Name_____ Date_____

Number
Unit 1 Line Master 1a

Place-Value Chart to 1 Million

Units	Ones	
	Tens	
	Hundreds	
Thousands	Thousands	
	Ten Thousands	
	Hundred Thousands	
	Millions	

Name_____ Date_____

Number
Unit 1 Line Master 1b

Place-Value Chart to Hundred Millions

Units	Ones	
	Tens	
	Hundreds	
Thousands	Ones	
	Tens	
	Hundreds	
Millions	Ones	
	Tens	
	Hundreds	

Name_____ Date_____

Number
Unit 1 Line Master 2a

Connect 15: Up to 10 Million

START Where is 76 596?	seventy-six thousand five hundred ninety-six Where is 3 000 000 + 900 000 + 40 000 + 6000 + 500 + 20 + 1?
3 946 521 Where is a number with 4 hundred thousands, 2 ten thousands, 6 thousands, 8 hundreds, 2 ones?	four hundred twenty-six thousand eight hundred two Where is 1 000 000?
1 million Where is 600 000 + 5000 + 800 + 20 + 4?	605 824 Where is a number that is 30 thousands more than 204 904?
200 000 + 30 000 + 4000 + 900 + 4 Where is a number with 5 hundred thousands, 4 tens, 5 ones?	500 045 Where is 345 thousand?
345 000 Where is 2 000 000 + 6?	2 000 006 Where is 300 000 + 5000 + 300 + 5?

Name_____ Date_____

Number
Unit 1 Line Master 2b

Connect 15: Up to 10 Million (cont'd)

305 305 Where is 4 millions + 802 thousands + 560 ones?	4 802 560 Where is 900 000 + 90 000 + 6000 + 100 + 20 + 5?
996 125 Where is a number with 8 hundred thousands, 2 ten thousands, 7 thousands, 4 hundreds, 8 ones?	eight hundred twenty-seven thousand four hundred eight Where is 895 005?
eight hundred ninety-five thousand five **END**	_____ Where is _____?
_____ Where is _____?	_____ Where is _____?
_____ Where is _____?	_____. Where is _____?

Name_____ Date_____

Number
Unit 1 Line Master 3

Connect 10: Up to 100 000

START Where is 7596?	seven thousand five hundred ninety-six Where is 1000 + 400 + 60 + 50?
1465 Where is a number with 2 ten thousands, 6 thousands, 8 hundreds, 2 ones?	twenty-six thousand eight hundred two Where is 90 000?
90 thousand Where is 6000 + 500 + 80 + 4?	6584 Where is 23 494?
20 000 + 3000 + 400 + 90 + 4 Where is a number with 5 thousands, 4 tens, 5 ones?	5045 Where is 45 thousand?
45 000 Where is 2000 + 6?	2006 **END**

Name_____ Date_____

Number
Unit 1 Line Master 4a

Place-Value Challenge!
Recording Sheet

Player B

Millions	Ones				
Thousands	Hundreds				
	Tens				
	Ones				
Units	Hundreds				
	Tens				
	Ones				

<, >, or =

Player A

Millions	Ones				
Thousands	Hundreds				
	Tens				
	Ones				
Units	Hundreds				
	Tens				
	Ones				

Name_____ Date_____

Number
Unit 1 Line Master 4b

Place-Value Challenge!
Recording Sheet (cont'd)

Player A	Rounded Number
Round 1	
Round 2	
Round 3	
Round 4	

Player B	Rounded Number
Round 1	
Round 2	
Round 3	
Round 4	

Points

	Round 1	Round 2	Round 3	Round 4	Total
Player A					
Player B					

Name_____ Date_____

Number
Unit 1 Line Master 5a

Link 3! Gameboard A: Up to 10 Million

605 040	876 543	87 643	50 053
9 040 052	548 632	5 968 000	9 423 075
427 089	747 747	207 089	1 000 000
48 632	1 500 968	5 968 086	9 823 075
474 747	405 060	765 432	304 056

Name_____ Date_____

Number
Unit 1 Line Master 5b

Link 3! Gameboard A Cards: Up to 10 Million

Five million nine hundred sixty-eight thousand eighty-six	500 000 + 40 000 + 8000 + 600 + 30 + 2	765 thousand 432	50 000 + 50 + 3
Forty-eight thousand six hundred thirty-two	Nine million forty thousand fifty-two	747 thousand 747	300 000 + 4000 + 50 + 6
9 000 000 + 800 000 + 20 000 + 3000 + 70 + 5	400 000 + 70 000 + 4000 + 700 + 40 + 7	Four hundred twenty-seven thousand eighty-nine	1 million
876 thousand 5 hundred 43	200 000 + 7000 + 80 + 9	One million five hundred thousand nine hundred sixty-eight	605 thousand 40
5 000 000 + 900 000 + 60 000 + 8000	87 thousand 6 hundred 43	Nine million four hundred twenty-three thousand seventy-five	Four hundred five thousand sixty

Name_____ Date_____

Number
Unit 1 Line Master 6a

Link 3! Gameboard B: Up to 100 000

74 747	4747	90 680
9608	54 632	20 089
8632	2098	23 075
20 375	87 643	80 632

Name_____ Date_____

Number
Unit 1 Line Master 6b

Link 3! Gameboard B Cards: Up to 100 000

Two thousand ninety-eight	87 thousand 6 hundred 43	Nine thousand six hundred eight
4 thousand 7 hundred 47	4 000 000 + 200 000 + 7000 + 80 + 9	Twenty thousand three hundred seventy-five
90 000 + 600 + 80	70 000 + 4000 + 700 + 40 + 7	Fifty-four thousand six hundred thirty-two
Eight thousand six hundred thirty-two	20 000 + 3000 + 70 + 5	20 thousand 89

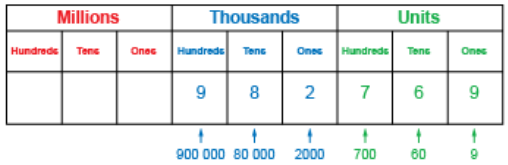
Number

Activity 1 Assessment

Representing Numbers to 10 000 000

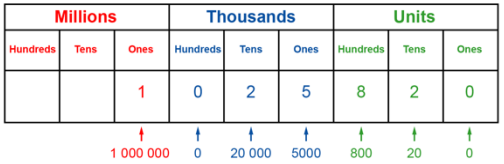
Extending Whole Number Understanding

Represents 6-digit number on place-value chart (decomposes in one way)



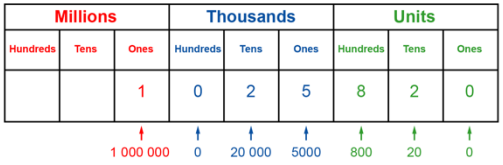
"982 769 has 9 hundred-thousands, 8 ten-thousands, 2 thousands, 7 hundreds, 6 tens, and 9 ones."

Represents 7-digit number on place-value chart (decomposes in one way)



"1 025 820: I used the digits of the number to tell me the number to write in each column."

Uses relationships among place-value positions to read and write a number in more than one way



"1 million, 2 ten-thousands, 5 thousands, 8 hundreds, and 2 tens, can also be 1 million, 25 thousands, 820 ones."
1 025 820 = 1 000 000 + 20 000 + 5000 + 800 + 20

Observations/Documentation

Number

Activity 1 Assessment

Representing Numbers to 10 000 000

Extending Whole Number Understanding (cont'd)

Uses place-value to compare and order numbers to 10 000 000

"Both start with 4 million 125 thousands.
3 hundreds is greater than 1 hundred,
2 tens is greater than 0 tens,
and 7 ones is less than 9 ones.
So, 4 125 327 is greater than 4 125 109."

Rounds 6- and 7-digit numbers to various places

Millions			Thousands			Units		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		1	0	2	5	8	2	0
		1 000 000	0	20 000	5000	800	20	0

"1 025 820 rounded to the nearest ten
is 1 025 820, to the nearest hundred
is 1 025 800, to the nearest thousand
is 1 026 000, to the nearest ten thousand
is 1 030 000, to the nearest hundred thousand
is 1 000 000, and to the nearest million
is 1 000 000."

Represents and compares numbers flexibly using place-value relationships

"1 025 820 =
1 000 000 + 20 000 + 5000 + 800 + 20
1 025 820 =
1 000 000 + 20 000 + 5000 + 700 + 120
1 025 820 =
1 000 000 + 20 000 + 5000 + 700 + 110 + 10"

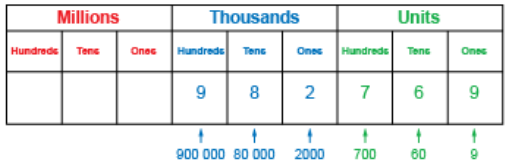
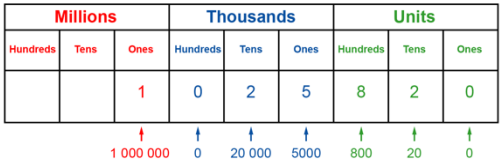
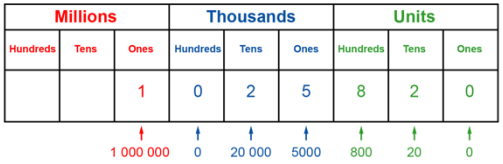
Observations/Documentation

Number

Activity 2 Assessment

Representing Numbers in Different Forms

Extending Whole Number Understanding

Represents 6-digit number on place-value chart (decomposes in one way)	Represents 7-digit number on place-value chart (decomposes in one way)	Uses relationships among place-value positions to read and write a number in more than one way
		
"982 769 has 9 hundred-thousands, 8 ten-thousands, 2 thousands, 7 hundreds, 6 tens, and 9 ones."	**"1 025 820: I used the digits of the number to tell me the number to write in each column."**	**"1 million, 2 ten-thousands, 5 thousands, 8 hundreds, and 2 tens, can also be 1 million, 25 thousands, 820 ones."** **1 025 820 = 1 000 000 + 20 000 + 5000 + 800 + 20**

Observations/Documentation

Number

Activity 2 Assessment

Representing Numbers in Different Forms

Extending Whole Number Understanding (cont'd)

Uses place-value to compare and order numbers to 10 000 000

**"Both start with 4 million 125 thousands.
3 hundreds is greater than 1 hundred,
2 tens is greater than 0 tens,
and 7 ones is less than 9 ones.
So, 4 125 327 is greater than 4 125 109."**

Rounds 6- and 7-digit numbers to various places

Millions			Thousands			Units		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		1	0	2	5	8	2	0
		1 000 000	0	20 000	5000	800	20	0

**"1 025 820 rounded to the nearest ten
is 1 025 820, to the nearest hundred
is 1 025 800, to the nearest thousand
is 1 026 000, to the nearest ten thousand
is 1 030 000, to the nearest hundred thousand
is 1 000 000, and to the nearest million
is 1 000 000."**

Represents and compares numbers flexibly using place-value relationships

**"1 025 820 =
1 000 000 + 20 000 + 5000 + 800 + 20
1 025 820 =
1 000 000 + 20 000 + 5000 + 700 + 120
1 025 820 =
1 000 000 + 20 000 + 5000 + 700 + 110 + 10"**

Observations/Documentation

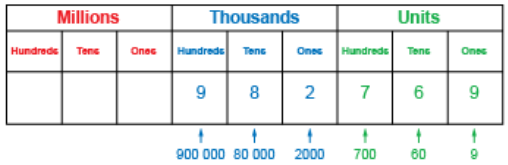
Number

Activity 3 Assessment

Comparing and Rounding Numbers

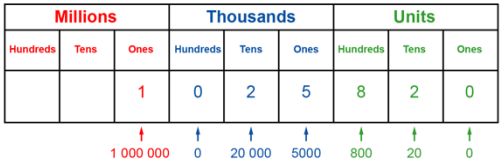
Extending Whole Number Understanding

Represents 6-digit number on place-value chart (decomposes in one way)



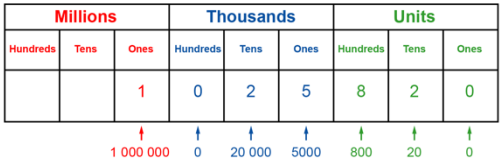
"982 769 has 9 hundred-thousands, 8 ten-thousands, 2 thousands, 7 hundreds, 6 tens, and 9 ones."

Represents 7-digit number on place-value chart (decomposes in one way)



"1 025 820: I used the digits of the number to tell me the number to write in each column."

Uses relationships among place-value positions to read and write a number in more than one way



"1 million, 2 ten-thousands, 5 thousands, 8 hundreds, and 2 tens, can also be 1 million, 25 thousands, 820 ones."
1 025 820 = 1 000 000 + 20 000 + 5000 + 800 + 20

Observations/Documentation

Number

Activity 3 Assessment

Comparing and Rounding Numbers

Extending Whole Number Understanding (cont'd)

Uses place-value to compare and order numbers to 10 000 000

**"Both start with 4 million 125 thousands.
3 hundreds is greater than 1 hundred,
2 tens is greater than 0 tens,
and 7 ones is less than 9 ones.
So, 4 125 327 is greater than 4 125 109."**

Rounds 6- and 7-digit numbers to various places

Millions			Thousands			Units		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		1	0	2	5	8	2	0
		1 000 000	0	20 000	5000	800	20	0

**"1 025 820 rounded to the nearest ten
is 1 025 820, to the nearest hundred
is 1 025 800, to the nearest thousand
is 1 026 000, to the nearest ten thousand
is 1 030 000, to the nearest hundred thousand
is 1 000 000, and to the nearest million
is 1 000 000."**

Represents and compares numbers flexibly using place-value relationships

**"1 025 820 =
1 000 000 + 20 000 + 5000 + 800 + 20
1 025 820 =
1 000 000 + 20 000 + 5000 + 700 + 120
1 025 820 =
1 000 000 + 20 000 + 5000 + 700 + 110 + 10"**

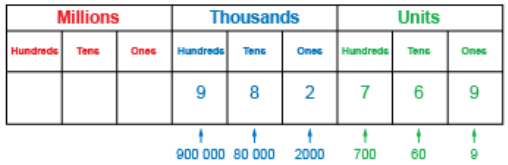
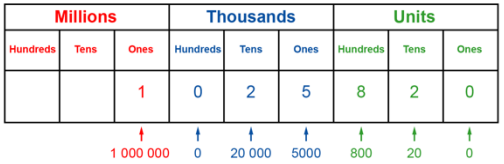
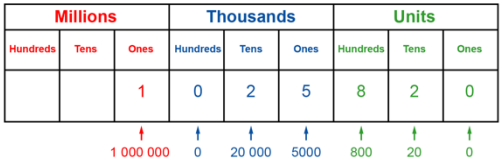
Observations/Documentation

Number

Activity 4 Assessment

Consolidating Number Relationships and Place Value

Extending Whole Number Understanding

Represents 6-digit number on place-value chart (decomposes in one way)	Represents 7-digit number on place-value chart (decomposes in one way)	Uses relationships among place-value positions to read and write a number in more than one way
		
"982 769 has 9 hundred-thousands, 8 ten-thousands, 2 thousands, 7 hundreds, 6 tens, and 9 ones."	**"1 025 820: I used the digits of the number to tell me the number to write in each column."**	**"1 million, 2 ten-thousands, 5 thousands, 8 hundreds, and 2 tens, can also be 1 million, 25 thousands, 820 ones."** **1 025 820 = 1 000 000 + 20 000 + 5000 + 800 + 20**

Observations/Documentation

Number

Activity 4 Assessment

Consolidating Number Relationships and Place Value

Extending Whole Number Understanding (cont'd)

Uses place-value to compare and order numbers to 10 000 000

**"Both start with 4 million 125 thousands.
3 hundreds is greater than 1 hundred,
2 tens is greater than 0 tens,
and 7 ones is less than 9 ones.
So, 4 125 327 is greater than 4 125 109."**

Rounds 6- and 7-digit numbers to various places

Millions			Thousands			Units		
Hundreds	Tens	Ones	Hundreds	Tens	Ones	Hundreds	Tens	Ones
		1	0	2	5	8	2	0
		1 000 000	0	20 000	5000	800	20	0

**"1 025 820 rounded to the nearest ten
is 1 025 820, to the nearest hundred
is 1 025 800, to the nearest thousand
is 1 026 000, to the nearest ten thousand
is 1 030 000, to the nearest hundred thousand
is 1 000 000, and to the nearest million
is 1 000 000."**

Represents and compares numbers flexibly using place-value relationships

**"1 025 820 =
1 000 000 + 20 000 + 5000 + 800 + 20
1 025 820 =
1 000 000 + 20 000 + 5000 + 700 + 120
1 025 820 =
1 000 000 + 20 000 + 5000 + 700 + 110 + 10"**

Observations/Documentation

Name_____ Date_____

Number
Unit 2 Line Master 1

Number of Views

Choose one video below.

How many views did it get on its first two days online?

First four days online?

Use estimation to check the reasonableness of your answers.

Number of Views, each day, first four days online

Day 1	Day 2	Day 3	Day 4
102 004	123 220	100 311	100 202

Number of Views, each day, first four days online

Day 1	Day 2	Day 3	Day 4
125 075	175 225	200 050	150 500

Number of Views, each day, first four days online

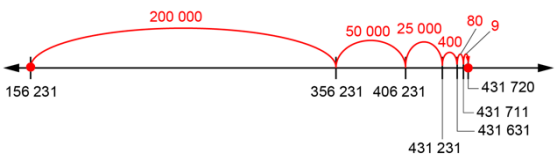
Day 1	Day 2	Day 3	Day 4
156 231	275 489	250 750	243 225

Number

Activity 5 Assessment

Exploring Addition Strategies

Conceptual Meaning of Whole Number Addition and Subtraction

Recognizes addition and subtraction situations to 1 000 000	Models and symbolizes ways to solve problems to 1 000 000	Uses an understanding of place value to decompose numbers to solve problems to 1 000 000
How many views did the video get on its first two days online? "To find the total number of views, I need to add the number of views on Day 1 and the number of views on Day 2."	156 231 + 275 489 = ? 	156 231 = 100 000 + 50 000 + 6000 + 200 + 30 + 1 275 489 = 200 000 + 70 000 + 5000 + 400 + 80 + 9 156 231 + 275 489 = 300 000 + 120 000 + 11 000 + 600 + 110 + 10 = 431 720 "I added hundred thousands with hundred thousands, ten thousands with ten thousands, thousands with thousands, and so on. I added like units."

Observations/Documentation

Number

Activity 5 Assessment

Exploring Addition Strategies

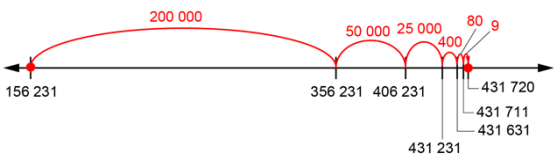
Conceptual Meaning of Whole Number Addition and Subtraction (cont'd)

Uses an understanding of place value to add and subtract to 1 000 000 using the standard algorithm 968 867 – 790 283 = ? 8 1 7 1 ~~9~~68 ~~8~~67 – 790 283 178 584 "I used the standard algorithm."	Estimates to determine if answer to problem is reasonable 968 867 – 790 283 = ? "968 867 is close to 970 000 and 790 283 is close to 800 000. 970 000 – 800 000 = 170 000. 178 584 is close to 170 000. So, my answer is reasonable."	Creates and solves multi-step addition and subtraction problems flexibly using a variety of strategies A dancing monkey video got 54 977 likes one day and 127 522 likes the next. How many more likes does it need to reach 250 000? 1 1 1 54 977 + 127 552 182 529 1 14 9 9 1 ~~2~~50 ~~0~~00 – 182 529 67 471
Observations/Documentation		

Number

Activity 6 Assessment

Exploring Subtraction Strategies

Conceptual Meaning of Whole Number Addition and Subtraction		
Recognizes addition and subtraction situations to 1 000 000 How many views did the video get on its first two days online? "To find the total number of views, I need to add the number of views on Day 1 and the number of views on Day 2."	Models and symbolizes ways to solve problems to 1 000 000 156 231 + 275 489 = ?  	Uses an understanding of place value to decompose numbers to solve problems to 1 000 000 156 231 = 100 000 + 50 000 + 6000 + 200 + 30 + 1 275 489 = 200 000 + 70 000 + 5000 + 400 + 80 + 9 156 231 + 275 489 = 300 000 + 120 000 + 11 000 + 600 + 110 + 10 = 431 720 "I added hundred thousands with hundred thousands, ten thousands with ten thousands, thousands with thousands, and so on. I added like units."
Observations/Documentation		

Number

Activity 6 Assessment

Exploring Subtraction Strategies

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

Uses an understanding of place value to add and subtract to 1 000 000 using the standard algorithm

968 867 – 790 283 = ?

$$\begin{array}{r} {\scriptstyle 8\,1\quad 7\,1} \\ 968\,867 \\ -\,790\,283 \\ \hline 178\,584 \end{array}$$

"I used the standard algorithm."

