

Conquer the Obstacles! (cont'd)

Game Cards

Calculate 144 − 73	Calculate 218 − 96	Calculate 225 − 140
Calculate 181 + 12	Calculate 229 + 63	Calculate 177 – 98
Calculate 43 + 126	Calculate 86 − 57	Calculate 176 + 98

Name_____ Date_____

Number
Unit 2 Line Master 3g

Conquer the Obstacles! (cont'd)

Game Cards (Blank)

Word Problem	Word Problem	Word Problem
Estimate	Estimate	Estimate
Calculate	Calculate	Calculate

Number

Activity 7 Assessment

Estimating Sums and Differences

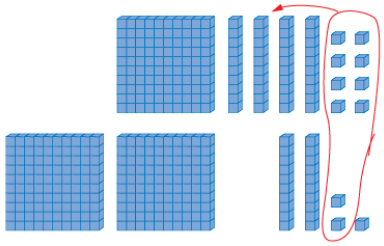
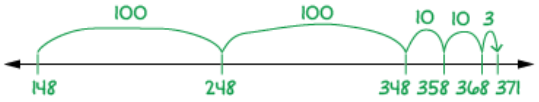
Estimating Sums and Differences			
Uses front-end estimation Estimate: 28 + 46 + 177 + 158 20 + 40 + 100 + 100 = 260 "I estimate about 260."	Uses rounding to write each number to the nearest ten Estimate: 28 + 46 + 177 + 158 30 + 50 + 180 + 160 = 420 "I estimate about 420."	Uses rounding and compensation Estimate: 28 + 46 + 177 + 158 I'll round two up and two down. 30 + 40 + 170 + 160 = 400 "I estimate about 420."	Estimates flexibly to check reasonableness of solutions 123 + 248 + 169 + 150 = 690 Estimate to check: 23 + 69 is about 100, so 123 + 169 is about 300. 48 + 50 is about 100, so 248 + 150 is about 400. 300 + 400 = 700 Since 690 is close to 700, the solution seems reasonable.
Observations/Documentation			

Number

Activity 8 Assessment

Modelling Addition and Subtraction

Conceptual Meaning of Whole Number Addition and Subtraction

Recognizes addition and subtraction situations and models concretely to add or subtract to 1000 148 + 223 = ? 	Models and symbolizes ways to solve problems to 1000 148 + 223 = ? 	Uses an understanding of place value to decompose both numbers to solve problems to 10 000 896 – 345 = ? 800 – 300 = 500 90 – 40 = 50 6 – 5 = 1 } 500 + 50 + 1 = 551 "I subtracted the hundreds, the tens, and then the ones."

Observations/Documentation

Number

Activity 8 Assessment

Modelling Addition and Subtraction

Conceptual Meaning of Whole Number Addition and Subtraction (cont'd)

Uses an understanding of place value to decompose one number to solve problems to 10 000

548 + 348 = ?

348 = **300** + **40** + **8**

548 + **300** = 848

848 + **40** = 888

888 + **8** = 896

$$\begin{array}{r} 548 \\ +\ 348 \\ \hline 800 \\ 80 \\ +\ 16 \\ \hline 896 \end{array}$$

"I used place value to add on the second number."

Estimates to determine if answer to problem is reasonable

896 - 345 = ?

"896 is close to 900. 345 is close to 350. 900 - 350 = 550. 550 is close to 551, the answer I calculated, so my answer is reasonable."

Creates and solves addition and subtraction problems flexibly using a variety of strategies

1874 raffle tickets were sold in advance. 227 more tickets were sold at the door. How many tickets were sold altogether?

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1} \\ 1874 \\ +\ 227 \\ \hline 2101 \end{array}$$

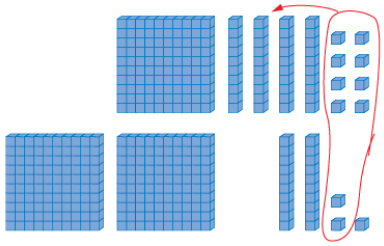
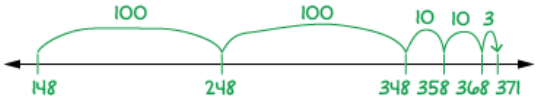
Observations/Documentation

Number

Activity 9 Assessment

Adding and Subtracting Larger Numbers

Conceptual Meaning of Whole Number Addition and Subtraction

Recognizes addition and subtraction situations and models concretely to add or subtract to 1000	Models and symbolizes ways to solve problems to 1000	Uses an understanding of place value to decompose both numbers to solve problems to 10 000
148 + 223 = ? 	148 + 223 = ? 	896 – 345 = ? 800 – 300 = 500 90 – 40 = 50 6 – 5 = 1 } 500 + 50 + 1 = 551 "I subtracted the hundreds, the tens, and then the ones."

Observations/Documentation

Number

Activity 9 Assessment

Adding and Subtracting Larger Numbers

Conceptual Meaning of Whole Number Addition and Subtraction (cont'd)

Uses an understanding of place value to decompose one number to solve problems to 10 000

548 + 348 = ?

348 = **300** + **40** + **8**

548 + **300** = 848

848 + **40** = 888

888 + **8** = 896

$$\begin{array}{r} 548 \\ +\ 348 \\ \hline 800 \\ 80 \\ +\ 16 \\ \hline 896 \end{array}$$

"I used place value to add on the second number."

Estimates to determine if answer to problem is reasonable

896 - 345 = ?

"896 is close to 900. 345 is close to 350. 900 - 350 = 550. 550 is close to 551, the answer I calculated, so my answer is reasonable."

Creates and solves addition and subtraction problems flexibly using a variety of strategies

1874 raffle tickets were sold in advance. 227 more tickets were sold at the door. How many tickets were sold altogether?

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1} \\ 1874 \\ +\ 227 \\ \hline 2101 \end{array}$$

Observations/Documentation

Number

Activity 10 Assessment

Using Mental Math to Add and Subtract

Developing Fluency of Whole Number Addition and Subtraction		
Uses known sums and differences to fluently solve addition and subtraction problems to 100 25 + 76 = ? "I know 25 + 75 = 100. Since 76 is 1 more than 75, the answer is 101."	Purposefully uses properties or relationships to solve addition and subtraction problems 25 + 44 + 76 = ? "I can rearrange the numbers to make it easier to add." 25 + 76 + 44 = 101 + 44 = 145	Understands the inverse relationship between addition and subtraction and applies it to solve problems 645 – 227 = ? "I can rewrite it as an addition problem: 227 + ? = 645. I can use friendly numbers. 200 + **400** = 600 and 27 + **18** = 45. The missing part is **400** + **18** = 418. Check: 227 + 418 = 645."
Observations/Documentation		

Number

Activity 10 Assessment

Using Mental Math to Add and Subtract

Developing Fluency of Whole Number Addition and Subtraction (cont'd)

Applies mental strategies and algorithms to add and subtract (e.g. using benchmark numbers, known facts, partial sums) 227 + 418 = __ 227 + 418 = 645 600 + 30 + 15 = 645 200 + 400 = 600 20 + 10 = 30 7 + 8 = 15 "I could used partial sums or the standard algorithm."	Uses estimation to check the reasonableness of solutions This year 227 children, 34 teachers, and 18 supervisors will attend the local fair. How many people will attend altogether? "227 is close to 230, 34 is close to 35, and 18 is close to 20. 230 + 35 + 20 = 285. I overestimated because we want to make sure we have enough buses."	Flexibly creates and solves addition and subtraction problems and checks reasonableness of solutions 185 students were to attend the assembly. 27 students were absent form school. How many students attended the assembly? 185 – 27 = 185 – 30 + 3 = 155 + 3 = 158 "190 - 30 = 160. Since 160 is close to 158, solution is reasonable."

Observations/Documentation

Number

Activity 11 Assessment

Creating and Solving Problems

Developing Fluency of Whole Number Addition and Subtraction		
Uses known sums and differences to fluently solve addition and subtraction problems to 100 25 + 76 = ? "I know 25 + 75 = 100. Since 76 is 1 more than 75, the answer is 101."	Purposefully uses properties or relationships to solve addition and subtraction problems 25 + 44 + 76 = ? "I can rearrange the numbers to make it easier to add." 25 + 76 + 44 = 101 + 44 = 145	Understands the inverse relationship between addition and subtraction and applies it to solve problems 645 – 227 = ? "I can rewrite it as an addition problem: 227 + ? = 645. I can use friendly numbers. 200 + **400** = 600 and 27 + **18** = 45. The missing part is **400** + **18** = 418. Check: 227 + 418 = 645."
Observations/Documentation		

Number

Activity 11 Assessment

Creating and Solving Problems

Developing Fluency of Whole Number Addition and Subtraction (cont'd)

Applies mental strategies and algorithms to add and subtract (e.g. using benchmark numbers, known facts, partial sums) 227 + 418 = __ 227 +418 600 30 15 645 200 + 400 = 600 20 + 10 = 30 7 + 8 = 15 1 227 +418 645 "I could used partial sums or the standard algorithm."	Uses estimation to check the reasonableness of solutions This year 227 children, 34 teachers, and 18 supervisors will attend the local fair. How many people will attend altogether? "227 is close to 230, 34 is close to 35, and 18 is close to 20. 230 + 35 + 20 = 285. I overestimated because we want to make sure we have enough buses."	Flexibly creates and solves addition and subtraction problems and checks reasonableness of solutions 185 students were to attend the assembly. 27 students were absent form school. How many students attended the assembly? 185 – 27 = 185 – 30 + 3 = 155 + 3 = 158 "190 - 30 = 160. Since 160 is close to 158, solution is reasonable."

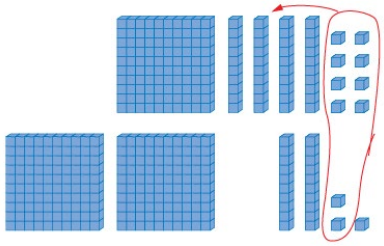
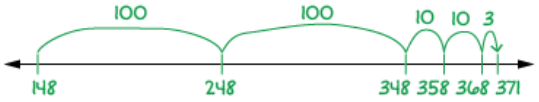
Observations/Documentation

Number

Activity 12 Assessment

Fluency with Addition and Subtraction Consolidation

Conceptual Meaning of Whole Number Addition and Subtraction

Recognizes addition and subtraction situations and models concretely to add or subtract to 1000	Models and symbolizes ways to solve problems to 1000	Uses an understanding of place value to decompose both numbers to solve problems to 10 000
148 + 223 = ? 	148 + 223 = ? 	896 – 345 = ? 800 – 300 = 500 90 – 40 = 50 6 – 5 = 1 } 500 + 50 + 1 = 551 "I subtracted the hundreds, the tens, and then the ones."

Observations/Documentation

Number

Activity 12 Assessment

Fluency with Addition and Subtraction Consolidation

Conceptual Meaning of Whole Number Addition and Subtraction (cont'd)

Uses an understanding of place value to decompose one number to solve problems to 10 000

548 + 348 = ?

348 = **300** + **40** + **8**

548 + **300** = 848

848 + **40** = 888

888 + **8** = 896

$$\begin{array}{r} 548 \\ +\ 348 \\ \hline 800 \\ 80 \\ +\ 16 \\ \hline 896 \end{array}$$

"I used place value to add on the second number."

Estimates to determine if answer to problem is reasonable

896 - 345 = ?

"896 is close to 900. 345 is close to 350. 900 - 350 = 550. 550 is close to 551, the answer I calculated, so my answer is reasonable."

Creates and solves addition and subtraction problems flexibly using a variety of strategies

1874 raffle tickets were sold in advance. 227 more tickets were sold at the door. How many tickets were sold altogether?

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1} \\ 1874 \\ +\ 227 \\ \hline 2101 \end{array}$$

Observations/Documentation

Number

Activity 12 Assessment

Fluency with Addition and Subtraction Consolidation

Developing Fluency of Whole Number Addition and Subtraction		
Uses known sums and differences to fluently solve addition and subtraction problems to 100 25 + 76 = ? "I know 25 + 75 = 100. Since 76 is 1 more than 75, the answer is 101."	Purposefully uses properties or relationships to solve addition and subtraction problems 25 + 44 + 76 = ? "I can rearrange the numbers to make it easier to add." 25 + 76 + 44 = 101 + 44 = 145	Understands the inverse relationship between addition and subtraction and applies it to solve problems 645 – 227 = ? "I can rewrite it as an addition problem: 227 + ? = 645. I can use friendly numbers. 200 + **400** = 600 and 27 + **18** = 45. The missing part is **400** + **18** = 418. Check: 227 + 418 = 645."
Observations/Documentation		

Number

Activity 12 Assessment

Fluency with Addition and Subtraction Consolidation

Developing Fluency of Whole Number Addition and Subtraction (cont'd)

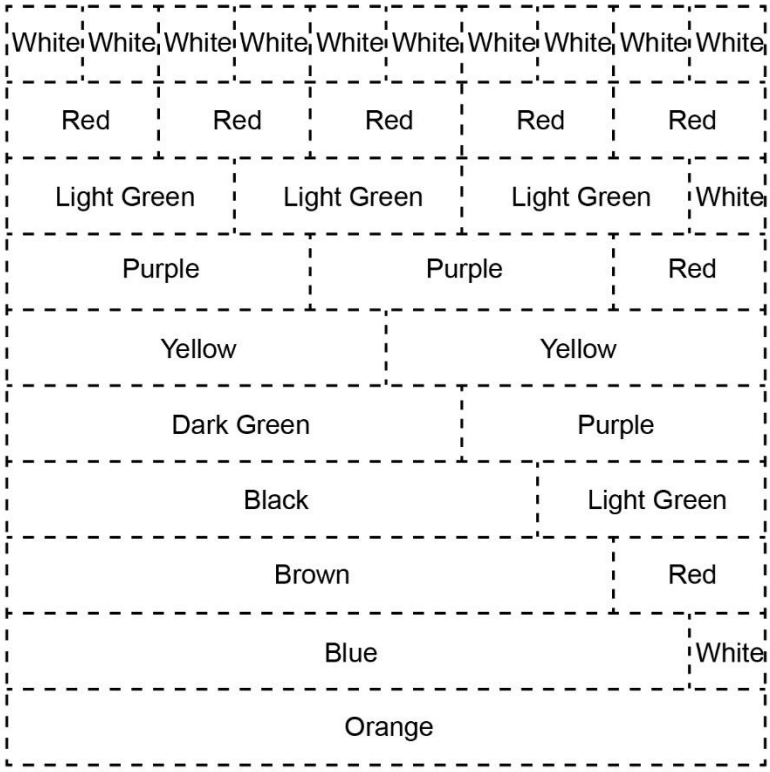
Applies mental strategies and algorithms to add and subtract (e.g. using benchmark numbers, known facts, partial sums) 227 + 418 = __ 227 +418 600 30 15 645 200 + 400 = 600 20 + 10 = 30 7 + 8 = 15 1 227 +418 645 "I could used partial sums or the standard algorithm."	Uses estimation to check the reasonableness of solutions This year 227 children, 34 teachers, and 18 supervisors will attend the local fair. How many people will attend altogether? "227 is close to 230, 34 is close to 35, and 18 is close to 20. 230 + 35 + 20 = 285. I overestimated because we want to make sure we have enough buses."	Flexibly creates and solves addition and subtraction problems and checks reasonableness of solutions 185 students were to attend the assembly. 27 students were absent form school. How many students attended the assembly? 185 – 27 = 185 – 30 + 3 = 155 + 3 = 158 "190 - 30 = 160. Since 160 is close to 158, solution is reasonable."

Observations/Documentation

Name_____ Date_____

Number
Unit 3 Line Master 1

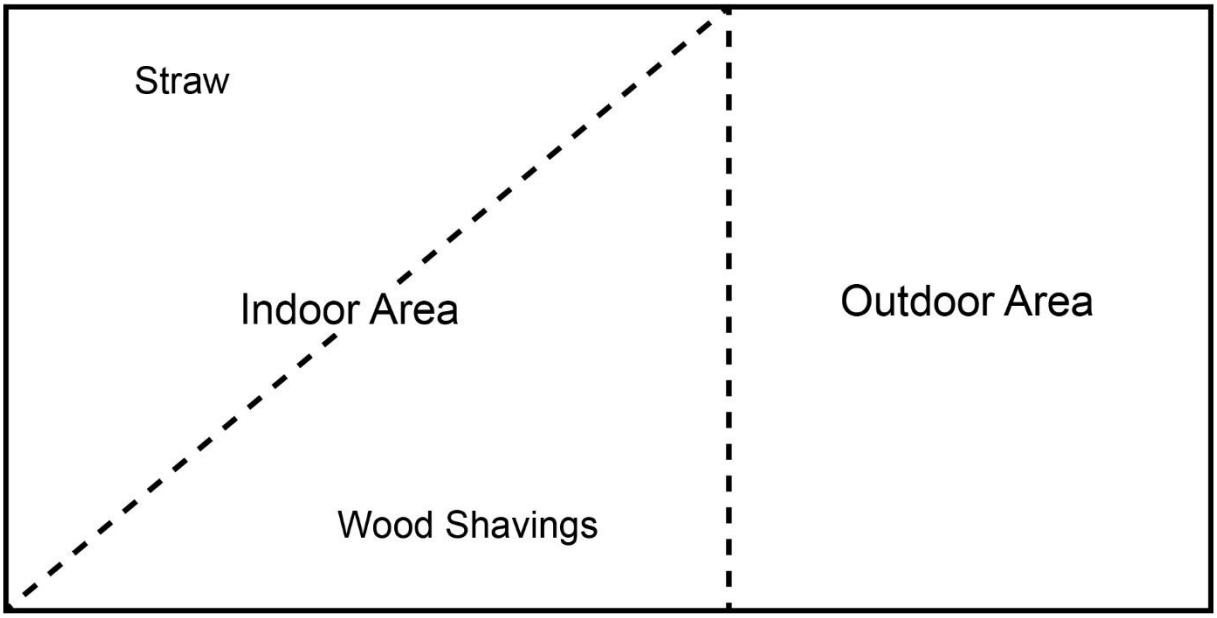
Relational Rods



Name_____ Date_____

Number
Unit 3 Line Master 2a

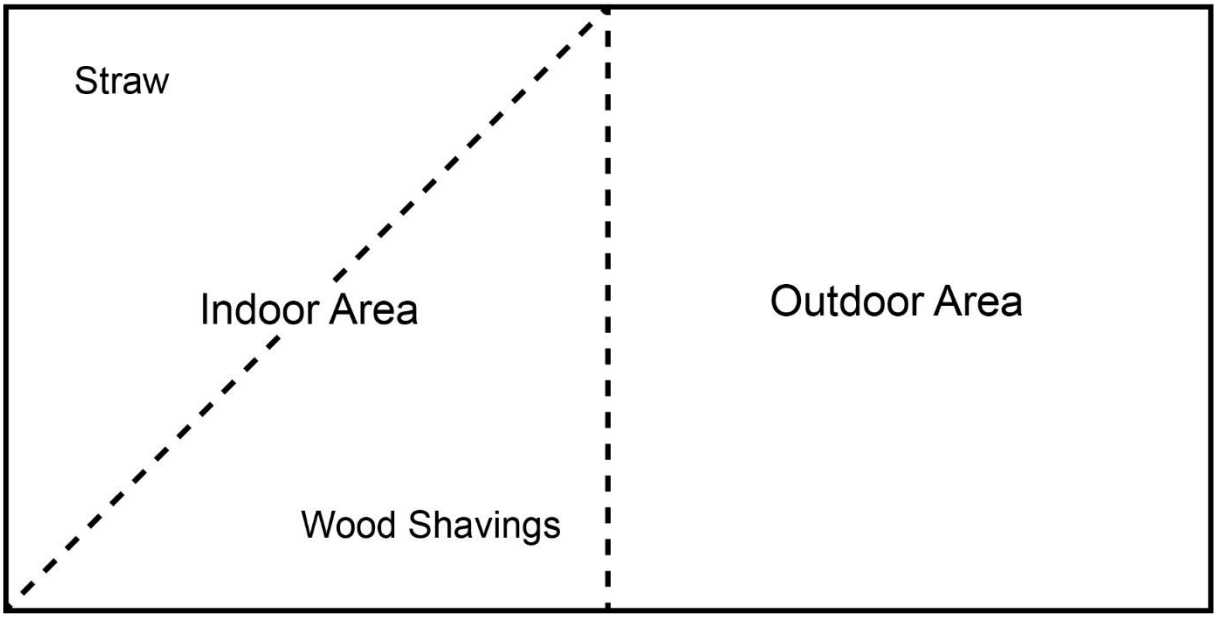
Where the Chicken Live



Name_____ Date_____

Number
Unit 3 Line Master 2a

Where the Chicken Live (cont'd)



Name_____ Date_____

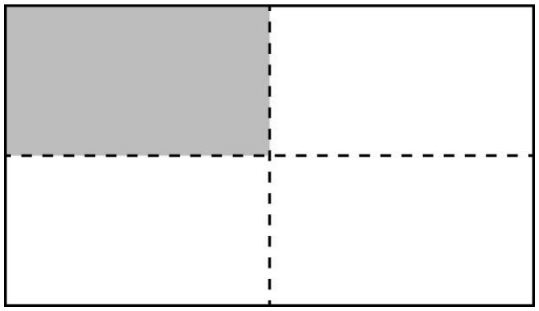
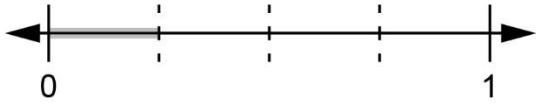
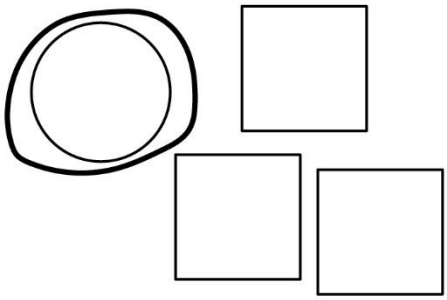
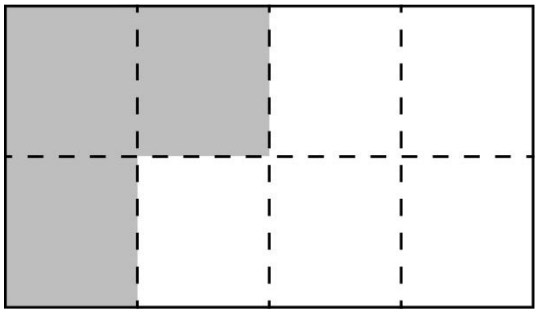
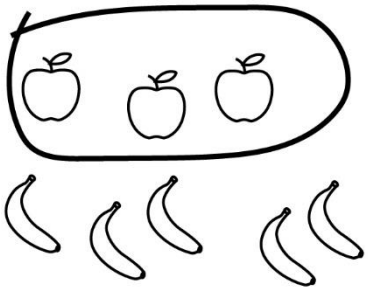
Number
Unit 3 Line Master 3

Open Number Lines

Name_____ Date_____

Number
Unit 3 Line Master 4a

Fraction Cards

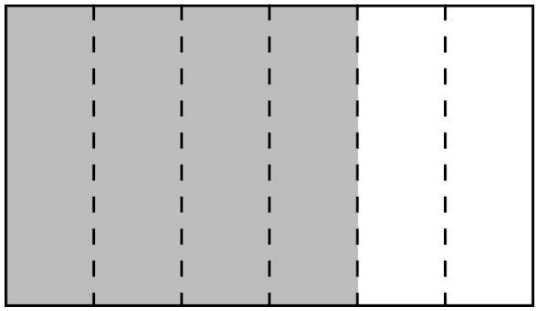
$\frac{1}{4}$	
	
$\frac{3}{8}$	
	

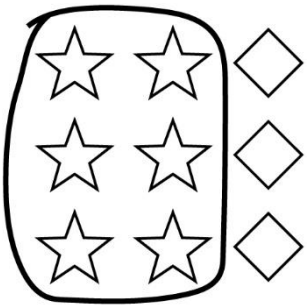
Name_____ Date_____

Number
Unit 3 Line Master 4b

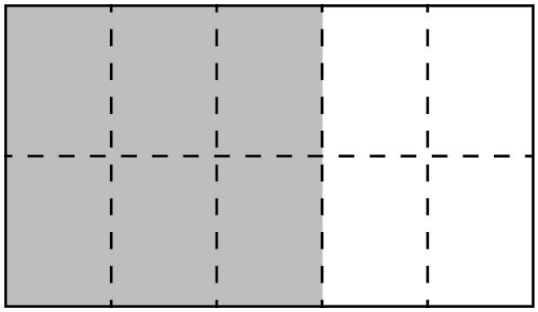
Fraction Cards (cont'd)

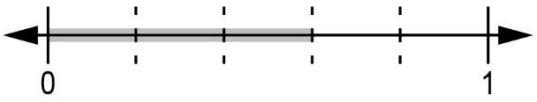
$\frac{2}{3}$

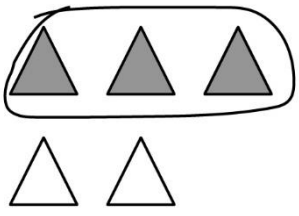




$\frac{3}{5}$



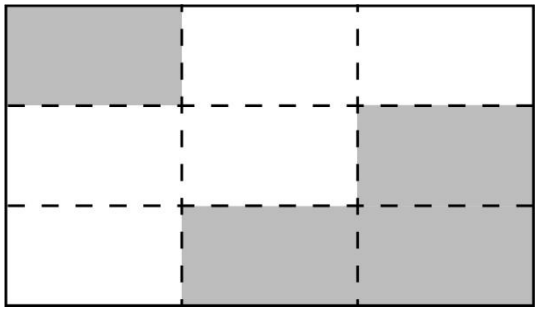
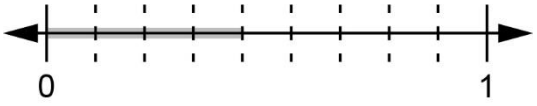
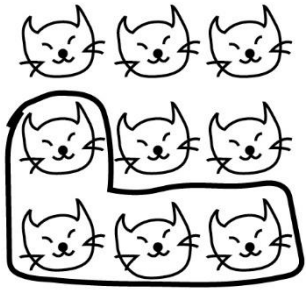
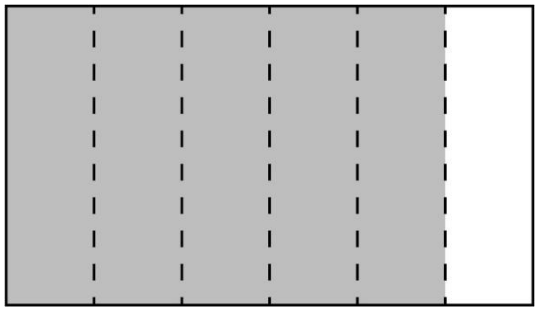
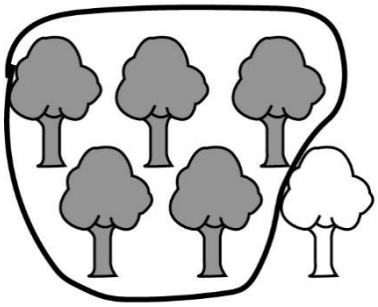




Name_____ Date_____

Number
Unit 3 Line Master 4c

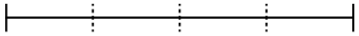
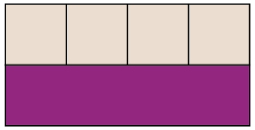
Fraction Cards (cont'd)

$\frac{4}{9}$	
	
$\frac{5}{6}$	
	

Number

Activity 13 Assessment

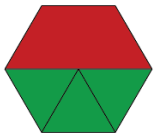
What Are Fractions?

Exploring Fractions			
Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"	Understands the meaning of the numerator and denominator  "I counted 4 one-fifths, which tells me I have $\frac{4}{5}$ altogether. 4 is the number of parts shaded and 5 is the total number of equal parts."	Compares unit fractions  "One-half is bigger than one-third of the same whole."
Observations/Documentation			

Number

Activity 13 Assessment

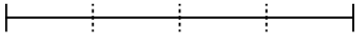
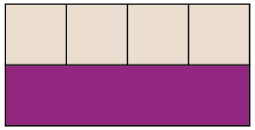
What Are Fractions?