Estimates to determine if answer to problem is reasonable

968 867 – 790 283 = ?

"968 867 is close to 970 000 and 790 283 is close to 800 000.
970 000 – 800 000 = 170 000.
178 584 is close to 170 000.
So, my answer is reasonable."

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

A dancing monkey video got 54 977 likes one day and 127 522 likes the next. How many more likes does it need to reach 250 000?

$$\begin{array}{r} {\scriptstyle 1\,1\quad 1} \\ 54\,977 \\ +\,127\,552 \\ \hline 182\,529 \end{array}$$

$$\begin{array}{r} {\scriptstyle 1\,14\,9\quad 9\,9\,1} \\ 250\,000 \\ -\,182\,529 \\ \hline 67\,471 \end{array}$$

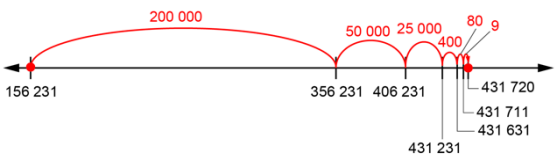
Observations/Documentation

Number

Activity 7 Assessment

Consolidating Fluency with Addition and Subtraction

Conceptual Meaning of Whole Number Addition and Subtraction

Recognizes addition and subtraction situations to 1 000 000	Models and symbolizes ways to solve problems to 1 000 000	Uses an understanding of place value to decompose numbers to solve problems to 1 000 000
How many views did the video get on its first two days online? "To find the total number of views, I need to add the number of views on Day 1 and the number of views on Day 2."	156 231 + 275 489 = ? 	156 231 = 100 000 + 50 000 + 6000 + 200 + 30 + 1 275 489 = 200 000 + 70 000 + 5000 + 400 + 80 + 9 156 231 + 275 489 = 300 000 + 120 000 + 11 000 + 600 + 110 + 10 = 431 720 "I added hundred thousands with hundred thousands, ten thousands with ten thousands, thousands with thousands, and so on. I added like units."

Observations/Documentation

Number

Activity 7 Assessment

Consolidating Fluency with Addition and Subtraction

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

Uses an understanding of place value to add and subtract to 1 000 000 using the standard algorithm

968 867 – 790 283 = ?

8 1 7 1
~~9~~68 ~~8~~67
– 790 283
178 584

"I used the standard algorithm."

Estimates to determine if answer to problem is reasonable

968 867 – 790 283 = ?

"968 867 is close to 970 000 and 790 283 is close to 800 000.
970 000 – 800 000 = 170 000.
178 584 is close to 170 000.
So, my answer is reasonable."

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

A dancing monkey video got 54 977 likes one day and 127 522 likes the next. How many more likes does it need to reach 250 000?

1 1 1
54 977
+ 127 552
182 529

1 14 9 9 1
~~2~~50 ~~0~~00
– 182 529
67 471

Observations/Documentation

Name_____ Date_____

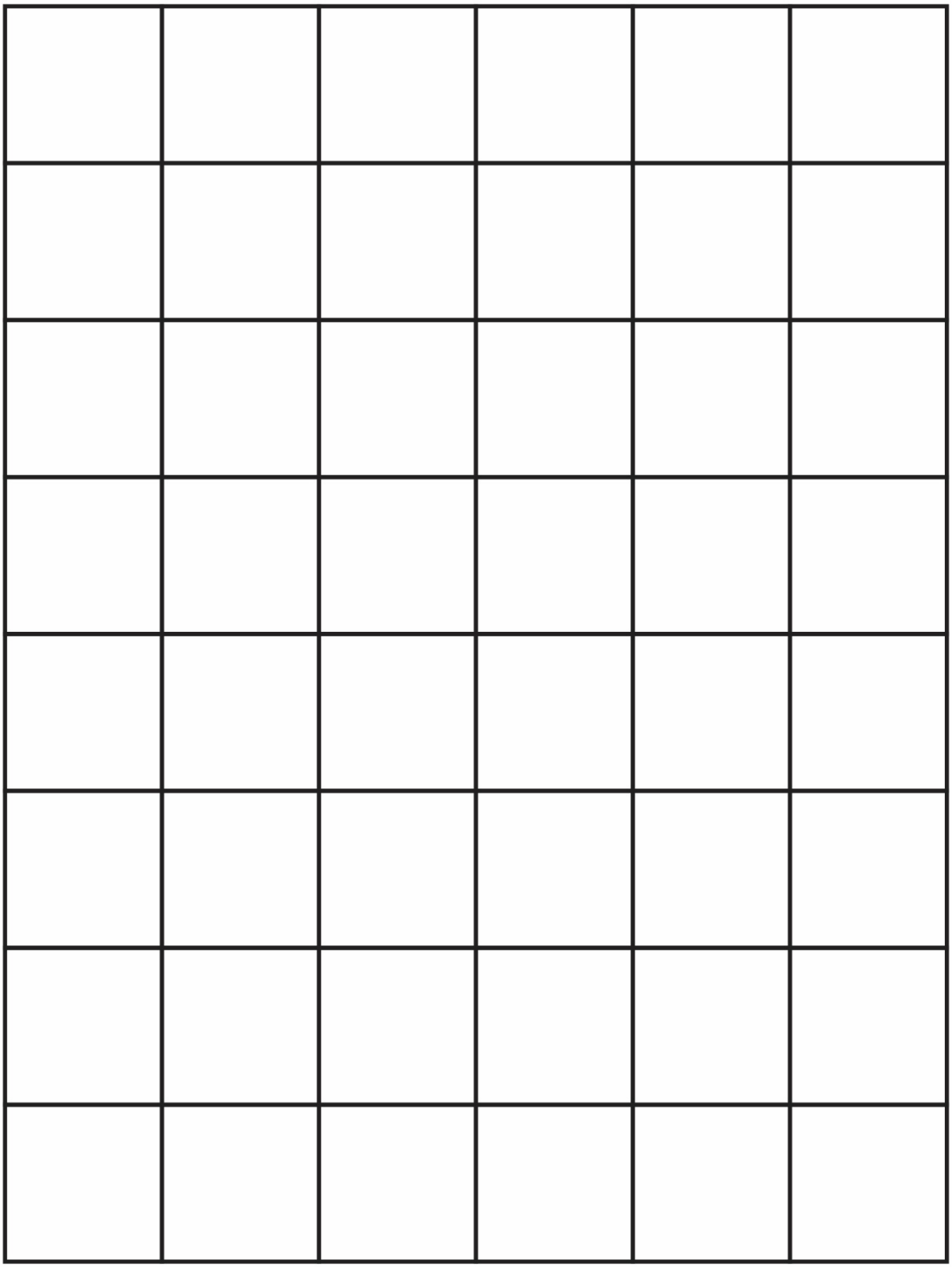
Number
Unit 3 Line Master 1

Relational Rods

Name _____ Date _____

Number
Unit 3 Line Master 2

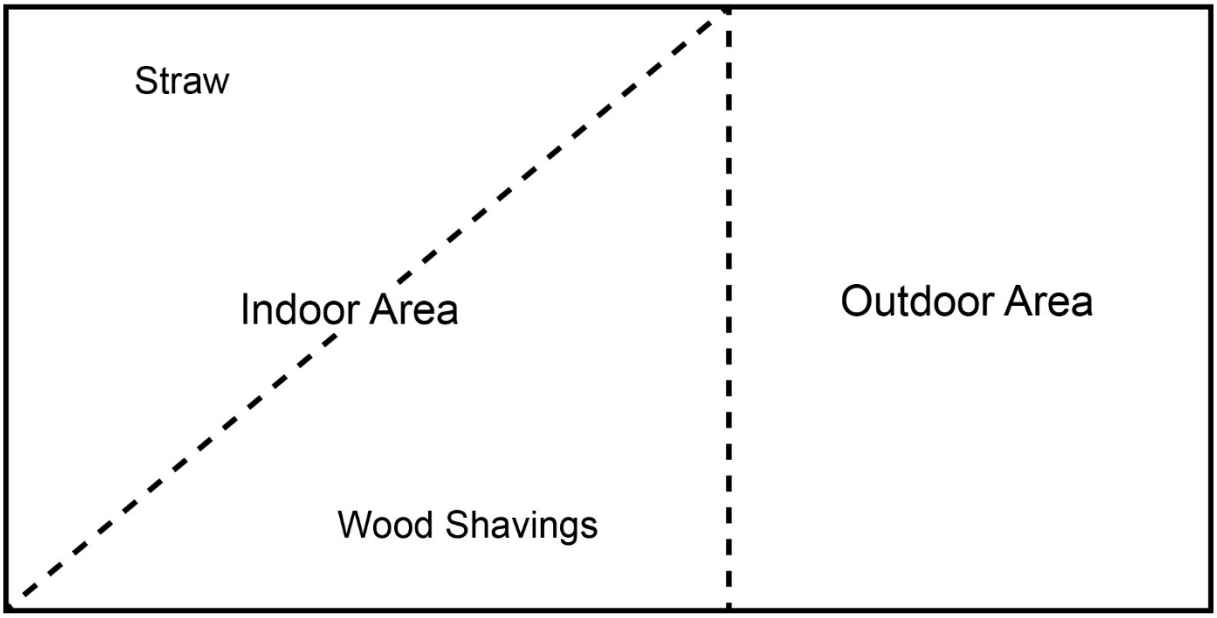
Colour Tile Grid



Name_____ Date_____

Number
Unit 3 Line Master 3a

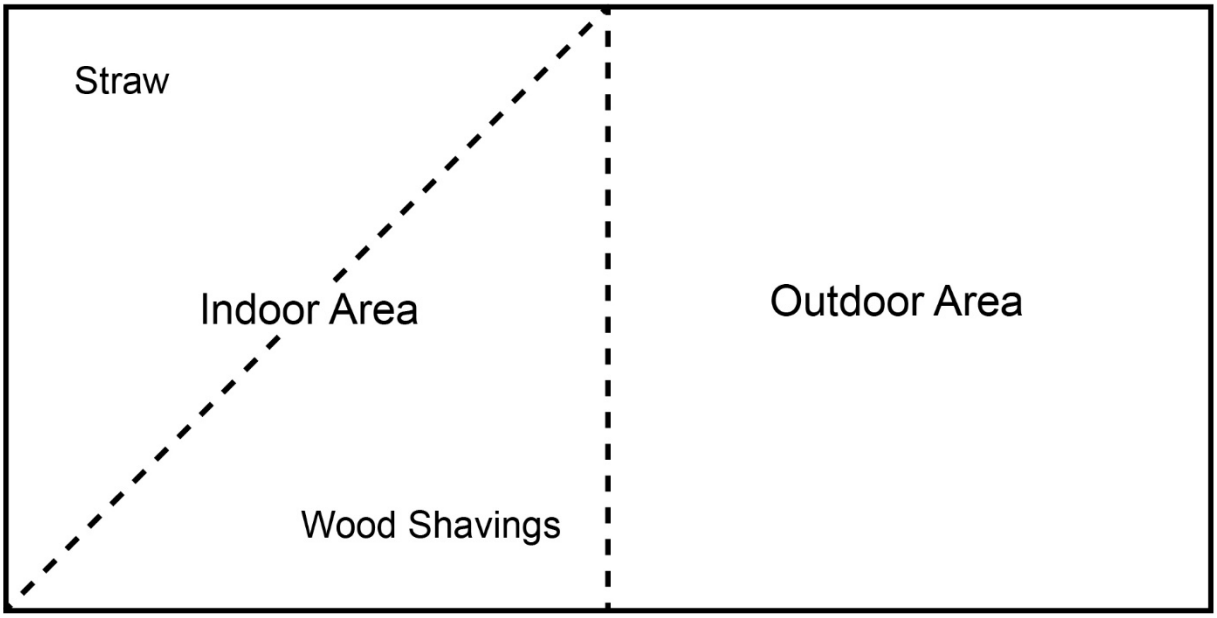
Where the Chickens Live



Name_____ Date_____

Number
Unit 3 Line Master 3b

Where the Chickens Live (cont'd)



Name_____ Date_____

Number
Unit 3 Line Master 4

Open Number Lines

Name_____ Date_____

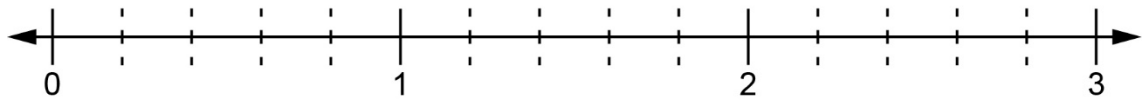
Number
Unit 3 Line Master 5a

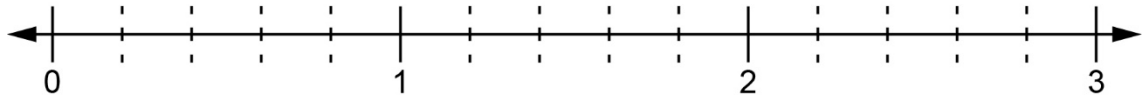
Filling Three

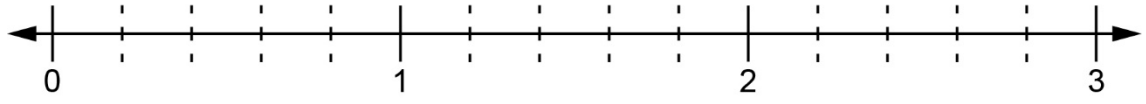
Goal: Counting by one-fifths to be the first to reach 3.

How to Play:

- **Player A:** Start at 0. Count 1, 2, or 3 one-fifths.
  Draw jumps on the line and write a fraction to label where you land.
- **Player B:** Start where Player A ended.
  Count on 1, 2, or 3 one-fifths.
- Draw the jumps and label where you land.
  If you land beyond 1, record the fraction as a mixed number.
- Continue to take turns until one player reaches 3.
- Play again.







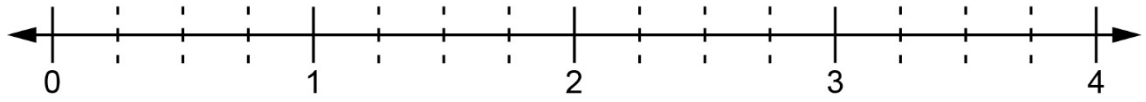
Name_____ Date_____

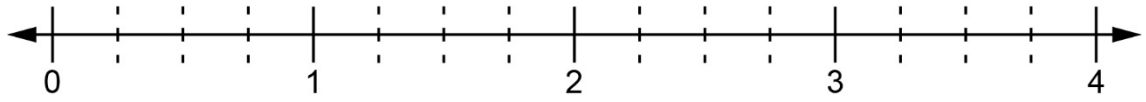
Number
Unit 3 Line Master 5b

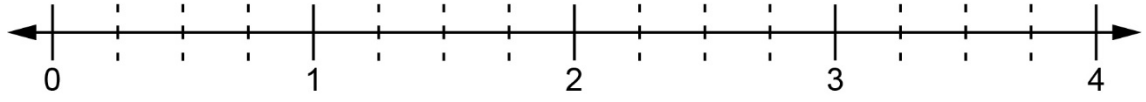
Filling Four

How to Play:

- **Player A:** Start at 0. Count 1, 2, or 3 one-fourths. Draw jumps on the line and write a fraction to label where you land.
- **Player B:** Start where Player A ended. Count on 1, 2, or 3 one-fourths. Draw the jumps and label where you land. If you land beyond 1, record the fraction as a mixed number.
- Continue to take turns until one player reaches 4.
- Play again.



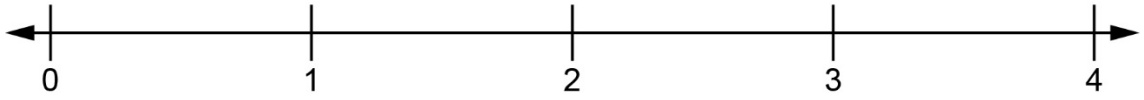


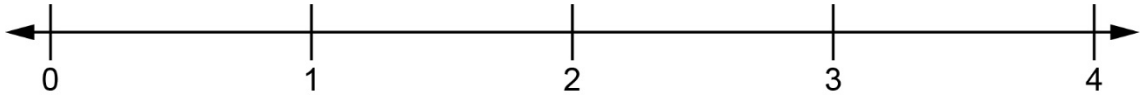


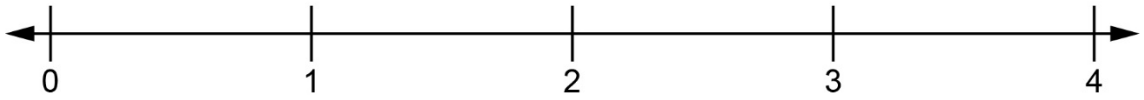
Name_____ Date_____

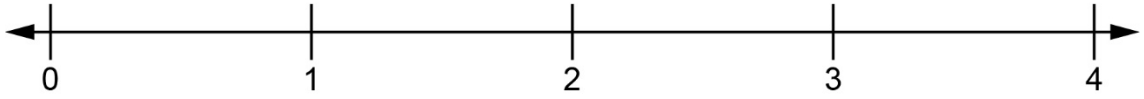
Number
Unit 3 Line Master 6a

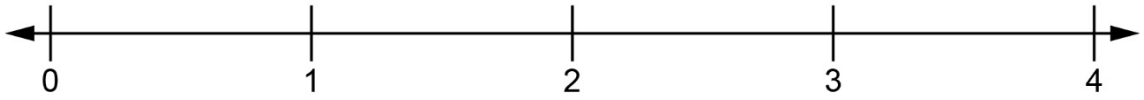
Number Lines (0 to 4)