Exploring Fractions (cont'd)			
Understands relationship between number of parts (denominator) and the size of the parts "When I divide the same whole into 8 equal parts or 10 equal parts, there are more tenths and each tenth is smaller than each eighth."	Moves comfortably across different representations of fractions  "As a set, the trapezoid represents $\frac{1}{4}$ (1 of 4 items). As an area model, the trapezoid represents $\frac{1}{2}$."	Understands that, for the same whole, equivalent fractions represent the same quantity "$\frac{2}{3}$ and $\frac{4}{6}$ represent the same amount, but $\frac{4}{6}$ has twice as many parts as $\frac{2}{3}$."	Uses fraction sense (e.g., benchmarks) to compare and order fractions "I know $\frac{4}{6}$ is a little more than half, $\frac{8}{9}$ is pretty close to one whole, and $\frac{1}{5}$ is close to zero."
Observations/Documentation			

Number

Activity 14 Assessment

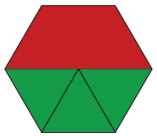
Counting by Unit Fractions

Exploring Fractions			
Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"	Understands the meaning of the numerator and denominator  "I counted 4 one-fifths, which tells me I have $\frac{4}{5}$ altogether. 4 is the number of parts shaded and 5 is the total number of equal parts."	Compares unit fractions  "One-half is bigger than one-third of the same whole."
Observations/Documentation			

Number

Activity 14 Assessment

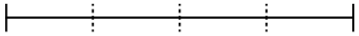
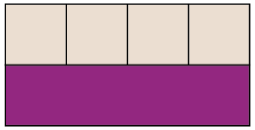
Counting by Unit Fractions

Exploring Fractions (cont'd)			
Understands relationship between number of parts (denominator) and the size of the parts "When I divide the same whole into 8 equal parts or 10 equal parts, there are more tenths and each tenth is smaller than each eighth."	Moves comfortably across different representations of fractions  "As a set, the trapezoid represents $\frac{1}{4}$ (1 of 4 items). As an area model, the trapezoid represents $\frac{1}{2}$."	Understands that, for the same whole, equivalent fractions represent the same quantity "$\frac{2}{3}$ and $\frac{4}{6}$ represent the same amount, but $\frac{4}{6}$ has twice as many parts as $\frac{2}{3}$."	Uses fraction sense (e.g., benchmarks) to compare and order fractions "I know $\frac{4}{6}$ is a little more than half, $\frac{8}{9}$ is pretty close to one whole, and $\frac{1}{5}$ is close to zero."
Observations/Documentation			

Number

Activity 15 Assessment

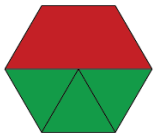
Exploring Different Representations of Fractions

Exploring Fractions			
Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"	Understands the meaning of the numerator and denominator  "I counted 4 one-fifths, which tells me I have $\frac{4}{5}$ altogether. 4 is the number of parts shaded and 5 is the total number of equal parts."	Compares unit fractions  "One-half is bigger than one-third of the same whole."
Observations/Documentation			

Number

Activity 15 Assessment

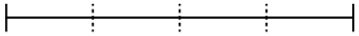
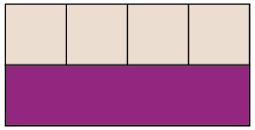
Exploring Different Representations of Fractions

Exploring Fractions (cont'd)			
Understands relationship between number of parts (denominator) and the size of the parts "When I divide the same whole into 8 equal parts or 10 equal parts, there are more tenths and each tenth is smaller than each eighth."	Moves comfortably across different representations of fractions  "As a set, the trapezoid represents $\frac{1}{4}$ (1 of 4 items). As an area model, the trapezoid represents $\frac{1}{2}$."	Understands that, for the same whole, equivalent fractions represent the same quantity "$\frac{2}{3}$ and $\frac{4}{6}$ represent the same amount, but $\frac{4}{6}$ has twice as many parts as $\frac{2}{3}$."	Uses fraction sense (e.g., benchmarks) to compare and order fractions "I know $\frac{4}{6}$ is a little more than half, $\frac{8}{9}$ is pretty close to one whole, and $\frac{1}{5}$ is close to zero."
Observations/Documentation			

Number

Activity 16 Assessment

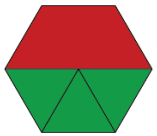
Sharing Equally

Exploring Fractions			
Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"	Understands the meaning of the numerator and denominator  "I counted 4 one-fifths, which tells me I have $\frac{4}{5}$ altogether. 4 is the number of parts shaded and 5 is the total number of equal parts."	Compares unit fractions  "One-half is bigger than one-third of the same whole."
Observations/Documentation			

Number

Activity 16 Assessment

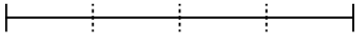
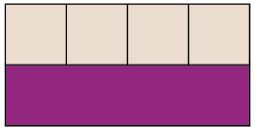
Sharing Equally

Exploring Fractions (cont'd)			
Understands relationship between number of parts (denominator) and the size of the parts "When I divide the same whole into 8 equal parts or 10 equal parts, there are more tenths and each tenth is smaller than each eighth."	Moves comfortably across different representations of fractions  "As a set, the trapezoid represents $\frac{1}{4}$ (1 of 4 items). As an area model, the trapezoid represents $\frac{1}{2}$."	Understands that, for the same whole, equivalent fractions represent the same quantity "$\frac{2}{3}$ and $\frac{4}{6}$ represent the same amount, but $\frac{4}{6}$ has twice as many parts as $\frac{2}{3}$."	Uses fraction sense (e.g., benchmarks) to compare and order fractions "I know $\frac{4}{6}$ is a little more than half, $\frac{8}{9}$ is pretty close to one whole, and $\frac{1}{5}$ is close to zero."
Observations/Documentation			

Number

Activity 17 Assessment

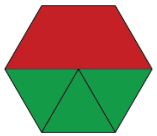
Exploring Equivalence in Fractions

Exploring Fractions			
Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"	Understands the meaning of the numerator and denominator  "I counted 4 one-fifths, which tells me I have $\frac{4}{5}$ altogether. 4 is the number of parts shaded and 5 is the total number of equal parts."	Compares unit fractions  "One-half is bigger than one-third of the same whole."
Observations/Documentation			

Number

Activity 17 Assessment

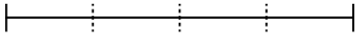
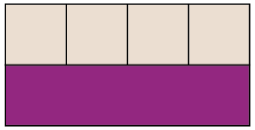
Exploring Equivalence in Fractions

Exploring Fractions (cont'd)			
Understands relationship between number of parts (denominator) and the size of the parts "When I divide the same whole into 8 equal parts or 10 equal parts, there are more tenths and each tenth is smaller than each eighth."	Moves comfortably across different representations of fractions  "As a set, the trapezoid represents $\frac{1}{4}$ (1 of 4 items). As an area model, the trapezoid represents $\frac{1}{2}$."	Understands that, for the same whole, equivalent fractions represent the same quantity "$\frac{2}{3}$ and $\frac{4}{6}$ represent the same amount, but $\frac{4}{6}$ has twice as many parts as $\frac{2}{3}$."	Uses fraction sense (e.g., benchmarks) to compare and order fractions "I know $\frac{4}{6}$ is a little more than half, $\frac{8}{9}$ is pretty close to one whole, and $\frac{1}{5}$ is close to zero."
Observations/Documentation			

Number

Activity 18 Assessment

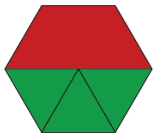
Comparing and Ordering Fractions

Exploring Fractions			
Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"	Understands the meaning of the numerator and denominator  "I counted 4 one-fifths, which tells me I have $\frac{4}{5}$ altogether. 4 is the number of parts shaded and 5 is the total number of equal parts."	Compares unit fractions  "One-half is bigger than one-third of the same whole."
Observations/Documentation			

Number

Activity 18 Assessment

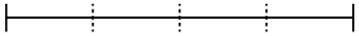
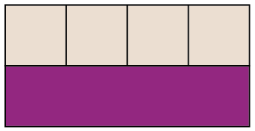
Comparing and Ordering Fractions

Exploring Fractions (cont'd)			
Understands relationship between number of parts (denominator) and the size of the parts "When I divide the same whole into 8 equal parts or 10 equal parts, there are more tenths and each tenth is smaller than each eighth."	Moves comfortably across different representations of fractions  "As a set, the trapezoid represents $\frac{1}{4}$ (1 of 4 items). As an area model, the trapezoid represents $\frac{1}{2}$."	Understands that, for the same whole, equivalent fractions represent the same quantity "$\frac{2}{3}$ and $\frac{4}{6}$ represent the same amount, but $\frac{4}{6}$ has twice as many parts as $\frac{2}{3}$."	Uses fraction sense (e.g., benchmarks) to compare and order fractions "I know $\frac{4}{6}$ is a little more than half, $\frac{8}{9}$ is pretty close to one whole, and $\frac{1}{5}$ is close to zero."
Observations/Documentation			

Number

Activity 19 Assessment

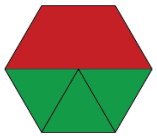
Fractions Consolidation

Exploring Fractions			
Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"	Understands the meaning of the numerator and denominator  "I counted 4 one-fifths, which tells me I have $\frac{4}{5}$ altogether. 4 is the number of parts shaded and 5 is the total number of equal parts."	Compares unit fractions  "One-half is bigger than one-third of the same whole."
Observations/Documentation			

Number

Activity 19 Assessment

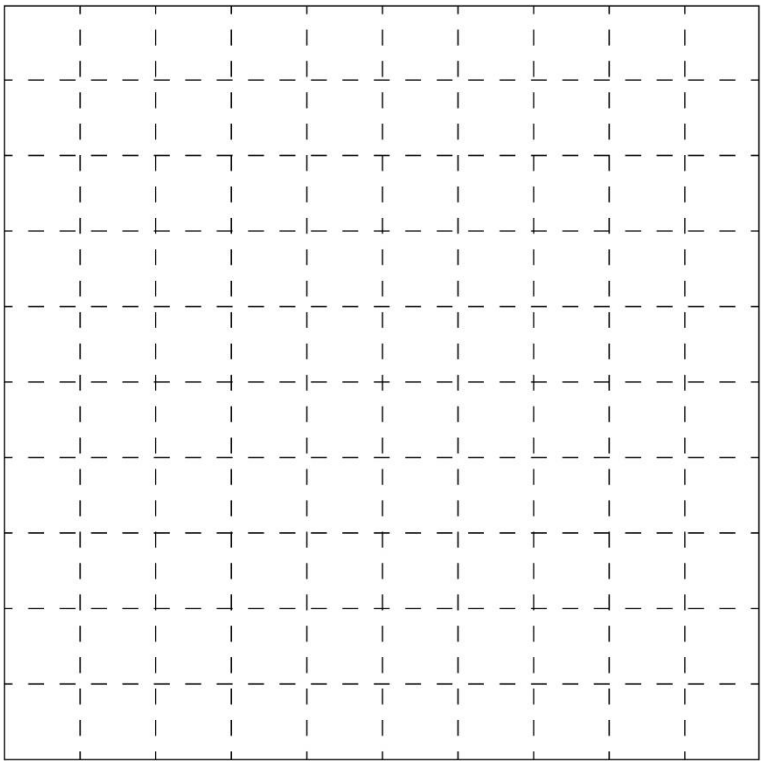
Fractions Consolidation

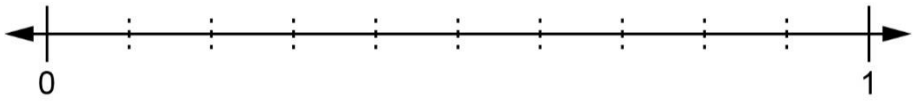
Exploring Fractions (con't)			
Understands relationship between number of parts (denominator) and the size of the parts "When I divide the same whole into 8 equal parts or 10 equal parts, there are more tenths and each tenth is smaller than each eighth."	Moves comfortably across different representations of fractions  "As a set, the trapezoid represents $\frac{1}{4}$ (1 of 4 items). As an area model, the trapezoid represents $\frac{1}{2}$."	Understands that, for the same whole, equivalent fractions represent the same quantity "$\frac{2}{3}$ and $\frac{4}{6}$ represent the same amount, but $\frac{4}{6}$ has twice as many parts as $\frac{2}{3}$."	Uses fraction sense (e.g., benchmarks) to compare and order fractions "I know $\frac{4}{6}$ is a little more than half, $\frac{8}{9}$ is pretty close to one whole, and $\frac{1}{5}$ is close to zero."
Observations/Documentation			

Name_____ Date_____

Number
Unit 4 Line Master 1

Exploring Tenths





Name_____ Date_____

Number
Unit 4 Line Master 2a

Decimal Word Cards

One-tenth	Two-tenths
Three-tenths	Four-tenths
Five-tenths	Six-tenths
Seven-tenths	Eight-tenths
Nine-tenths	Ten-tenths

Name_____ Date_____

Number
Unit 4 Line Master 2b

Decimal Word Cards (cont'd)

Zero-tenths	One whole
One and five-tenths	One and nine-tenths
Two and one-tenth	Two and three-tenths
Twenty-tenths	One and one-tenth
Three and two-tenths	Two wholes

Name_____ Date_____

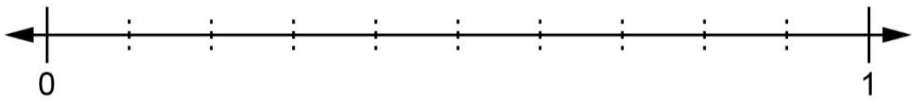
Number
Unit 4 Line Master 3

Place-Value Mat

Hundredths

Hundreds	Tens	Ones	•	Tenths	Hundredths

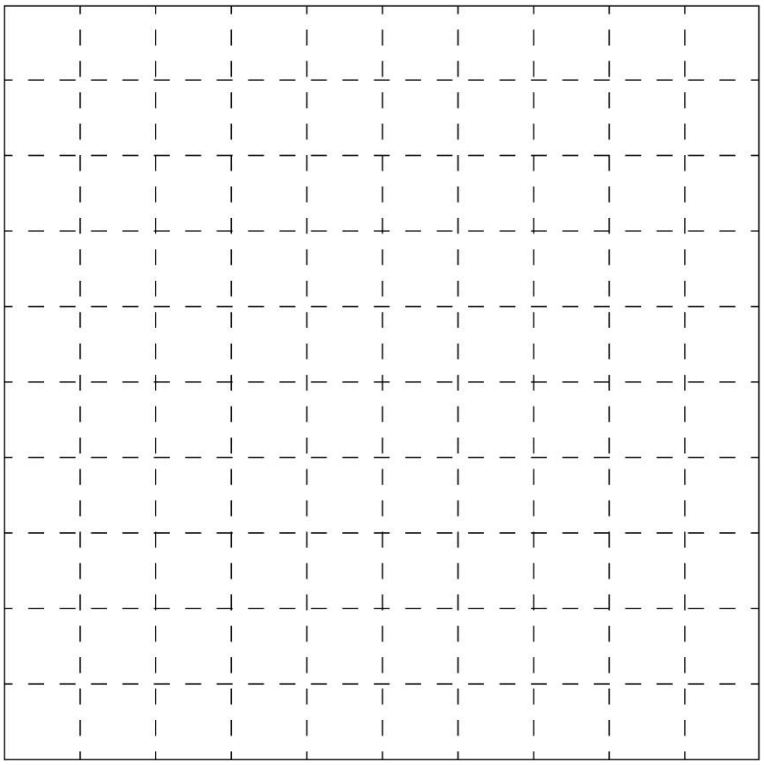
My Number

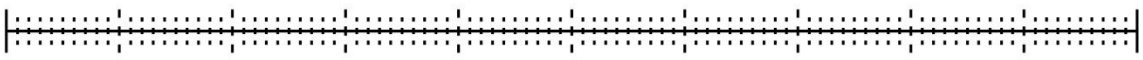


Name_____ Date_____

Number
Unit 4 Line Master 4

Exploring Hundredths

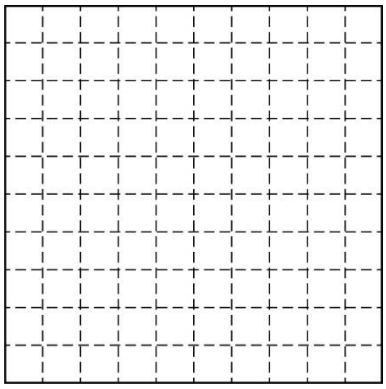
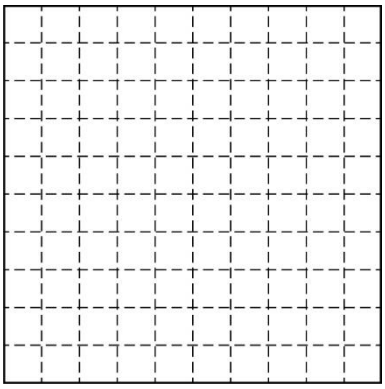
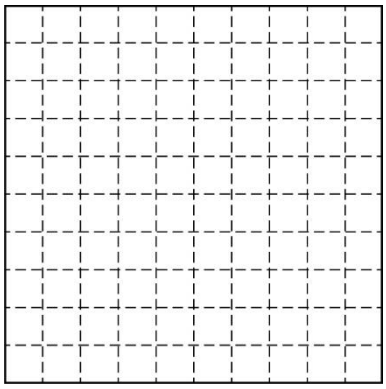


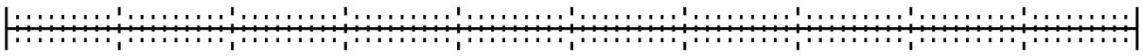


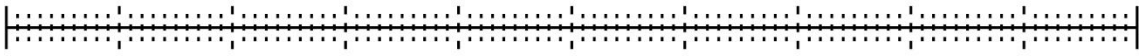
Name_____ Date_____

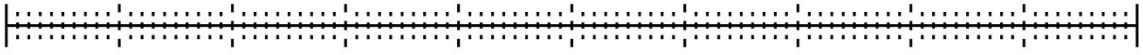
Number
Unit 4 Line Master 5

Comparing Decimals







Name_____ Date_____

Number
Unit 4 Line Master 6a

Spinners

(Decimals with Tenths)

Tenths

Ones

Name_____ Date_____

Number
Unit 4 Line Master 6b

Spinners

(Decimals with Hundredths)

Hundredths

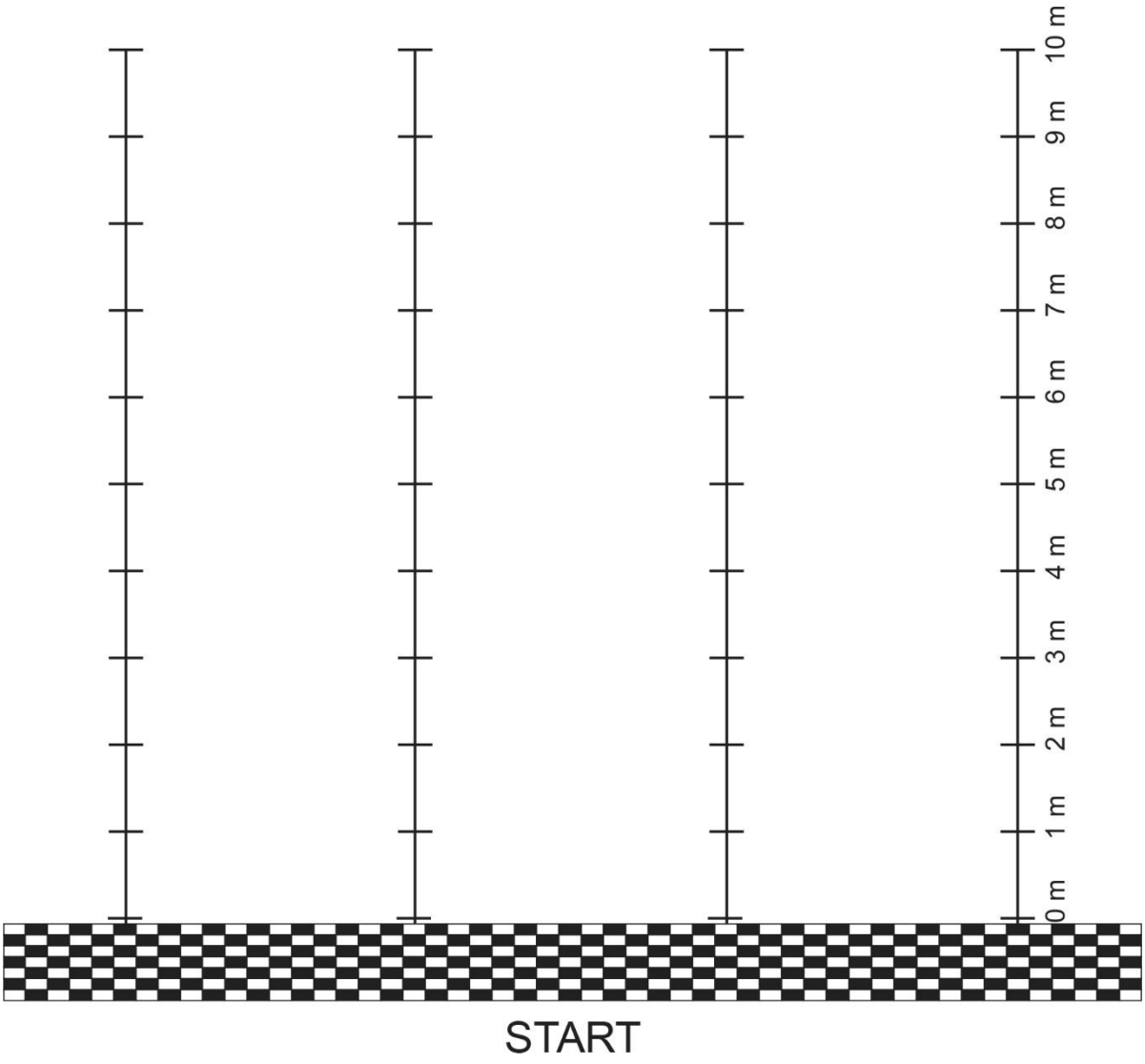
Tenths

Ones

Name_____ Date_____

Number
Unit 4 Line Master 7

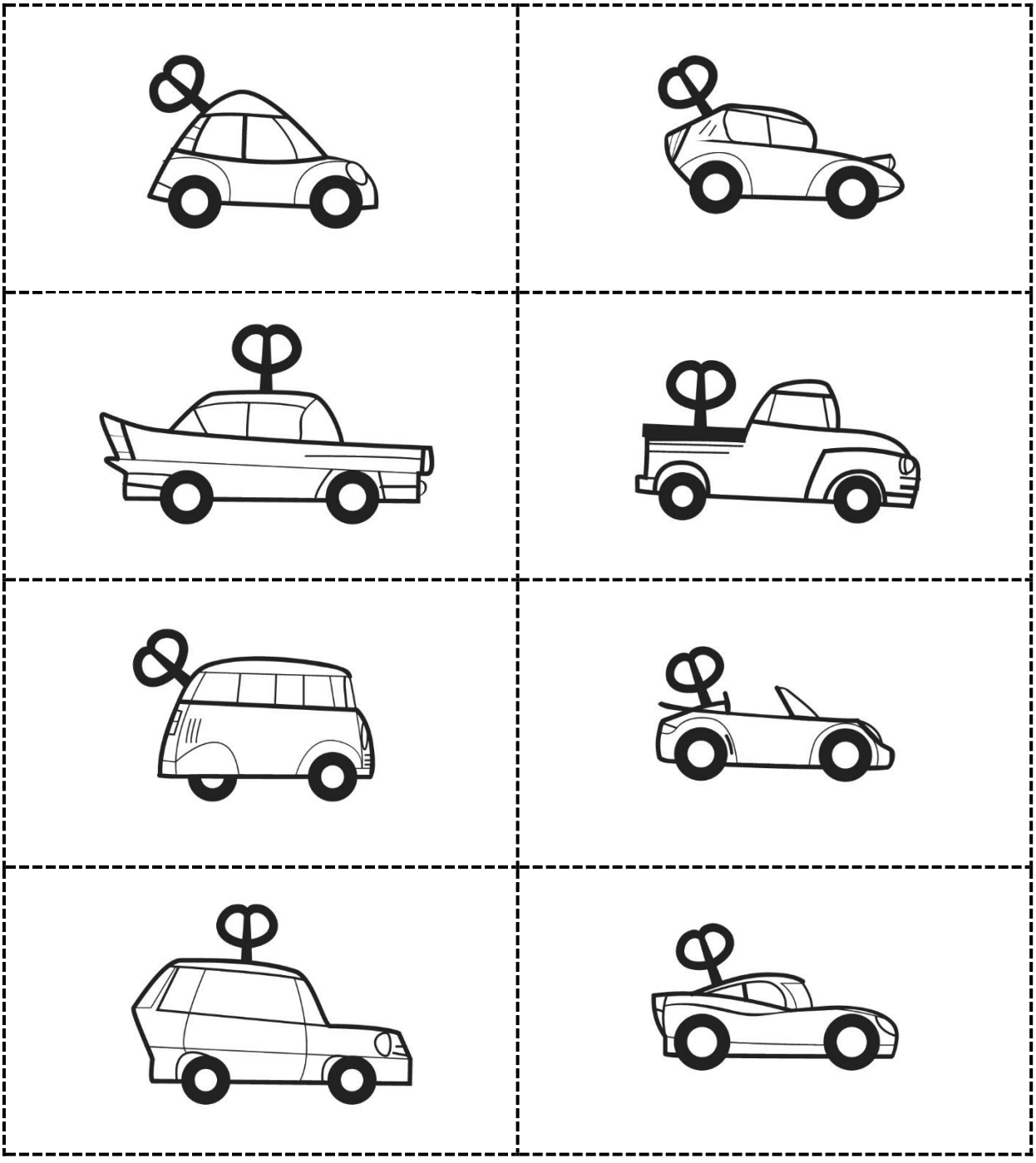
Racetrack Number Line



Name_____ Date_____

Number
Unit 4 Line Master 8

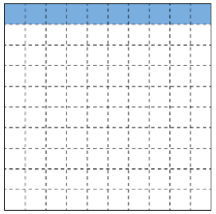
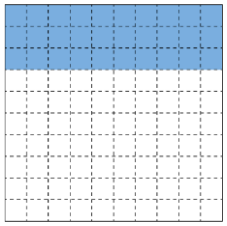
Wind-Up Cars



Number

Activity 20 Assessment

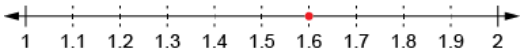
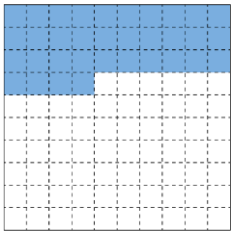
Exploring Tenths

Exploring Decimals		
Demonstrates how decimals can be equally partitioned into tenths and hundredths  "The large square is one whole. It has ten equal-sized rows. Each row is one-tenth."	Relates visual representation of decimal with tenths to place value  "0.3; the digit in the tenth place is 3 because there are three tenths shaded."	Compares and orders decimals with tenths using a variety of strategies (e.g., benchmarks, grids) "1.9 > 1.6: both decimals have 1 whole, so I compare the tenths. Nine tenths is greater than 6 tenths, so 1.9 is greater."
Observations/Documentation		

Number

Activity 20 Assessment
Exploring Tenths

Exploring Decimals (cont'd)

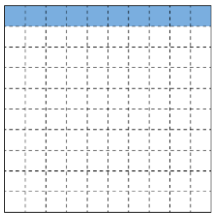
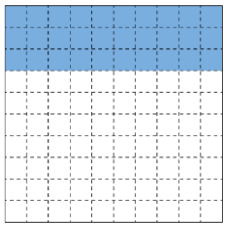
Rounds decimals with tenths to the nearest whole number	Relates visual representation of decimal with hundredths to place value	Recognizes and writes equivalent decimals
 "1.6 is 4 tenths away from 2 and 6 tenths away from 1. So, 1.6 is closer to 2."	 "0.34 represents 3 tenths and 4 hundredths, or 34 hundredths."	"0.2 = 0.20 2 tenths = 20 hundredths"

Observations/Documentation

Number

Activity 21 Assessment

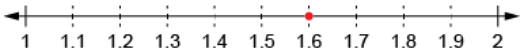
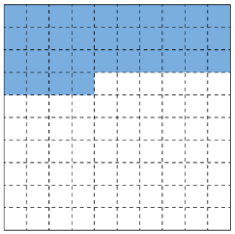
Exploring Hundredths

Exploring Decimals		
Demonstrates how decimals can be equally partitioned into tenths and hundredths  "The large square is one whole. It has ten equal-sized rows. Each row is one-tenth."	Relates visual representation of decimal with tenths to place value  "0.3; the digit in the tenth place is 3 because there are three tenths shaded."	Compares and orders decimals with tenths using a variety of strategies (e.g., benchmarks, grids) "1.9 > 1.6: both decimals have 1 whole, so I compare the tenths. Nine tenths is greater than 6 tenths, so 1.9 is greater."
Observations/Documentation		

Number

Activity 21 Assessment
Exploring Hundredths

Exploring Decimals (cont'd)

Rounds decimals with tenths to the nearest whole number	Relates visual representation of decimal with hundredths to place value	Recognizes and writes equivalent decimals
 "1.6 is 4 tenths away from 2 and 6 tenths away from 1. So, 1.6 is closer to 2."	 "0.34 represents 3 tenths and 4 hundredths, or 34 hundredths."	"0.2 = 0.20 2 tenths = 20 hundredths"

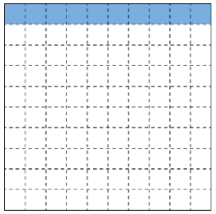
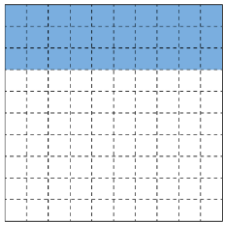
Observations/Documentation

Number

Activity 22 Assessment

Comparing and Ordering Decimals

Exploring Decimals

Demonstrates how decimals can be equally partitioned into tenths and hundredths	Relates visual representation of decimal with tenths to place value	Compares and orders decimals with tenths using a variety of strategies (e.g., benchmarks, grids)
 "The large square is one whole. It has ten equal-sized rows. Each row is one-tenth."	 "0.3; the digit in the tenth place is 3 because there are three tenths shaded."	"1.9 > 1.6: both decimals have 1 whole, so I compare the tenths. Nine tenths is greater than 6 tenths, so 1.9 is greater."