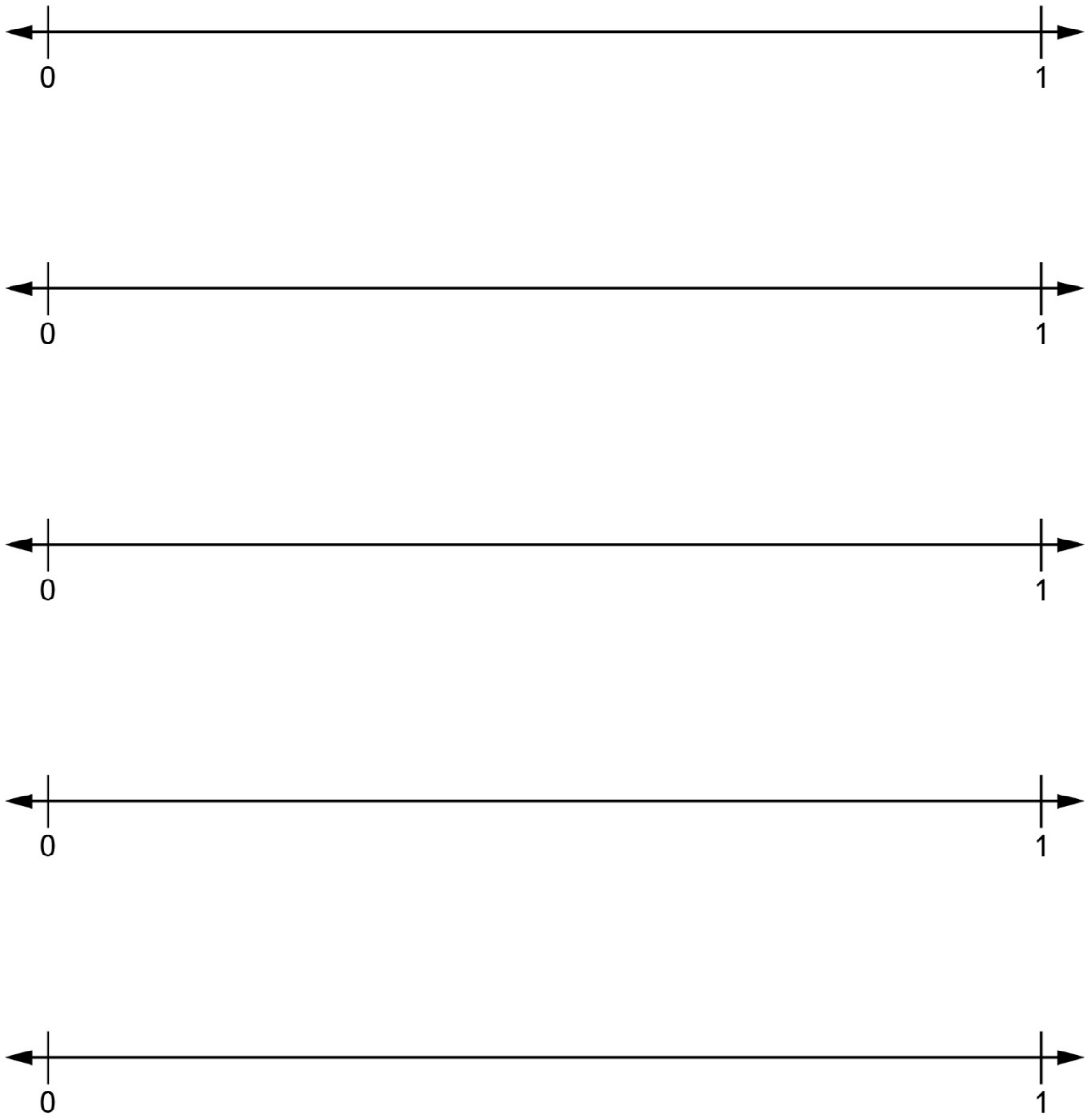




Name_____ Date_____

Number
Unit 3 Line Master 6b

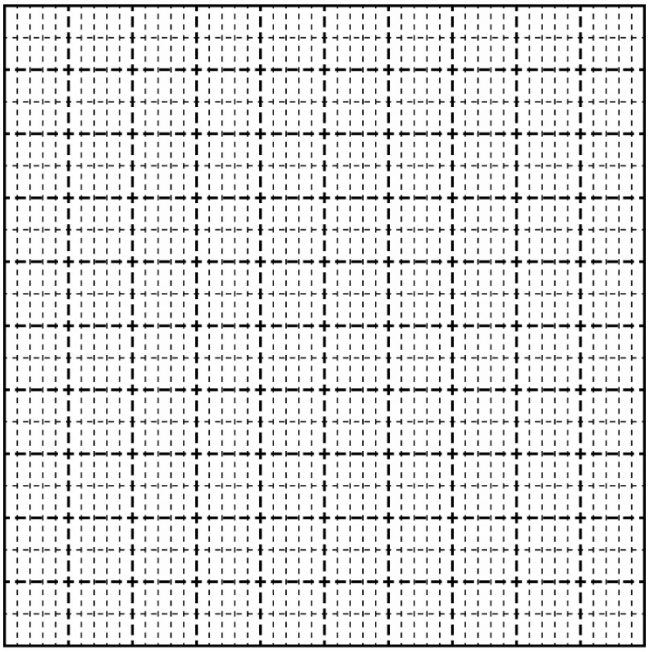
Number Lines (0 to 1)

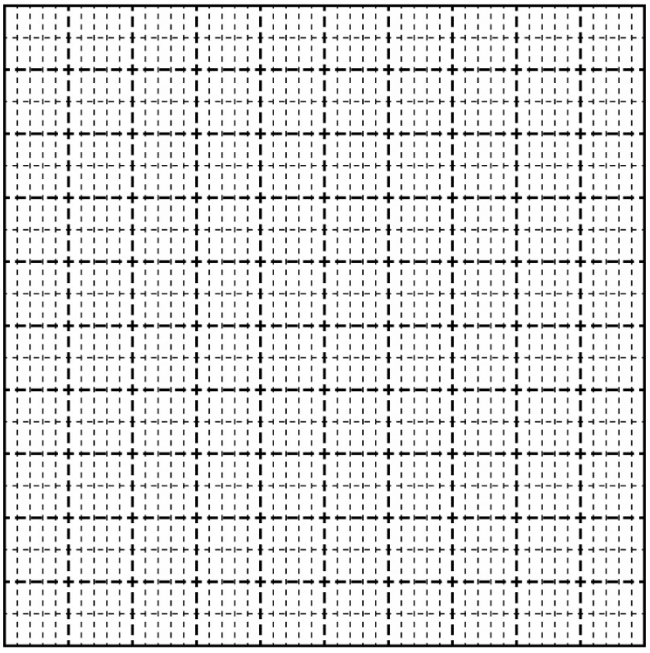


Name_____ Date_____

Number
Unit 3 Line Master 7

Thousandths Grids

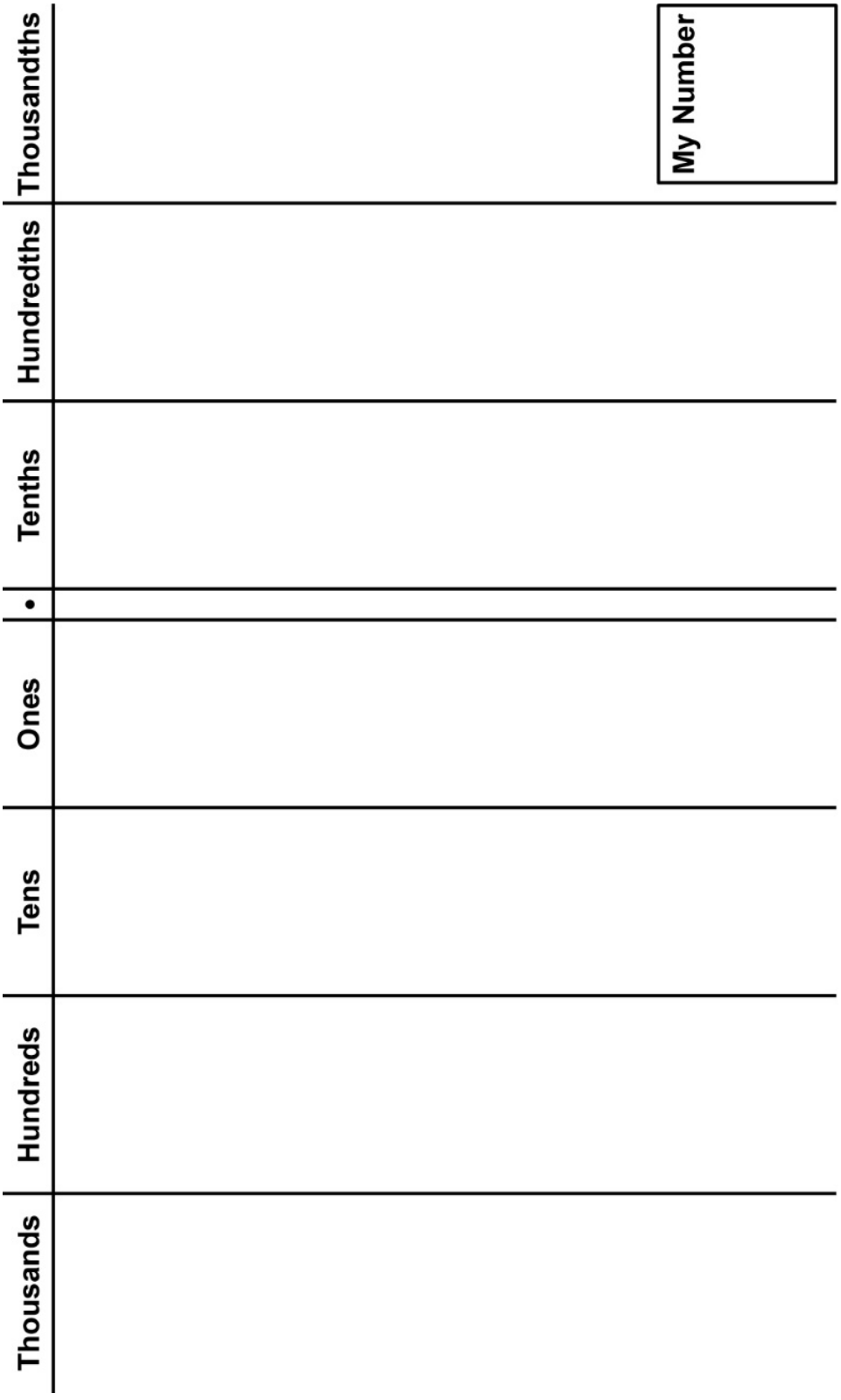




Name_____ Date_____

Number
Unit 3 Line Master 8

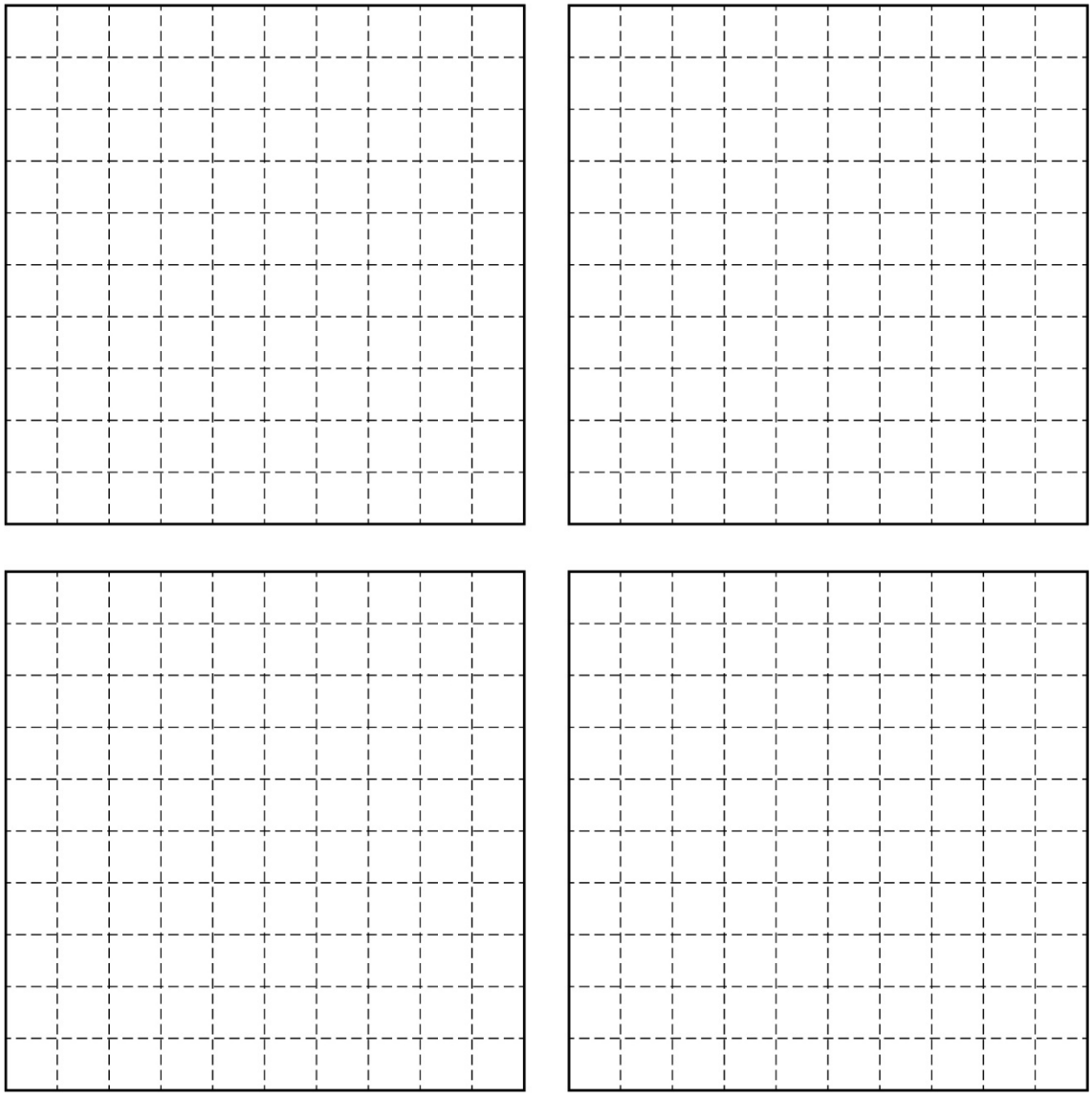
Place-Value Mat (Thousandths)



Name_____ Date_____

Number
Unit 3 Line Master 9

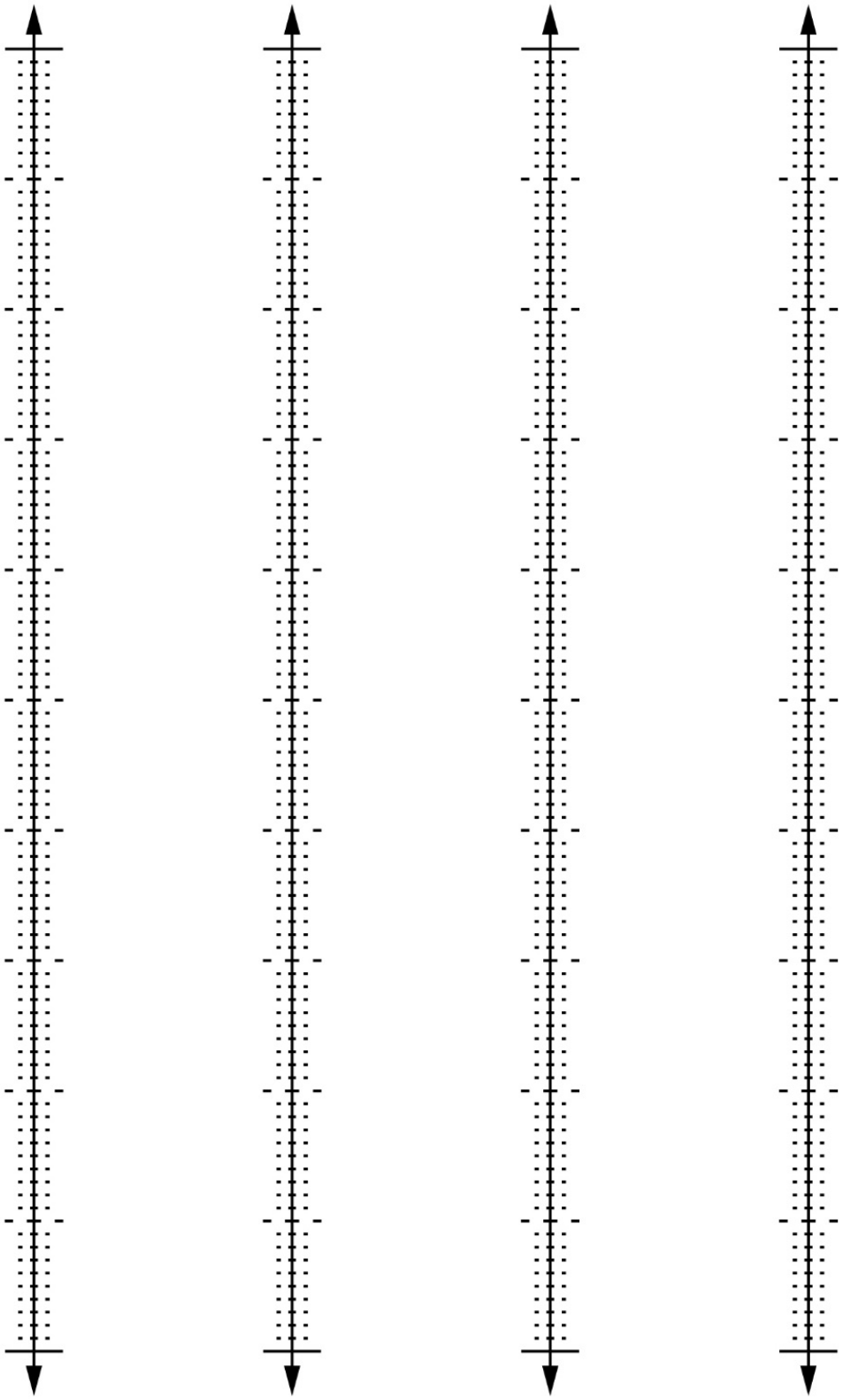
Hundredths Grids



Name_____ Date_____

Number
Unit 3 Line Master 10

Hundredths Lines

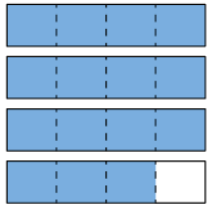
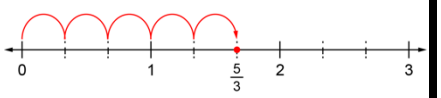


Number

Activity 8 Assessment

Counting by Unit Fractions

Exploring Fractions and Decimals

Uses counting to determine improper fractions and mixed numbers	Models fractions using quantities, lengths, and areas	Expresses improper fractions as mixed numbers and vice versa	Compares and orders fractions, including improper fractions and mixed numbers (e.g., using benchmarks)
 "I counted 15 one-fourths. Each four-fourths is one whole, so $\frac{15}{4} = 3\frac{3}{4}$."	 "I took jumps on a number line to show $\frac{5}{3}$."	$\frac{5}{3} = 1\frac{2}{3}$ "5 = 3 + 2 So, $\frac{5}{3} = \frac{3}{3} + \frac{2}{3}$, which is the same as $1 + \frac{2}{3} = 1\frac{2}{3}$."	$\frac{11}{7}, \frac{16}{9}, \frac{13}{12}$ $\frac{11}{7} = 1\frac{4}{7}, \frac{16}{9} = 1\frac{7}{9}, \frac{13}{12} = 1\frac{1}{12}$ "All the fractions are between 1 and 2. I compared to benchmarks: $1\frac{4}{7}$ is a little more than 1 and one-half. $1\frac{7}{9}$ is pretty close to 2. $1\frac{1}{12}$ is very close to 1. So, from least to greatest: $\frac{13}{12}, 1\frac{4}{7}, 1\frac{7}{9}$."

Observations/Documentation

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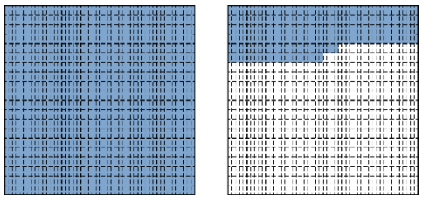
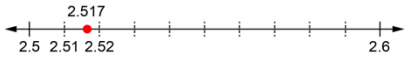
Number

Activity 8 Assessment
Counting by Unit Fractions

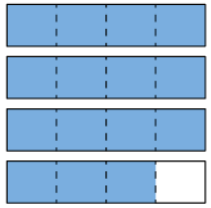
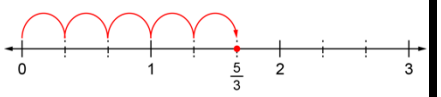
Exploring Fractions and Decimals (cont'd)			
Represents decimal numbers to thousandths  "I shaded the grids to show 1.254."	Identifies a decimal between two given decimals 2.834, ?, 2.84 "Both decimals have 2 wholes. I know 2.834 has 834 thousandths and 2.84 has 840 thousandths. 836 is between 834 and 840. So, 2.836 is between 2.834 and 2.84."	Rounds decimals to a specified place value (e.g., nearest hundredth)  "2.517 is closer to 2.52 than to 2.51, so I round up to 2.52."	Flexibly compares and orders decimals 2.7, 2.649, 2.76 "I ordered the decimals from least to greatest: 2.649, 2.7, 2.76."
Observations/Documentation			

Number

Activity 9 Assessment

Exploring Different Representations of Fractions

Exploring Fractions and Decimals

Uses counting to determine improper fractions and mixed numbers	Models fractions using quantities, lengths, and areas	Expresses improper fractions as mixed numbers and vice versa	Compares and orders fractions, including improper fractions and mixed numbers (e.g., using benchmarks)
 "I counted 15 one-fourths. Each four-fourths is one whole, so $\frac{15}{4} = 3\frac{3}{4}$."	 "I took jumps on a number line to show $\frac{5}{3}$."	$\frac{5}{3} = 1\frac{2}{3}$ "5 = 3 + 2 So, $\frac{5}{3} = \frac{3}{3} + \frac{2}{3}$, which is the same as $1 + \frac{2}{3} = 1\frac{2}{3}$."	$\frac{11}{7}, \frac{16}{9}, \frac{13}{12}$ $\frac{11}{7} = 1\frac{4}{7}, \frac{16}{9} = 1\frac{7}{9}, \frac{13}{12} = 1\frac{1}{12}$ "All the fractions are between 1 and 2. I compared to benchmarks: $1\frac{4}{7}$ is a little more than 1 and one-half. $1\frac{7}{9}$ is pretty close to 2. $1\frac{1}{12}$ is very close to 1. So, from least to greatest: $\frac{13}{12}, 1\frac{4}{7}, 1\frac{7}{9}$."

Observations/Documentation

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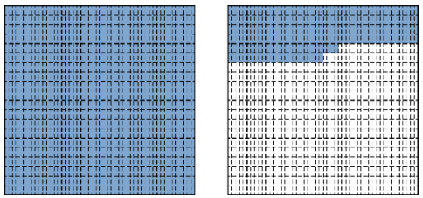
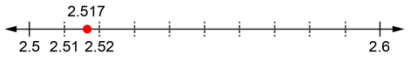
Number

Activity 9 Assessment

Exploring Different Representations of Fractions

Exploring Fractions and Decimals (cont'd)

Represents decimal numbers to thousandths	Identifies a decimal between two given decimals	Rounds decimals to a specified place value (e.g., nearest hundredth)	Flexibly compares and orders decimals
 "I shaded the grids to show 1.254."	2.834, ?, 2.84 "Both decimals have 2 wholes. I know 2.834 has 834 thousandths and 2.84 has 840 thousandths. 836 is between 834 and 840. So, 2.836 is between 2.834 and 2.84."	 "2.517 is closer to 2.52 than to 2.51, so I round up to 2.52."	2.7, 2.649, 2.76 "I ordered the decimals from least to greatest: 2.649, 2.7, 2.76."

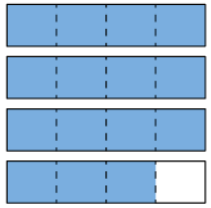
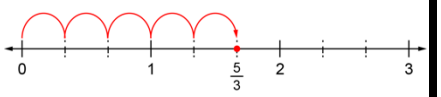
Observations/Documentation

Number

Activity 10 Assessment

Exploring Improper Fractions and Mixed Numbers

Exploring Fractions and Decimals

Uses counting to determine improper fractions and mixed numbers	Models fractions using quantities, lengths, and areas	Expresses improper fractions as mixed numbers and vice versa	Compares and orders fractions, including improper fractions and mixed numbers (e.g., using benchmarks)
 "I counted 15 one-fourths. Each four-fourths is one whole, so $\frac{15}{4} = 3\frac{3}{4}$."	 "I took jumps on a number line to show $\frac{5}{3}$."	$\frac{5}{3} = 1\frac{2}{3}$ "5 = 3 + 2 So, $\frac{5}{3} = \frac{3}{3} + \frac{2}{3}$, which is the same as $1 + \frac{2}{3} = 1\frac{2}{3}$."	$\frac{11}{7}, \frac{16}{9}, \frac{13}{12}$ $\frac{11}{7} = 1\frac{4}{7}, \frac{16}{9} = 1\frac{7}{9}, \frac{13}{12} = 1\frac{1}{12}$ "All the fractions are between 1 and 2. I compared to benchmarks: $1\frac{4}{7}$ is a little more than 1 and one-half. $1\frac{7}{9}$ is pretty close to 2. $1\frac{1}{12}$ is very close to 1. So, from least to greatest: $\frac{13}{12}, 1\frac{4}{7}, 1\frac{7}{9}$."

Observations/Documentation

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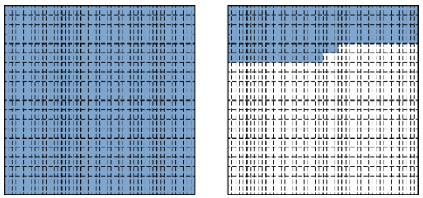
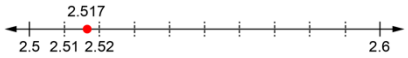
Number

Activity 10 Assessment

Exploring Improper Fractions and Mixed Numbers

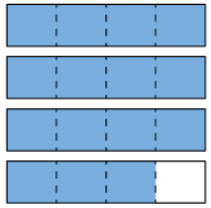
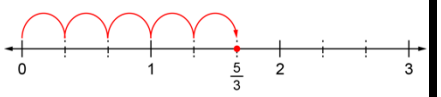
Exploring Fractions and Decimals (cont'd)			
Represents decimal numbers to thousandths  "I shaded the grids to show 1.254."	Identifies a decimal between two given decimals 2.834, ?, 2.84 "Both decimals have 2 wholes. I know 2.834 has 834 thousandths and 2.84 has 840 thousandths. 836 is between 834 and 840. So, 2.836 is between 2.834 and 2.84."	Rounds decimals to a specified place value (e.g., nearest hundredth)  "2.517 is closer to 2.52 than to 2.51, so I round up to 2.52."	Flexibly compares and orders decimals 2.7, 2.649, 2.76 "I ordered the decimals from least to greatest: 2.649, 2.7, 2.76."
Observations/Documentation			

Number

Activity 11 Assessment

Comparing and Ordering Fractions

Exploring Fractions and Decimals

Uses counting to determine improper fractions and mixed numbers	Models fractions using quantities, lengths, and areas	Expresses improper fractions as mixed numbers and vice versa	Compares and orders fractions, including improper fractions and mixed numbers (e.g., using benchmarks)
 "I counted 15 one-fourths. Each four-fourths is one whole, so $\frac{15}{4} = 3\frac{3}{4}$."	 "I took jumps on a number line to show $\frac{5}{3}$."	$\frac{5}{3} = 1\frac{2}{3}$ "5 = 3 + 2 So, $\frac{5}{3} = \frac{3}{3} + \frac{2}{3}$, which is the same as $1 + \frac{2}{3} = 1\frac{2}{3}$."	$\frac{11}{7}, \frac{16}{9}, \frac{13}{12}$ $\frac{11}{7} = 1\frac{4}{7}, \frac{16}{9} = 1\frac{7}{9}, \frac{13}{12} = 1\frac{1}{12}$ "All the fractions are between 1 and 2. I compared to benchmarks: $1\frac{4}{7}$ is a little more than 1 and one-half. $1\frac{7}{9}$ is pretty close to 2. $1\frac{1}{12}$ is very close to 1. So, from least to greatest: $\frac{13}{12}, 1\frac{4}{7}, 1\frac{7}{9}$."

Observations/Documentation

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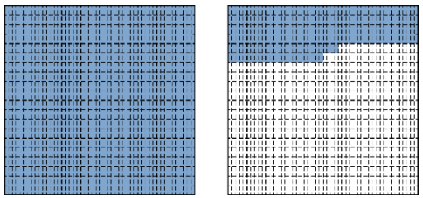
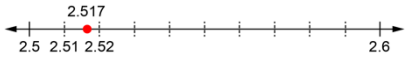
Number

Activity 11 Assessment
Comparing and Ordering Fractions

Exploring Fractions and Decimals (cont'd)

Represents decimal numbers to thousandths	Identifies a decimal between two given decimals	Rounds decimals to a specified place value (e.g., nearest hundredth)	Flexibly compares and orders decimals
 "I shaded the grids to show 1.254."	2.834, ?, 2.84 "Both decimals have 2 wholes. I know 2.834 has 834 thousandths and 2.84 has 840 thousandths. 836 is between 834 and 840. So, 2.836 is between 2.834 and 2.84."	 "2.517 is closer to 2.52 than to 2.51, so I round up to 2.52."	2.7, 2.649, 2.76 "I ordered the decimals from least to greatest: 2.649, 2.7, 2.76."

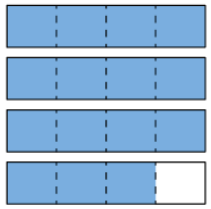
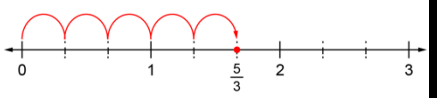
Observations/Documentation

Number

Activity 12 Assessment

Representing Decimals

Exploring Fractions and Decimals

Uses counting to determine improper fractions and mixed numbers	Models fractions using quantities, lengths, and areas	Expresses improper fractions as mixed numbers and vice versa	Compares and orders fractions, including improper fractions and mixed numbers (e.g., using benchmarks)
 "I counted 15 one-fourths. Each four-fourths is one whole, so $\frac{15}{4} = 3\frac{3}{4}$."	 "I took jumps on a number line to show $\frac{5}{3}$."	$\frac{5}{3} = 1\frac{2}{3}$ "5 = 3 + 2 So, $\frac{5}{3} = \frac{3}{3} + \frac{2}{3}$, which is the same as $1 + \frac{2}{3} = 1\frac{2}{3}$."	$\frac{11}{7}, \frac{16}{9}, \frac{13}{12}$ $\frac{11}{7} = 1\frac{4}{7}, \frac{16}{9} = 1\frac{7}{9}, \frac{13}{12} = 1\frac{1}{12}$ "All the fractions are between 1 and 2. I compared to benchmarks: $1\frac{4}{7}$ is a little more than 1 and one-half. $1\frac{7}{9}$ is pretty close to 2. $1\frac{1}{12}$ is very close to 1. So, from least to greatest: $\frac{13}{12}, 1\frac{4}{7}, 1\frac{7}{9}$."

Observations/Documentation

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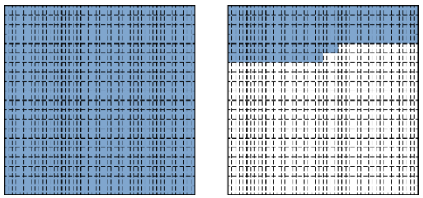
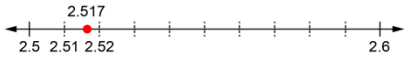
Number

Activity 12 Assessment
Representing Decimals

Exploring Fractions and Decimals (cont'd)			
Represents decimal numbers to thousandths  "I shaded the grids to show 1.254."	Identifies a decimal between two given decimals 2.834, ?, 2.84 "Both decimals have 2 wholes. I know 2.834 has 834 thousandths and 2.84 has 840 thousandths. 836 is between 834 and 840. So, 2.836 is between 2.834 and 2.84."	Rounds decimals to a specified place value (e.g., nearest hundredth)  "2.517 is closer to 2.52 than to 2.51, so I round up to 2.52."	Flexibly compares and orders decimals 2.7, 2.649, 2.76 "I ordered the decimals from least to greatest: 2.649, 2.7, 2.76."
Observations/Documentation			

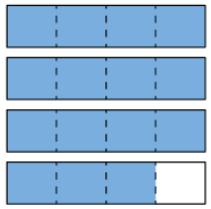
Number

Activity 13 Assessment

Comparing and Ordering Decimals

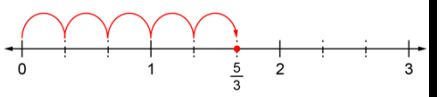
Exploring Fractions and Decimals

Uses counting to determine improper fractions and mixed numbers



"I counted 15 one-fourths. Each four-fourths is one whole, so $\frac{15}{4} = 3\frac{3}{4}$."

Models fractions using quantities, lengths, and areas



"I took jumps on a number line to show $\frac{5}{3}$."

Expresses improper fractions as mixed numbers and vice versa

$\frac{5}{3} = 1\frac{2}{3}$

"5 = 3 + 2

So, $\frac{5}{3} = \frac{3}{3} + \frac{2}{3}$, which is the same as $1 + \frac{2}{3} = 1\frac{2}{3}$."

Compares and orders fractions, including improper fractions and mixed numbers (e.g., using benchmarks)

$\frac{11}{7}, \frac{16}{9}, \frac{13}{12}$

$\frac{11}{7} = 1\frac{4}{7}, \frac{16}{9} = 1\frac{7}{9}, \frac{13}{12} = 1\frac{1}{12}$

"All the fractions are between 1 and 2. I compared to benchmarks:

$1\frac{4}{7}$ is a little more than 1 and one-half. $1\frac{7}{9}$ is pretty close to 2.

$1\frac{1}{12}$ is very close to 1.

So, from least to greatest:

$\frac{13}{12}, 1\frac{4}{7}, 1\frac{7}{9}$."

Observations/Documentation

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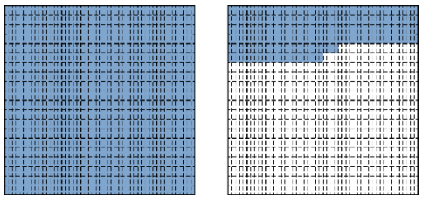
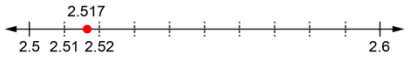
Number

Activity 13 Assessment

Comparing and Ordering Decimals

Exploring Fractions and Decimals (cont'd)

Represents decimal numbers to thousandths	Identifies a decimal between two given decimals	Rounds decimals to a specified place value (e.g., nearest hundredth)	Flexibly compares and orders decimals
 "I shaded the grids to show 1.254."	2.834, ?, 2.84 "Both decimals have 2 wholes. I know 2.834 has 834 thousandths and 2.84 has 840 thousandths. 836 is between 834 and 840. So, 2.836 is between 2.834 and 2.84."	 "2.517 is closer to 2.52 than to 2.51, so I round up to 2.52."	2.7, 2.649, 2.76 "I ordered the decimals from least to greatest: 2.649, 2.7, 2.76."

Observations/Documentation

Number

Activity 14 Assessment
Exploring Ratios

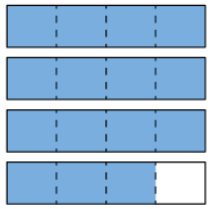
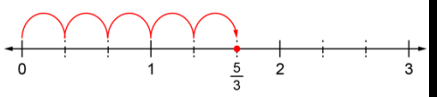
Exploring Ratios			
Understands difference between part-part and part-whole relationships  "Butterflies to ladybugs is a part-part relationship and butterflies to all insects is a part-whole relationship."	Expresses part-part and part-whole relationships with ratios  "Butterflies to ladybugs: 3:1, a part-part ratio. Butterflies to all insects: 3:4, a part-whole ratio."	Expresses part-whole relationships in different ways (i.e., ratios, fractions, decimals, percents)  "Butterflies to all insects: 3:4, $\frac{3}{4}$, 0.75, 75%"	Flexibly interprets and expresses ratios to represent different situations 4:5 "A 4:5 ratio could represent a part-part situation, such as:  Or it could represent a part-whole situation, such as:" 
Observations/Documentation			
.			

Number

Activity 15 Assessment

Consolidating Fractions, Decimals, and Ratios

Exploring Fractions and Decimals

Uses counting to determine improper fractions and mixed numbers	Models fractions using quantities, lengths, and areas	Expresses improper fractions as mixed numbers and vice versa	Compares and orders fractions, including improper fractions and mixed numbers (e.g., using benchmarks)
 "I counted 15 one-fourths. Each four-fourths is one whole, so $\frac{15}{4} = 3\frac{3}{4}$."	 "I took jumps on a number line to show $\frac{5}{3}$."	$\frac{5}{3} = 1\frac{2}{3}$ "5 = 3 + 2 So, $\frac{5}{3} = \frac{3}{3} + \frac{2}{3}$, which is the same as $1 + \frac{2}{3} = 1\frac{2}{3}$."	$\frac{11}{7}, \frac{16}{9}, \frac{13}{12}$ $\frac{11}{7} = 1\frac{4}{7}, \frac{16}{9} = 1\frac{7}{9}, \frac{13}{12} = 1\frac{1}{12}$ "All the fractions are between 1 and 2. I compared to benchmarks: $1\frac{4}{7}$ is a little more than 1 and one-half. $1\frac{7}{9}$ is pretty close to 2. $1\frac{1}{12}$ is very close to 1. So, from least to greatest: $\frac{13}{12}, 1\frac{4}{7}, 1\frac{7}{9}$."

Observations/Documentation

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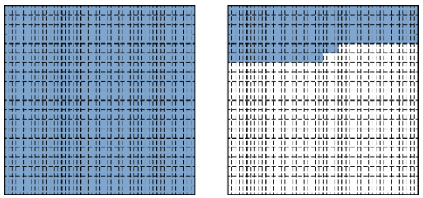
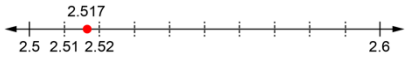
Number

Activity 15 Assessment

Consolidating Fractions, Decimals, and Ratios

Exploring Fractions and Decimals (cont'd)			
Represents decimal numbers to thousandths  "I shaded the grids to show 1.254."	Identifies a decimal between two given decimals 2.834, ?, 2.84 "Both decimals have 2 wholes. I know 2.834 has 834 thousandths and 2.84 has 840 thousandths. 836 is between 834 and 840. So, 2.836 is between 2.834 and 2.84."	Rounds decimals to a specified place value (e.g., nearest hundredth)  "2.517 is closer to 2.52 than to 2.51, so I round up to 2.52."	Flexibly compares and orders decimals 2.7, 2.649, 2.76 "I ordered the decimals from least to greatest: 2.649, 2.7, 2.76."
Observations/Documentation			

Number

Activity 15 Assessment

Consolidating Fractions, Decimals, and Ratios

Exploring Ratios			
Understands difference between part-part and part-whole relationships  "Butterflies to ladybugs is a part-part relationship and butterflies to all insects is a part-whole relationship."	Expresses part-part and part-whole relationships with ratios  "Butterflies to ladybugs: 3:1, a part-part ratio. Butterflies to all insects: 3:4, a part-whole ratio."	Expresses part-whole relationships in different ways (i.e., ratios, fractions, decimals, percents)  "Butterflies to all insects: 3:4, $\frac{3}{4}$, 0.75, 75%"	Flexibly interprets and expresses ratios to represent different situations 4:5 "A 4:5 ratio could represent a part-part situation, such as:  Or it could represent a part-whole situation, such as:" 
Observations/Documentation			
.			

Name _____ Date _____

Number
Unit 4 Line Master 1

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_____

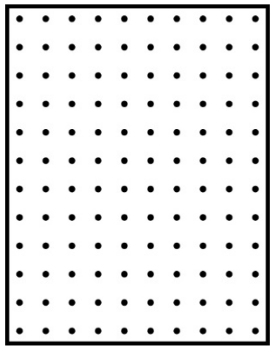
Number
Unit 4 Line Master 2

Who is Correct?

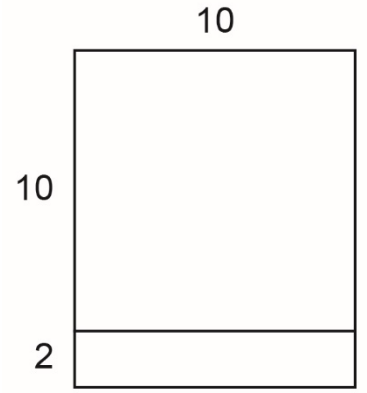
An egg farmer took 10 cartons of eggs to the market.
Each carton had 12 eggs.
How many eggs did the farmer take?

To solve the problem:

- Ronica outlined an array on dot paper.



- Patrick made an open array.



Whose solution is correct? Explain.
How are the solution strategies the same?
How are they different?

Name_____ Date_____

Number
Unit 4 Line Master 3a

How Much Do They Eat?

For each problem, determine how much food each animal gets.
Show your work.
Record your solution on grid paper or dot paper.

Problem 1

There are 6 grizzly bears at a wildlife park.
Each day, they receive a 120-kg bag of food.
The food is shared equally among them.

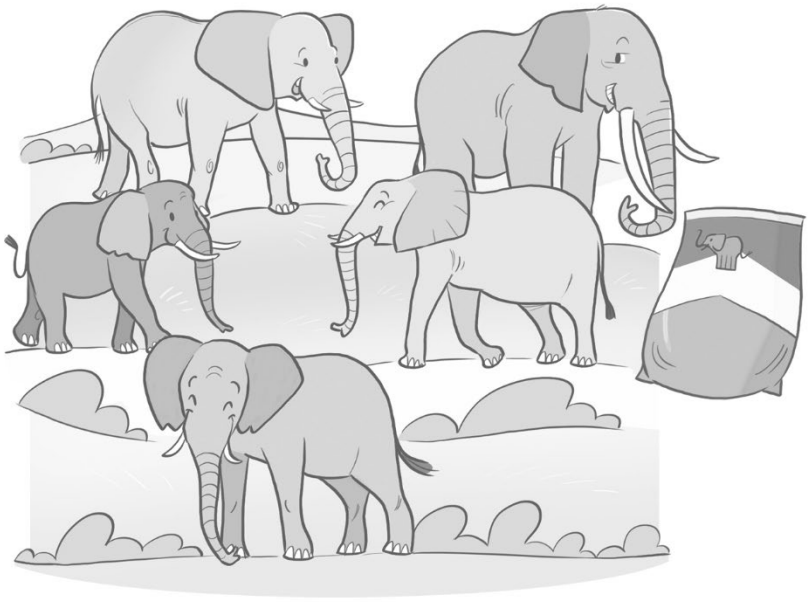
Name_____ Date_____

Number
Unit 4 Line Master 3b

How Much Do They Eat? (cont'd)

Problem 2

There are 5 elephants at a safari park.
Each day, they receive a 150-kg bag of food.
The food is shared equally among them.