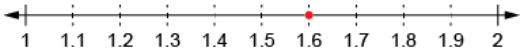
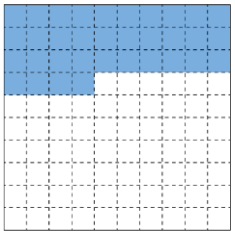
Observations/Documentation

Number

Activity 22 Assessment

Comparing and Ordering Decimals

Exploring Decimals (cont'd)

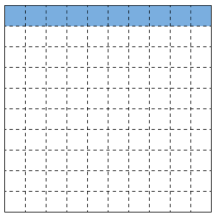
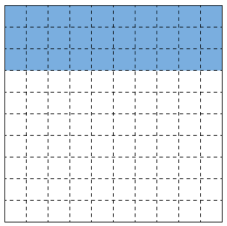
Rounds decimals with tenths to the nearest whole number	Relates visual representation of decimal with hundredths to place value	Recognizes and writes equivalent decimals
 "1.6 is 4 tenths away from 2 and 6 tenths away from 1. So, 1.6 is closer to 2."	 "0.34 represents 3 tenths and 4 hundredths, or 34 hundredths."	"0.2 = 0.20 2 tenths = 20 hundredths"

Observations/Documentation

Number

Activity 23 Assessment

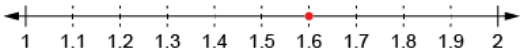
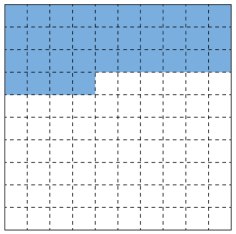
Decimals Consolidation

Exploring Decimals		
Demonstrates how decimals can be equally partitioned into tenths and hundredths  "The large square is one whole. It has ten equal-sized rows. Each row is one-tenth."	Relates visual representation of decimal with tenths to place value  "0.3; the digit in the tenth place is 3 because there are three tenths shaded."	Compares and orders decimals with tenths using a variety of strategies (e.g., benchmarks, grids) "1.9 > 1.6: both decimals have 1 whole, so I compare the tenths. Nine tenths is greater than 6 tenths, so 1.9 is greater."
Observations/Documentation		

Number

Activity 23 Assessment
Decimals Consolidation

Exploring Decimals (con't)

Rounds decimals with tenths to the nearest whole number	Relates visual representation of decimal with hundredths to place value	Recognizes and writes equivalent decimals
 "1.6 is 4 tenths away from 2 and 6 tenths away from 1. So, 1.6 is closer to 2."	 "0.34 represents 3 tenths and 4 hundredths, or 34 hundredths."	"0.2 = 0.20 2 tenths = 20 hundredths"

Observations/Documentation

Name_____ Date_____

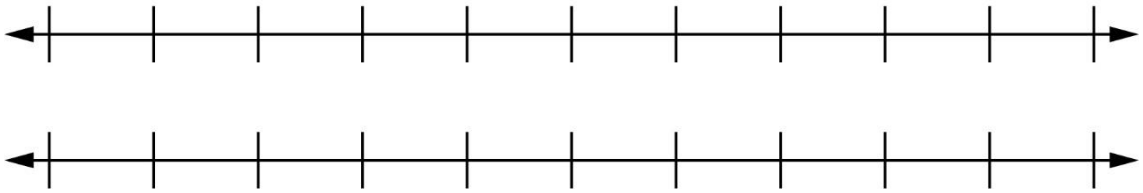
Number
Unit 5 Line Master 1

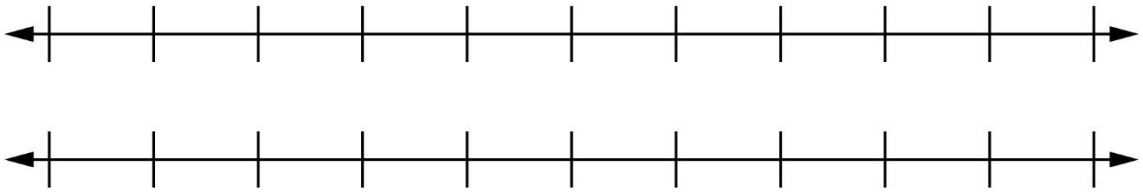
Ratio Tables

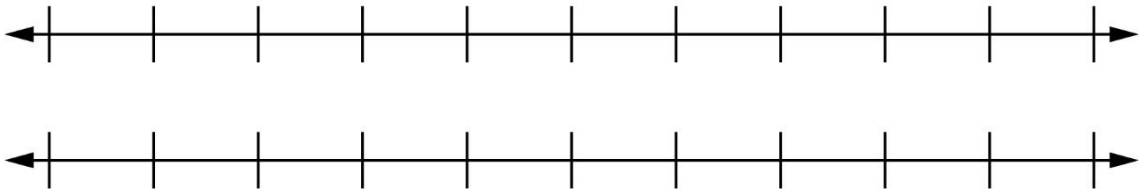
Name_____ Date_____

Number
Unit 5 Line Master 2

Double Number Lines







Name_____ Date_____

Number
Unit 5 Line Master 3a

Walking Trails

Problem A

Two students walked the Wilderness Trail.
Charlie walks at a moderate rate.
Suki walks at a fast rate.
How long did it take each student to walk the trail?

Wilderness trail: 7 km

Charlie

Distance (km)	1	2	3	4	5	6	7
Time (min)	10						

Suki

Distance (km)	1	2	3	4	5	6	7
Time (min)	8						

Name_____ Date_____

Number
Unit 5 Line Master 3b

Walking Trails (cont'd)

Problem B

Sofia walked the Nature Trail in 32 minutes.
At what rate did Sofia walk?

Distance (km)	1	2	3	4
Time (min)				32

Nature trail: 4 km

Problem C

Kavana walked for 30 minutes at a moderate rate.
How far did Kavana walk?

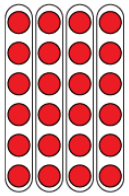
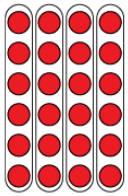
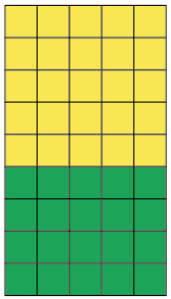
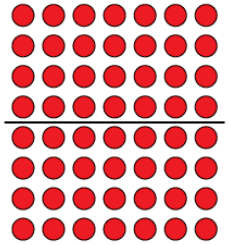
Distance (km)	1		
Time (min)	10		30

Number

Activity 24 Assessment

Strategies for Multiplication

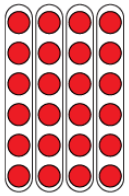
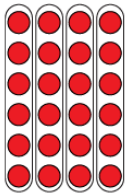
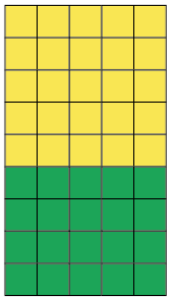
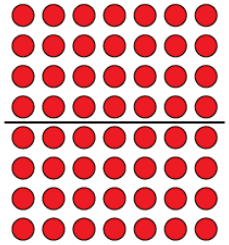
Fluency of Multiplication and Division Facts

Recalls and demonstrates multiplication and divisions facts to 5 × 5.  "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	Uses inverse operations to solve multiplication and division problems.  "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	Uses known facts to determine unknown facts "I can use the distributive property to split the multiplication into facts that I know, then add." 5 × 9 = 5 × 5 + 5 × 4 25 + 20 = 45 	Fluently creates and solves whole number multiplication and division problems. There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 
Observations/Documentation			

Number

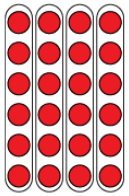
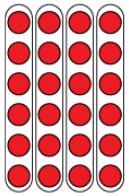
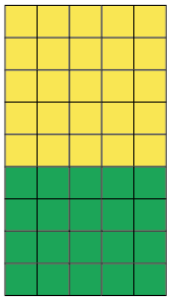
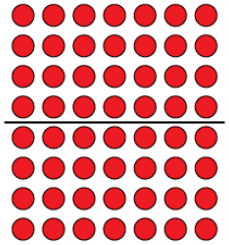
Activity 25 Assessment

Solving Multiplication Problems

Fluency of Multiplication and Division Facts			
Recalls and demonstrates multiplication and divisions facts to 5 × 5.  "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	Uses inverse operations to solve multiplication and division problems.  "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	Uses known facts to determine unknown facts "I can use the distributive property to split the multiplication into facts that I know, then add." 5 × 9 = 5 × 5 + 5 × 4 25 + 20 = 45 	Fluently creates and solves whole number multiplication and division problems. There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 
Observations/Documentation			

Number

Activity 26 Assessment
Relating Multiplication and Division

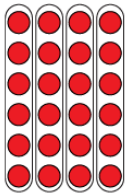
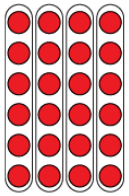
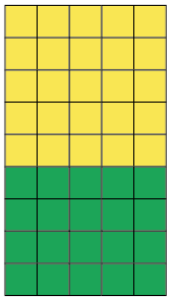
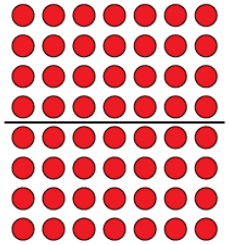
Fluency of Multiplication and Division Facts			
Recalls and demonstrates multiplication and divisions facts to 5 × 5.  "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	Uses inverse operations to solve multiplication and division problems.  "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	Uses known facts to determine unknown facts "I can use the distributive property to split the multiplication into facts that I know, then add." 5 × 9 = 5 × 5 + 5 × 4 25 + 20 = 45 	Fluently creates and solves whole number multiplication and division problems. There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 
Observations/Documentation			

Number

Activity 27 Assessment

Strategies for Division

Fluency of Multiplication and Division Facts

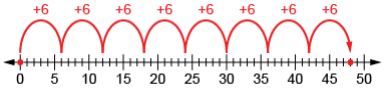
Recalls and demonstrates multiplication and divisions facts to 5 × 5.  "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	Uses inverse operations to solve multiplication and division problems.  "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	Uses known facts to determine unknown facts "I can use the distributive property to split the multiplication into facts that I know, then add." 5 × 9 = 5 × 5 + 5 × 4 25 + 20 = 45 	Fluently creates and solves whole number multiplication and division problems. There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 
Observations/Documentation			

Number

Activity 28 Assessment

Whole Number Rates

Representing Multiplicative Relationships as Rates

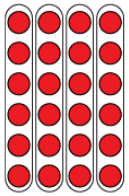
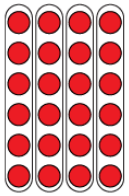
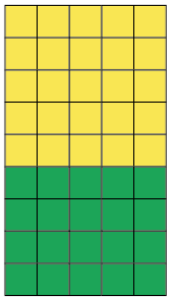
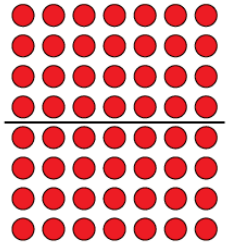
Solves unit rate problems concretely and pictorially	Uses various tools to solve multiple unit rate problems.	Uses inverse relationships to record and solve unit rate problems	Flexibly applies multiplicative reasoning to solve different types of unit rate problems.
It takes 6 apples to make an apple pie. How many apples are needed to make 9 pies?  "I used a number line to show how the number of apples increases as the number of pies increases."	Kiran and Simi walk 30 km. Kiran walks 5 km per hour and Simi walks 6 km in one hour. How long will it take each person to walk 30 km? **Hours** 1 2 3 4 5 6 **Kiran (km)** 5 10 15 20 25 30 **Sami (km)** 6 12 18 24 30 ? "I used a ratio table. It makes it easy to make comparisons and to solve the problem."	Marc paddled a canoe 10 km in 150 minutes. At what rate did he paddle? ÷10 **Minutes** 150 15 **Marc (km)** 10 1 ÷10 "10 km × **rate per minute** = 150 minutes I thought division: 150 ÷ 10 = ? I know 10 × **15** = 150. So, Marc paddled at the **rate of 15 km per minute."**	Shila cuts lawns in the neighborhood and charges $7/hour. If Shila works for 6 hours each week, how many hours will Shila need to work to make $168? **Hours** 6 12 18 24 **Earnings ($)** 42 84 126 168 "I know that Shila makes $42 a week (7 × 6 = 42). From the ratio table, Shila will make $168 dollars after 24 hours of work."

Observations/Documentation

Number

Activity 29 Assessment

Fluency with Multiplication and Division Facts Consolidation

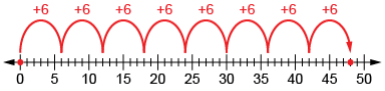
Fluency of Multiplication and Division Facts			
Recalls and demonstrates multiplication and divisions facts to 5 × 5.  "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	Uses inverse operations to solve multiplication and division problems.  "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	Uses known facts to determine unknown facts "I can use the distributive property to split the multiplication into facts that I know, then add." 5 × 9 = 5 × 5 + 5 × 4 25 + 20 = 45 	Fluently creates and solves whole number multiplication and division problems. There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 
Observations/Documentation			

Number

Activity 29 Assessment

Fluency with Multiplication and Division Facts Consolidation

Representing Multiplicative Relationships as Rates

Solves unit rate problems concretely and pictorially	Uses various tools to solve multiple unit rate problems.	Uses inverse relationships to record and solve unit rate problems	Flexibly applies multiplicative reasoning to solve different types of unit rate problems.
It takes 6 apples to make an apple pie. How many apples are needed to make 9 pies?  "I used a number line to show how the number of apples increases as the number of pies increases."	Kiran and Simi walk 30 km. Kiran walks 5 km per hour and Simi walks 6 km in one hour. How long will it take each person to walk 30 km? **Hours** 1 2 3 4 5 6 **Kiran (km)** 5 10 15 20 25 30 **Sami (km)** 6 12 18 24 30 ? "I used a ratio table. It makes it easy to make comparisons and to solve the problem."	Marc paddled a canoe 10 km in 150 minutes. At what rate did he paddle? ÷10 **Minutes** 150 15 **Marc (km)** 10 1 ÷10 "10 km × **rate per minute** = 150 minutes I thought division: 150 ÷ 10 = ? I know 10 × **15** = 150. So, Marc paddled at the **rate of 15 km per minute."**	Shila cuts lawns in the neighborhood and charges $7/hour. If Shila works for 6 hours each week, how many hours will Shila need to work to make $168? **Hours** 6 12 18 24 **Earnings ($)** 42 84 126 168 "I know that Shila makes $42 a week (7 × 6 = 42). From the ratio table, Shila will make $168 dollars after 24 hours of work."

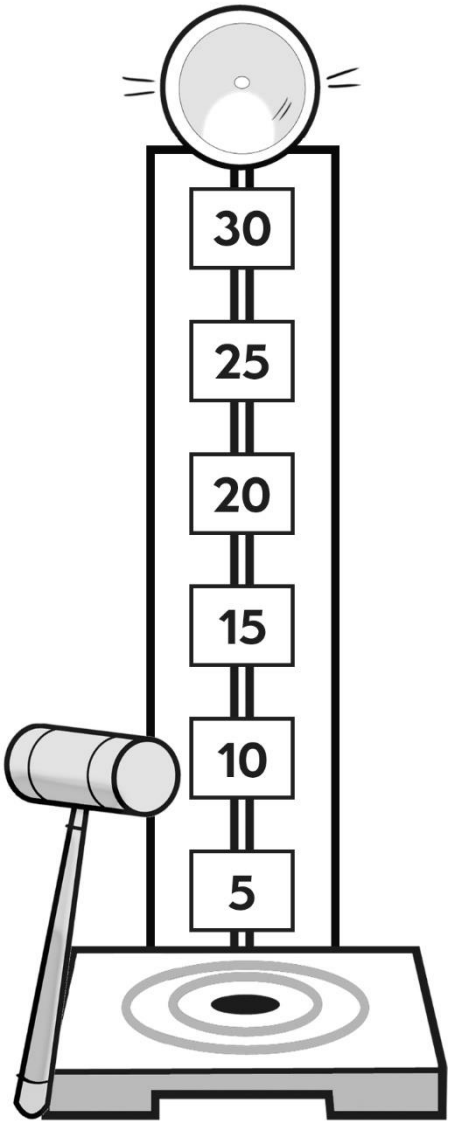
Observations/Documentation

Name_____ Date_____

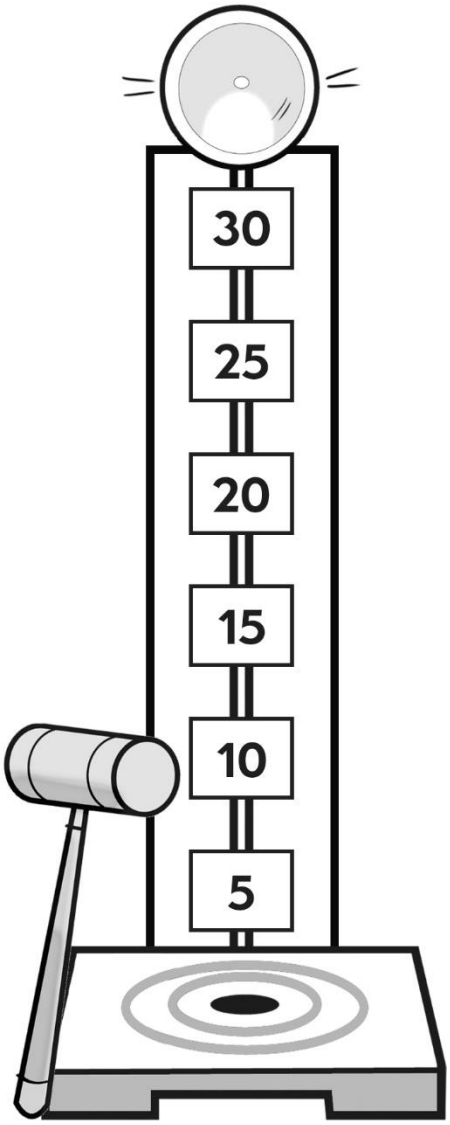
Number
Unit 6 Line Master 1a

Ring the Bell!

Gameboard



Player A



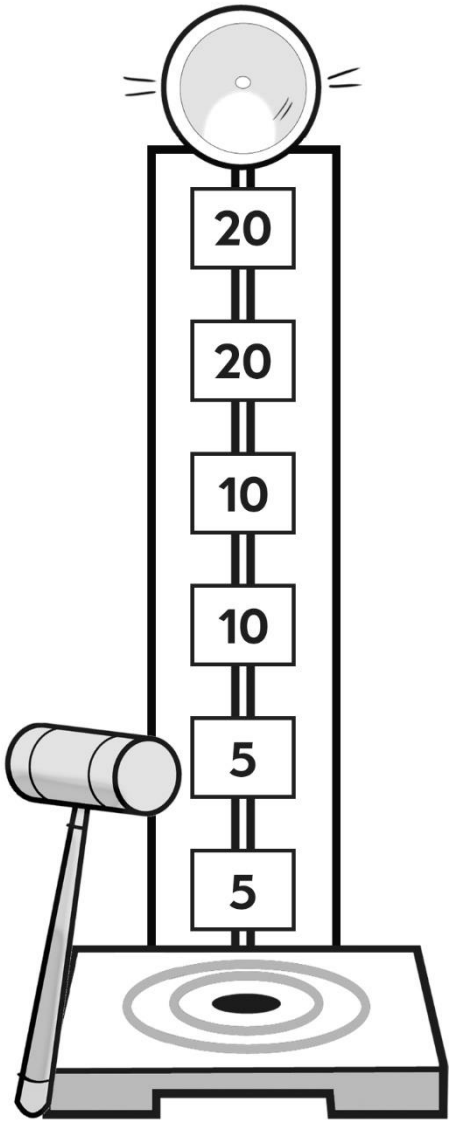
Player B

Name_____ Date_____

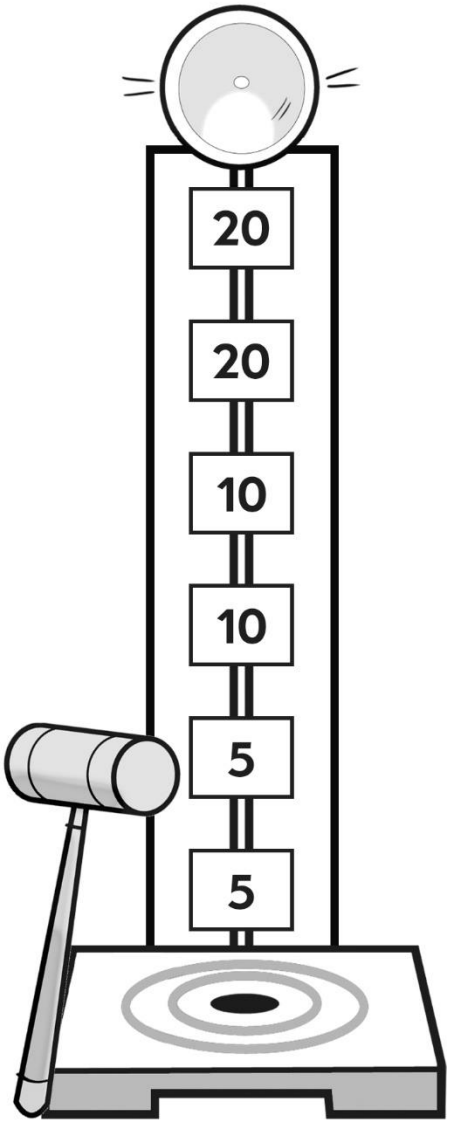
Number
Unit 6 Line Master 1b

Ring the Bell! (cont'd)

Gameboard



Player A



Player B

Name_____ Date_____

Number
Unit 6 Line Master 2a

Ring the Bell!

Game Cards

32 ÷ 6	77 ÷ 5	90 ÷ 4
98 ÷ 3	41 ÷ 8	63 ÷ 6
55 ÷ 3	81 ÷ 8	98 ÷ 4
54 ÷ 4	59 ÷ 2	89 ÷ 6
48 ÷ 9	87 ÷ 9	62 ÷ 2
52 ÷ 2	42 ÷ 2	77 ÷ 3

Name_____ Date_____

Number
Unit 6 Line Master 2b

Ring the Bell! (cont'd)

Game Cards

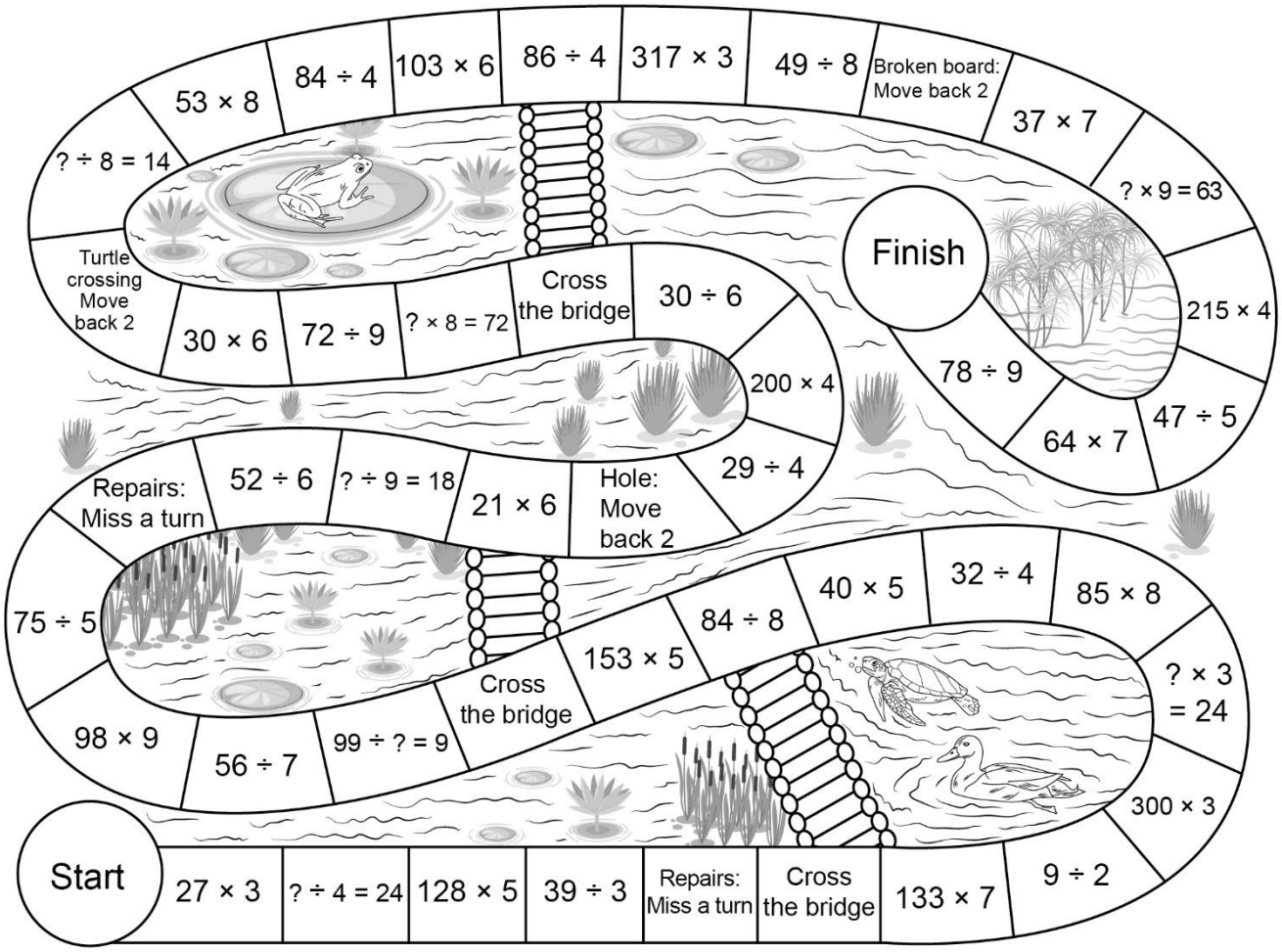
32 ÷ 6	48 ÷ 5	78 ÷ 4
61 ÷ 3	41 ÷ 8	63 ÷ 6
44 ÷ 4	81 ÷ 8	9 ÷ 2
59 ÷ 3	42 ÷ 2	39 ÷ 8

Name_____ Date_____

Number
Unit 6 Line Master 3a

Marsh Dash!