Number

Activity 16 Assessment

Investigating Divisibility Tests

Multiplying and Dividing Larger Numbers

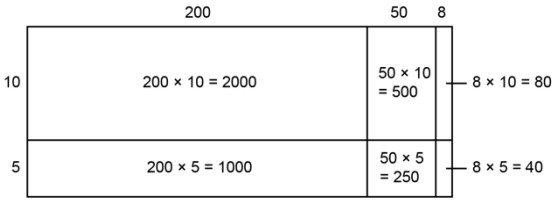
Uses divisibility tests to identify numbers that are divisible by 2, 3, and 5.

285

"Not divisible by 2 as the ones digit is not even. Divisible by 3 because the sum of the digits, 15, is divisible by 3.
Divisible by 5 as the ones digit is 5."

Models multiplication and division situations concretely and pictorially (i.e., using Base Ten Blocks, arrays, open arrays)

258 × 15 = ?



"I used an open array and added all the areas: 2000 + 1000 + 500 + 250 + 80 + 40 = 3870. So, 258 × 15 = 3870."

Uses standard algorithms to multiply and divide

258 × 15 = ?

$$\begin{array}{r} {\scriptstyle 2\ 4} \\ 258 \\ \times\ 15 \\ \hline {\scriptstyle 1} \\ 1290 \\ +2580 \\ \hline 3870 \end{array}$$

Multiply: 258 × 5

Multiply: 258 × 10

"I used the standard algorithm to multiply."

Observations/Documentation

Number

Activity 16 Assessment
Investigating Divisibility Tests

Multiplying and Dividing Larger Numbers (cont'd)

Estimates to determine if answer to multiplication or division problem is reasonable	Expresses a quotient with or without a remainder according to context	Creates and solves multiplication and division problems flexibly using a variety of strategies
258 × 15 = 3870 "258 is close to 250. 250 × 15 = (250 × 10) + (250 × 5) = 2500 + 1250 = 3750 3870 is close to 3750. So, my answer is reasonable."	There are 114 students going on field trip. Each bus holds 9 students. How many buses are needed? $\begin{array}{r} 12 \\ 9\overline{)114} \\ -\ 9 \\ \hline 24 \\ -\ 18 \\ \hline 6 \end{array}$ 114 ÷ 9 = 12 R6 "Since 6 students cannot be left behind, 13 buses are needed."	5 elephants share 748 kg of food. How much food does each elephant get? 748 ÷ 5 = (500 ÷ 5) + (200 ÷ 5) + (45 ÷ 5) + (3 ÷ 5) = 100 + 40 + 9 + (3 ÷ 5) = 149 R3, or $149\frac{3}{5}$ or $149\frac{6}{10}$, or 149.6 Each elephant got 149.6 kg of food.

Observations/Documentation

Number

Activity 17 Assessment

Using Estimation for Multiplication and Division

Multiplying and Dividing Larger Numbers

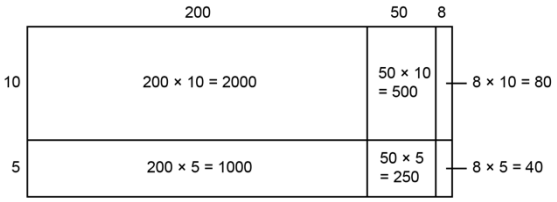
Uses divisibility tests to identify numbers that are divisible by 2, 3, and 5.

285

"Not divisible by 2 as the ones digit is not even. Divisible by 3 because the sum of the digits, 15, is divisible by 3.
Divisible by 5 as the ones digit is 5."

Models multiplication and division situations concretely and pictorially (i.e., using Base Ten Blocks, arrays, open arrays)

258 × 15 = ?



"I used an open array and added all the areas: 2000 + 1000 + 500 + 250 + 80 + 40 = 3870. So, 258 × 15 = 3870."

Uses standard algorithms to multiply and divide

258 × 15 = ?

$$\begin{array}{r} {\scriptstyle 2\ 4} \\ 258 \\ \times\ 15 \\ \hline {\scriptstyle 1} \\ 1290 \\ +2580 \\ \hline 3870 \end{array}$$

Multiply: 258 × 5

Multiply: 258 × 10

"I used the standard algorithm to multiply."

Observations/Documentation

Number

Activity 17 Assessment

Using Estimation for Multiplication and Division

Multiplying and Dividing Larger Numbers (cont'd)

Estimates to determine if answer to multiplication or division problem is reasonable	Expresses a quotient with or without a remainder according to context	Creates and solves multiplication and division problems flexibly using a variety of strategies
$258 \times 15 = 3870$ "258 is close to 250. $250 \times 15 = (250 \times 10) + (250 \times 5)$ $= 2500 + 1250$ $= 3750$ 3870 is close to 3750. So, my answer is reasonable."	There are 114 students going on field trip. Each bus holds 9 students. How many buses are needed? $9\overline{)114}$ 12 -9 24 -18 6 $114 \div 9 = 12$ R6 "Since 6 students cannot be left behind, 13 buses are needed."	5 elephants share 748 kg of food. How much food does each elephant get? $748 \div 5 = (500 \div 5) + (200 \div 5) + (45 \div 5) + (3 \div 5)$ $= 100 + 40 + 9 + (3 \div 5)$ $= 149$ R3, or $149\frac{3}{5}$ or $149\frac{6}{10}$, or 149.6 Each elephant got 149.6 kg of food.

Observations/Documentation

Number

Activity 18 Assessment
Multiplying Larger Numbers

Multiplying and Dividing Larger Numbers

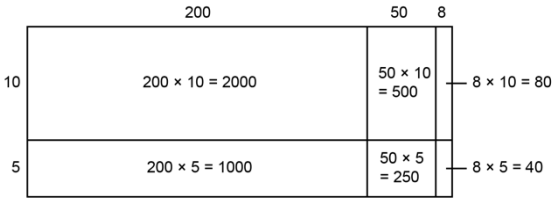
Uses divisibility tests to identify numbers that are divisible by 2, 3, and 5.

285

"Not divisible by 2 as the ones digit is not even. Divisible by 3 because the sum of the digits, 15, is divisible by 3.
Divisible by 5 as the ones digit is 5."

Models multiplication and division situations concretely and pictorially (i.e., using Base Ten Blocks, arrays, open arrays)

258 × 15 = ?



"I used an open array and added all the areas: 2000 + 1000 + 500 + 250 + 80 + 40 = 3870. So, 258 × 15 = 3870."

Uses standard algorithms to multiply and divide

258 × 15 = ?

$$\begin{array}{r} {\scriptstyle 2\ 4} \\ 258 \\ \times\ 15 \\ \hline {\scriptstyle 1} \\ 1290 \\ +2580 \\ \hline 3870 \end{array}$$

Multiply: 258 × 5

Multiply: 258 × 10

"I used the standard algorithm to multiply."

Observations/Documentation

Number

Activity 18 Assessment
Multiplying Larger Numbers

Multiplying and Dividing Larger Numbers (cont'd)

Estimates to determine if answer to multiplication or division problem is reasonable $258 \times 15 = 3870$ "258 is close to 250. $250 \times 15 = (250 \times 10) + (250 \times 5)$ $= 2500 + 1250$ $= 3750$ 3870 is close to 3750. So, my answer is reasonable."	Expresses a quotient with or without a remainder according to context There are 114 students going on field trip. Each bus holds 9 students. How many buses are needed? $\begin{array}{r} 12 \\ 9\overline{)114} \\ -\ 9 \\ \hline 24 \\ -\ 18 \\ \hline 6 \end{array}$ $114 \div 9 = 12$ R6 "Since 6 students cannot be left behind, 13 buses are needed."	Creates and solves multiplication and division problems flexibly using a variety of strategies 5 elephants share 748 kg of food. How much food does each elephant get? $748 \div 5 = (500 \div 5) + (200 \div 5) + (45 \div 5) + (3 \div 5)$ $= 100 + 40 + 9 + (3 \div 5)$ $= 149$ R3, or $149\frac{3}{5}$ or $149\frac{6}{10}$, or 149.6 Each elephant got 149.6 kg of food.
Observations/Documentation		

Number

Activity 19 Assessment

Dividing Larger Numbers

Multiplying and Dividing Larger Numbers

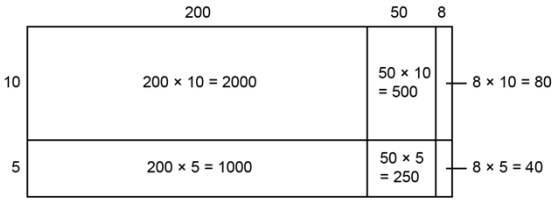
Uses divisibility tests to identify numbers that are divisible by 2, 3, and 5.

285

"Not divisible by 2 as the ones digit is not even. Divisible by 3 because the sum of the digits, 15, is divisible by 3.
Divisible by 5 as the ones digit is 5."

Models multiplication and division situations concretely and pictorially (i.e., using Base Ten Blocks, arrays, open arrays)

258 × 15 = ?



"I used an open array and added all the areas: 2000 + 1000 + 500 + 250 + 80 + 40 = 3870. So, 258 × 15 = 3870."

Uses standard algorithms to multiply and divide

258 × 15 = ?

$$\begin{array}{r} {\scriptstyle 2\ 4} \\ 258 \\ \times\ 15 \\ \hline {\scriptstyle 1} \\ 1290 \\ +2580 \\ \hline 3870 \end{array}$$

Multiply: 258 × 5

Multiply: 258 × 10

"I used the standard algorithm to multiply."

Observations/Documentation

Number

Activity 19 Assessment
Dividing Larger Numbers

Multiplying and Dividing Larger Numbers (cont'd)

Estimates to determine if answer to multiplication or division problem is reasonable	Expresses a quotient with or without a remainder according to context	Creates and solves multiplication and division problems flexibly using a variety of strategies
$258 \times 15 = 3870$ "258 is close to 250. $250 \times 15 = (250 \times 10) + (250 \times 5)$ $= 2500 + 1250$ $= 3750$ 3870 is close to 3750. So, my answer is reasonable."	There are 114 students going on field trip. Each bus holds 9 students. How many buses are needed? $\begin{array}{r} 12 \\ 9\overline{)114} \\ -\ 9 \\ \hline 24 \\ -\ 18 \\ \hline 6 \end{array}$ $114 \div 9 = 12$ R6 "Since 6 students cannot be left behind, 13 buses are needed."	5 elephants share 748 kg of food. How much food does each elephant get? $748 \div 5 = (500 \div 5) + (200 \div 5) + (45 \div 5) + (3 \div 5)$ $= 100 + 40 + 9 + (3 \div 5)$ $= 149$ R3, or $149\frac{3}{5}$ or $149\frac{6}{10}$, or 149.6 Each elephant got 149.6 kg of food.

Observations/Documentation

Number

Activity 20 Assessment

Consolidating Multiplying and Dividing Larger Numbers

Multiplying and Dividing Larger Numbers

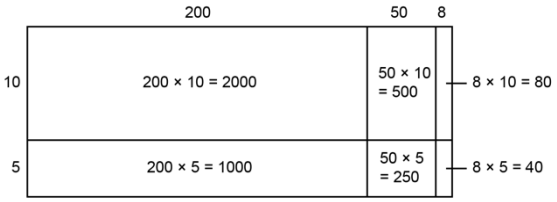
Uses divisibility tests to identify numbers that are divisible by 2, 3, and 5.

285

"Not divisible by 2 as the ones digit is not even. Divisible by 3 because the sum of the digits, 15, is divisible by 3.
Divisible by 5 as the ones digit is 5."

Models multiplication and division situations concretely and pictorially (i.e., using Base Ten Blocks, arrays, open arrays)

258 × 15 = ?



"I used an open array and added all the areas: 2000 + 1000 + 500 + 250 + 80 + 40 = 3870. So, 258 × 15 = 3870."

Uses standard algorithms to multiply and divide

258 × 15 = ?

$$\begin{array}{r} {\scriptstyle 2\ 4} \\ 258 \\ \times\ 15 \\ \hline {\scriptstyle 1} \\ 1290 \\ +2580 \\ \hline 3870 \end{array}$$

Multiply: 258 × 5

Multiply: 258 × 10

"I used the standard algorithm to multiply."

Observations/Documentation

Number

Activity 20 Assessment

Consolidating Multiplying and Dividing Larger Numbers

Multiplying and Dividing Larger Numbers (cont'd)

Estimates to determine if answer to multiplication or division problem is reasonable	Expresses a quotient with or without a remainder according to context	Creates and solves multiplication and division problems flexibly using a variety of strategies
$258 \times 15 = 3870$ "258 is close to 250. $250 \times 15 = (250 \times 10) + (250 \times 5)$ $= 2500 + 1250$ $= 3750$ 3870 is close to 3750. So, my answer is reasonable."	There are 114 students going on field trip. Each bus holds 9 students. How many buses are needed? $9\overline{)114}$ 12 -9 24 -18 6 $114 \div 9 = 12$ R6 "Since 6 students cannot be left behind, 13 buses are needed."	5 elephants share 748 kg of food. How much food does each elephant get? $748 \div 5 = (500 \div 5) + (200 \div 5) + (45 \div 5) + (3 \div 5)$ $= 100 + 40 + 9 + (3 \div 5)$ $= 149$ R3, or $149\frac{3}{5}$ or $149\frac{6}{10}$, or 149.6 Each elephant got 149.6 kg of food.

Observations/Documentation

Name_____ Date_____

Number
Unit 5 Line Master 1a

Decimal Cards

To hundredths and thousandths

12.735	42.481	20.91	30.530
26.066	32.08	34.013	26.039
33.47	32.763	21.194	42.128
18.055	12.323	30.756	20.32

Name_____ Date_____

Number
Unit 5 Line Master 1b

Decimal Cards (cont'd)

To hundredths and thousandths

15.735	16.48	22.912	23.503
41.065	16.085	24.013	33.18
32.48	41.753	18.891	24.722
34.015	42.345	13.74	15.358

Name_____ Date_____

Number
Unit 5 Line Master 1c

Decimal Cards (cont'd)

To tenths

41.7	12.4	50.9	20.5
17.0	28.8	20.1	40.4
16.9	26.7	13.1	23.8
16.5	2.3	10.7	14.3

Name_____ Date_____

Number
Unit 5 Line Master 1d

Decimal Cards (cont'd)

To tenths

11.7	12.4	21.9	24.5
31.0	32.8	26.1	27.4
17.9	23.7	14.1	25.8
21.5	32.3	25.7	32.6

Name_____ Date_____

Number
Unit 5 Line Master 2

Decimals Gotcha!

Recording Sheet

Player 2	**Estimate**	24 + 32 = 56				
	Cards	32.08				
		24.722				
Gotcha!		Player 2				
Player 1	**Estimate**	21 + 33 = 54				
	Cards	32.763				
		21.194				

Name_____ Date_____

Number
Unit 5 Line Master 3

Shopping for the Food Bank

Preston is grocery shopping to buy 10 kg of food for the food bank.
Preston will choose 1 of each item.
Identify a basket of food that comes close to a total mass of 10 kg.
Estimate first, then add to check.
What is the difference between the total mass of food you chose and 10 kg? Show how you know.

Food Item	Mass (kg)
Baked beans	0.550
Blueberries	1.750
Carrots	1.360
Cereal	0.640
Cheese (grated)	0.125
Chicken broth	0.985
Chicken wings	0.850
Hamburger	1.450
Potatoes	2.270
Tea bags	0.790
Tuna (3 cans)	0.510
Water	1.250

Name_____ Date_____

Number
Unit 5 Line Master 4a

Fraction Action!

Gameboard

$\frac{2}{5}$	$\frac{4}{6}$	$\frac{2}{3}$	$1\frac{1}{5}$	$\frac{8}{3}$
$1\frac{2}{7}$	$\frac{5}{8}$	$2\frac{1}{5}$	$\frac{2}{6}$	$\frac{6}{8}$
$2\frac{1}{8}$	$1\frac{1}{4}$	**FREE**	$\frac{20}{50}$	$\frac{5}{6}$
$\frac{9}{7}$	$\frac{3}{4}$	$\frac{1}{6}$	$\frac{4}{10}$	$\frac{13}{25}$
$\frac{1}{3}$	$\frac{7}{8}$	$\frac{6}{9}$	$\frac{17}{8}$	$\frac{5}{4}$

Name_____ Date_____

Number
Unit 5 Line Master 4b

Fraction Action! (cont'd)

Game Cards

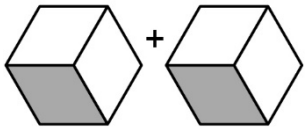
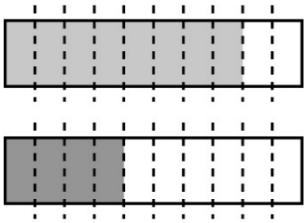
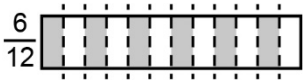
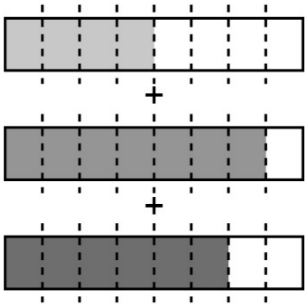
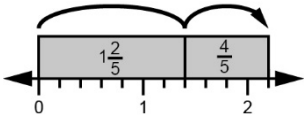
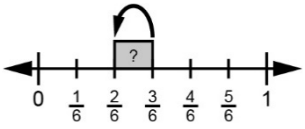
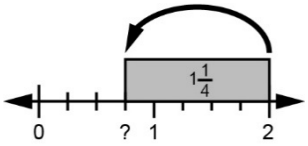
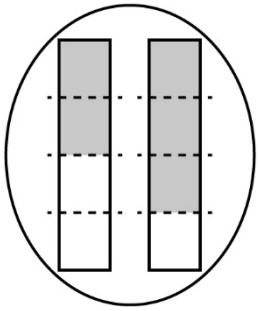
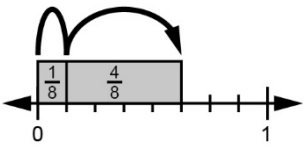
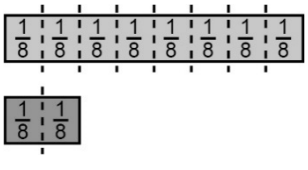
$\frac{7}{25} + \frac{6}{25}$	Alexa mixes $\frac{2}{9}$ of lemonade with $\frac{4}{9}$ of water. How much liquid do they have altogether?	$2\frac{2}{8} - 1\frac{3}{8}$
Gerome has a full tray of brownies. They ate $\frac{1}{6}$ of the brownies. How much is left?	$\frac{10}{50} + \frac{10}{50}$	Aleshia needs $\frac{7}{5}$ of soil and $\frac{4}{5}$ of fertilizer for their garden. How much planting mixture will they have in total?
$3 - \frac{7}{8}$	For one recipe, Lenor needs 1 cup of flour. For another, they need $\frac{2}{3}$ of a cup of flour. What's the difference in flour needed?	$\frac{2}{3} + \frac{2}{3} + \frac{2}{3} + \frac{2}{3}$
Jabar walked $\frac{5}{7}$ of a kilometre and then $\frac{4}{7}$ of a kilometre to the library. How many kilometres did Jabar walk altogether?	$1\frac{3}{6} - \frac{7}{6}$	Orange juice comes in 2 L-bottles. You use $\frac{3}{4}$ L of juice for a smoothie. How much juice is left?

Name_____ Date_____

Number
Unit 5 Line Master 4c

Fraction Action! (cont'd)

Game Cards

Whole ? Part $\frac{4}{7}$ Part $\frac{5}{7}$		
$\frac{6}{12}$ 		
		
		Whole $1\frac{1}{9}$ Part $\frac{4}{9}$ Part ?