Gameboard A

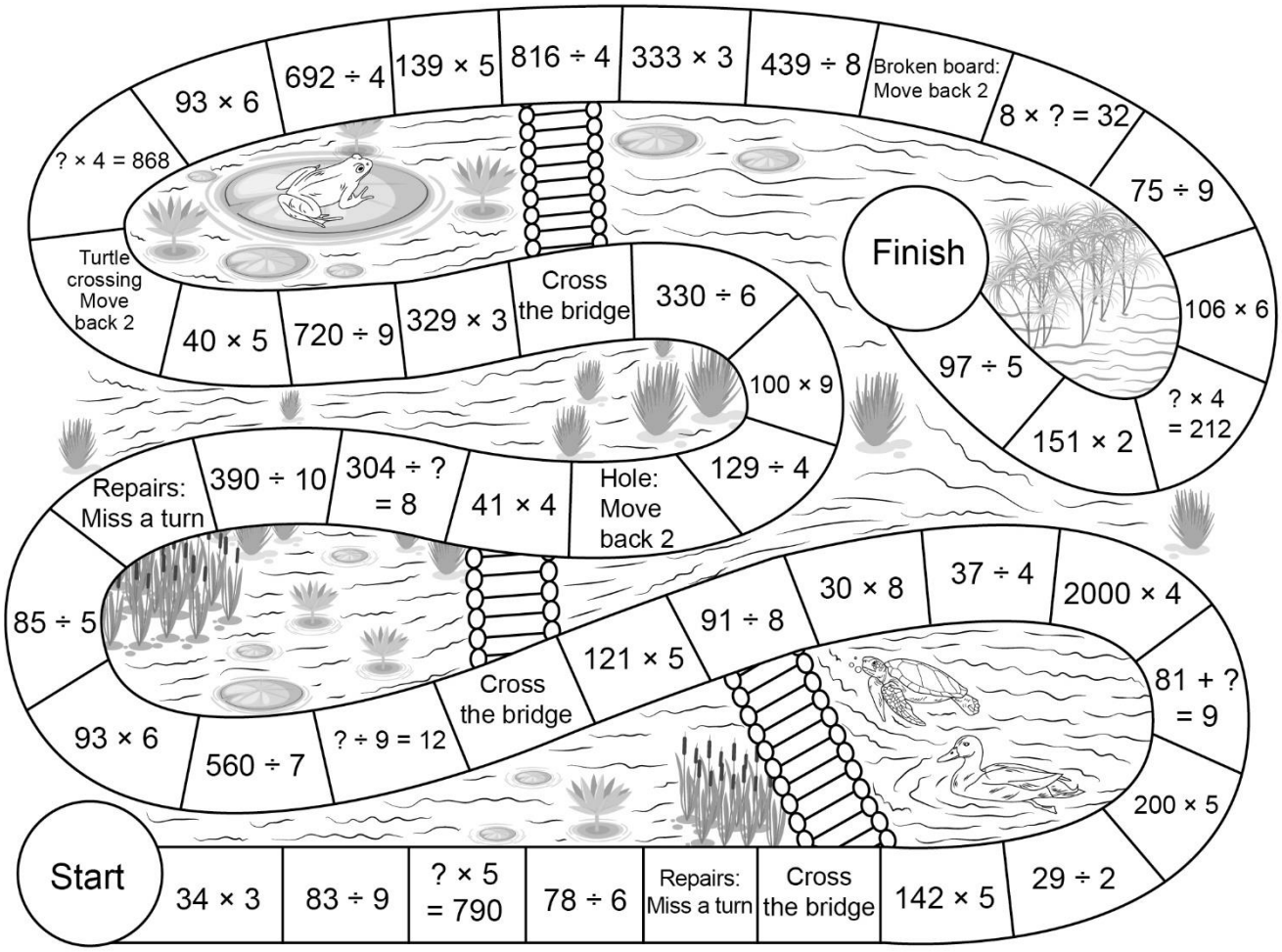


Name_____ Date_____

Number
Unit 6 Line Master 3b

Marsh Dash!

Gameboard B

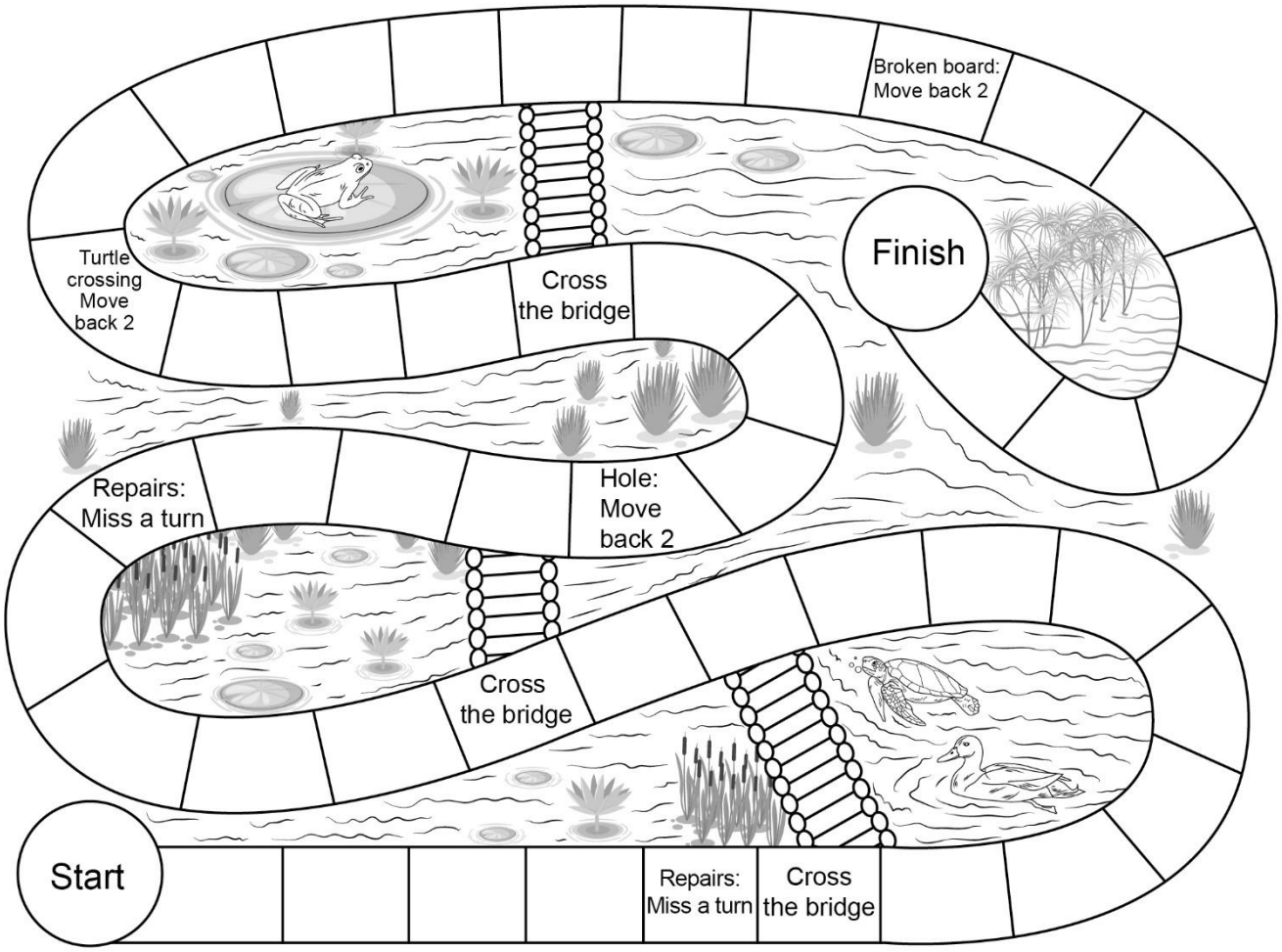


Name_____ Date_____

Number
Unit 6 Line Master 3c

Marsh Dash!

Blank Gameboard



Number

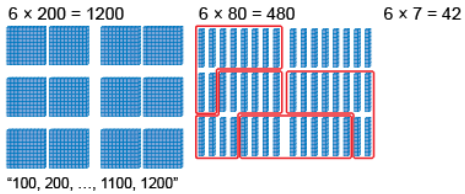
Activity 30 Assessment

Exploring Strategies for Multiplying

Conceptual Meaning of Multiplication and Division with Larger Numbers

Models multiplication and division situations concretely and pictorially

6 × 287 = ?

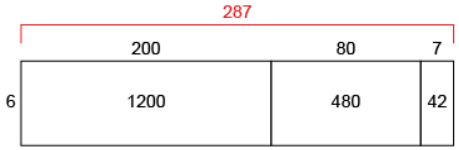


1200 + 480 + 42 = 1722

"I traded groups of 10 rods for a flat."

Models multiplication and division situations using an open array.

6 × 287 = ?



"I can use an open array to help me multiply."

Uses place value to multiply whole numbers by 10, 100, and 1000 and to divide by 10.

60 × 7 × 100 = 6 × 10 × 7 × 100
= 42 × 1000
= 42 000

"I used the associative property to make friendly numbers, then used the known fact 6 × 7 = 42."

Observations/Documentation

Number

Activity 30 Assessment

Exploring Strategies for Multiplying

Conceptual Meaning of Multiplication and Division with Larger Numbers (cont'd)

Decomposes numbers and use partial products and partial quotients to multiply and divide. 6 × 287 = ? 287 × 6 42 (7 × 6) 480 (80 × 6) +1200 (200 × 6) 1722 "I decomposed 287 into hundreds, tens, and ones, then used partial products to multiply."	Estimates to determine if answer to multiplication or division problem is reasonable. 6 × 287 = 1722 287 is close to 300. 6 × 300 = 1800 1800 is close to the answer I calculate, 1722. So, my answer is reasonable.	Creates and solves multiplication and division problems flexibly using a variety of strategies. 123 ÷ 6 =? "I counted 123 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?" 6)123 60 10 63 60 10 R 3 20 "I round up to 21 pages to be sure all photos will fit."

Observations/Documentation

Number

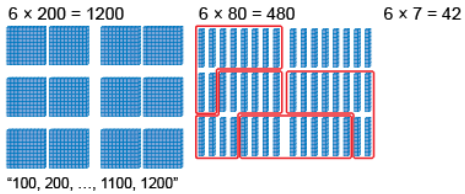
Activity 31 Assessment

Estimating Products

Conceptual Meaning of Multiplication and Division with Larger Numbers

Models multiplication and division situations concretely and pictorially

6 × 287 = ?

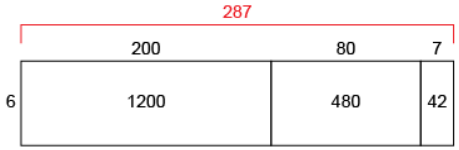


1200 + 480 + 42 = 1722

"I traded groups of 10 rods for a flat."

Models multiplication and division situations using open arrays.

6 × 287 = ?



"I can use an open array to help me multiply."

Uses place value to multiply whole numbers by 10, 100, and 1000 and to divide by 10.

60 × 7 × 100 = 6 × 10 × 7 × 100
= 42 × 1000
= 42 000

"I used the associative property
to make friendly numbers,
then used the known fact 6 × 7 = 42."

Observations/Documentation

Number

Activity 31 Assessment

Estimating Products

Conceptual Meaning of Multiplication and Division with Larger Numbers (cont'd)

Decomposes numbers and use partial products and partial quotients to multiply and divide. 6 × 287 = ? 287 × 6 42 — 7 × 6 480 — 80 × 6 + 1200 — 200 × 6 1722 "I decomposed 287 into hundreds, tens, and ones, then used partial products to multiply."	Estimates to determine if answer to multiplication or division problem is reasonable. 6 × 287 = 1722 287 is close to 300. 6 × 300 = 1800 1800 is close to the answer I calculate, 1722. So, my answer is reasonable.	Creates and solves multiplication and division problems flexibly using a variety of strategies. 123 ÷ 6 =? "I counted 123 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?" 6) 123 60 — 10 63 60 — 10 R 3 — 20 "I round up to 21 pages to be sure all photos will fit."

Observations/Documentation

Number

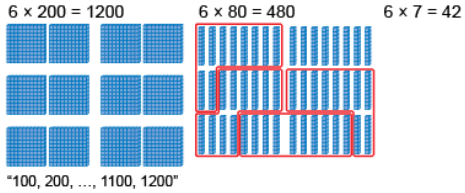
Activity 32 Assessment

Exploring Strategies for Dividing

Conceptual Meaning of Multiplication and Division with Larger Numbers

Models multiplication and division situations concretely and pictorially

6 × 287 = ?

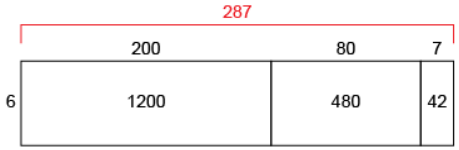


1200 + 480 + 42 = 1722

"I traded groups of 10 rods for a flat."

Models multiplication and division situations using an open array.

6 × 287 = ?



"I can use an open array to help me multiply."

Uses place value to multiply whole numbers by 10, 100, and 1000 and to divide by 10.

60 × 7 × 100 = 6 × 10 × 7 × 100
= 42 × 1000
= 42 000

"I used the associative property
to make friendly numbers,
then used the known fact 6 × 7 = 42."

Observations/Documentation

Number

Activity 32 Assessment

Exploring Strategies for Dividing

Conceptual Meaning of Multiplication and Division with Larger Numbers (cont'd)

Decomposes numbers and use partial products and partial quotients to multiply and divide. 6 × 287 = ? 287 × 6 42 (7 × 6) 480 (80 × 6) + 1200 (200 × 6) 1722 "I decomposed 287 into hundreds, tens, and ones, then used partial products to multiply."	Estimates to determine if answer to multiplication or division problem is reasonable. 6 × 287 = 1722 287 is close to 300. 6 × 300 = 1800 1800 is close to the answer I calculate, 1722. So, my answer is reasonable.	Creates and solves multiplication and division problems flexibly using a variety of strategies. 123 ÷ 6 =? "I counted 123 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?" 6)123 60 10 63 60 10 R 3 20 "I round up to 21 pages to be sure all photos will fit."

Observations/Documentation

Number

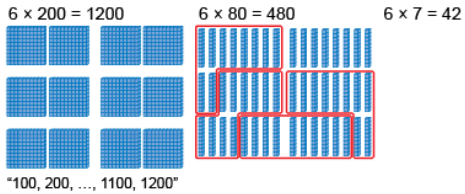
Activity 33 Assessment

Estimating Quotients

Conceptual Meaning of Multiplication and Division with Larger Numbers

Models multiplication and division situations concretely and pictorially

6 × 287 = ?

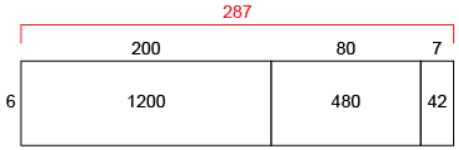


1200 + 480 + 42 = 1722

"I traded groups of 10 rods for a flat."

Models multiplication and division situations using an open array.

6 × 287 = ?



"I can use an open array to help me multiply."

Uses place value to multiply whole numbers by 10, 100, and 1000 and to divide by 10.

60 × 7 × 100 = 6 × 10 × 7 × 100
= 42 × 1000
= 42 000

"I used the associative property to make friendly numbers, then used the known fact 6 × 7 = 42."

Observations/Documentation

Number

Activity 33 Assessment

Estimating Quotients

Conceptual Meaning of Multiplication and Division with Larger Numbers (cont'd)		
Decomposes numbers and use partial products and partial quotients to multiply and divide. 6 × 287 = ? 287 × 6 42 (7 × 6) 480 (80 × 6) + 1200 (200 × 6) 1722 "I decomposed 287 into hundreds, tens, and ones, then used partial products to multiply."	Estimates to determine if answer to multiplication or division problem is reasonable. 6 × 287 = 1722 287 is close to 300. 6 × 300 = 1800 1800 is close to the answer I calculate, 1722. So, my answer is reasonable.	Creates and solves multiplication and division problems flexibly using a variety of strategies. 123 ÷ 6 =? "I counted 123 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?" 6)123 60 10 63 60 10 R 3 20 "I round up to 21 pages to be sure all photos will fit."
Observations/Documentation		

Number

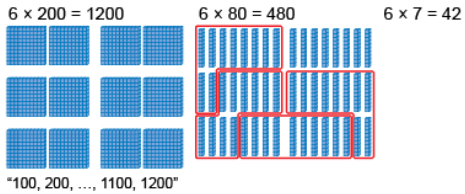
Activity 34 Assessment

Dividing with Remainders

Conceptual Meaning of Multiplication and Division with Larger Numbers

Models multiplication and division situations concretely and pictorially

6 × 287 = ?

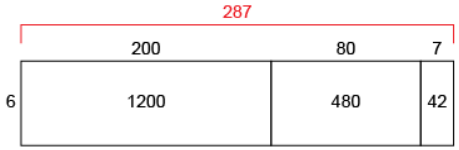


1200 + 480 + 42 = 1722

"I traded groups of 10 rods for a flat."

Models multiplication and division situations using open arrays.

6 × 287 = ?



"I can use an open array to help me multiply."

Uses place value to multiply whole numbers by 10, 100, and 1000 and to divide by 10.

60 × 7 × 100 = 6 × 10 × 7 × 100
= 42 × 1000
= 42 000

"I used the associative property
to make friendly numbers,
then used the known fact 6 × 7 = 42."

Observations/Documentation

Number

Activity 34 Assessment

Dividing with Remainders

Conceptual Meaning of Multiplication and Division with Larger Numbers (cont'd)

Decomposes numbers and use partial products and partial quotients to multiply and divide. 6 × 287 = ? 287 × 6 42 — 7 × 6 480 — 80 × 6 + 1200 — 200 × 6 1722 "I decomposed 287 into hundreds, tens, and ones, then used partial products to multiply."	Estimates to determine if answer to multiplication or division problem is reasonable. 6 × 287 = 1722 287 is close to 300. 6 × 300 = 1800 1800 is close to the answer I calculate, 1722. So, my answer is reasonable.	Creates and solves multiplication and division problems flexibly using a variety of strategies. 123 ÷ 6 =? "I counted 123 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?" 6)123 60 — 10 63 60 — 10 R 3 — 20 "I round up to 21 pages to be sure all photos will fit."

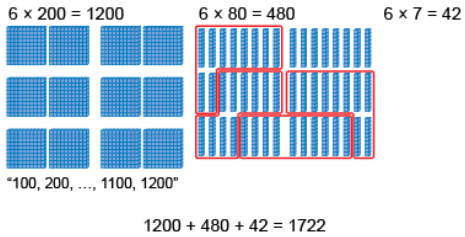
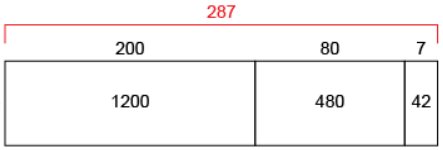
Observations/Documentation

Number

Activity 35 Assessment

Multiplying and Dividing Larger Numbers Consolidation

Conceptual Meaning of Multiplication and Division with Larger Numbers

Models multiplication and division situations concretely and pictorially 6 × 287 = ?  1200 + 480 + 42 = 1722 "I traded groups of 10 rods for a flat."	Models multiplication and division situations using an open array. 6 × 287 = ?  "I can use an open array to help me multiply."	Uses place value to multiply whole numbers by 10, 100, and 1000 and to divide by 10. 60 × 7 × 100 = 6 × 10 × 7 × 100 = 42 × 1000 = 42 000 "I used the associative property to make friendly numbers, then used the known fact 6 × 7 = 42."

Observations/Documentation

Number

Activity 35 Assessment

Multiplying and Dividing Larger Numbers Consolidation

Conceptual Meaning of Multiplication and Division with Larger Numbers (cont'd)

Decomposes numbers and use partial products and partial quotients to multiply and divide. 6 × 287 = ? 287 × 6 42 — 7 × 6 480 — 80 × 6 + 1200 — 200 × 6 1722 "I decomposed 287 into hundreds, tens, and ones, then used partial products to multiply."	Estimates to determine if answer to multiplication or division problem is reasonable. 6 × 287 = 1722 287 is close to 300. 6 × 300 = 1800 1800 is close to the answer I calculate, 1722. So, my answer is reasonable.	Creates and solves multiplication and division problems flexibly using a variety of strategies. 123 ÷ 6 =? "I counted 123 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?" 6) 123 60 — 10 63 60 — 10 R 3 — 20 "I round up to 21 pages to be sure all photos will fit."

Observations/Documentation

Name_____ Date_____

Number
Unit 7 Line Master 1a

First to 10!

	+		=		(Sum 1)
(Sum 1)	+		=		(Sum 2)
(Sum 2)	+		=		(Sum 3)
(Sum 3)	+		=		(Sum 4)
(Sum 4)	+		=		(Sum 5)
(Sum 5)	+		=		(Sum 6)
(Sum 6)	+		=		(Sum 7)
(Sum 7)	+		=		(Sum 8)
(Sum 8)	+		=		(Sum 9)
(Sum 9)	+		=		(Sum 10)
(Sum 10)	+		=		(Sum 11)
(Sum 11)	+		=		(Sum 12)

Name_____ Date_____

Number
Unit 7 Line Master 1b

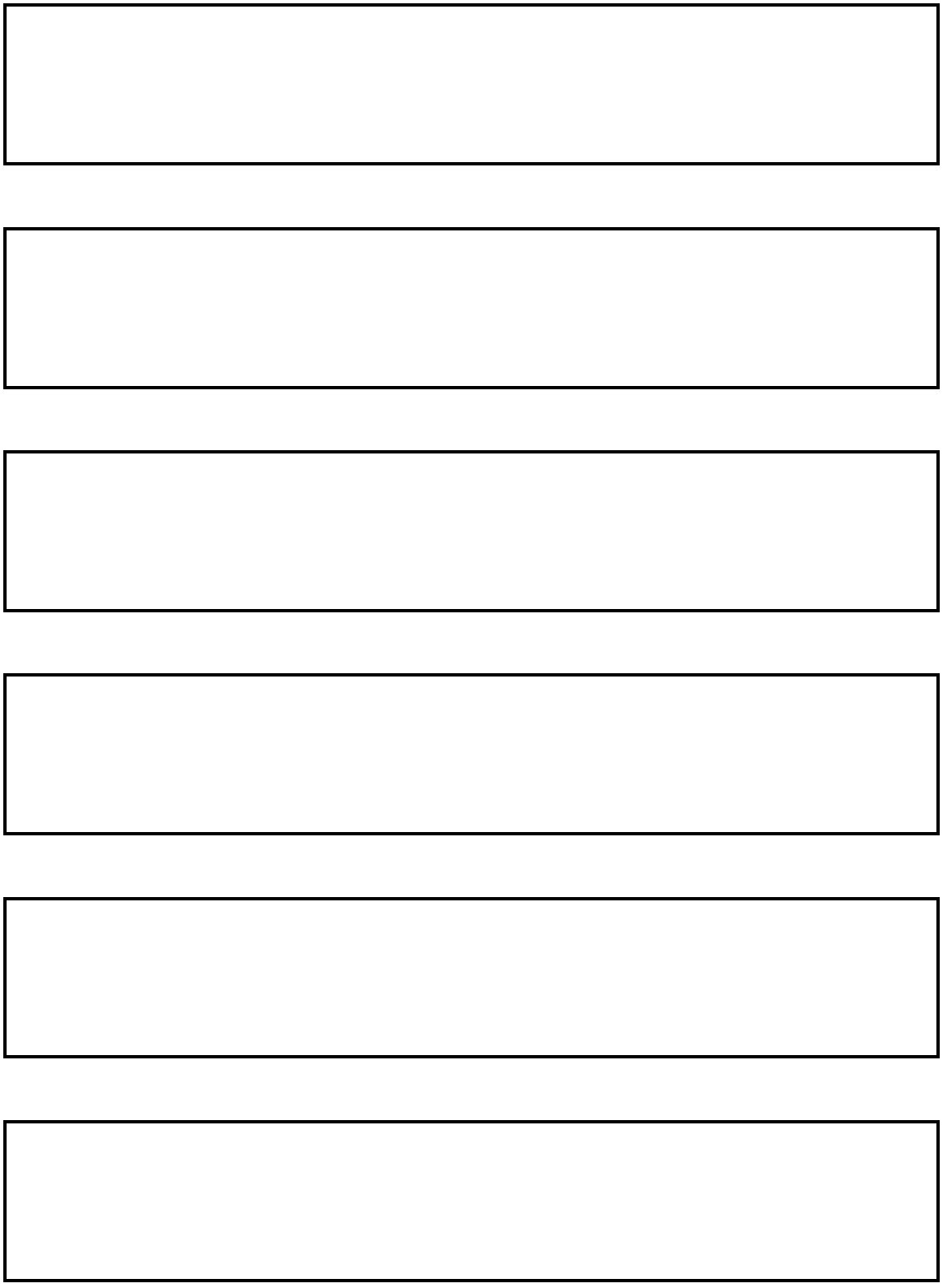
First to 0!

10	–	_____	=	_____ (Difference 1)
_____ (Difference 1)	–	_____	=	_____ (Difference 2)
_____ (Difference 2)	–	_____	=	_____ (Difference 3)
_____ (Difference 3)	–	_____	=	_____ (Difference 4)
_____ (Difference 4)	–	_____	=	_____ (Difference 5)
_____ (Difference 5)	–	_____	=	_____ (Difference 6)
_____ (Difference 6)	–	_____	=	_____ (Difference 7)
_____ (Difference 7)	–	_____	=	_____ (Difference 8)
_____ (Difference 8)	–	_____	=	_____ (Difference 9)
_____ (Difference 9)	–	_____	=	_____ (Difference 10)
_____ (Difference 10)	–	_____	=	_____ (Difference 11)
_____ (Difference 11)	–	_____	=	_____ (Difference 12)

Name_____ Date_____

Number
Unit 7 Line Master 2

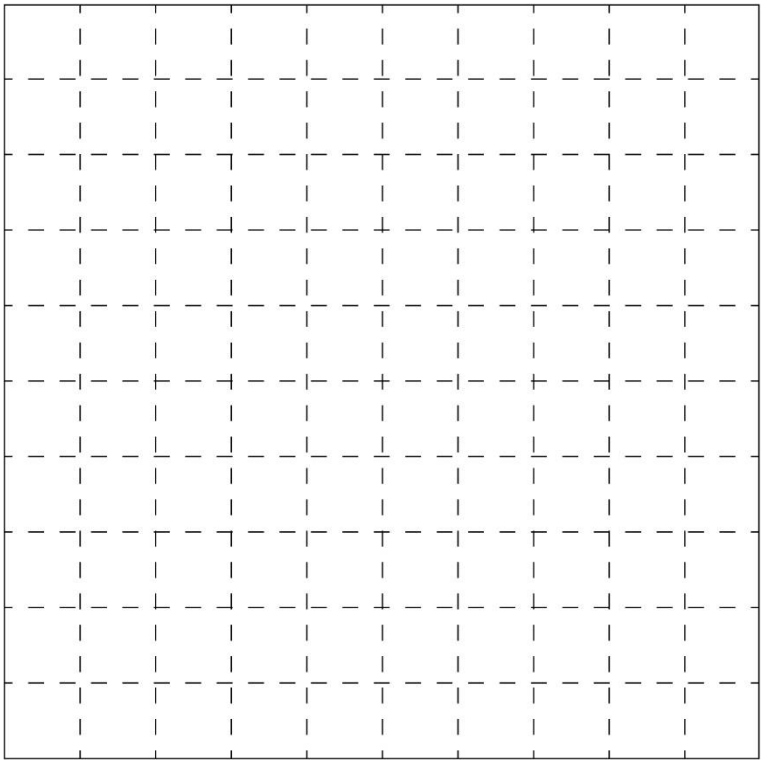
Paper Strips

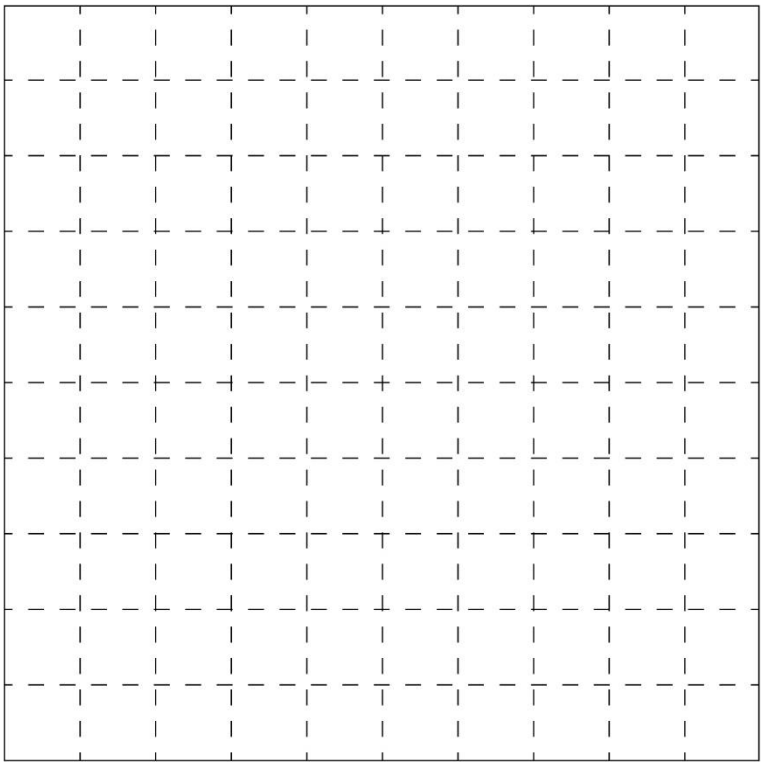


Name_____ Date_____

Number
Unit 7 Line Master 3

Hundredths Grids





Name_____ Date_____

Number
Unit 7 Line Master 4

Place-Value Mat

Hundredths

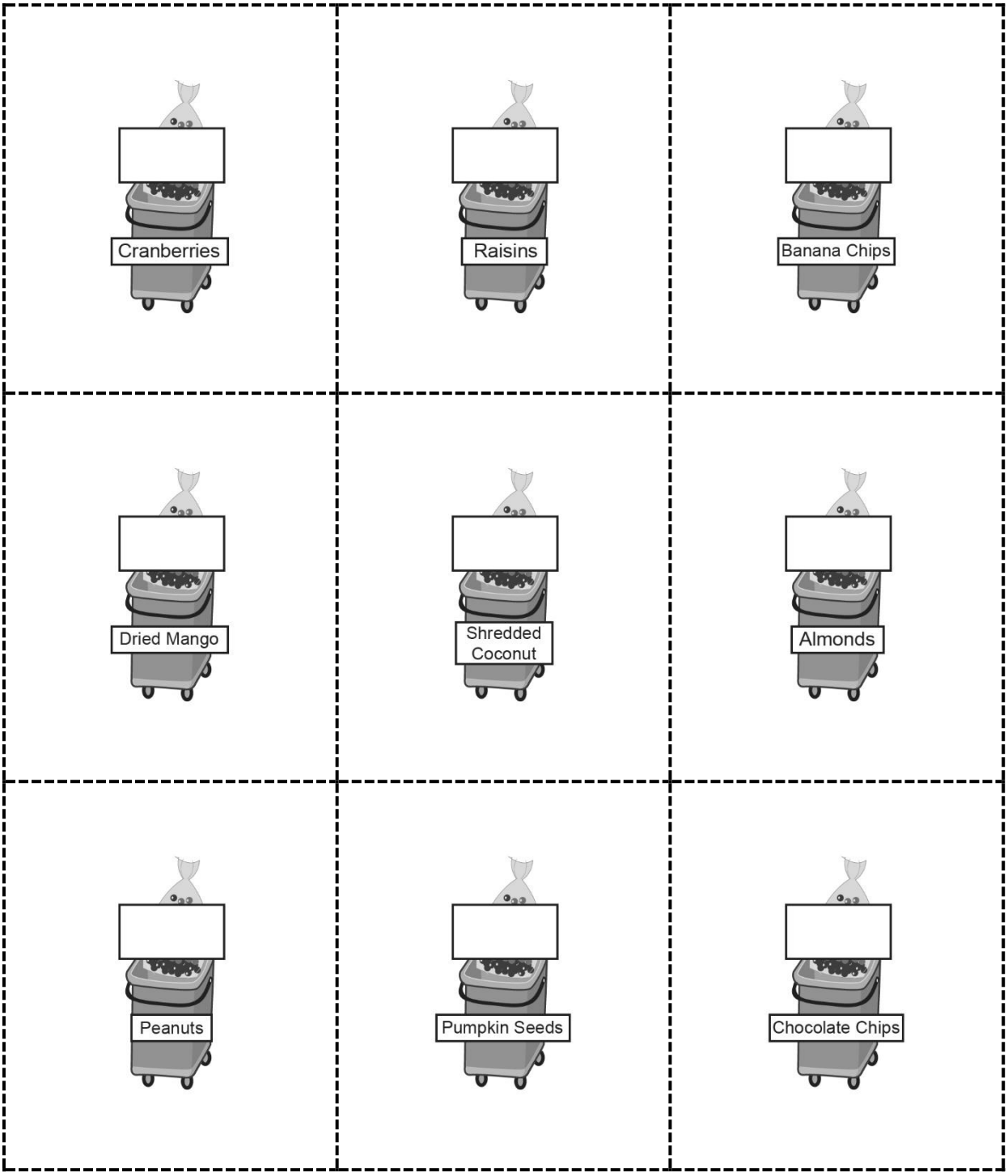
Hundreds	Tens	Ones	•	Tenths	Hundredths

My Number

Name_____ Date_____

Number
Unit 7 Line Master 5

Trail Mix Shopping!



Number

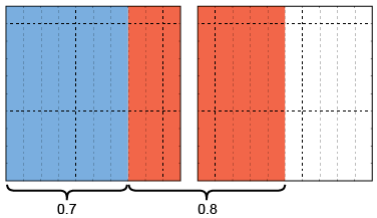
Activity 36 Assessment

Estimating Sums and Differences with Decimals

Conceptual Meaning of Addition and Subtraction of Decimals

Recognizes addition and subtraction situations and models concretely to add or subtract to tenths

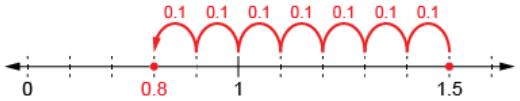
0.7 + 0.8 = 1.5



“7 tenths + 8 more tenths = 1 whole and 5 tenths”

Models and symbolizes ways to solve problems by using a number line

1.5 – 0.7 = ?



Uses an understanding of place value to add or subtract decimals with tenths (decomposes both numbers)

14.6 + 27.8 = ?

14 + 27 = 41 (whole numbers)
0.6 + 0.8 = 1.4 (decimals)
41 + 1.4 = 42.4

“I decomposed both numbers,
added the whole numbers, then the tenths.”

Observations/Documentation

Number

Activity 36 Assessment

Estimating Sums and Differences with Decimals

Conceptual Meaning of Addition and Subtraction of Decimals (cont'd)		
Uses an understanding of place value to decompose one number 14.6 + 27.8 = ? 27.8 = 27 + 0.8 14.6 + 27 = 41.6 41.6 + 0.8 = 42.4 "I used place value to add on the second number."	Uses estimation and mental math strategies to check reasonableness of solutions 25.86 – 17.23 = 8.63 26 – 17 = 9 "8.63 is the answer I calculated, and it is close to 9, so my answer is reasonable."	Solves addition and subtraction problems flexibly, using a variety of strategies 25.85 – 17.21 = ? 25.85 + 0.15 = 26 17.21 + 0.15 = 17.36 26 – 17.36 = 8.64 1 1 25.85 – 17.21 8.64
Observations/Documentation		

Number

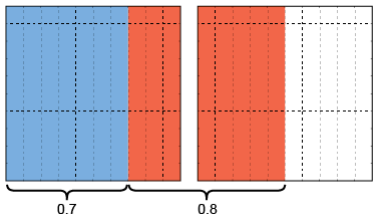
Activity 37 Assessment

Adding and Subtracting Decimals

Conceptual Meaning of Addition and Subtraction of Decimals

Recognizes addition and subtraction situations and models concretely to add or subtract to tenths

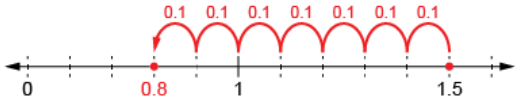
0.7 + 0.8 = 1.5



“7 tenths + 8 more tenths = 1 whole and 5 tenths”

Models and symbolizes ways to solve problems by using a number line

1.5 – 0.7 = ?



Uses an understanding of place value to add or subtract decimals with tenths (decomposes both numbers)

14.6 + 27.8 = ?

14 + 27 = 41 (whole numbers)
0.6 + 0.8 = 1.4 (decimals)
41 + 1.4 = 42.4

“I decomposed both numbers,
added the whole numbers, then the tenths.”

Observations/Documentation

Number

Activity 37 Assessment

Adding and Subtracting Decimals

Conceptual Meaning of Addition and Subtraction of Decimals (cont'd)		
Uses an understanding of place value to decompose one number 14.6 + 27.8 = ? 27.8 = 27 + 0.8 14.6 + 27 = 41.6 41.6 + 0.8 = 42.4 "I used place value to add on the second number."	Uses estimation and mental math strategies to check reasonableness of solutions 25.86 – 17.23 = 8.63 26 – 17 = 9 "8.63 is the answer I calculated, and it is close to 9, so my answer is reasonable."	Solves addition and subtraction problems flexibly, using a variety of strategies 25.85 – 17.21 = ? 25.85 + 0.15 = 26 17.21 + 0.15 = 17.36 26 – 17.36 = 8.64 1 1 25.85 – 17.21 8.64
Observations/Documentation		

Number

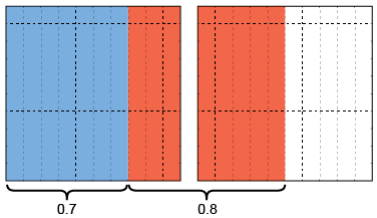
Activity 38 Assessment

Using Mental Math to Add and Subtract Decimals

Conceptual Meaning of Addition and Subtraction of Decimals

Recognizes addition and subtraction situations and models concretely to add or subtract to tenths

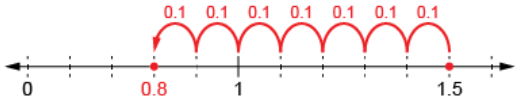
0.7 + 0.8 = 1.5



“7 tenths + 8 more tenths = 1 whole and 5 tenths”

Models and symbolizes ways to solve problems by using a number line

1.5 – 0.7 = ?



Uses an understanding of place value to add or subtract decimals with tenths (decomposes both numbers)

14.6 + 27.8 = ?

14 + 27 = 41 (whole numbers)
0.6 + 0.8 = 1.4 (decimals)
41 + 1.4 = 42.4

“I decomposed both numbers,
added the whole numbers, then the tenths.”

Observations/Documentation

Number

Activity 38 Assessment

Using Mental Math to Add and Subtract Decimals

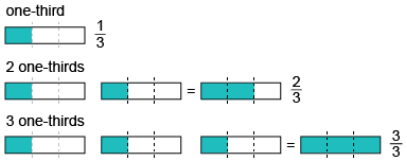
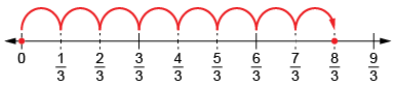
Conceptual Meaning of Addition and Subtraction of Decimals (cont'd)		
Uses an understanding of place value to decompose one number 14.6 + 27.8 = ? 27.8 = 27 + 0.8 14.6 + 27 = 41.6 41.6 + 0.8 = 42.4 "I used place value to add on the second number."	Uses estimation and mental math strategies to check reasonableness of solutions 25.86 – 17.23 = 8.63 26 – 17 = 9 "8.63 is the answer I calculated, and it is close to 9, so my answer is reasonable."	Solves addition and subtraction problems flexibly, using a variety of strategies 25.85 – 17.21 = ? 25.85 + 0.15 = 26 17.21 + 0.15 = 17.36 26 – 17.36 = 8.64 1 1 25.85 – 17.21 8.64
Observations/Documentation		

Number

Activity 39 Assessment

Repeated Addition with Unit Fractions

Relationship Between Repeated Addition of Unit Fractions and Multiplication

Counts unit fractions	Concretely solves problems involving the repeated addition of unit fractions	Models symbolically and describes repeated addition of unit fractions	Uses multiplication of unit fractions to flexibly solve related problems
 "1 one-third, 2 one-thirds, 3 one-thirds"	Miranda feeds her puppy, Atlas, $\frac{1}{3}$ cup of food, 4 times per day. How much food does the puppy get in two days?  "1 one-third, 2 one-thirds, 3 one-thirds, 4 one-thirds, 5 one-thirds, 6 one-thirds, 7 one-thirds, 8 one-thirds" $\frac{8}{3}$ cups = $2\frac{2}{3}$ cups	 $\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}=\frac{8}{3}$ $\frac{8}{3}=\frac{6}{3}+\frac{2}{3}=2\frac{2}{3}$ "Atlas gets $2\frac{2}{3}$ cups of food per day."	Atlas is fed 4 times per day for 2 days: $4 \times 2 = 8$ $8 \times \frac{1}{3}=\frac{8}{3}$, or $2\frac{2}{3}$ "Atlas gets $2\frac{2}{3}$ cups of food."

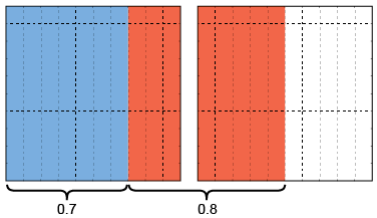
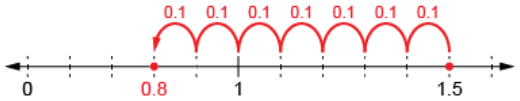
Observations/Documentation

Number

Activity 40 Assessment

Operations with Fractions and Decimals Consolidation

Conceptual Meaning of Addition and Subtraction of Decimals

Recognizes addition and subtraction situations and models concretely to add or subtract to tenths 0.7 + 0.8 = 1.5  "7 tenths + 8 more tenths = 1 whole and 5 tenths"	Models and symbolizes ways to solve problems by using a number line 1.5 – 0.7 = ?  	Uses an understanding of place value to add or subtract decimals with tenths (decomposes both numbers) 14.6 + 27.8 = ? 14 + 27 = 41 (whole numbers) 0.6 + 0.8 = 1.4 (decimals) 41 + 1.4 = 42.4 "I decomposed both numbers, added the whole numbers, then the tenths."

Observations/Documentation

Number

Activity 40 Assessment

Operations with Fractions and Decimals Consolidation

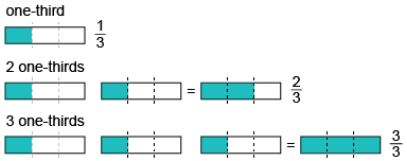
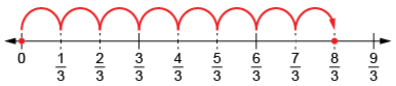
Conceptual Meaning of Addition and Subtraction of Decimals (con't)		
Uses an understanding of place value to decompose one number 14.6 + 27.8 = ? 27.8 = 27 + 0.8 14.6 + 27 = 41.6 41.6 + 0.8 = 42.4 "I used place value to add on the second number."	Uses estimation and mental math strategies to check reasonableness of solutions 25.86 – 17.23 = 8.63 26 – 17 = 9 "8.63 is the answer I calculated, and it is close to 9, so my answer is reasonable."	Solves addition and subtraction problems flexibly, using a variety of strategies 25.85 – 17.21 = ? 25.85 + 0.15 = 26 17.21 + 0.15 = 17.36 26 – 17.36 = 8.64 1 1 25.85 – 17.21 8.64
Observations/Documentation		

Number

Activity 40 Assessment

Operations with Fractions and Decimals Consolidation

Relationship Between Repeated Addition of Unit Fractions and Multiplication

Counts unit fractions	Concretely solves problems involving the repeated addition of unit fractions	Models symbolically and describes repeated addition of unit fractions	Uses multiplication of unit fractions to flexibly solve related problems
 "1 one-third, 2 one-thirds, 3 one-thirds"	Miranda feeds her puppy, Atlas, $\frac{1}{3}$ cup of food, 4 times per day. How much food does the puppy get in two days?  "1 one-third, 2 one-thirds, 3 one-thirds, 4 one-thirds, 5 one-thirds, 6 one-thirds, 7 one-thirds, 8 one-thirds" $\frac{8}{3}$ cups = $2\frac{2}{3}$ cups	 $\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}=\frac{8}{3}$ $\frac{8}{3}=\frac{6}{3}+\frac{2}{3}=2\frac{2}{3}$ "Atlas gets $2\frac{2}{3}$ cups of food per day."	Atlas is fed 4 times per day for 2 days: $4 \times 2 = 8$ $8 \times \frac{1}{3}=\frac{8}{3}$, or $2\frac{2}{3}$ "Atlas gets $2\frac{2}{3}$ cups of food."

Observations/Documentation

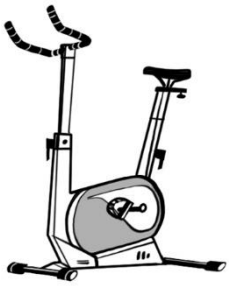
Name_____ Date_____

Number
Unit 8 Line Master 1a

Sports Equipment

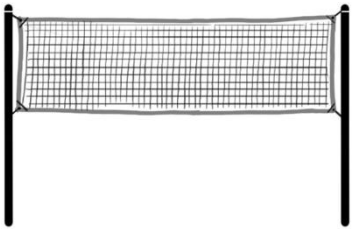
Basketball hoop
$387

Treadmill
$465

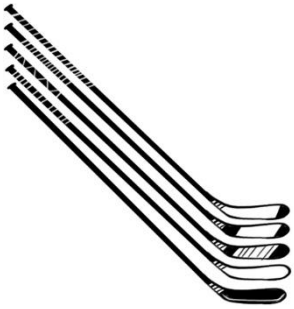


Exercise bike
$349

Ping pong table
$251



Volleyball net
$65



Hockey sticks
$199

Soccer balls
$99

Name_____ Date_____

Number
Unit 8 Line Master 1b

Sports Equipment (cont'd)

Recording Sheet

Your school has been given a grant of $1000 to buy gym equipment for the community center.
Choose 3 pieces of equipment.

Estimate the total cost of the 3 pieces of equipment.

Explain how estimating the cost helped you decide what to buy.

Calculate the total cost of the 3 pieces of equipment.
Show your thinking.

How much money is left over?
Show the strategies you used.

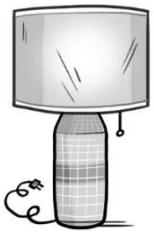
Choose as many pieces of equipment as you want,
trying to spend as close to $1000 as you can without going over.

Name_____ Date_____

Number
Unit 8 Line Master 2a

Reusable Treasures

Chair
$27.25



Lamp
$18.75

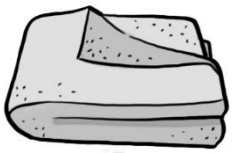
Bookshelf
$35.35

Snowboard
$59.95

Video game
$12.30

Backpack
$18.99

Watch
$36.90



Blanket
$28.80

Lantern
$19.40

Baseball glove
$26.50

Camera
$40.15

Computer monitor
$29.95

Name_____ Date_____

Number
Unit 8 Line Master 2b

Reusable Treasures (cont'd)

Recording Sheet

You have $100 to buy 3 items from the thrift store.
Choose 3 items.
Justify your choice.

Estimate the total cost of the 3 items.

Calculate the total cost of the 3 items.
Show your thinking.

How much change will you get from $100?
Show your work.

Buy as many items as you like, to spend
as close to $100 without going over.

Name_____ Date_____

Number
Unit 8 Line Master 3

Can I Buy It?

Recording Sheet

I chose _____ as a class goal because

_____.

Event from Game	Earnings (Add)	Spending (Subtract)	Savings Balance
			$50
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
Final Balance			

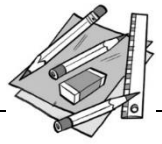
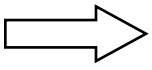
How did the decisions you made affect the amount you save?

Name_____ Date_____

Number
Unit 8 Line Master 4a

Can I Buy It?

Gameboard (Decimal Amounts)

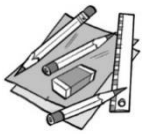
Raked leaves: earned $10	Bought supplies for class pet: $15.60	Replaced lost book: $9.78	Recycled cans and bottles: $11.80 	Earned $25 delivering newspapers
Paid library fine: $4.90				Traded video game: received $12.35
Garage sale: earned $27.80				Donated to animal shelter: $12.75
Your choice: 1 loaf of bread for $2.25 3 loaves of bread for $5.75 				Bought present to cheer up sick student: $18.66
Bought used sled to deliver newspapers: $10.50				Won $20 in a raffle
START 	Volunteered at seniors' home: $0	Received gift card: $14.60	Bought classroom supplies: $12.38	Cleaned out garage: earned $10

Name_____ Date_____

Number
Unit 8 Line Master 4b

Can I Buy It? (cont'd)

Gameboard (Whole-Dollar Amounts)

Bought movie tickets: $16	Raked leaves: earned $10 	Shovelled snow: earned $25	Recycled cans and bottles: $12 	Paid library fine: $5
Volunteered at seniors' home: $0				Received gift card: $15
Your choice: 1 loaf of bread for $2 5 loaves of bread for $8 				Replaced lost book: $10
Bought used sled: $10				Traded video game: received $12
Cleaned out garage: earned $13 				Bought classroom supplies: $14
START ⇨	Bought present for sick student: $19	Donated to food bank: $13	Garage sale: earned $28	Won $25 in a raffle

Name_____ Date_____

Number
Unit 8 Line Master 5a

Our Day Trip

You are planning to treat your family/friends to a day trip.
You can spend no more than $100.00.
Record the cost of all items in dollars and cents.

How will you earn the money to pay for the trip?

How much of the money will you save and for how long?

Who will you invite?

What will you do?

How will you get there?

What will you eat?

Name_____ Date_____

Number
Unit 8 Line Master 5b

Our Day Trip (cont'd)

Determine the total cost.

How will you pay for the different items? Why?

If paying by cash, how much change will you get?

Name_____ Date_____

Number
Unit 8 Line Master 5c

Our Day Trip (ON Only)

You are planning to treat your family/friends to a day trip.
You must decide how much money you will spend.
Record the cost of all items in dollars.

How will you earn the money to pay for the trip?

How much of the money will you save and for how long?

Who will you invite?

What will you do?

How will you get there?

What will you eat?

Name_____ Date_____

Number
Unit 8 Line Master 5d

Our Day Trip (ON Only) (cont'd)

Determine the total cost.

How will you pay for the different items? Why?

If paying by cash, how much change will you get?

Number

Activity 41 Assessment

Purchasing and Making Change (Whole-Dollar Amounts)

Adding and Subtracting Money Amounts			
Uses addition strategies to calculate the total cost of items. "I add the prices to find the total cost."	Uses addition and subtraction strategies to calculate the change for a purchase. Purchase: $465 Paid: $500 "To find the change, I can add on to $465 until I reach $500, or I can subtract $465 from $500."	Estimates and uses mental math to calculate total cost and determine the change. "I use friendly numbers to estimate that $235 plus $170 is about $400. The change from $500 is about $100 because when I add 100 to 400, I get 500."	Estimates and efficiently calculates the total cost of multiple items and determines change. "I first estimate the total cost of several items to be sure I have enough money. I try to choose the most helpful mental math strategies to calculate the total cost and the change."
Observations/Documentation			

Number

Activity 42 Assessment

Purchasing and Making Change (Decimal Amounts)

Adding and Subtracting Money Amounts			
Uses addition strategies to calculate the total cost of items. "I add the prices to find the total cost."	Uses addition and subtraction strategies to calculate the change for a purchase. Purchase: $465 Paid: $500 "To find the change, I can add on to $465 until I reach $500, or I can subtract $465 from $500."	Estimates and uses mental math to calculate total cost and determine the change. "I use friendly numbers to estimate that $235 plus $170 is about $400. The change from $500 is about $100 because when I add 100 to 400, I get 500."	Estimates and efficiently calculates the total cost of multiple items and determines change. "I first estimate the total cost of several items to be sure I have enough money. I try to choose the most helpful mental math strategies to calculate the total cost and the change."
Observations/Documentation			
	.		

Number

Activity 43 Assessment
Making Financial Decisions

Making Financial Decisions			
Identifies a financial goal but struggles when making decisions about a financial plan "I am not sure if I should spend money to buy something I want now."	Makes financial decisions about ways to earn income to reach a financial goal "To help reach my financial goal, I can earn money by doing jobs for my neighbours."	Makes financial decisions about income, saving, spending, and donating money to reach a goal "I know that there are several financial transactions to consider when developing a plan. Things happen and I need to make decisions about expenses and spending money."	Makes an efficient financial plan and considers how basic decisions are related "When you make a financial plan, you need to consider all types of transactions and how they are related."
Observations/Documentation			

Number

Activity 44 Assessment

Making Good Purchases

Making Good Purchases			
Identifies products to compare but is unsure which factors are important to consider. "These are the 3 packages of pencils I would choose because they look the best."	Considers a couple of factors (e.g., cost and quality) when comparing products to determine a good purchase. "It is important to compare the cost and quality of the products before making decisions."	Considers multiple factors when comparing products to determine a good purchase. "I have to consider shipping costs too. Sometimes it costs money to get the product shipped and that adds to the total cost."	Makes decisions about a good purchase by efficiently considering all factors "This product has a review of 4.8 from 10 reviews. That product has a review of 4.7 from 300 reviews. The second product is liked by a lot more people, so I chose that one."
Observations/Documentation			

Number

Activity 45 Assessment

Financial Literacy Consolidation

Adding and Subtracting Money Amounts			
Uses addition strategies to calculate the total cost of items. "I add the prices to find the total cost."	Uses addition and subtraction strategies to calculate the change for a purchase. Purchase: $465 Paid: $500 "To find the change, I can add on to $465 until I reach $500, or I can subtract $465 from $500."	Estimates and uses mental math to calculate total cost and determine the change. "I use friendly numbers to estimate that $235 plus $170 is about $400. The change from $500 is about $100 because when I add 100 to 400, I get 500."	Estimates and efficiently calculates the total cost of multiple items and determines change. "I first estimate the total cost of several items to be sure I have enough money. I try to choose the most helpful mental math strategies to calculate the total cost and the change."
Observations/Documentation			

Number

Activity 45 Assessment

Financial Literacy Consolidation

Making Financial Decisions			
Identifies a financial goal but struggles when making decisions about a financial plan "I am not sure if I should spend money to buy something I want now."	Makes financial decisions about ways to earn income to reach a financial goal "To help reach my financial goal, I can earn money by doing jobs for my neighbours."	Makes financial decisions about income, saving, spending, and donating money to reach a goal "I know that there are several financial transactions to consider when developing a plan. Things happen and I need to make decisions about expenses and spending money."	Makes an efficient financial plan and considers how basic decisions are related "When you make a financial plan, you need to consider all types of transactions and how they are related."
Observations/Documentation			

Name_____ Date_____

Patterning and Algebra
Unit 1 Line Master 1

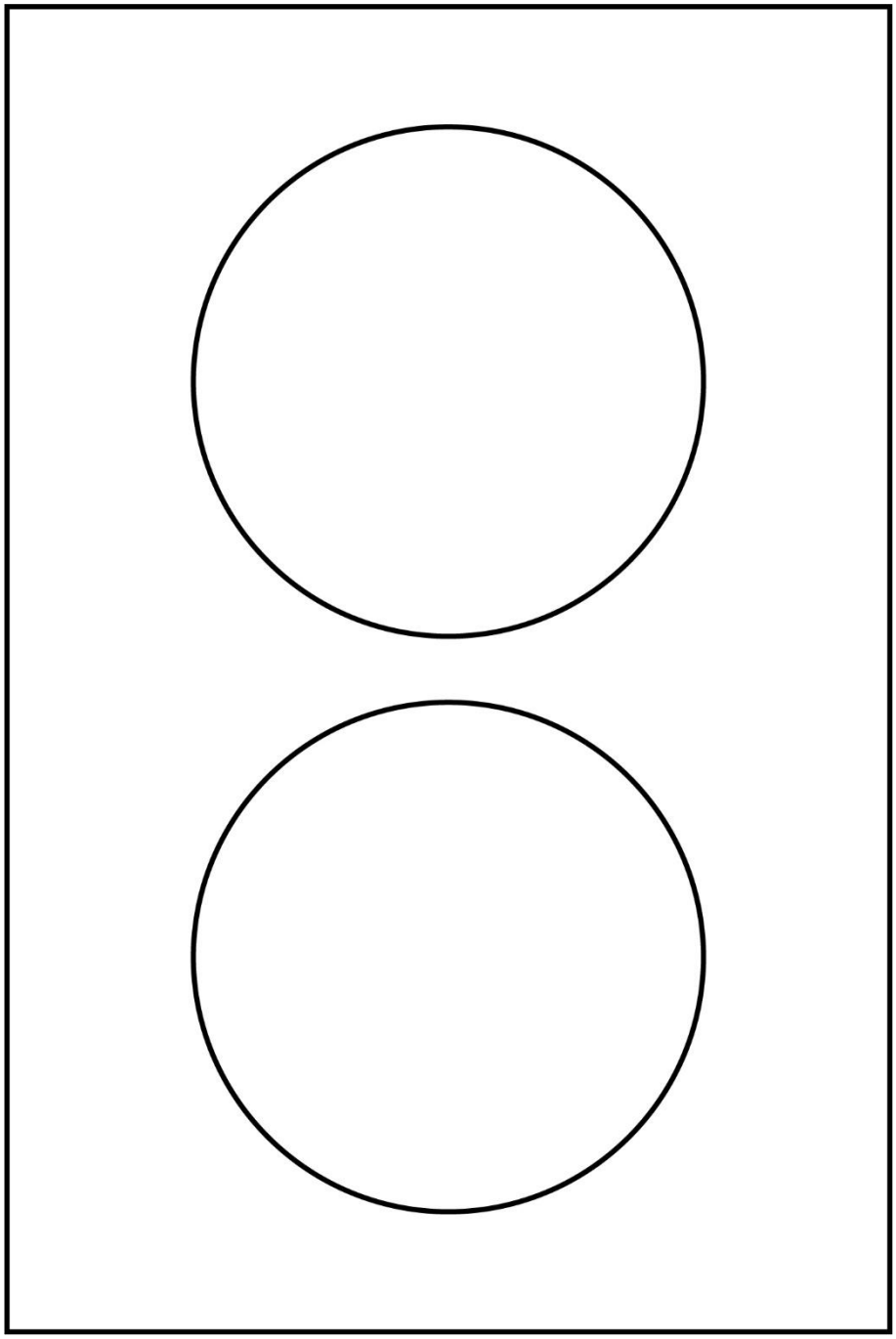
Flower Patterns

Number of Flowers	Number of _____ Blocks Used	Number of _____ Blocks Used
1		
2		
3		
4		
5		