Name_____ Date_____

Number
Unit 5 Line Master 4d

Fraction Action! (cont'd)

Gameboard

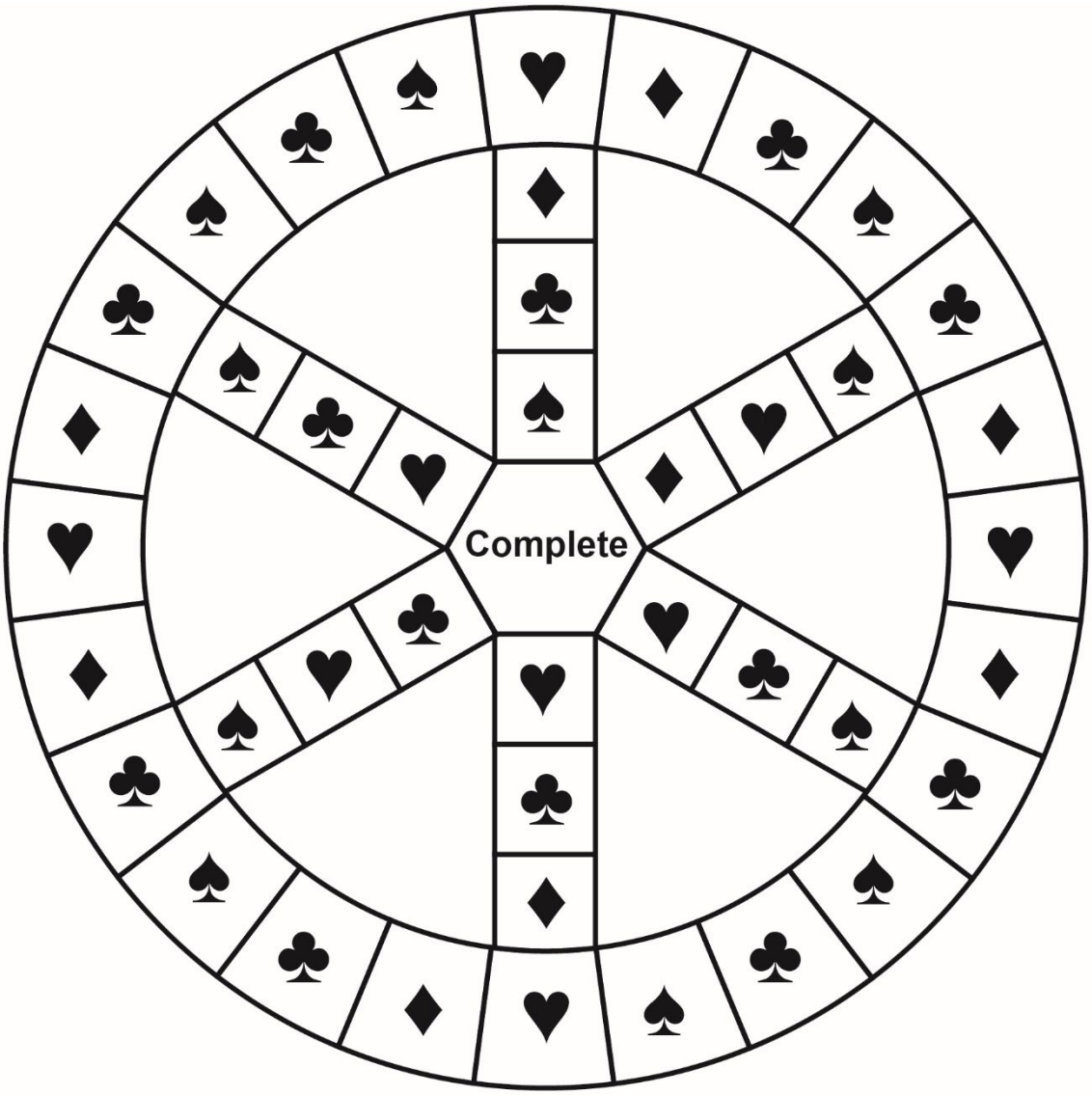
$\frac{1}{6}$	$\frac{2}{5}$	$\frac{6}{9}$
$\frac{2}{3}$	**FREE**	$\frac{2}{6}$
$\frac{1}{3}$	$\frac{5}{8}$	$\frac{5}{6}$

Name_____ Date_____

Number
Unit 5 Line Master 5

Complete the Chase!

Gameboard



Legend

♥ Estimating

♦ Adding decimals

♣ Subtracting decimals

♠ Adding/subtracting fractions

Name_____ Date_____

Number
Unit 5 Line Master 6a

Complete the Chase!

Game Cards

♥ Estimate: 24.40 + 12.16 ♥ Estimate: 0.907 – 0.83 ♦ 17.36 + 43.02 ♣ 0.8 – 0.36 ♠ $\frac{1}{6} + \frac{5}{6}$ ♠ $\frac{7}{4} - \frac{5}{4}$	♥ Estimate: 0.45 – 0.21 ♥ Estimate: 2.44 + 9.7 ♦ 13.2 + 12.05 ♣ $73.40 – $54.23 ♠ $1\frac{3}{8} - \frac{5}{8}$ ♠ $\frac{21}{25} + \frac{29}{25}$
♥ Estimate: 36.11 + 27.35 ♥ Estimate: 8.457 – 6.382 ♦ $19.99 + $17.49 ♣ 9.12 – 2.45 ♠ $4\frac{1}{5} - \frac{2}{5}$ ♠ $8 + \frac{1}{10}$	♥ Estimate: 3.10 – 0.8 ♥ Estimate: 6.396 + 9.051 ♦ 17.324 + 9.16 ♣ 15.94 – 8.64 ♠ $2\frac{7}{10} + 5\frac{8}{10}$ ♠ $3\frac{3}{5} - 2\frac{1}{5}$
♥ Estimate: 2.22 + 6.95 ♥ Estimate: 4.02 – 3.8 ♦ 0.14 + 14.03 ♣ 3.842 – 1.016 ♠ $\frac{3}{4} + \frac{9}{4}$ ♠ $\frac{17}{75} - \frac{2}{75}$	♥ Estimate: 83.1 – 34.01 ♥ Estimate: 5.18 + 7.352 ♦ 29.125 + 12.236 ♣ 71.981 – 61.87 ♠ $3\frac{3}{10} - \frac{9}{10}$ ♠ $\frac{13}{10} + \frac{17}{10}$

Name_____ Date_____

Number
Unit 5 Line Master 6b

Complete the Chase! (cont'd)

Game Cards

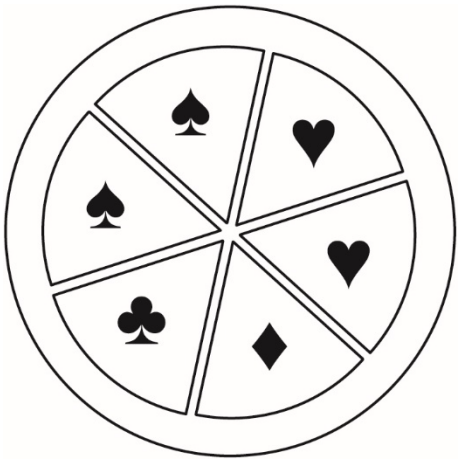
♥ Estimate: 24.40 + 12.16 ♥ Estimate: 7.8 – 6.395 ♦ 17.36 + 43.02 ♣ 0.827 – 0.36 ♠ $\frac{3}{8} + \frac{5}{8}$ ♠ $\frac{5}{6} - \frac{1}{6}$	♥ Estimate: 0.45 – 0.21 ♥ Estimate: 6.652 + 23.48 ♦ 135.2 + 12.05 ♣ $73.40 – $54.23 ♠ $1 - \frac{4}{4}$ ♠ $\frac{7}{3} + \frac{14}{3}$
♥ Estimate: 36.11 + 27.35 ♥ Estimate: 29.47 – 14.369 ♦ $19.99 + $17.49 ♣ 9.12 – 2.457 ♠ $4\frac{2}{5} + 9\frac{2}{5}$ ♠ $4\frac{1}{5} - \frac{6}{5}$	♥ Estimate: 3.04 – 0.8 ♥ Estimate: 76.8 + 32.473 ♦ 17.32 + 9.67 ♣ 15.94 – 8.6 ♠ $2\frac{1}{3} + \frac{5}{3}$ ♠ $3\frac{33}{100} - \frac{8}{100}$
♥ Estimate: 2.22 + 6.95 ♥ Estimate: 9.821 – 3.694 ♦ 0.14 + 14.035 ♣ 3.84 – 1.016 ♠ $\frac{57}{50} + \frac{93}{50}$ ♠ $\frac{41}{10} - \frac{29}{10}$	♥ Estimate: 83.1 – 34.01 ♥ Estimate: 46.34 + 16.089 ♦ 29.12 + 12.23 ♣ 71.98 – 61.8 ♠ $2\frac{1}{3} + 3\frac{2}{3}$ ♠ $3\frac{1}{25} - 1\frac{26}{25}$

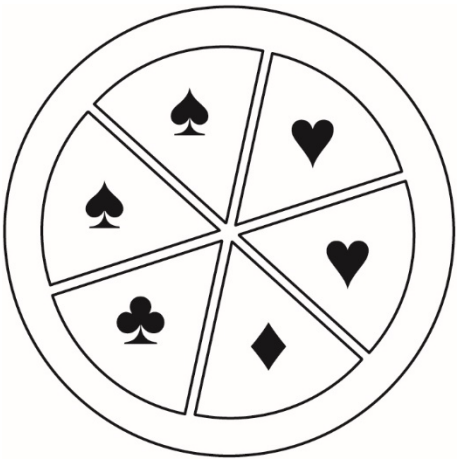
Name_____ Date_____

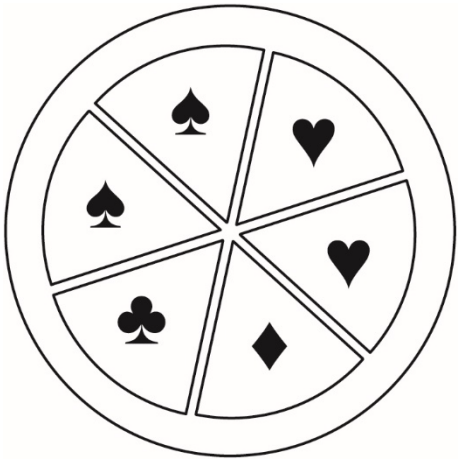
Number
Unit 5 Line Master 7

Complete the Chase!

Game Pieces







Number

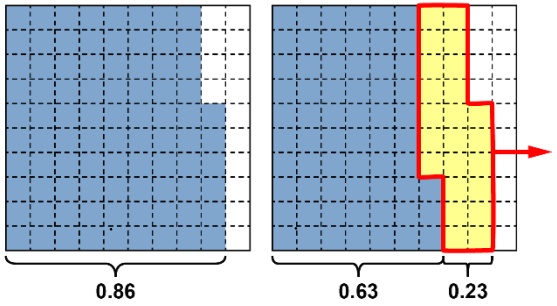
Activity 21 Assessment

Estimating Sums and Differences with Decimals

Conceptual Meaning of Addition and Subtraction of Decimals

Recognizes addition and subtraction situations and models concretely or pictorially to add or subtract to hundredths (using hundredths grids or Base Ten Blocks)

25.86 – 17.23 = ?



"86 hundredths – 23 hundredths =
63 hundredths
25 – 17 = 8"

25.86 – 17.23 = 8.63

Uses an understanding of place value to add or subtract decimals with hundredths (using standard algorithm)

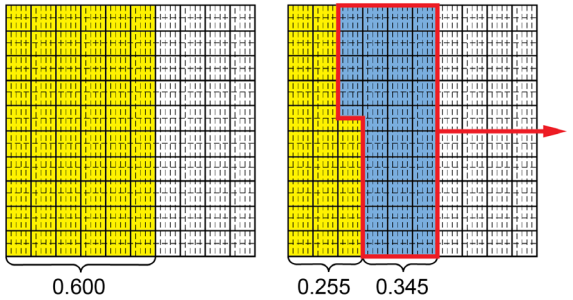
25.86 – 17.23 = ?

$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ 25.86 \\ -\ 17.23 \\ \hline 8.63 \end{array}$$

"I used the standard algorithm to subtract the hundredths, then the tenths, and then the whole numbers."

Models to add or subtract decimals with thousandths (e.g., using thousandths grids or number lines)

43.600 – 1.345 = ?



"600 thousandths – 345 thousandths =
255 thousandths
43 – 1 = 42."

43.6 – 1.345 = 42.255

Observations/Documentation

Number

Activity 21 Assessment

Estimating Sums and Differences with Decimals

Conceptual Meaning of Addition and Subtraction of Decimals (cont'd)

Uses an understanding of place value to add or subtract decimals with thousandths (e.g., using standard algorithm)

$$\begin{array}{r} {\scriptstyle 5\ 9\ 1} \\ 43.6\not{0}\not{0} \\ -\ 1.345 \\ \hline 42.255 \end{array}$$

"I used the standard algorithm to subtract the thousandths, then the hundredths, then the tenths, and then the whole numbers."

Uses estimation and mental math strategies to check reasonableness of solutions

43.6 – 1.345 = 42.255
43.6 is close to 44. 1.345 is close to 1.
44 – 1 = 43

"42.255 is the answer I calculated, and it is close to 43, so my answer is reasonable."

Solves addition and subtraction problems flexibly, using a variety of strategies

Naomi swam 1.5 km, rode a bicycle for 35.29 km, and ran for 8.375 km. What was the total distance Naomi travelled?

1.5 km + 35.29 km + 8.375 km = ?

$$\begin{array}{r} {\scriptstyle 1\ \ 1} \\ {\scriptstyle 1}\ 1.500 \\ 35.290 \\ +\ \ 8.375 \\ \hline 45.165 \end{array}$$

"I wrote each number as a decimal with thousandths.
Naomi travelled 45.165 km in total."

Observations/Documentation

Number

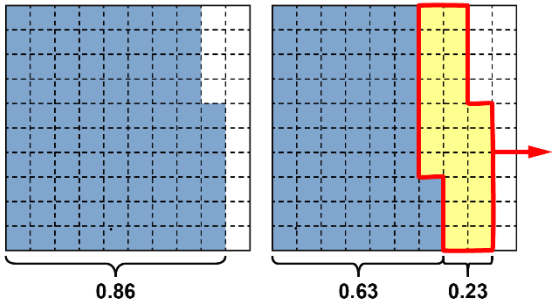
Activity 22 Assessment

Adding and Subtracting Decimals to Thousandths

Conceptual Meaning of Addition and Subtraction of Decimals

Recognizes addition and subtraction situations and models concretely or pictorially to add or subtract to hundredths (using hundredths grids or Base Ten Blocks)

25.86 – 17.23 = ?



"86 hundredths – 23 hundredths =
63 hundredths
25 – 17 = 8"

25.86 – 17.23 = 8.63

Uses an understanding of place value to add or subtract decimals with hundredths (using standard algorithm)

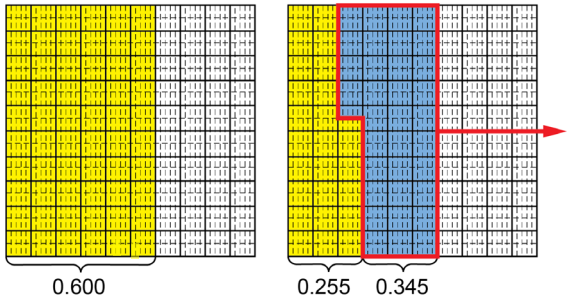
25.86 – 17.23 = ?

$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ \ } \\ 25.86 \\ -\ 17.23 \\ \hline 8.63 \end{array}$$

"I used the standard algorithm to subtract the hundredths, then the tenths, and then the whole numbers."

Models to add or subtract decimals with thousandths (e.g., using thousandths grids or number lines)

43.600 – 1.345 = ?



"600 thousandths – 345 thousandths =
255 thousandths
43 – 1 = 42."

43.6 – 1.345 = 42.255

Observations/Documentation

Number

Activity 22 Assessment

Adding and Subtracting Decimals to Thousandths

Conceptual Meaning of Addition and Subtraction of Decimals (cont'd)

Uses an understanding of place value to add or subtract decimals with thousandths (e.g., using standard algorithm)

$$\begin{array}{r} {\scriptstyle 5\ 9\ 1} \\ 43.6\not{0}\not{0} \\ -\ 1.345 \\ \hline 42.255 \end{array}$$

"I used the standard algorithm to subtract the thousandths, then the hundredths, then the tenths, and then the whole numbers."

Uses estimation and mental math strategies to check reasonableness of solutions

43.6 – 1.345 = 42.255
43.6 is close to 44. 1.345 is close to 1.
44 – 1 = 43

"42.255 is the answer I calculated, and it is close to 43, so my answer is reasonable."

Solves addition and subtraction problems flexibly, using a variety of strategies

Naomi swam 1.5 km, rode a bicycle for 35.29 km, and ran for 8.375 km. What was the total distance Naomi travelled?

1.5 km + 35.29 km + 8.375 km = ?

$$\begin{array}{r} {\scriptstyle 1\ \ 1} \\ {\scriptstyle 1}\ 1.500 \\ 35.290 \\ +\ \ 8.375 \\ \hline 45.165 \end{array}$$

"I wrote each number as a decimal with thousandths.
Naomi travelled 45.165 km in total."

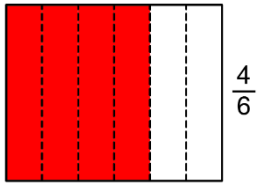
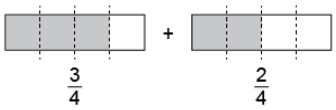
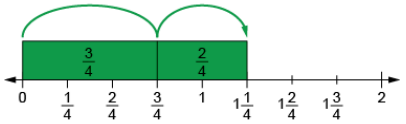
Observations/Documentation

Number

Activity 23 Assessment

Adding and Subtracting Fractions with Like Denominators

Adding and Subtracting Fractions with Like Denominators

Expresses the composition or decomposition of a quantity as a sum or difference	Adds and subtracts concretely or pictorially	Adds and subtracts symbolically	Flexibly solves problems involving the addition and subtraction of fractions
<catch: pick up  "I can think of $\frac{4}{6}$ as $\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}$, or as $\frac{1}{6}+\frac{3}{6}$. I can also think of $\frac{4}{6}$ as $\frac{6}{6}-\frac{1}{6}-\frac{1}{6}$, or as $\frac{6}{6}-\frac{2}{6}$."	$\frac{3}{4}+\frac{2}{4}=?$  "Because each whole is divided into fourths, I can add the parts. 3 fourths + 2 fourths = 5 fourths. 5 fourths make 1 whole and $\frac{1}{4}$."  $\frac{3}{4}+\frac{2}{4}=\frac{5}{4}=1\frac{1}{4}$ "I modelled on the number line, then counted on from $\frac{3}{4}$: 4 fourths, 5 fourths."	$3\frac{1}{8}-\frac{6}{8}=?$ $3\frac{1}{8}=\frac{25}{8}$ $\frac{25}{8}-\frac{6}{8}=\frac{19}{8}$, or $2\frac{3}{8}$ "I converted $3\frac{1}{8}$ to $\frac{25}{8}$, then subtracted. I checked my answer using addition."	$1\frac{3}{10}+\frac{8}{10}+?=2\frac{7}{10}$ $1\frac{3}{10}+\frac{8}{10}=1\frac{11}{10}=2\frac{1}{10}$ $2\frac{7}{10}-2\frac{1}{10}=\frac{6}{10}$ $2\frac{1}{10}+\frac{6}{10}=2\frac{7}{10}$ "$\frac{6}{10}$ needs to be added to the other fractions to equal $2\frac{7}{10}$."
Observations/Documentation			

Number

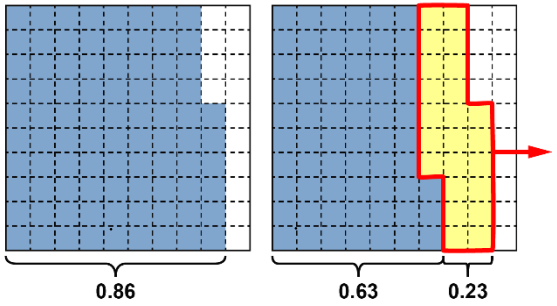
Activity 24 Assessment

Consolidating Operations with Fractions and Decimal

Conceptual Meaning of Addition and Subtraction of Decimals

Recognizes addition and subtraction situations and models concretely or pictorially to add or subtract to hundredths (using hundredths grids or Base Ten Blocks)

25.86 – 17.23 = ?



"86 hundredths – 23 hundredths =
63 hundredths
25 – 17 = 8"

25.86 – 17.23 = 8.63

Uses an understanding of place value to add or subtract decimals with hundredths (using standard algorithm)

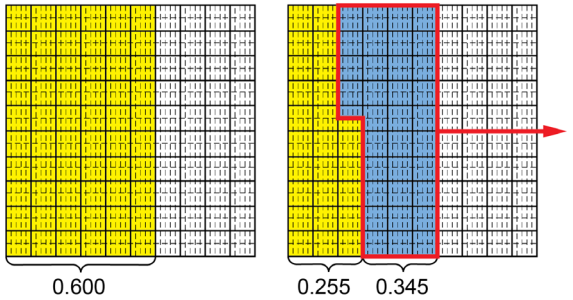
25.86 – 17.23 = ?

$$\begin{array}{r} {\scriptstyle 1\ \ 1} \\ 25.86 \\ -\ 17.23 \\ \hline 8.63 \end{array}$$

"I used the standard algorithm to subtract the hundredths, then the tenths, and then the whole numbers."

Models to add or subtract decimals with thousandths (e.g., using thousandths grids or number lines)

43.600 – 1.345 = ?



"600 thousandths – 345 thousandths =
255 thousandths
43 – 1 = 42."

43.6 – 1.345 = 42.255

Observations/Documentation

Number

Activity 24 Assessment

Consolidating Operations with Fractions and Decimal

Conceptual Meaning of Addition and Subtraction of Decimals (cont'd)

Uses an understanding of place value to add or subtract decimals with thousandths (e.g., using standard algorithm)

$$\begin{array}{r} {\scriptstyle 5\ 9\ 1} \\ 43.6\not{0}\not{0} \\ -\ 1.345 \\ \hline 42.255 \end{array}$$

"I used the standard algorithm to subtract the thousandths, then the hundredths, then the tenths, and then the whole numbers."

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Naomi swam 1.5 km, rode a bicycle for 35.29 km, and ran for 8.375 km. What was the total distance Naomi travelled?

1.5 km + 35.29 km + 8.375 km = ?

$$\begin{array}{r} {\scriptstyle 1\ \ 1} \\ {\scriptstyle 1}\ 1.500 \\ 35.290 \\ +\ \ 8.375 \\ \hline 45.165 \end{array}$$

"I wrote each number as a decimal with thousandths.
Naomi travelled 45.165 km in total."

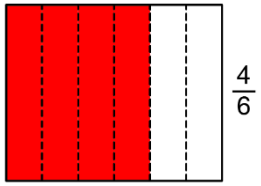
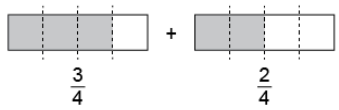
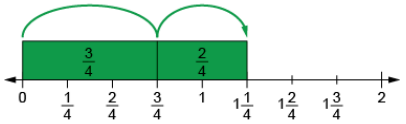
Observations/Documentation

Number

Activity 24 Assessment

Consolidating Operations with Fractions and Decimal

Adding and Subtracting Fractions with Like Denominators

Expresses the composition or decomposition of a quantity as a sum or difference	Adds and subtracts concretely or pictorially	Adds and subtracts symbolically	Flexibly solves problems involving the addition and subtraction of fractions
<catch: pick up  "I can think of $\frac{4}{6}$ as $\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}$, or as $\frac{1}{6}+\frac{3}{6}$. I can also think of $\frac{4}{6}$ as $\frac{6}{6}-\frac{1}{6}-\frac{1}{6}$, or as $\frac{6}{6}-\frac{2}{6}$."	$\frac{3}{4}+\frac{2}{4}=?$  "Because each whole is divided into fourths, I can add the parts. 3 fourths + 2 fourths = 5 fourths. 5 fourths make 1 whole and $\frac{1}{4}$."  $\frac{3}{4}+\frac{2}{4}=\frac{5}{4}=1\frac{1}{4}$ "I modelled on the number line, then counted on from $\frac{3}{4}$: 4 fourths, 5 fourths."	$3\frac{1}{8}-\frac{6}{8}=?$ $3\frac{1}{8}=\frac{25}{8}$ $\frac{25}{8}-\frac{6}{8}=\frac{19}{8}$, or $2\frac{3}{8}$ "I converted $3\frac{1}{8}$ to $\frac{25}{8}$, then subtracted. I checked my answer using addition."	$1\frac{3}{10}+\frac{8}{10}+?=2\frac{7}{10}$ $1\frac{3}{10}+\frac{8}{10}=1\frac{11}{10}=2\frac{1}{10}$ $2\frac{7}{10}-2\frac{1}{10}=\frac{6}{10}$ $2\frac{1}{10}+\frac{6}{10}=2\frac{7}{10}$ "$\frac{6}{10}$ needs to be added to the other fractions to equal $2\frac{7}{10}$."

Observations/Documentation

Name_____ Date_____

Number
Unit 6 Line Master 1

Bubbly Budgeting

Weekly Action Plans	Income	Expenses
What will you do each week?		
Week 1 Parents' group donates money to help with expenses for the car wash.	$50.00	
Week 2		
Week 3		
Week 4		
Car Wash Day Cost per car: Cost per van: Cost per truck:		
Totals:		

Name_____ Date_____

Number
Unit 6 Line Master 2

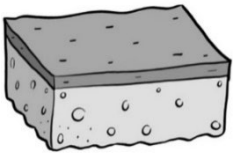
Expenses for the Car Wash

Cleaning Supplies

Plastic bucket
$4.99

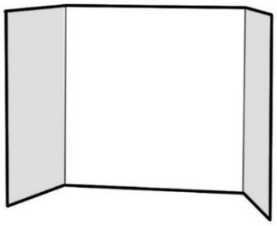
Package of 4 cloths
$2.47

3 L of soap
$9.97

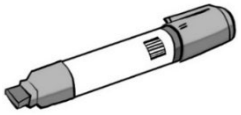


Sponge
$2.97

Advertising



Poster board
$4.98



Marker
$1.49

Other Expenses

_____

_____

_____

Name_____ Date_____

Number
Unit 6 Line Master 3a

Our Financial Plan

1. Our goal is _____.

2. Explain why you chose that goal.

3. Is your goal a short-term or long-term goal?

4. What steps will you take to reach your goal?

Name_____ Date_____

Number
Unit 6 Line Master 3b

Our Financial Plan (cont'd)

5. Create a savings plan to reach your goal.

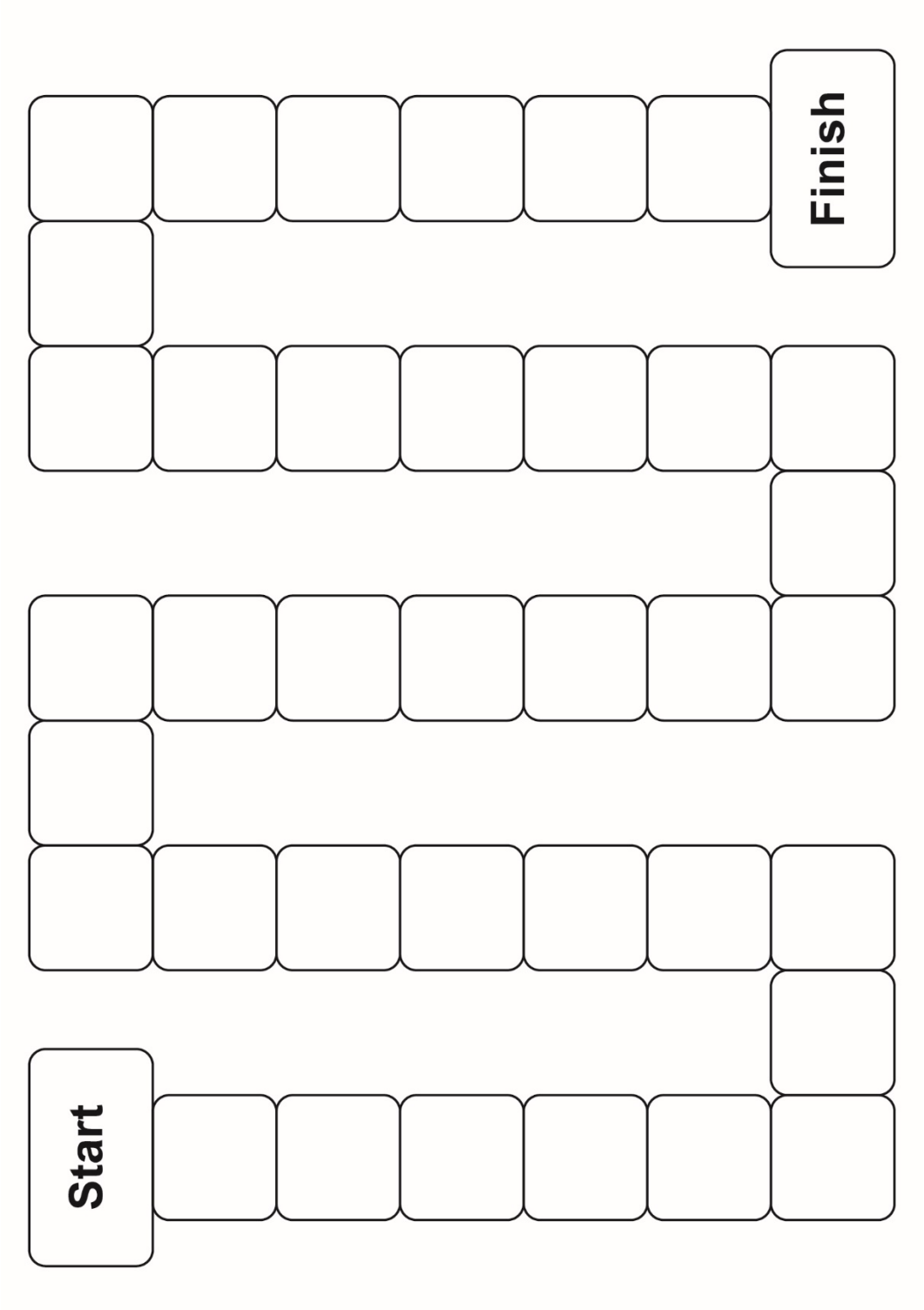
6. What factors might help you reach your goal?

7. What factors might prevent you from reaching your goal?

Name _____ Date _____

Number
Unit 6 Line Master 4

Budget Choices Challenge! Gameboard



Name_____ Date _____

Number
Unit 6 Line Master 5a

Budget Cards

$820	**$700**
$750	**$500**
$1000	**$800**
$3500	**$1250**
$750	**$1200**
$560	**$580**
$1750	**$750**

Name_____ Date _____

Number
Unit 6 Line Master 5b

Budget Cards (cont'd)

$790	**$520**
$655	**$695**
$755	**$1005**
$805	**$630**
$645	**$495**
$855	**$785**

Name_____ Date _____

Number
Unit 6 Line Master 6a

Consumer Choice Cards

Smartphone $418	Laptop computer $729
Video game console $449	Bike $285
Running shoes $109	Backpack $43
Movie tickets $32	Fast-food meal $18
T-shirt $14	Book $12
Streaming subscription $34	Smart watch $299
Guitar $175	Makeup $27

Name_____ Date _____

Number
Unit 6 Line Master 6b

Consumer Choice Cards (cont'd)

Board game $39	Sports equipment $57
Art supplies $35	TV $349
Pet food $75	Virtual Reality game $99
Skateboard $88	Shorts $31
Hoodie $47	Amusement Park tickets $49
Hockey game tickets $87	Donuts $23

Name_____ Date _____

Number
Unit 6 Line Master 7a

Influence Cards

Celebrity endorsement	Social media influencer
Friend recommendation	5-star product reviews
Package design	TV advertisement
Brand reputation	Family influence
Peer influence	Price discount
Trend or fad	Environmentally friendly
Convenience	Product guarantee

Name_____ Date _____

Number
Unit 6 Line Master 7b

Influence Cards (cont'd)

Advertising jingle	Expert opinion
Product demo	User testimonial
2-star product review	Not environmentally friendly
Poor quality	Coupon

Number

Activity 25 Assessment

Designing a Simple Budget

Designing a Simple Budget			
Identifies a financial goal "I want to raise $250 to donate to the food bank."	Considers some factors involved in designing a budget "I need to think about how much to charge per car, and how much to spend on supplies and advertising."	Designs a simple budget recognizing the importance of several factors "Our expenses are about $100. We'll charge $8 per car and assume 50 cars. We should make about $300 after expenses, which allows us to reach our goal."	Flexibly creates a simple budget and adjusts for unforeseen circumstances "We'll advertise a second date in case of rain. We'll aim to raise a bit more than $250 in case the hose breaks and we need to buy another one."
Observations/Documentation			

Number

Activity 26 Assessment

Planning for Financial Goals

Planning for Financial Goals			
Understands the difference between short-term and long-term goals "Short-term goal: Save $5 for the pizza lunch next Friday. Long-term goal: Save $150 for new skates next winter."	Outlines key steps needed to make a savings plan to achieve a financial goal "I earn $10 a week cutting grass. I will save $5 each week in my bank account."	Recognizes and explains various factors that may help or interfere with reaching a financial goal "I will have to find another job as I can't cut grass in the winter. To save money, I will borrow books from the library."	Makes informed decisions about planning for a financial goal, considering all possible factors "If I lose a job or I have an unexpected expense, I need to be able to adjust my savings plan so that I can still achieve my goal."
Observations/Documentation			

Number

Activity 27 Assessment

Factors Influencing Consumer Choices

Factors Influencing Consumer Choices			
Identifies and recognizes that consumers have choice when purchasing a product or service "I know that there are many places to buy lunch and I have a choice to make."	Identifies some factors that influence consumer choice (e.g., advertising and marketing) "I know that coupons are a way to advertise for a company and to attract consumers."	Recognizes many different factors that influence consumer choice and how each is used to sway consumer practice "I know that sporting companies use celebrity athletes in advertisements because people will think they can play like them if they use the same sports equipment."	Understands subtle ways consumers are being influenced in the world around them "Companies advertise on television during popular viewing times because the viewing crowd is so large."
Observations/Documentation			

Number

Activity 28 Assessment

Consolidating Financial Literacy

Designing a Simple Budget			
Identifies a financial goal "I want to raise $250 to donate to the food bank."	Considers some factors involved in designing a budget "I need to think about how much to charge per car, and how much to spend on supplies and advertising."	Designs a simple budget recognizing the importance of several factors "Our expenses are about $100. We'll charge $8 per car and assume 50 cars. We should make about $300 after expenses, which allows us to reach our goal."	Flexibly creates a simple budget and adjusts for unforeseen circumstances "We'll advertise a second date in case of rain. We'll aim to raise a bit more than $250 in case the hose breaks and we need to buy another one."
Observations/Documentation			

Number

Activity 28 Assessment

Consolidating Financial Literacy

Factors Influencing Consumer Choices			
Identifies and recognizes that consumers have choice when purchasing a product or service "I know that there are many places to buy lunch and I have a choice to make."	Identifies some factors that influence consumer choice (e.g., advertising and marketing) "I know that coupons are a way to advertise for a company and to attract consumers."	Recognizes many different factors that influence consumer choice and how each is used to sway consumer practice "I know that sporting companies use celebrity athletes in advertisements because people will think they can play like them if they use the same sports equipment."	Understands subtle ways consumers are being influenced in the world around them "Companies advertise on television during popular viewing times because the viewing crowd is so large."
Observations/Documentation			

Name_____ Date_____

Patterning and Algebra
Unit 1 Line Master 1

How Much Does Diego Need?

Number of Children	Number of Paper Towel Rolls	Number of Feathers	Number of Pieces of Craft Paper	Number of Dried Beans
1	1	4	3	10
2	2	8		
3	3		9	
4	4		12	40

Complete the table.

Identify the rule that relates the number of children to each type of material.

Write an algebraic expression for each rule.

Use each expression to determine how much of each material is needed for 50 children.

Name_____ Date _____

Patterning and Algebra
Unit 1 Line Master 2

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

Patterning and Algebra

Activity 1 Assessment
Investigating Visual Sequences

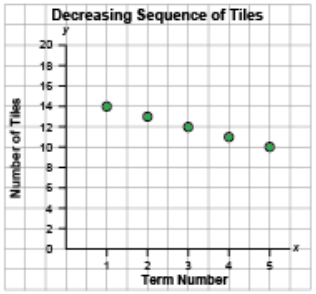
Investigating Arithmetic Sequences

Identifies how an arithmetic sequence increases or decreases and describes the initial term and constant change

"This is a decreasing sequence.
Initial term: 14 red tiles;
Constant change: take away 1 red tile."

Represents arithmetic sequences in tables of values and on graphs

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10



"The table and graph show the number of tiles decreases by 1 each time. The points on the graph lie on a straight line that goes down to the right."

Identifies a rule that relates the positions and terms of an arithmetic sequence

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10

"By looking at the table, I see that the number of tiles is equal to 15 minus the term number."

Observations/Documentation

Activity 1 Assessment
Investigating Visual Sequences

Investigating Arithmetic Sequences (cont'd)

Writes an algebraic expression that relates the positions and terms of an arithmetic sequence

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10

"The number of tiles is equal to 15 minus the term number. I can write this rule as $15 - n$, where n represents the term number."

Determines the missing term in an arithmetic sequence (using expression)

Term Number	Term Value
1	8
2	16
3	?
4	32
5	?
6	48

"Rule: Multiply the term number by 8 to get the term value. I can write this rule as: $8n$, where n represents the term number.
Term 3: $8n = 8 \times 3$, or 24
Term 5: $8n = 8 \times 5$, or 40."

Fluently identifies, creates, and extends various arithmetic sequences to solve real-life problems

Box	Cost to Ship ($)
1	3.50
2	7.00
3	10.50

How much would it cost to ship 9 boxes?

"To determine the shipping cost, multiply the number of boxes by $3.50. I would use the expression $3.5n$, where n is the number of boxes:
$3.5n = 3.5 \times 9$, or 31.5
So, the cost to ship 9 boxes is $31.50."

Observations/Documentation

Patterning and Algebra

Activity 2 Assessment

Investigating Numeric Sequences

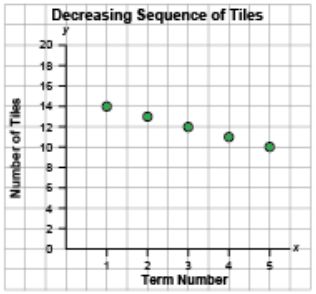
Investigating Arithmetic Sequences

Identifies how an arithmetic sequence increases or decreases and describes the initial term and constant change

"This is a decreasing sequence.
Initial term: 14 red tiles;
Constant change: take away 1 red tile."

Represents arithmetic sequences in tables of values and on graphs

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10



"The table and graph show the number of tiles decreases by 1 each time. The points on the graph lie on a straight line that goes down to the right."

Identifies a rule that relates the positions and terms of an arithmetic sequence

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10

"By looking at the table, I see that the number of tiles is equal to 15 minus the term number."

Observations/Documentation

Activity 2 Assessment
Investigating Numeric Sequences

Investigating Arithmetic Sequences (cont'd)

Writes an algebraic expression that relates the positions and terms of an arithmetic sequence

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10

"The number of tiles is equal to 15 minus the term number. I can write this rule as $15 - n$, where n represents the term number."

Determines the missing term in an arithmetic sequence (using expression)

Term Number	Term Value
1	8
2	16
3	?
4	32
5	?
6	48

"Rule: Multiply the term number by 8 to get the term value. I can write this rule as: $8n$, where n represents the term number.
Term 3: $8n = 8 \times 3$, or 24
Term 5: $8n = 8 \times 5$, or 40."

Fluently identifies, creates, and extends various arithmetic sequences to solve real-life problems

Box	Cost to Ship ($)
1	3.50
2	7.00
3	10.50

How much would it cost to ship 9 boxes?

"To determine the shipping cost, multiply the number of boxes by $3.50. I would use the expression $3.5n$, where n is the number of boxes:
$3.5n = 3.5 \times 9$, or 31.5
So, the cost to ship 9 boxes is $31.50."

Observations/Documentation

Patterning and Algebra

Activity 3 Assessment

Consolidating Patterns and Relations

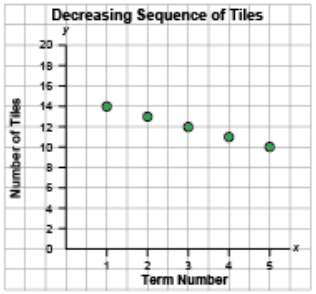
Investigating Arithmetic Sequences

Identifies how an arithmetic sequence increases or decreases and describes the initial term and constant change

"This is a decreasing sequence.
Initial term: 14 red tiles;
Constant change: take away 1 red tile."

Represents arithmetic sequences in tables of values and on graphs

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10



"The table and graph show the number of tiles decreases by 1 each time. The points on the graph lie on a straight line that goes down to the right."

Identifies a rule that relates the positions and terms of an arithmetic sequence

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10

"By looking at the table, I see that the number of tiles is equal to 15 minus the term number."

Observations/Documentation

Activity 3 Assessment

Consolidating Patterns and Relations

Investigating Arithmetic Sequences (cont'd)

Writes an algebraic expression that relates the positions and terms of an arithmetic sequence

Term Number	Number of Tiles
1	14
2	13
3	12
4	11
5	10

"The number of tiles is equal to 15 minus the term number. I can write this rule as $15 - n$, where n represents the term number."