Name_____ Date_____

Patterning and Algebra
Unit 1 Line Master 2a

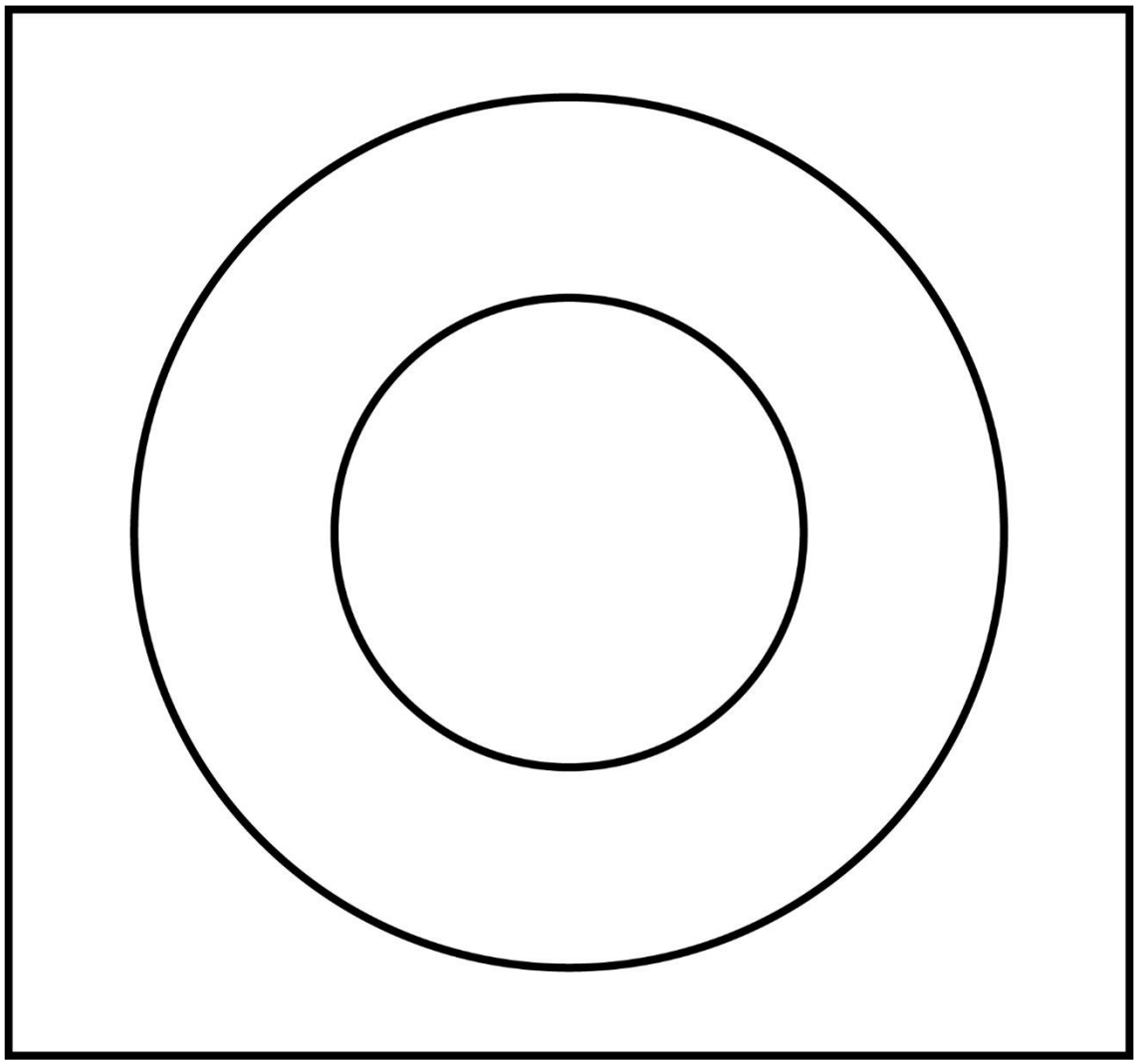
Other Venn Diagrams



Name_____ Date_____

Patterning and Algebra
Unit 1 Line Master 2b

Other Venn Diagrams (cont'd)



Name_____ Date_____

Patterning and Algebra
Unit 1 Line Master 3

Attributes for Sorting

Odd numbers	Numbers with _____ digits
Even numbers	Numbers divisible by _____
Numbers greater than _____	The digits in the numbers add to _____
Numbers less than _____	The digits in the numbers add to less than _____
Numbers with _____ digits	The digits in the numbers add to more than _____
Numbers with _____ tens	Numbers with _____ ones
Numbers divisible by _____	Numbers greater than _____
Numbers less than _____	Numbers with _____ digits

Name_____ Date_____

Patterning and Algebra
Unit 1 Line Master 4

Hundred Chart (101 – 200)

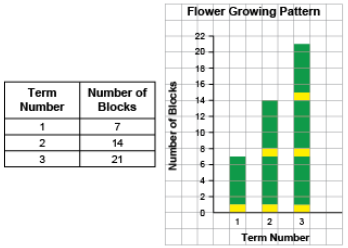
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

Patterning and Algebra

Activity 1 Assessment

Repeating and Growing Patterns

Generalizing and Representing Patterns

Recognizes that a pattern can repeat, increase, or decrease.	Identifies how a pattern changes and describes the pattern rule.	Represents patterns using a table or chart.	Represents patterns symbolically and writes the pattern rule.
 "This is an increasing pattern. I know this because each time there are more blocks."	 "The pattern rule is: Start with 1 hexagon and 6 triangles. Add one hexagon and 6 triangles each time."	 "The table shows the number of blocks increases by 7 each time, and the graph shows the height of the bars increases by the same amount."	7, 14, 21 "The number of blocks in each term increases by 7 because each flower has 7 blocks. Term 3: 7 + 7 + 7 = 21."

Observations/Documentation

Patterning and Algebra

Activity 1 Assessment

Repeating and Growing Patterns

Generalizing and Representing Patterns (cont'd)

Extends patterns using repeated addition, repeated subtraction, or multiplication.

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60

"I extended the patterns in the number of hexagons and triangles using a multiplication chart."

Creates patterns and explains the pattern rule.

23, 31, 39, 47, 55, 63, 71, 79, 87, 95

"I created an increasing pattern that starts at 23 and increases by 8 each time."

Uses patterns to solve problems.

Yasmin and her family are planning a celebration and need to arrange 70 chairs.

Number of Tables	Number of Chairs	Total Chairs
1	4	4
2	6	10
3	8	18
4	10	28
5	12	40
6	14	54

"I added the number of chairs in the first 6 terms (54).
Term 7 is 16 and 54 + 16 = 70.
Yasmin will need 7 tables."

Fluently identifies, creates, and extends patterns to solve real-life problems.

Sami takes 40 minutes to make one bracelet. How many bracelets can Sami make in 6 hours?

Number of Bracelets	Total Time in Minutes
1	40
2	80
3	120
4	160
5	200
6	240

"There are 360 minutes in 6 hours. I know that the pattern increases by 40 mins each term. 9 × 40 = 360. Sami can make 9 bracelets in 6 hours."

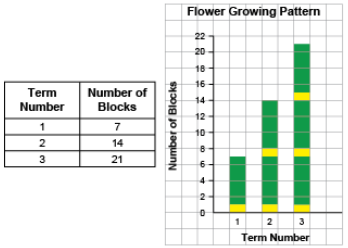
Observations/Documentation

Patterning and Algebra

Activity 2 Assessment

Investigating Increasing and Decreasing Patterns

Generalizing and Representing Patterns

Recognizes that a pattern can repeat, increase, or decrease.	Identifies how a pattern changes and describes the pattern rule.	Represents patterns using a table or chart.	Represents patterns symbolically and writes the pattern rule.
 "This is an increasing pattern. I know this because each time there are more blocks."	 "The pattern rule is: Start with 1 hexagon and 6 triangles. Add one hexagon and 6 triangles each time."	 "The table shows the number of blocks increases by 7 each time, and the graph shows the height of the bars increases by the same amount."	7, 14, 21 "The number of blocks in each term increases by 7 because each flower has 7 blocks. Term 3: 7 + 7 + 7 = 21."

Observations/Documentation

Patterning and Algebra

Activity 2 Assessment

Investigating Increasing and Decreasing Patterns

Generalizing and Representing Patterns (cont'd)

Extends patterns using repeated addition, repeated subtraction, or multiplication.

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60

"I extended the patterns in the number of hexagons and triangles using a multiplication chart."

Creates patterns and explains the pattern rule.

23, 31, 39, 47, 55, 63, 71, 79, 87, 95

"I created an increasing pattern that starts at 23 and increases by 8 each time."

Uses patterns to solve problems.

Yasmin and her family are planning a celebration and need to arrange 70 chairs.

Number of Tables	Number of Chairs	Total Chairs
1	4	4
2	6	10
3	8	18
4	10	28
5	12	40
6	14	54

"I added the number of chairs in the first 6 terms (54).
Term 7 is 16 and 54 + 16 = 70.
Yasmin will need 7 tables."

Fluently identifies, creates, and extends patterns to solve real-life problems.

Sami takes 40 minutes to make one bracelet. How many bracelets can Sami make in 6 hours?

Number of Bracelets	Total Time in Minutes
1	40
2	80
3	120
4	160
5	200
6	240

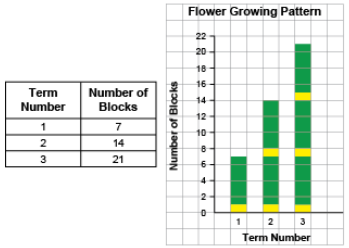
"There are 360 minutes in 6 hours. I know that the pattern increases by 40 mins each term. 9 × 40 = 360. Sami can make 9 bracelets in 6 hours."

Observations/Documentation

Patterning and Algebra

Activity 3 Assessment

Representing Patterns

Generalizing and Representing Patterns			
Recognizes that a pattern can repeat, increase, or decrease.  "This is an increasing pattern. I know this because each time there are more blocks."	Identifies how a pattern changes and describes the pattern rule.  "The pattern rule is: Start with 1 hexagon and 6 triangles. Add one hexagon and 6 triangles each time."	Represents patterns using a table or chart.  "The table shows the number of blocks increases by 7 each time, and the graph shows the height of the bars increases by the same amount."	Represents patterns symbolically and writes the pattern rule. 7, 14, 21 "The number of blocks in each term increases by 7 because each flower has 7 blocks. Term 3: 7 + 7 + 7 = 21."
Observations/Documentation			

Patterning and Algebra

Activity 3 Assessment
Representing Patterns

Generalizing and Representing Patterns (cont'd)

Extends patterns using repeated addition, repeated subtraction, or multiplication.

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60

"I extended the patterns in the number of hexagons and triangles using a multiplication chart."

Creates patterns and explains the pattern rule.

23, 31, 39, 47, 55, 63, 71, 79, 87, 95

"I created an increasing pattern that starts at 23 and increases by 8 each time."

Uses patterns to solve problems.

Yasmin and her family are planning a celebration and need to arrange 70 chairs.

Number of Tables	Number of Chairs	Total Chairs
1	4	4
2	6	10
3	8	18
4	10	28
5	12	40
6	14	54

"I added the number of chairs in the first 6 terms (54).
Term 7 is 16 and 54 + 16 = 70.
Yasmin will need 7 tables."

Fluently identifies, creates, and extends patterns to solve real-life problems.

Sami takes 40 minutes to make one bracelet. How many bracelets can Sami make in 6 hours?

Number of Bracelets	Total Time in Minutes
1	40
2	80
3	120
4	160
5	200
6	240

"There are 360 minutes in 6 hours. I know that the pattern increases by 40 mins each term. 9 × 40 = 360. Sami can make 9 bracelets in 6 hours."

Observations/Documentation

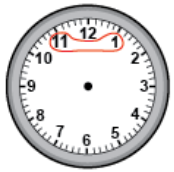
Patterning and Algebra

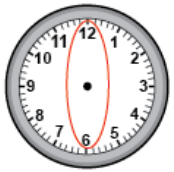
Activity 4 Assessment

Investigating Number Relationships

Pattern Relationships

Recognizes number pattern relationships	Identifies patterns and relationships in a chart, table, or diagram	Describes patterns to illustrate the relationships among whole numbers and decimal numbers





"I see number relationships on the clock: pairs of numbers on a horizontal line add to 12: 11 + 1 = 12, 10 + 2 = 12; and opposite numbers have a difference of 6: 12 - 6 = 6, 7 – 1 = 6."

Trading 1 ten for 10 ones

Tens	Ones	•	Tenths
5	4	•	3
4	14	•	3
3	24	•	3
2	34	•	3
1	44	•	3
0	54	•	3

"I noticed that 54.3 can be written as a sum, in different ways, to form a pattern by trading 1 ten for 10 ones."

0.8 + 4.0 = 4.8
0.7 + 4.1 = 4.8
0.6 + 4.2 = 4.8
0.5 + 4.3 = 4.8
0.4 + 4.4 = 4.8

"The pattern shows that as one addend increases by 0.1, the other addend decreases by 0.1, so the sum stays the same."

Observations/Documentation

Activity 4 Assessment
Investigating Number Relationships

Pattern Relationships (cont'd)

Describes pattern relationships found in a table or diagram using addition or subtraction

22	23	24	25	26
32	33	34	35	36
42	43	44	45	46
52	53	54	55	56
62	63	64	65	66

"When I added the numbers on the diagonals in squares formed by 4 numbers on the hundred chart, I noticed the sums are equal. It happened when I choose different numbers too."

Describes pattern relationships on tables, charts, or diagrams using multiplication

9, 18, 27, 36, 45, 54, 63, 72, 81, 90

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

"These are the products from 9 × 1 to 9 × 10. The ones digits decrease by 1 each time, and the tens digits increase by 1 each time. The sum of the digits in each product is 9."

Fluently identifies and describes different patterns in a variety of representations

1, 4, 9, 16, 25, 36, 49, 64, 81, 100

Term	Number
1	1
2	4
3	9
4	16
5	25
6	36
7	49
8	64
9	81
10	100

"When looking at the products I identified several pattern relationships and rules:
multiply each number by itself or start at 1, add 3, add 5, add 7, … or start at 1, add 3, then add 2 more than you added the time before."

Observations/Documentation

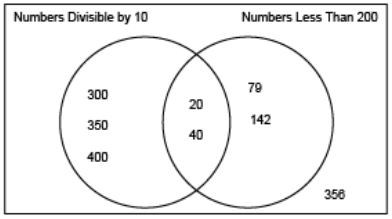
Patterning and Algebra

Activity 5 Assessment

Sorting in Venn Diagrams and Carroll Diagrams

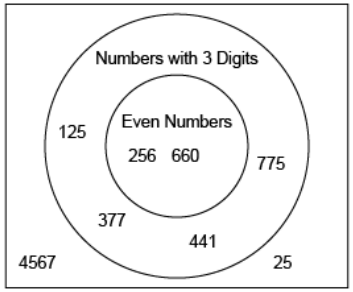
Sorting in Venn and Carroll Diagrams

Identifies and describes a sorting rule for numbers shown in a Venn diagram.



"The numbers in the left loop are divisible by 10 and the numbers in the right loop are less than 200. The numbers 20 and 40 are in the intersection of the loops because they fit both sorting rules."

Creates a Venn diagram to represent and describe number pattern relationships.



"I created this Venn diagram to represent the pattern relationships. The outer circle has 3-digit numbers and the inner circle has 3-digit numbers that are even. The outer numbers are not 3-digit numbers."

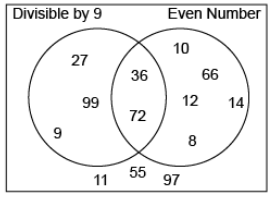
Completes a Carroll diagram to solve a problem about number pattern relationships.

Where would you put 135, 304, 14, 512, 21, 28 in the Carroll diagram?

	Digits add up to 8 or less	Digits do not add to 8 or less
2 digits	62, 70, 51, 14, 21	72, 88, 54, 28
Not 2 digits	123, 206, 421, 304, 512	248, 372, 567, 135

Fluently and flexibly identifies, describes, and solves a problem using charts or diagrams.

	Odd numbers	Not odd numbers
Divisible by 3	27, 99, 9	36, 66, 72, 12
Not divisible by 3	55, 97, 11	8, 14, 10



"I used the same numbers but sorted them differently to identify and describe different pattern relationships."

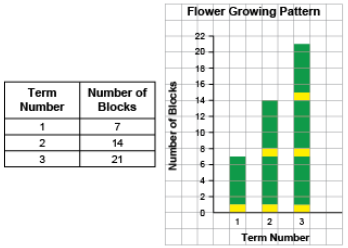
Observations/Documentation

Patterning and Algebra

Activity 6 Assessment

Patterns and Relations Consolidation

Generalizing and Representing Patterns

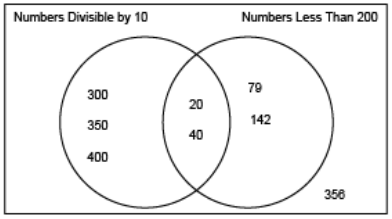
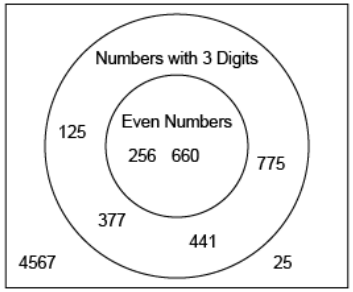
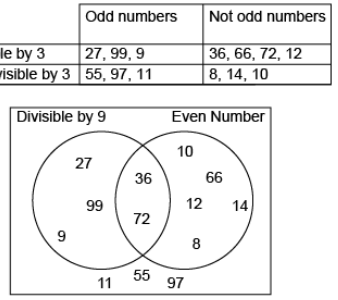
Recognizes that a pattern can repeat, increase, or decrease.	Identifies how a pattern changes and describes the pattern rule.	Represents patterns using a table or chart.	Represents patterns symbolically and writes the pattern rule.
 "This is an increasing pattern. I know this because each time there are more blocks."	 "The pattern rule is: Start with 1 hexagon and 6 triangles. Add one hexagon and 6 triangles each time."	 "The table shows the number of blocks increases by 7 each time, and the graph shows the height of the bars increases by the same amount."	7, 14, 21 "The number of blocks in each term increases by 7 because each flower has 7 blocks. Term 3: 7 + 7 + 7 = 21."
Observations/Documentation			

Patterning and Algebra

Activity 6 Assessment

Patterns and Relations Consolidation

Sorting in Venn and Carroll Diagrams

Identifies and describes a sorting rule for numbers shown in a Venn diagram.	Creates a Venn diagram to represent and describe number pattern relationships.	Completes a Carroll diagram to solve a problem about number pattern relationships.	Fluently and flexibly identifies, describes, and solves a problem using charts or diagrams.
		Where would you put 135, 304, 14, 512, 21, 28 in the Carroll diagram?	
"The numbers in the left loop are divisible by 10 and the numbers in the right loop are less than 200. The numbers 20 and 40 are in the intersection of the loops because they fit both sorting rules."	"I created this Venn diagram to represent the pattern relationships. The outer circle has 3-digit numbers and the inner circle has 3-digit numbers that are even. The outer numbers are not 3-digit numbers."		"I used the same numbers but sorted them differently to identify and describe different pattern relationships."

	Digits add up to 8 or less	Digits do not add to 8 or less
2 digits	62, 70, 51, 14, 21	72, 88, 54, 28
Not 2 digits	123, 206, 421, 304, 512	248, 372, 567, 135

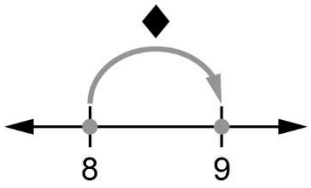
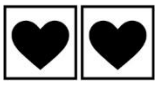
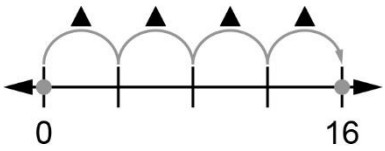
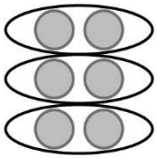
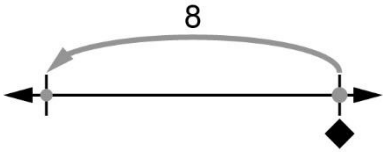
	Odd numbers	Not odd numbers
Divisible by 3	27, 99, 9	36, 66, 72, 12
Not divisible by 3	55, 97, 11	8, 14, 10

Observations/Documentation

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 1

Make a Match!

Picture	Statement	Expression or Equation
	8 plus a number is equal to 9	
	2 times a number	
	4 times a number is equal to 16	
	6 divided by a number is equal to 2	
	A number plus 3	
	A number minus 8	

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 2

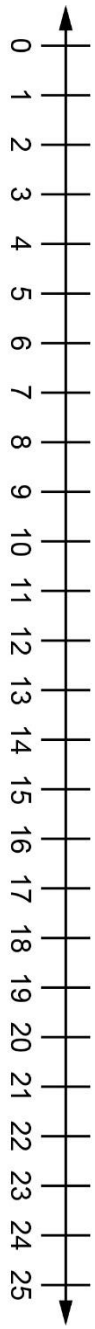
Solving Equations

$\square + 3 = 11$	$8 - \square = 2$
$3 = \square - 7$	$12 = \square + 5$
8 added to a number is equal to 15. What is the number?	12 minus a number is equal to 8. What is the number?
9 is equal to 4 plus a number. What is the number?	5 is equal to 12 minus a number. What is the number?

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 3

Inequality Gameboard



Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 4a

Inequality Cards

$\square + 4 > 14$	$\square + 16 \leq 17$	$4 + \square \geq 10$	$\square + 11 < 24$
$\square + 11 \leq 16$	$5 + \square > 9$	$\square + 5 < 18$	$7 + \square \geq 14$
$\square + 5 \leq 8$	$4 + \square < 20$	$\square 7 + > 16$	$\square + 8 \geq 16$
$\square - 3 > 9$	$\square - 1 \geq 14$	$\square - 7 \geq 1$	$\square - 17 > 6$
$\square - 8 > 4$	$\square - 18 \geq 5$	$\square - 16 \geq 8$	$\square - 2 > 14$
$\square - 11 \geq 6$	$\square - 2 > 4$	$\square - 7 > 6$	$\square - 8 \geq 13$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 4b

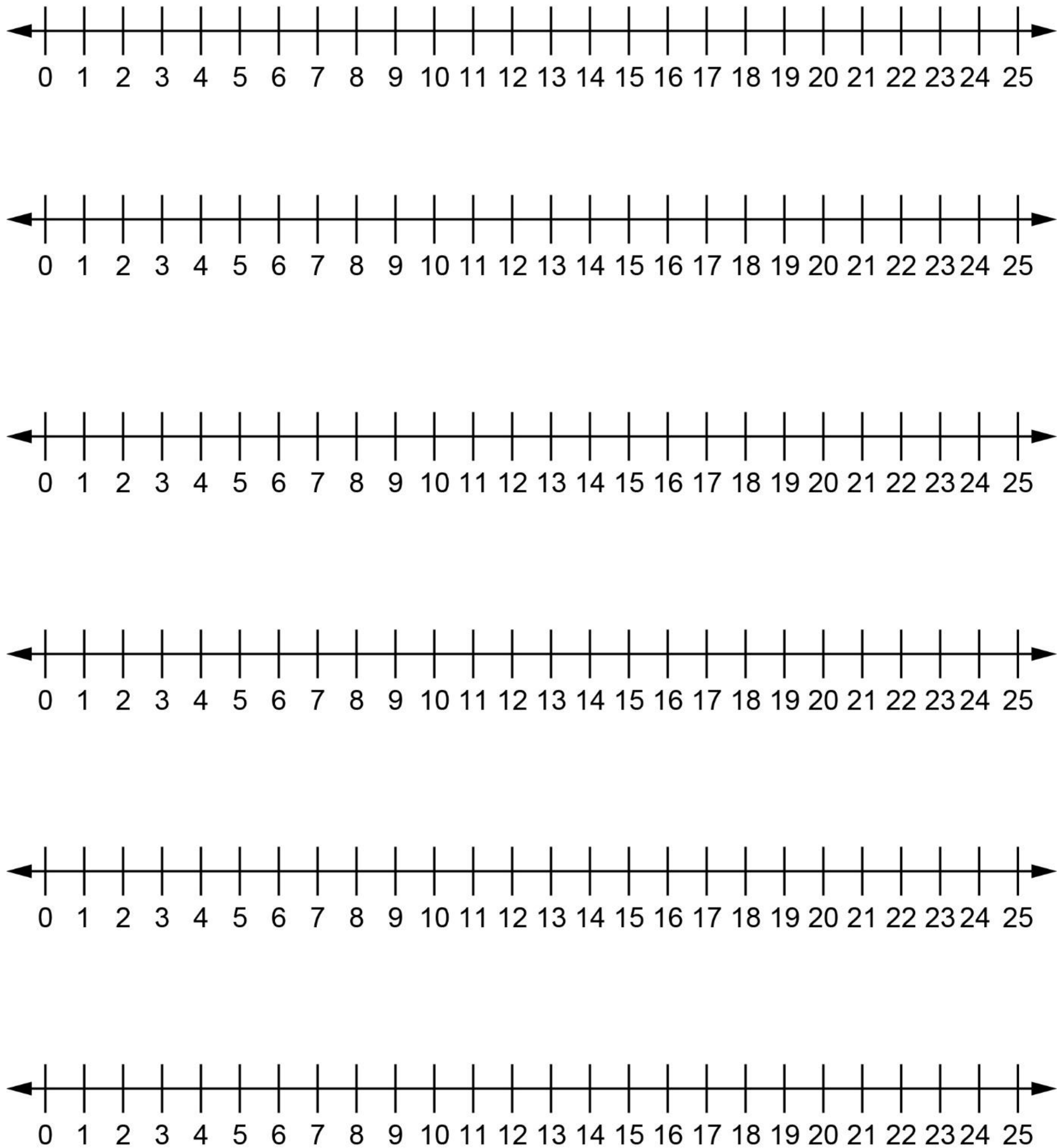
Inequality Cards (cont'd)

$\square + 4 > 6$	$\square + 6 \leq 10$	$4 + \square \geq 10$	$\square + 1 < 6$
$\square + 2 \leq 9$	$5 + \square > 9$	$\square + 5 < 8$	$7 + \square \geq 10$
$\square - 3 > 6$	$\square - 1 \geq 4$	$\square - 6 \geq 1$	$\square - 2 > 4$
$\square - 8 > 4$	$\square - 7 \geq 5$	$\square - 5 \geq 6$	$\square - 4 > 6$

Name________________________________ Date_____________________

Patterning and Algebra
Unit 2 Line Master 5

Number Lines



Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 6a

Equation Cards

Part A

$\square \times 2 = 24$	$5 \times \square = 50$	$4 = \square \times 1$	$56 = 7 \times \square$
$\square \div 7 = 3$	$20 \div \square = 4$	$6 = \square \div 6$	$10 = 40 \div \square$
$\square \times 17 = 17$	$\square \div 6 = 7$	$12 = 24 \div \square$	$30 = 5 \times \square$
A number multiplied by two is equal to fourteen. What is the number?	A number divided by five is equal to five. What is the number?	Twenty-seven divided by a number is equal to three. What is the number?	Three multiplied by a number is equal to 33. What is the number?

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 6b

Equation Cards 2

Part B

$\square \times 2 = 30 - 4$	$30 - \square = 16 + 4$	$9 \div 3 = \square \times 1$	$\square - 6 = 30 + 4$
$\square \div 7 = 8 \div 2$	$20 \div \square = 2 \times 2$	$3 + 1 = \square \div 5$	$13 - 3 = 40 \div \square$
$\square \times 12 = 10 + 2$	$\square \div 6 = 8 \times 1$	$3 \times 4 = 24 \div \square$	$37 - 7 = 5 \times \square$
$17 - 3 = \square \times 2$	$3 + \square = 30 - 2$	$30 - 30 = \square \times 3$	$22 \div \square = 11 - 9$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 7a

Three in a Row Gameboard

Part A

7	9	42	2
5	25	8	11
36	1	10	4
12	3	21	6

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 7a

Three in a Row Gameboard

Part B

7	9	40	2
5	25	8	11
24	1	10	4
13	3	28	6

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 8a

Consolidation Chart

Equalities

Representation	
Statement	
Equation 1	Equation 2 (inverse operation)
Solution	Verify Solution
Story Problem	

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 8b

Consolidation Chart

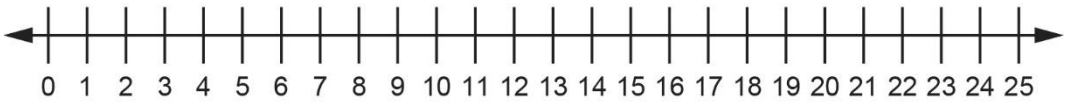
Inequalities

Statement

Inequality

Solution

Graph



Verify Solution

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 9

Inequality Statements

1 Fifteen less than a number is greater than eight.	**2** Nine plus a number is greater than or equal to fifteen.
3 A number take away thirteen is greater than or equal to three.	**4** A number plus seven is less than or equal to twenty.

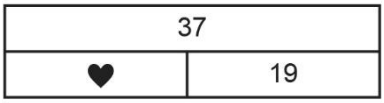
Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 10

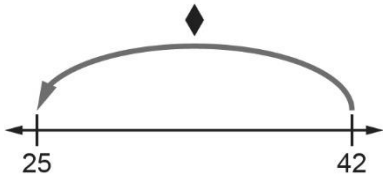
Representations

Equalities

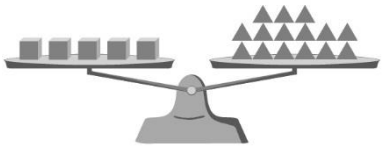
1



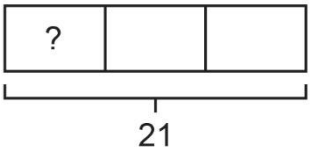
2



3



4



Patterning and Algebra

Activity 7 Assessment
Using Symbols

Using Symbols or Letters to Represent Unknowns			
Identifies symbols or letters with unknown quantities. 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape or a letter."	Interprets symbols or letters as an unknown quantity in equations. 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Interprets symbols or letters to represent any unknown quantity in expressions 18 + ☐ "The box represents any number that would be added to 18."	Flexibly interprets and uses variables to represent quantities in equations and expressions. 6 × ☐ = 30 30 ÷ ☐
Observations/Documentation			

Patterning and Algebra

Activity 8 Assessment

Solving Equations Concretely

Using Symbols or Letters to Represent Unknowns			
Identifies symbols or letters with unknown quantities. 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape or a letter."	Interprets symbols or letters as an unknown quantity in equations. 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Interprets symbols or letters to represent any unknown quantity in expressions 18 + ☐ "The box represents any number that would be added to 18."	Flexibly interprets and uses variables to represent quantities in equations and expressions. 6 × ☐ = 30 30 ÷ ☐
Observations/Documentation			

Patterning and Algebra

Activity 9 Assessment

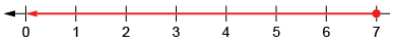
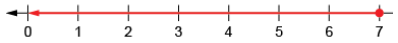
Solving Addition and Subtraction Equations

Using Symbols or Letters to Represent Unknowns			
Identifies symbols or letters with unknown quantities. 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape or a letter."	Interprets symbols or letters as an unknown quantity in equations. 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Interprets symbols or letters to represent any unknown quantity in expressions 18 + ☐ "The box represents any number that would be added to 18."	Flexibly interprets and uses variables to represent quantities in equations and expressions. 6 × ☐ = 30 30 ÷ ☐
Observations/Documentation			

Patterning and Algebra

Activity 10 Assessment

Solving Addition and Subtraction Inequalities

Solving Inequalities			
Recognizes inequality symbols and their meaning in various inequality equations $m > 6$ $m \geq 6$ "Each time, the unknown can be any number greater than 6. In the second equation, it could also be 6. There are many quantities that would work."	Represents solutions to simple inequalities by graphing on a number line and testing solutions. $\blacksquare + 3 \leq 10$ $\blacksquare \leq 7$  "The unknown plus 3 needs to be less than or equal to 10. I could count on 7 from 3 to get 10. So, I know the unknown must be 7 or less."	Uses inverse operations to re-write inequalities, then solves. $\blacksquare + 3 \leq 10$ $\blacksquare \leq 10 - 3$  	Flexibly solves inequalities, then verifies and graphs the solutions. $18 - m < 8$ "What numbers can I take away from 18 for the answer to be less than 8?" I can rearrange the equation to find the unknown: $18 - 8 < m$ 
Observations/Documentation			

Patterning and Algebra

Activity 11 Assessment

Solving Multiplication and Division Equations

Using Symbols or Letters to Represent Unknowns			
Identifies symbols or letters with unknown quantities. 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape or a letter."	Interprets symbols or letters as an unknown quantity in equations. 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Interprets symbols or letters to represent any unknown quantity in expressions 18 + ☐ "The box represents any number that would be added to 18."	Flexibly interprets and uses variables to represent quantities in equations and expressions. 6 × ☐ = 30 30 ÷ ☐
Observations/Documentation			

Patterning and Algebra

Activity 12 Assessment

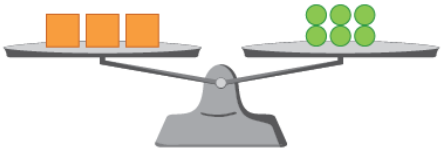
Using Equations to Solve Problems

Solving Unknowns in Equations

Uses concrete materials to "guess and check."

"I know that 3 multiplied by 4 is 12."

Draws and interprets pictures using a balance model.



$3 \times \blacksquare = 6$

"I placed 1 in each group until the pans balanced; ■ = 2"

Decomposes and recomposes numbers.

$3 \times 8 = \blacksquare$

$3 \times 8 = (2 \times 8) + (1 \times 8)$
$(2 \times 8) + (1 \times 8) = 16 + 8$
$16 + 8 = 24$

"I can decompose the equation into parts that can help me solve for the unknown."

Observations/Documentation

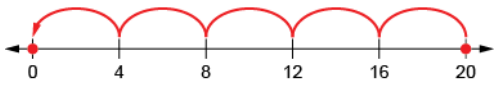
.

Patterning and Algebra

Activity 12 Assessment

Using Equations to Solve Problems

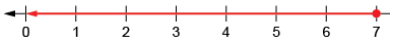
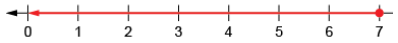
Solving Unknowns in Equations (cont'd)

Uses relationships and properties of operations (inverse operations, associative property).  $20 = 4 \times \blacksquare$ "I rewrote the equation as a division equation: $20 \div 4 = \blacksquare$."	Writes a statement for a given equation and solves for the unknown. $\blacksquare \div 6 = 3$ "I had a bag of baby carrots. I shared them equally with me and 5 friends and we each ended up with 3. How many baby carrots were in the bag to start?"	Flexibly uses multiple strategies to solve equations. $\blacksquare \times 2 = 30 - 4$ "I know something times 2 is equal to 26, because $30 - 4$ is 26. I can rewrite using division: $26 \div 2 = \blacksquare$. So, the unknown is 13."
Observations/Documentation		

Patterning and Algebra

Activity 13 Assessment

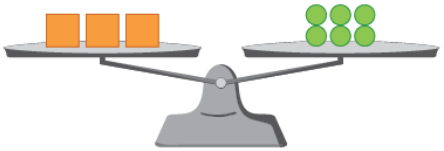
Variables and Equations Consolidation

Solving Inequalities			
Recognizes inequality symbols and their meaning in various inequality equations $m > 6$ $m \geq 6$ "Each time, the unknown can be any number greater than 6. In the second equation, it could also be 6. There are many quantities that would work."	Represents solutions to simple inequalities by graphing on a number line and testing solutions. ■ + 3 ≤ 10 ■ ≤ 7  "The unknown plus 3 needs to be less than or equal to 10. I could count on 7 from 3 to get 10. So, I know the unknown must be 7 or less."	Uses inverse operations to re-write inequalities, then solves. ■ + 3 ≤ 10 ■ ≤ 10 − 3  	Flexibly solves inequalities, then verifies and graphs the solutions. $18 - m < 8$ "What numbers can I take away from 18 for the answer to be less than 8?" I can rearrange the equation to find the unknown: $18 - 8 < m$ 
Observations/Documentation			

Patterning and Algebra

Activity 13 Assessment

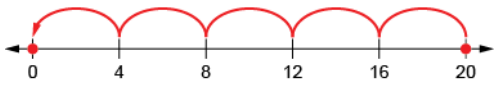
Variables and Equations Consolidation

Solving Unknowns in Equations		
Uses concrete materials to "guess and check."  "I know that 3 multiplied by 4 is 12."	Draws and interprets pictures using a balance model.  $3 \times \blacksquare = 6$ "I placed 1 in each group until the pans balanced; ■ = 2"	Decomposes and recomposes numbers. $3 \times 8 = \blacksquare$ $3 \times 8 = (2 \times 8) + (1 \times 8)$ $(2 \times 8) + (1 \times 8) = 16 + 8$ $16 + 8 = 24$ "I can decompose the equation into parts that can help me solve for the unknown."
Observations/Documentation		

Patterning and Algebra

Activity 13 Assessment

Variables and Equations Consolidation

Solving Unknowns in Equations (con't)		
Uses relationships and properties of operations (inverse operations, associative property).  $20 = 4 \times \blacksquare$ "I rewrote the equation as a division equation: $20 \div 4 = \blacksquare$."	Writes a statement for a given equation and solves for the unknown. $\blacksquare \div 6 = 3$ "I had a bag of baby carrots. I shared them equally with me and 5 friends and we each ended up with 3. How many baby carrots were in the bag to start?"	Flexibly uses multiple strategies to solve equations. $\blacksquare \times 2 = 30 - 4$ "I know something times 2 is equal to 26, because $30 - 4$ is 26. I can rewrite using division: $26 \div 2 = \blacksquare$. So, the unknown is 13."
Observations/Documentation		

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 1a

Coding Routines

What is this code sequence for?

Code
Put on pajamas
Go to sleep
Read a chapter from your book
Brush teeth

If this code was for your bedtime routine, would it be in the correct order?

How might you reorganize the steps in the code so that it is accurate?
Is more than one sequence possible? Explain.

Do Part A of the activity.
Use the coding templates on the next page.

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 1b

Coding Routines (cont'd)

Code: Washing your hands

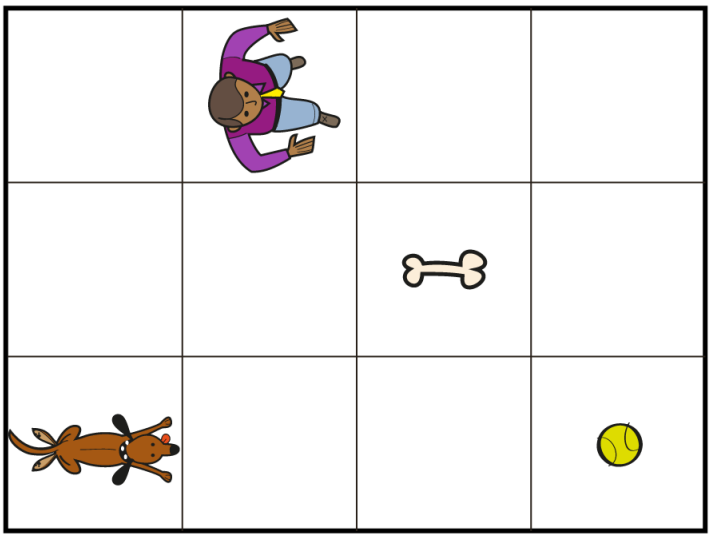
Code:

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 2a

Coding on a Grid

How could you write code to move the dog to the owner? The owner to the dog?



We can use code with arrows and numbers. For example, to write code to move the dog to the ball, we can write →→→ or 3→.

We use concurrent code when events are happening at the same time (e.g., the dog and owner running to the ball at the same time). For example:

Dog	Owner
→	→
→	→
→	Quarter turn right ↘
	↓
	↓

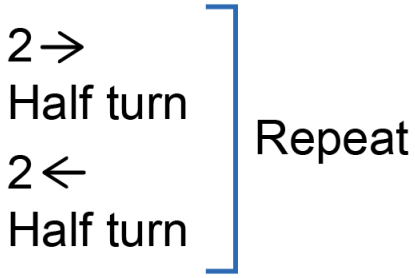
Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 2b

Coding on a Grid (cont'd)

Notice the difference between a turn arrow (e.g., to show a quarter or half-turn) and a square bracket used to show a repeat (e.g., going back to a previous step in the process and repeating).

A repeat arrow could be used if the dog was playing fetch and the owner kept throwing the ball to the same location on the grid.
For example: Dog



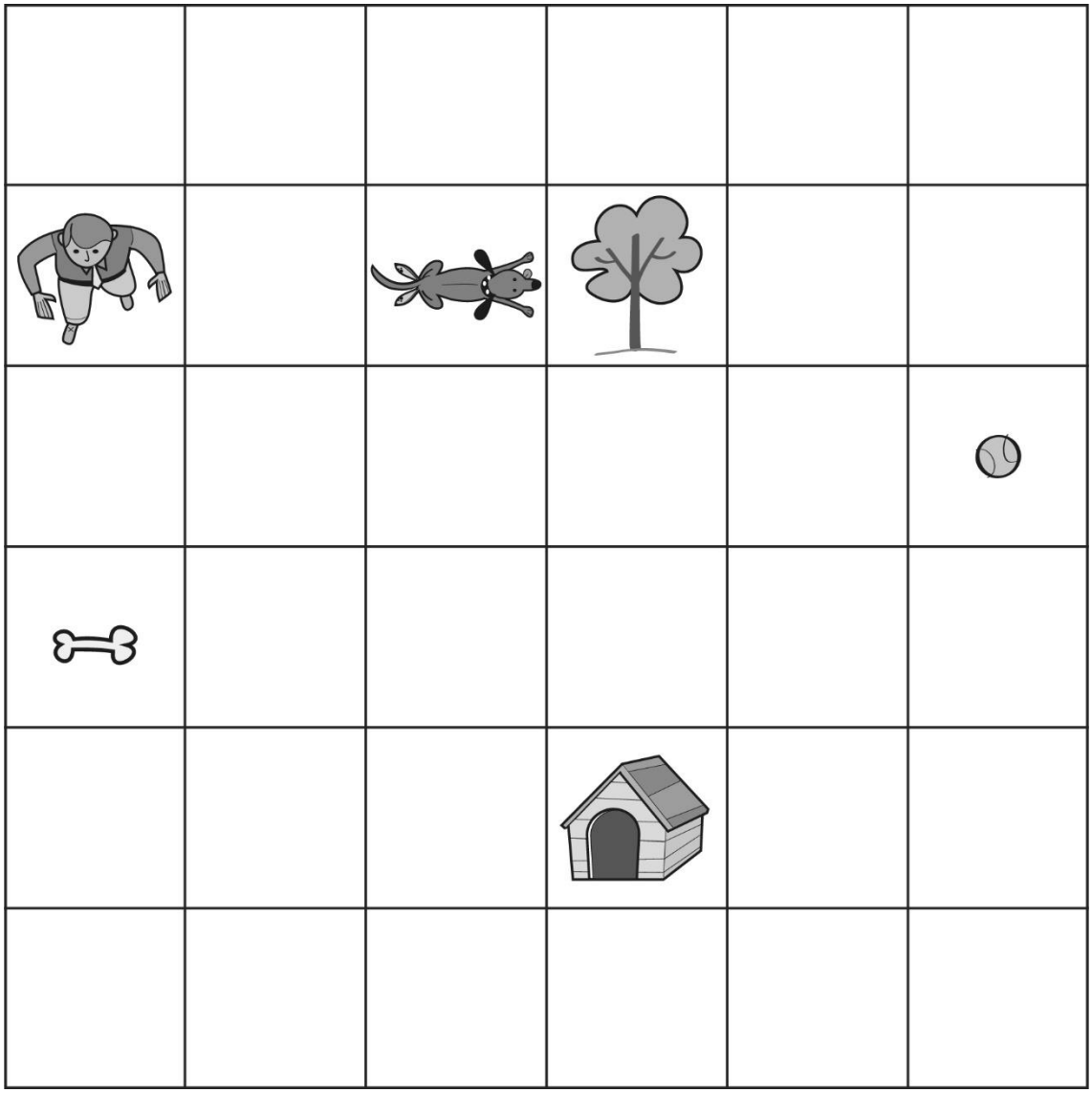
Do Part B of the activity.

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 2c

Coding on a Grid (cont'd)

Part A



Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 2d

Coding on a Grid (cont'd)

Tasks

Here are 2 different ways to write the coding instructions to get the same result.

- 1 down, 1 right, 1 down, 3 right, 1 down, 1 right, 2 up
- 1 step forward, $\frac{1}{4}$ turn left, 1 step forward, $\frac{1}{4}$ turn right,
  1 step forward, $\frac{1}{4}$ turn left, 3 steps forward, $\frac{1}{4}$ turn right,
  1 step forward, $\frac{1}{4}$ turn left, 1 step forward, $\frac{1}{4}$ turn left,
  2 steps forward

Which way do you prefer? Why? Why might you need to use both ways?

What is a simpler way to write the same code?

These code sequences move which object to where?
How did you find out?

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 2e

Coding on a Grid (cont'd)

Tasks

Write a code that:

Moves the dog to the bone.

Moves the dog to the bone with 8 "steps."

Moves the dog to the back of the doghouse.

How could you adjust the code so the dog gets to the front door?

Moves the dog to the right side of its owner.

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 2f

Coding on a Grid (cont'd)

Tasks

Write a code that:

Has the dog running away from its owner.

Has the owner throwing the ball and the dog fetching it (remember to include wait times if or when the dog or owner are not moving).

Dog	Owner

Has the dog running in a rectangle around the yard 3 times (try to include a "repeat" around some code).

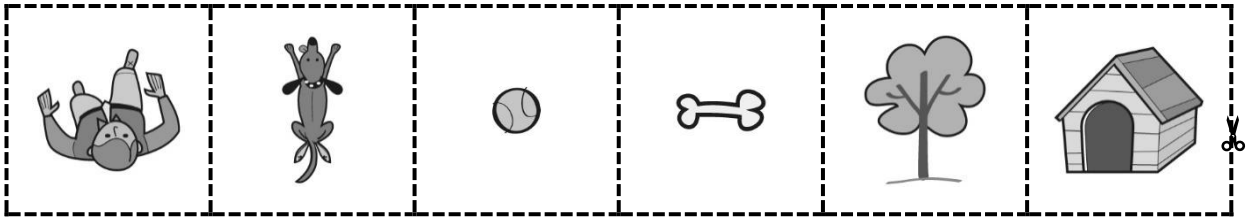
Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 2g

Coding on a Grid (cont'd)

Tasks

Place these objects on the grid in squares of your choice.

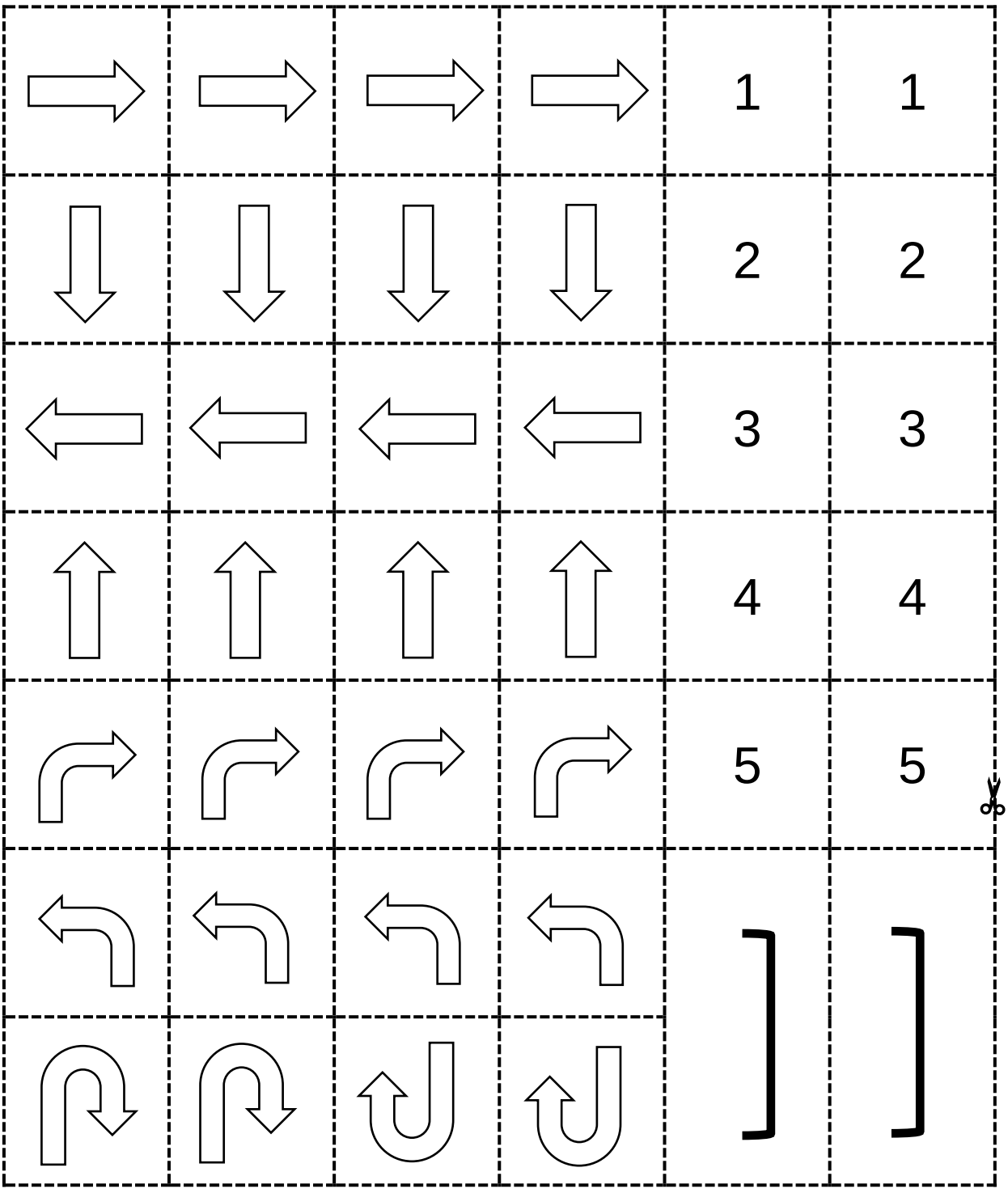


Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 3

Coding Cards

Use these cards to help visualize the movements on the grid and to write code.



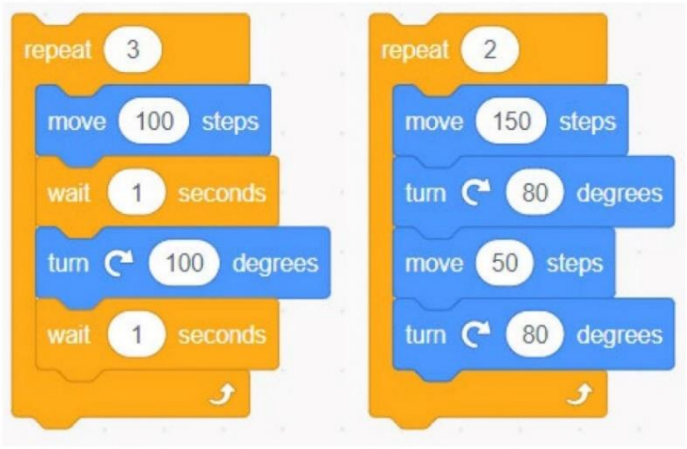
Name_____ Date_____

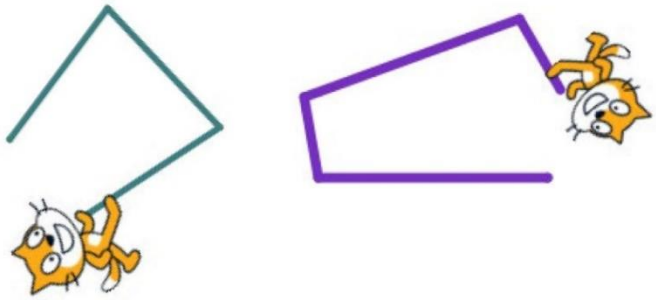
Patterning and Algebra
Unit 3 Line Master 4a

Making Shapes

Using a Block-Coding Program

Which of the images below did each set of block code create? How do you know?





How are the code sequences alike? How are they different?

What do you think *move*, *turn*, *repeat*, and *point in direction* might mean?

Notice the colour coding that is used to organize blocks according to function: blue indicates Motion blocks; orange indicates Control blocks, and dark green indicates Pen. Note that the code above is missing some important blocks for the sprite to draw the shapes.

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 4b

Making Shapes (cont'd)

Using a Block-Coding Program

In the program you looked at as a class, a character called a "sprite" (in this case, Cat) is trying to draw a rectangle and a square.

You are going to investigate how you might edit the "code" to help Cat walk over these shapes.

Be sure to add the **Pen Extensions** before you begin.

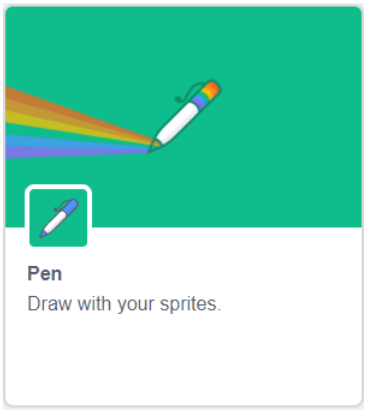
Go to: http://scratch.mit.edu

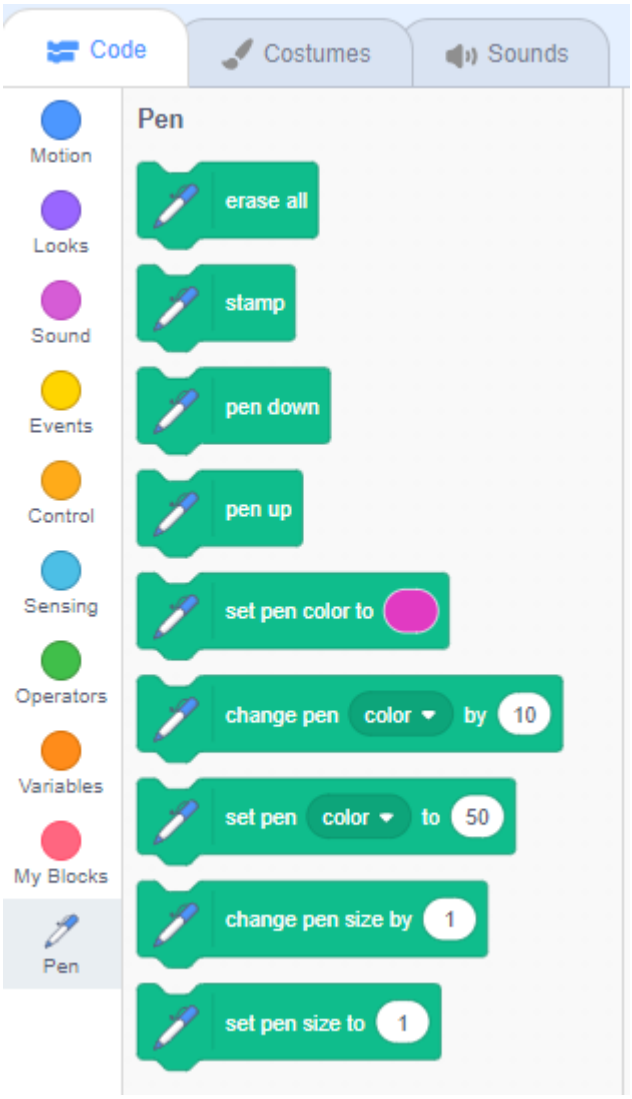
Log in, if your teacher would like you to.

Click **Create** to add a new project and name it.

Click the **Add Extension** icon at the bottom left.

Click the **Pen.** Draw with your sprites icon.





You will now see extra blocks for drawing with the pen.

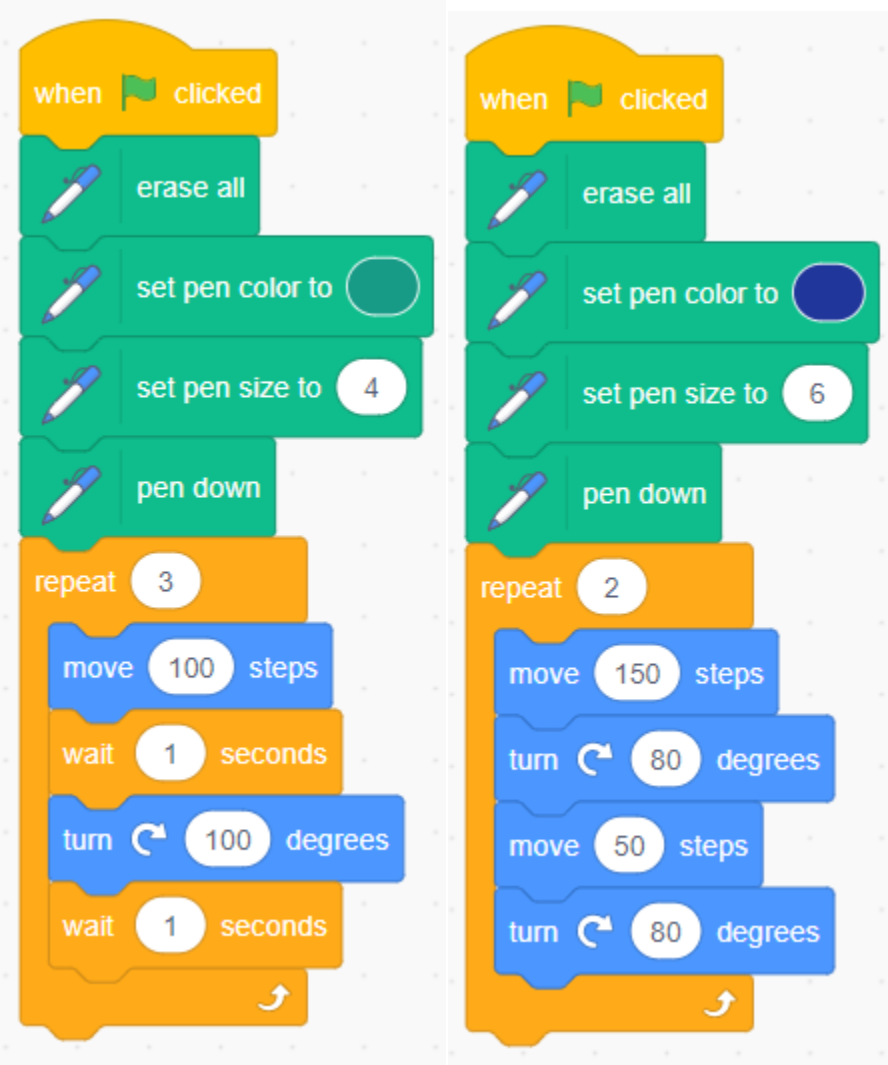
Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 4c

Making Shapes (cont'd)

Using a Block-Coding Program

You will see the same code again.
This time they have the necessary pen commands.



Why do you think all of the beginning code is important?
What does each block do?

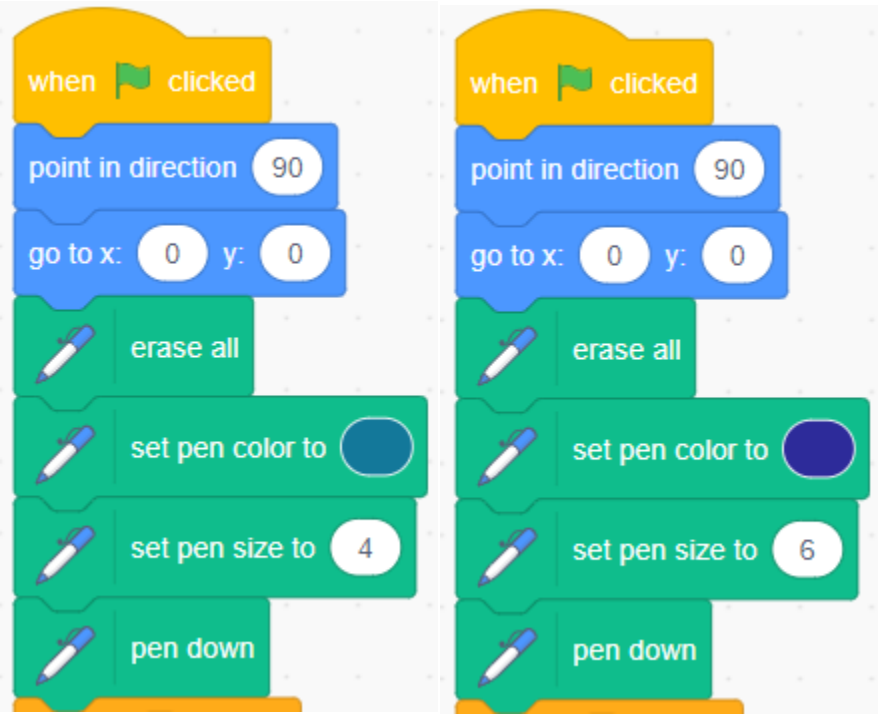
Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 4d

Making Shapes (cont'd)

Using a Block-Coding Program

You may want to add the following motion blocks to ensure that the sprite will begin in the right direction and at the centre of the stage each time.



Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 4e

Making Shapes (cont'd)

Using a Block-Coding Program

Challenge A: Code Cat to draw a square.

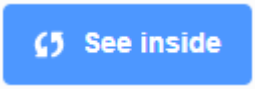
Work with your partner.

Start with a blank project or modify the project provided.

1. Use a blank project page to make your own.
   - Create a new project (if necessary).
   - Add in the **Pen Extensions** (as above), if you haven't already.
   - Use the above code image to find the blocks you will need.

OR

2. Modify this existing project:
   https://scratch.mit.edu/projects/479303643/
   - Click **See Inside** to alter the code

     or, if you've logged into Scratch, click **Remix** to get your own copy of this project,

     .
   - Change some of the numbers, then see how your changes impact the outcome (what Cat draws).
   - Talk about what you're changing and why.
     Change just one thing at a time!
   - You can always go back to the original link and start again.

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 4f

Making Shapes (cont'd)

Using a Block-Coding Program

Challenge B: Code Cat to draw a rectangle.

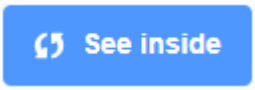
Work with your partner.

Start with a blank project or go to the link provided.

1. Use a blank project page to make your own.
   - Create a new project (if necessary).
   - Add in the **Pen Extensions** (as above), if you haven't already.
   - Use the above code image to find the blocks you will need.

OR

2. Modify this existing project:
   https://scratch.mit.edu/projects/550915078/
   - Click **See Inside** to alter the code

     or click **Remix** to get your own copy of this project.

   - Change some of the numbers, then see how your changes impact the outcome (what Cat draws).
   - Talk about what you're changing and why.
     Change just one thing at a time!

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 4g

Making Shapes (cont'd)

Using a Block-Coding Program

Self-check in

What have you learned about block coding so far?

Did you get stuck? If so, what did you do?

Did you turn to your classmates for help? If so, how did they help?

What are you doing to help the learning of others?

This is "hard fun." What do you think we mean by "hard fun"?
What other activities do you do that are "hard fun"?

Name_____ Date_____

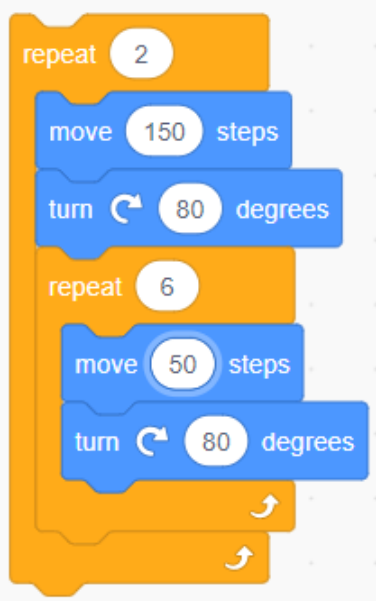
Patterning and Algebra
Unit 3 Line Master 5a

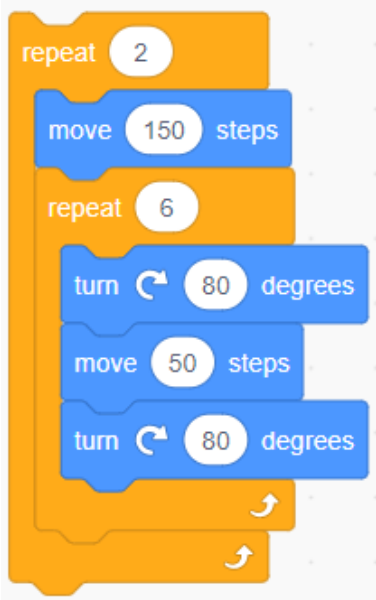
Coding a Shape Design

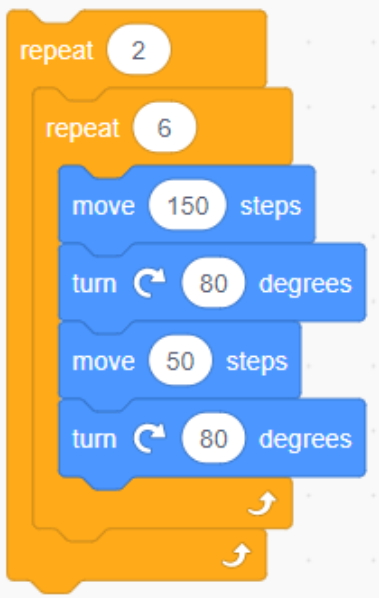
Using a Block-Coding Program

Part 1: Coding a Shape Design using Nested Events

Look at the code.

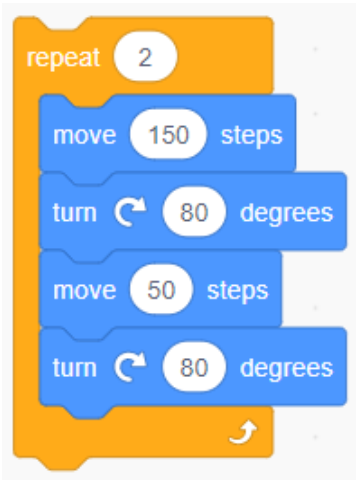


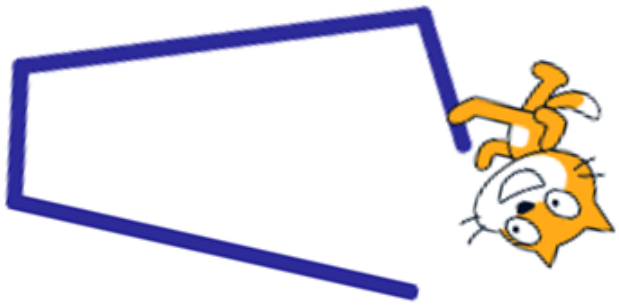




Notice there are 6 repeats within the repeat of 2 in each case.

The repeat of 2, without any repeats inside, would make the design shown.





Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 5b

Coding a Shape Design (cont'd)

Using a Block-Coding Program

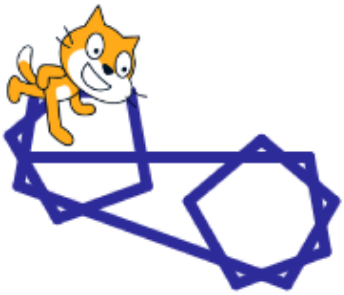
In each of the coding examples provided with a repeat of 6 inside, parts or all of the repeat of 2 will be repeated 6 times.

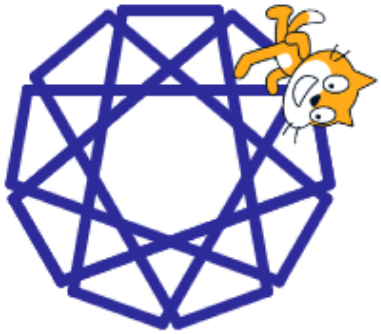
Where the repeat of 6 is placed will change the outcome significantly.

Predict what design each of the code sequences will create.

Try to visualize the movements in your mind. In fact, you can "walk" them out physically or in your mind, or sketch them on paper.

Don't worry if you're not sure — try to make a prediction anyway!
These are the outcomes for each code sequence.





Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 5c

Coding a Shape Design (cont'd)

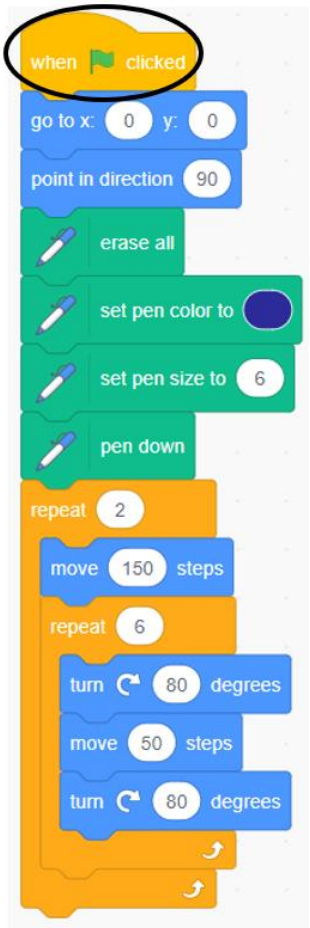
Using a Block-Coding Program

Work in the file and execute these code sequences.

Here's the link to the code for you to try out:
https://scratch.mit.edu/projects/550619357/

Click **See Inside** to access the code.

Click the individual green flags to execute the code for each script, rather than the flag at the top right.



Add wait times to help you see what each block of code does. Were any of your predictions correct?

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 5d

Coding a Shape Design (cont'd)

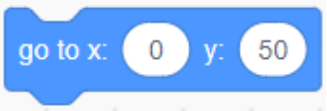
Using a Block-Coding Program

Mind-Sized Bites

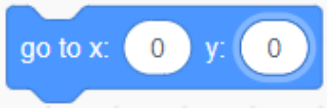
Seymour Papert is a famous mathematician. He created Logo, the first programming language for kids upon which Scratch is based. He also spoke of "mind-sized bites". When visualizing what happens in these code blocks, be conscious of the separate chunks.

Look at each enclosed repeat container as a chunk and make sense of it. This idea of decomposition is one of the skills of computational thinking.

One way to direct Cat is to tell Cat to move to a specific spot. For example:



tells Cat to go to (0,50) on the Cartesian plane.



tells Cat to go to (0,0) on the Cartesian plane.

tells Cat to go to (50,0) on the Cartesian plane.

Try it out! Start your own code or click the link below to try it out:
https://scratch.mit.edu/projects/550920160/

The different values for the *x* and *y* coordinates will move Cat to other parts on the screen, but you won't have to worry about changing these values in the upcoming activity.

What do you think this code will create? Why?

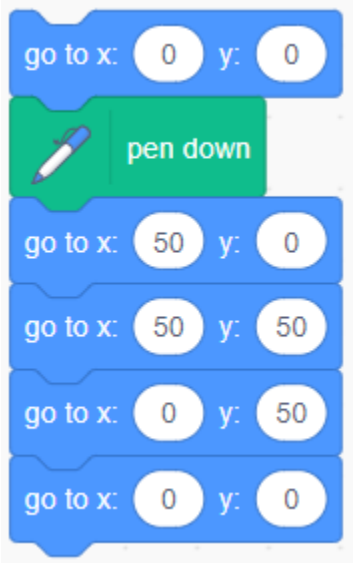
Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 5e

Coding a Shape Design (cont'd)

Using a Block-Coding Program

Recreate this application or click the link below and execute the code to check:
https://scratch.mit.edu/projects/550919596/



Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 5f

Coding a Shape Design (cont'd)

Using a Block-Coding Program

Part 2: Coding a Shape Design with Concurrent Events

Fish and Butterfly are playing together.
Fish is swimming in a pattern under the water.
Butterfly is trying to match Fish's movements.
But Butterfly is also making a pattern above the water,
and Fish is trying to match Butterfly's movements.

Let's execute the code and see what happens.

Click this link to access the file:
https://scratch.mit.edu/projects/550920489/

Execute the code by clicking the green flag on the preview page.

What do you notice? What do you wonder?

How do you think the code sequences are alike?

How do you think they are different?

Click **See Inside** to access the code.
Notice the nested loops. Here are the outcomes:

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 5g

Coding a Shape Design (cont'd)

Using a Block-Coding Program

Part 3: Challenge

Work with your partner.

Alter the code so that Fish creates Butterfly's flying pattern (but without looking at the code and copying it exactly).

OR

Alter the code so that Butterfly creates Fish's swimming pattern (again without looking at the code and copying it exactly).

As you test out different code sequences, predict how your changes will impact the outcome. Talk about what you're changing and why. Change 1 thing at a time!

As you try to recreate the pattern, you might get stuck frequently or have to start again. Don't worry! This is common when we are coding.

When you have the exact same patterns, make sure that you make the movements at the same time (like you are playing a mirror game).

Name_____ Date_____

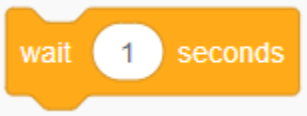
Patterning and Algebra
Unit 3 Line Master 5h

Coding a Shape Design (cont'd)

Using a Block-Coding Program

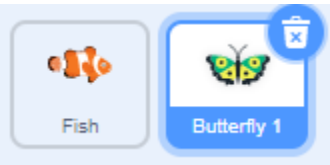
Tips

Wait time is included in this code.

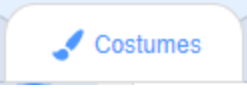


This impacts the movement—the speed the program executes, but not the final outcome.

The code sequences for each sprite are kept separately.
To access one, click the icon for the corresponding sprite.



If you want to alter the sprite in any way, click the **Costumes** tab at the top.



The line was created by adding a **Backdrop** 

Name_____ Date_____

Patterning and Algebra
Unit 3 Line Master 5i

Coding a Shape Design (cont'd)

Using a Block-Coding Program

Self-check in

What have you learned about block coding so far?

Did you get stuck? If so, what did you do?

Did you turn to your classmates for help? If so, how did they help?

What are you doing to help the learning of others?

This is "hard fun." What do you think we mean by "hard fun"?
What other activities do you do that are "hard fun"?

Patterning and Algebra

Activity 14 Assessment

Writing Code

Writing, Reading, and Altering Code on a Grid		
Tests movements on a grid involving sequential events "They took 3 steps forward, did a $\frac{1}{4}$ turn clockwise, then took 2 steps forward to get to the ball."	Visualizes and predicts movements on a grid involving sequential events "I'm going to take 3 steps forward, do a $\frac{1}{4}$ turn clockwise, then take 2 more steps forward. If I did a $\frac{1}{4}$ turn clockwise first, then I would have to take 2 steps forward, do a $\frac{1}{4}$ turn counterclockwise, and then 3 steps forward. Both ways get me to the same location."	Tests the movement of two different characters at the same time involving concurrent events "The owner walked forward and the dog walked forward. But they ran into each other. Oops."
Observations/Documentation		

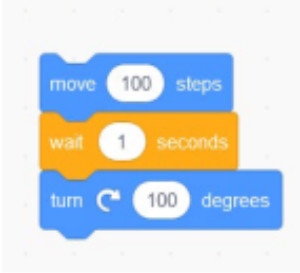
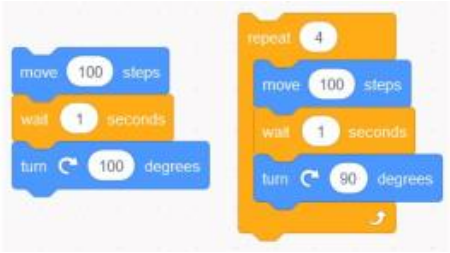
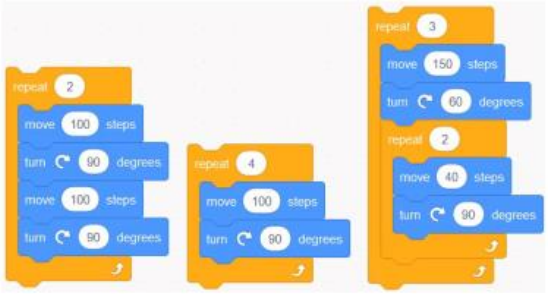
Activity 14 Assessment
Writing Code

Writing, Reading, and Altering Code on a Grid (cont'd)		
Flexibly writes, reads and alters code involving concurrent events "If the dog runs forward, then the owner has to turn at this point, or they'll run into each other. The dog could take a $\frac{1}{4}$ turn clockwise back here and that will solve that problem. Now I just need the owner to have more wait time."	Tests the repeated movements on a grid involving repeating events "I wrote this code but when my partner acted it out, it didn't work as I thought it would. I think this part of the code repeats, but my partner says that the way I wrote it, this whole part repeats."	Visualizes the repeating nature of the movements on a grid involving repeating events "I decided to use the repeat after the first step in the code. This way I wouldn't have to change the direction of the dog after it got to the doghouse and the dog could just move forward."
Observations/Documentation		

Patterning and Algebra

Activity 15 Assessment

Making Shapes

Analyzing and Classifying 2-D Shapes and Using Algebraic Thinking		
Reads and alters code by testing out various values or blocks until desired outcome is attained.  "I'm going to change the steps to 50 and the wait to 2 and the degrees to 90."	Reads and alters code by visualizing and explaining the impact of changes until desired outcome is achieved.  "I'll change the steps to 50, the degrees to 90, and I'll delete the wait because it doesn't impact the end image, only how long it takes to make. And I can just repeat 4 times to get a square."	Reads and flexibly alters code, including an ability to alter the same code in different ways for the same desired outcome.  "I'm going to alter this to use fewer blocks. Since the actions are equal in both code sequences, the outcome will be the same." Or "This nested loop is another way to create this design without so many blocks."
Observations/Documentation		

Patterning and Algebra

Activity 15 Assessment

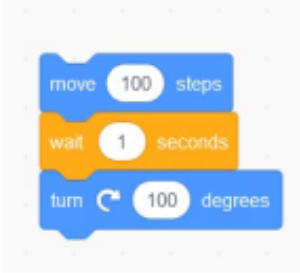
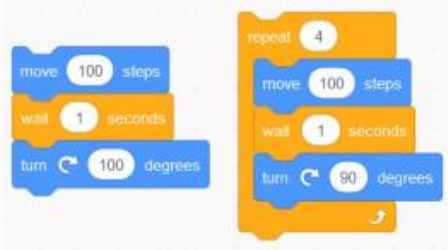
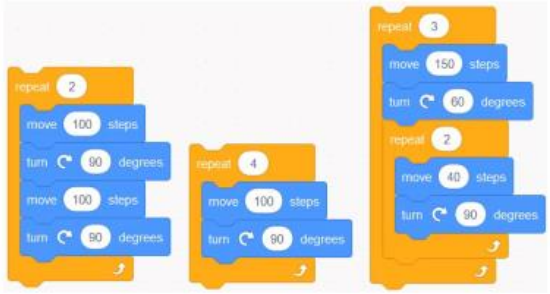
Making Shapes

Analyzing and Classifying 2-D Shapes and Using Algebraic Thinking (cont'd)		
Uses basic blocks to write code for a desired outcome "I tried using these blocks in this order, but it didn't make what I wanted."	Uses more complex blocks (including repeat) to write code for a desired outcome "I wrote code, but it used so many blocks. I can see that these blocks repeat. So, I used the repeat block instead and deleted these other blocks."	Uses complex blocks to flexibly write different code for the same desired outcome "Coding and algebra are very connected. Comparing the code sequences in these blocks is like comparing equivalent expressions. As long as the final outcome is the same, there are many code sequences that can create it."
Observations/Documentation		

Patterning and Algebra

Activity 16 Assessment

Coding a Concurrent Shape Design

Analyzing and Classifying 2-D Shapes and Using Algebraic Thinking		
Reads and alters code by testing out various values or blocks until desired outcome is attained.  "I'm going to change the steps to 50 and the wait to 2 and the degrees to 90."	Reads and alters code by visualizing and explaining the impact of changes until desired outcome is achieved.  "I'll change the steps to 50, the degrees to 90, and I'll delete the wait because it doesn't impact the end image, only how long it takes to make. And I can just repeat 4 times to get a square."	Reads and flexibly alters code, including an ability to alter the same code in different ways for the same desired outcome.  "I'm going to alter this to use fewer blocks. Since the actions are equal in both code sequences, the outcome will be the same." Or "This nested loop is another way to create this design without so many blocks."
Observations/Documentation		

Patterning and Algebra

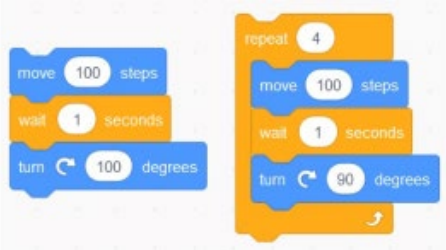
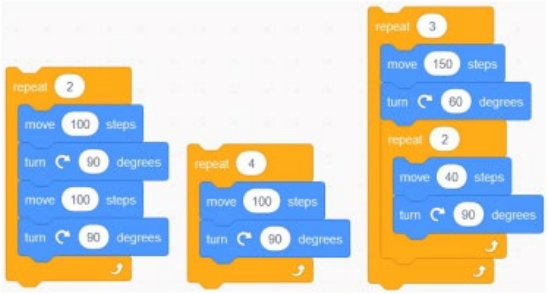
Activity 16 Assessment

Coding a Concurrent Shape Design

Analyzing and Classifying 2-D Shapes and Using Algebraic Thinking (cont'd)		
Uses basic blocks to write code for a desired outcome "I tried using these blocks in this order, but it didn't make what I wanted."	Uses more complex blocks (including repeat) to write code for a desired outcome "I wrote code, but it used so many blocks. I can see that these blocks repeat. So, I used the repeat block instead and deleted these other blocks."	Uses complex blocks to flexibly write different code for the same desired outcome "Coding and algebra are very connected. Comparing the code sequences in these blocks is like comparing equivalent expressions. As long as the final outcome is the same, there are many code sequences that can create it."
Observations/Documentation		

Patterning and Algebra

Activity 17 Assessment
Coding Consolidation

Analyzing and Classifying 2-D Shapes and Using Algebraic Thinking		
Reads and alters code by testing out various values or blocks until desired outcome is attained.  "I'm going to change the steps to 50 and the wait to 2 and the degrees to 90."	Reads and alters code by visualizing and explaining the impact of changes until desired outcome is achieved.  "I'll change the steps to 50, the degrees to 90, and I'll delete the wait because it doesn't impact the end image, only how long it takes to make. And I can just repeat 4 times to get a square."	Reads and flexibly alters code, including an ability to alter the same code in different ways for the same desired outcome.  "I'm going to alter this to use fewer blocks. Since the actions are equal in both code sequences, the outcome will be the same." Or "This nested loop is another way to create this design without so many blocks."
Observations/Documentation		

Patterning and Algebra

Activity 17 Assessment
Coding Consolidation

Analyzing and Classifying 2-D Shapes and Using Algebraic Thinking (cont'd)		
Uses basic blocks to write code for a desired outcome "I tried using these blocks in this order, but it didn't make what I wanted."	Uses more complex blocks (including repeat) to write code for a desired outcome "I wrote code, but it used so many blocks. I can see that these blocks repeat. So, I used the repeat block instead and deleted these other blocks."	Uses complex blocks to flexibly write different code for the same desired outcome "Coding and algebra are very connected. Comparing the code sequences in these blocks is like comparing equivalent expressions. As long as the final outcome is the same, there are many code sequences that can create it."
Observations/Documentation		

Patterning and Algebra

Activity 17 Assessment

Coding Consolidation

Writing, Reading, and Altering Code on a Grid		
Tests movements on a grid involving sequential events "They took 3 steps forward, did a $\frac{1}{4}$ turn clockwise, then took 2 steps forward to get to the ball."	Visualizes and predicts movements on a grid involving sequential events "I'm going to take 3 steps forward, do a $\frac{1}{4}$ turn clockwise, then take 2 more steps forward. If I did a $\frac{1}{4}$ turn clockwise first, then I would have to take 2 steps forward, do a $\frac{1}{4}$ turn counterclockwise, and then 3 steps forward. Both ways get me to the same location."	Tests the movement of two different characters at the same time involving concurrent events "The owner walked forward and the dog walked forward. But they ran into each other. Oops."
Observations/Documentation		

Patterning and Algebra

Activity 17 Assessment
Coding Consolidation

Writing, Reading, and Altering Code on a Grid (cont'd)		
Flexibly writes, reads and alters code involving concurrent events "If the dog runs forward, then the owner has to turn at this point, or they'll run into each other. The dog could take a $\frac{1}{4}$ turn clockwise back here and that will solve that problem. Now I just need the owner to have more wait time."	Tests the repeated movements on a grid involving repeating events "I wrote this code but when my partner acted it out, it didn't work as I thought it would. I think this part of the code repeats, but my partner says that the way I wrote it, this whole part repeats."	Visualizes the repeating nature of the movements on a grid involving repeating events "I decided to use the repeat after the first step in the code. This way I wouldn't have to change the direction of the dog after it got to the doghouse and the dog could just move forward."
Observations/Documentation		

Name_____ Date_____

Master 1

Pentominoes

A **pentomino** is a geometric shape made from 5 squares, connected at the sides.