Determines the missing term in an arithmetic sequence (using expression)

Term Number	Term Value
1	8
2	16
3	?
4	32
5	?
6	48

"Rule: Multiply the term number by 8 to get the term value. I can write this rule as: $8n$, where n represents the term number.
Term 3: $8n = 8 \times 3$, or 24
Term 5: $8n = 8 \times 5$, or 40."

Fluently identifies, creates, and extends various arithmetic sequences to solve real-life problems

Box	Cost to Ship ($)
1	3.50
2	7.00
3	10.50

How much would it cost to ship 9 boxes?

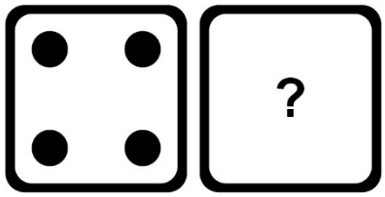
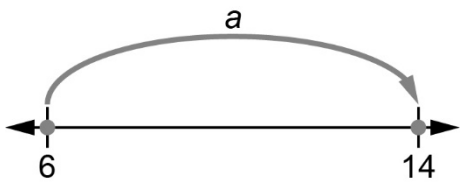
"To determine the shipping cost, multiply the number of boxes by $3.50. I would use the expression $3.5n$, where n is the number of boxes:
$3.5n = 3.5 \times 9$, or 31.5
So, the cost to ship 9 boxes is $31.50."

Observations/Documentation

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 1

Using Variables

Problem or Picture	Equation
Janie rolled 10 with two number cubes.  What number was on the other cube?	
There are 12 cars in the parking lot. The cars are parked in rows of 4. How many rows are there?	
	$3a = 15$
	

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 2a

Working on It Answers

For example:

Part A

- $7n$ or $7 \times n$
- $\frac{n}{8}$ or $n \div 8$
- $n - 3$
- $n + 6$
- $n \div 2 + 9$ or $\frac{n}{2} + 9$
- $20 - 2n$
- $(n - 5) \times 2$ or $2(n - 5)$

Part B

- $20 \div r = 5$
- $19 + s = 34$
- $20 = 5z$
- $20 + a = 36$
- Josie went to the dollar store to buy some craft sticks for art class. She needs 40 sticks and they come in packages of 8. How many packages should Josie buy?
- At the school's Spring Clean Up Day, 72 volunteers showed up. The principal arranged them onto 9 teams. How many volunteers are on each team?
- There is an 89-step staircase at the hiking trail. Edam climbed 23 steps. How many more steps does Edam need to take to reach the top?
- Ali counted 52 crackers left in the box. His siblings ate 37 crackers yesterday. How many crackers were there in the box to start with?

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 2b

Working on It Answers (cont'd)

Part C

- Square: $s = 3$; Perimeter = 3 + 3 + 3 + 3 = 12 units,
  Area = 3 × 3 = 9 square units
- Rectangle: $l = 2$, $w = 6$; Perimeter = 2 × 2 + 2 × 6 = 16 units,
  Area = 2 × 6 = 12 square units

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 2c

Working on It Answers (cont'd)

Accommodation

For example:

Part A

- $7n$ or $7 \times n$
- $\frac{n}{8}$ or $n \div 8$
- $n - 3$
- $n + 6$

Part B

- $10 = 3 + n$
- $12 \div r = 4$
- I gave 15 pencils to my 3 friends.
  I gave each friend the same number of pencils.
  How many pencils did I give to each friend?
- $6 + a = 14$

Part C

- Square: $s = 3$; Perimeter = 3 + 3 + 3 + 3 = 12 units,
  Area = 3 × 3 = 9 square units

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 3

Solving Equations

$n + 3 = 10$
$12 - p = 9$
$9 = 3 + r$
$10 = s - 8$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 4

Working on It Answers

Part A

$n = 6$

$t = 11$

$p = 20$

$d = 5$

Part B

$n = 18$

$p = 27$

$q = 24$

$r = 14$

Accommodation

$n = 7$

$p = 3$

$r = 6$

$s = 18$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 5a

Tic-Tac-Toe Gameboard 1

(One-Step Equations)

$m = 24 \div 3$	$6 \times c = 42$	$5p = 50$
$6 = \frac{n}{5}$	$49 = 7 \times k$	$b = 72 \div 9$
$36 = 4 \times t$	$\frac{35}{s} = 5$	$11e = 44$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 5b

Tic-Tac-Toe Gameboard 2

(Two-Step Equations)

$m + 2 = 24 \div 3$	$26 - 6c = 4$	$4p - 6 = 38$
$5 = \frac{d}{4}$	$49 = 2n - 3$	$4b = 72 \div 9$
$40 = 4t + 8$	$s \div 3 = 8$	$\frac{k}{5} - 6 = 1$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 5c

Tic-Tac-Toe Gameboard 3

$a = 6 \div 3$	$4 \times b = 12$	$15 = 3 \times c$
$2 = \frac{d}{4}$	$16 = 8 \times e$	$f = 6 \times 2$
$9 \div g = 3$	$\frac{h}{2} = 5$	$12 \div 3 = k$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 5d

Tic-Tac-Toe Gameboard 4

$t = 6$	$n = 24$	$e = 10$
$y = 8$	$x = 36$	$r = 12$
$v = 21$	$p = 7$	$w = 9$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 6

Working on It Answers

On-Grade (One-Step Equations)

$m = 24 \div 3$; $m = 8$
$6 \times c = 42$; $c = 7$
$5p = 50$; $p = 10$
$6 = \frac{n}{5}$; $n = 30$
$49 = 7 \times k$; $k = 7$
$b = 72 \div 9$; $b = 8$
$36 = 4 \times t$; $t = 9$
$\frac{35}{s} = 5$; $s = 7$
$11e = 44$; $e = 4$

On-Grade (Two-Step Equations)

$m + 2 = 24 \div 3$; $m = 6$
$28 - 6c = 4$; $c = 4$
$4p - 6 = 38$; $p = 11$
$5 = \frac{d}{4}$; $d = 20$
$49 = 2n - 3$; $n = 26$
$4b = 72 \div 9$; $b = 2$
$40 = 4t + 8$; $t = 8$
$s \div 3 = 8$; $s = 24$
$\frac{k}{5} - 6 = 1$; $k = 35$

Accommodation

$a = 6 \div 3$; $a = 2$
$4 \times b = 12$; $b = 3$
$15 = 3 \times c$; $c = 5$
$2 = \frac{d}{4}$; $d = 8$
$16 = 8 \times e$; $e = 2$
$f = 6 \times 2$; $f = 12$
$9 \div g = 3$; $g = 3$
$\frac{h}{2} = 5$; $h = 10$
$12 \div 3 = k$; $k = 4$

Extension

For example:
$t = 6$; $66 \div t = 11$
$n = 24$; $n \div 4 = 6$
$e = 10$; $10e = 100$
$y = 8$; $96 = 12y$
$x = 36$; $18 = x \div 2$
$r = 12$; $3r = 42 - 6$
$v = 21$; $3 \times 7 = v$
$p = 7$; $\frac{p}{7} = 1$
$w = 9$; $35 - 8 = 3w$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 7

Story Problems

Accommodation

Amy will be 10 years old in 2 years.
How old is Amy now?

Devon had 12 tickets to play games at the fun fair.
All games cost the same number of tickets.
Devon played 3 games.
How many tickets are needed to play 1 game?

Cary woke up to 9 text messages.
They replied to some of them.
There are still 5 unread texts.
How many texts did Cary reply to?

In 5 days, Dani packed 15 lunch boxes for a charity.
Each day, they packed the same number of boxes.
How many lunch boxes did Dani pack in 1 day?

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 8

Working on It Answers

For example:

On-Grade

$a + 5 = 16$, $a = 11$; Amy is 11 years old now.

$\frac{36}{t} = 9$, $t = 4$; 4 tickets are needed to play one game.

$23 - n = 11$, $n = 12$; Cary replied to 12 text messages.

$\frac{42}{b} = 6$, $b = 7$; Dani packed 7 lunch boxes in one day.

Accommodation

$a + 2 = 10$; $a = 8$, Amy is 8 years old now.

$\frac{12}{t} = 3$, $t = 4$; 4 tickets are needed to play one game.

$9 - n = 5$, $n = 4$; Cary replied to 4 text messages.

$\frac{15}{b} = 5$, $b = 3$; Dani packed 3 lunch boxes in one day.

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 9a

One-Step Equations
Answers

$4x = 44$ $x = 11$	$37 - y = 18$ $y = 19$
$p + 19 = 41$ $p = 22$	$8 = \frac{n}{7}$ $n = 56$

$9r = 63$ $r = 7$	$s - 11 = 38$ $s = 49$
$27 = 14 + t$ $t = 13$	$\frac{96}{v} = 12$ $v = 8$

$75 = 5u$ $u = 15$	$25 = 49 - w$ $w = 24$
$13 + y = 42$ $y = 29$	$\frac{80}{m} = 16$ $m = 5$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 9b

Two-Step Equations
Answers

$3x + 2 = 32$ $x = 10$	$47 - y = 15 + 7$ $y = 25$
$45 - h = 14$ $h = 31$	$5 = \frac{n}{15}$ $n = 75$

$7a = 42$ $a = 6$	$24 + 39 = 9b$ $b = 7$
$6n = 25 + 11$ $n = 6$	$51 - 21 = c + 18$ $c = 12$

$39 = 7e + 4$ $e = 5$	$g - 13 = 42 \div 6$ $g = 20$
$48 \div d = 4$ $d = 12$	$78 = 13h$ $h = 6$

Name_____ Date_____

Patterning and Algebra
Unit 2 Line Master 9c

Evaluating Expressions
Answers

$200 + 50 \times 9 \div 3$ $= 350$	$(36 + 14) \div 10 - 2$ $= 3$
$50 + 6 \times (11 - 4)$ $= 92$	$(2 + 5) \times (9 - 4)$ $= 35$

$2 + 30 \div 5 \times 3$ $= 20$	$4 + 5 \times 32 - 2$ $= 162$
$2 + 6 \times (4 + 5) \div 3$ $= 20$	$21 + 10 \times 11 \div 5$ $= 43$

$20 + 3 \times 21 \div 7$ $= 29$	$(27 - 11) \div (2 \times 4)$ $= 2$
$15 - 2 \times (17 + 4) \div 3$ $= 1$	$98 + 50 \times 3 \div 25$ $= 104$

Patterning and Algebra

Activity 4 Assessment

The Order of Operations

Variables and Equations			
Evaluates a numerical expression using the order of operations $2 \times (30 + 18) - 3 = 2 \times 48 - 3$ $= 96 - 3$ $= 93$ "I have to do the operation in brackets first, then the multiplication, and then the subtraction."	Writes an algebraic expression to describe an unknown value Subtract five from a number, then multiply by two $(n - 5) \times 2$ "I let n represent the number. I used brackets so 5 would be subtracted first."	Evaluates an algebraic expression using substitution $(n - 5) \times 2$ "To find the value of the expression when n equals 12, I substitute 12 for n." $(n - 5) \times 2 = (12 - 5) \times 2$ $= 7 \times 2$ $= 14$	Solves equations involving one operation using different strategies $23 = e + 15$ $23 - 15 = e + 15 - 15$ $8 = e$ "I used the inverse operation, subtracting 15 from each side."
Observations/Documentation			

Activity 4 Assessment
The Order of Operations

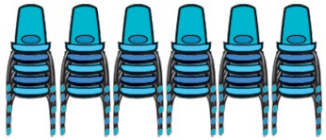
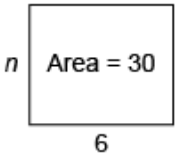
Variables and Equations (cont'd)

Solves equations involving two operations using different strategies	Verifies the solution to an equation	Solves problems using equations involving one or two operations	Flexibly works with equations to solve problems using a variety of strategies
$29 = 3z + 2$ $29 - 2 = 3z + 2 - 2$ $27 = 3z$ $\frac{27}{3} = \frac{3z}{3}$ $9 = z$ "I performed the order of operations in the reverse order to isolate the variable. I subtracted 2 from each side, then divided each side by 3."	$29 = 3z + 2$ "To verify, substitute $z = 9$. Left side = 29 Right side = $3(9) + 2$ $= 27 + 2$ $= 29$ Since the left side equals the right side, my solution is correct."	Kairis sold 16 tickets. That is twice as many tickets as Grace sold. How many tickets did Grace sell? Let t represent the number of tickets Grace sold. $2t = 16$ $\frac{2t}{2} = \frac{16}{2}$ $t = 8$ "So, Grace sold 8 tickets."	At the grocery store, there are 5 lines of people at the checkouts. There are the same number of people in each line. The manager counts to determine the total number of people at the checkouts, including 6 employees (including the manager). They counted 51 people. How many people are in each line? Let n represent the number of people in each line. $5n + 6 = 51$ $5n + 6 - 6 = 51 - 6$ $5n = 45$ $n = 9$ "I know $5 \times 9 = 45$, so $n = 9$. There are 9 people in each line."

Observations/Documentation

Patterning and Algebra

Activity 5 Assessment
Using Variables

Using Variables to Represent a Problem as an Equation			
Interprets word problems/pictures and identifies the unknown part Our class needs to set up rows of 6 chairs for a presentation. There are 30 chairs altogether. How many rows do we need?  "The unknown is the number of rows of 6 chairs needed to make an array of 30 chairs."	Translates word problems into equations using variables, operations, and numbers  "The unknown, n, is the number of rows. I know there are 6 chairs in each row and a total of 30 chairs. So, $6n = 30$."	Describes equivalent relationships using more than one equation (including formulas)  "I know the area of a rectangle is base multiplied by height, which is 30. If the base is 6, then the height must be n. I could write the equation $30 = 6n$ or $30 \div 6 = n$."	Flexibly writes algebraic equations using a variety of strategies $6n = 30$ $30 \div n = 6$ "I can use the inverse operation to rewrite the equation."
Observations/Documentation			

Patterning and Algebra

Activity 6 Assessment

Solving Addition and Subtraction Equations

Variables and Equations			
Evaluates a numerical expression using the order of operations $2 \times (30 + 18) - 3 = 2 \times 48 - 3$ $= 96 - 3$ $= 93$ "I have to do the operation in brackets first, then the multiplication, and then the subtraction."	Writes an algebraic expression to describe an unknown value Subtract five from a number, then multiply by two $(n - 5) \times 2$ "I let n represent the number. I used brackets so 5 would be subtracted first."	Evaluates an algebraic expression using substitution $(n - 5) \times 2$ "To find the value of the expression when n equals 12, I substitute 12 for n." $(n - 5) \times 2 = (12 - 5) \times 2$ $= 7 \times 2$ $= 14$	Solves equations involving one operation using different strategies $23 = e + 15$ $23 - 15 = e + 15 - 15$ $8 = e$ "I used the inverse operation, subtracting 15 from each side."
Observations/Documentation			

Activity 6 Assessment

Solving Addition and Subtraction Equations

Variables and Equations (cont'd)

Solves equations involving two operations using different strategies	Verifies the solution to an equation	Solves problems using equations involving one or two operations	Flexibly works with equations to solve problems using a variety of strategies
$29 = 3z + 2$ $29 - 2 = 3z + 2 - 2$ $27 = 3z$ $\frac{27}{3} = \frac{3z}{3}$ $9 = z$ "I performed the order of operations in the reverse order to isolate the variable. I subtracted 2 from each side, then divided each side by 3."	$29 = 3z + 2$ "To verify, substitute $z = 9$. Left side = 29 Right side = $3(9) + 2$ $= 27 + 2$ $= 29$ Since the left side equals the right side, my solution is correct."	Kairis sold 16 tickets. That is twice as many tickets as Grace sold. How many tickets did Grace sell? Let t represent the number of tickets Grace sold. $2t = 16$ $\frac{2t}{2} = \frac{16}{2}$ $t = 8$ "So, Grace sold 8 tickets."	At the grocery store, there are 5 lines of people at the checkouts. There are the same number of people in each line. The manager counts to determine the total number of people at the checkouts, including 6 employees (including the manager). They counted 51 people. How many people are in each line? Let n represent the number of people in each line. $5n + 6 = 51$ $5n + 6 - 6 = 51 - 6$ $5n = 45$ $n = 9$ "I know $5 \times 9 = 45$, so $n = 9$. There are 9 people in each line."

Observations/Documentation

Patterning and Algebra

Activity 7 Assessment

Solving Multiplication and Division Equations

Variables and Equations			
Evaluates a numerical expression using the order of operations $2 \times (30 + 18) - 3 = 2 \times 48 - 3$ $= 96 - 3$ $= 93$ "I have to do the operation in brackets first, then the multiplication, and then the subtraction."	Writes an algebraic expression to describe an unknown value Subtract five from a number, then multiply by two $(n - 5) \times 2$ "I let n represent the number. I used brackets so 5 would be subtracted first."	Evaluates an algebraic expression using substitution $(n - 5) \times 2$ "To find the value of the expression when n equals 12, I substitute 12 for n." $(n - 5) \times 2 = (12 - 5) \times 2$ $= 7 \times 2$ $= 14$	Solves equations involving one operation using different strategies $23 = e + 15$ $23 - 15 = e + 15 - 15$ $8 = e$ "I used the inverse operation, subtracting 15 from each side."
Observations/Documentation			

Activity 7 Assessment

Solving Multiplication and Division Equations

Variables and Equations (cont'd)

Solves equations involving two operations using different strategies	Verifies the solution to an equation	Solves problems using equations involving one or two operations	Flexibly works with equations to solve problems using a variety of strategies
$29 = 3z + 2$ $29 - 2 = 3z + 2 - 2$ $27 = 3z$ $\frac{27}{3} = \frac{3z}{3}$ $9 = z$ "I performed the order of operations in the reverse order to isolate the variable. I subtracted 2 from each side, then divided each side by 3."	$29 = 3z + 2$ "To verify, substitute $z = 9$. Left side = 29 Right side = $3(9) + 2$ $= 27 + 2$ $= 29$ Since the left side equals the right side, my solution is correct."	Kairis sold 16 tickets. That is twice as many tickets as Grace sold. How many tickets did Grace sell? Let t represent the number of tickets Grace sold. $2t = 16$ $\frac{2t}{2} = \frac{16}{2}$ $t = 8$ "So, Grace sold 8 tickets."	At the grocery store, there are 5 lines of people at the checkouts. There are the same number of people in each line. The manager counts to determine the total number of people at the checkouts, including 6 employees (including the manager). They counted 51 people. How many people are in each line? Let n represent the number of people in each line. $5n + 6 = 51$ $5n + 6 - 6 = 51 - 6$ $5n = 45$ $n = 9$ "I know $5 \times 9 = 45$, so $n = 9$. There are 9 people in each line."
Observations/Documentation			

Patterning and Algebra

Activity 8 Assessment

Using Equations to Solve Problems

Variables and Equations			
Evaluates a numerical expression using the order of operations $2 \times (30 + 18) - 3 = 2 \times 48 - 3$ $= 96 - 3$ $= 93$ "I have to do the operation in brackets first, then the multiplication, and then the subtraction."	Writes an algebraic expression to describe an unknown value Subtract five from a number, then multiply by two $(n - 5) \times 2$ "I let n represent the number. I used brackets so 5 would be subtracted first."	Evaluates an algebraic expression using substitution $(n - 5) \times 2$ "To find the value of the expression when n equals 12, I substitute 12 for n." $(n - 5) \times 2 = (12 - 5) \times 2$ $= 7 \times 2$ $= 14$	Solves equations involving one operation using different strategies $23 = e + 15$ $23 - 15 = e + 15 - 15$ $8 = e$ "I used the inverse operation, subtracting 15 from each side."
Observations/Documentation			

Activity 8 Assessment
Using Equations to Solve Problems

Variables and Equations (cont'd)

Solves equations involving two operations using different strategies	Verifies the solution to an equation	Solves problems using equations involving one or two operations	Flexibly works with equations to solve problems using a variety of strategies
$29 = 3z + 2$ $29 - 2 = 3z + 2 - 2$ $27 = 3z$ $\frac{27}{3} = \frac{3z}{3}$ $9 = z$ "I performed the order of operations in the reverse order to isolate the variable. I subtracted 2 from each side, then divided each side by 3."	$29 = 3z + 2$ "To verify, substitute $z = 9$. Left side = 29 Right side = $3(9) + 2$ $= 27 + 2$ $= 29$ Since the left side equals the right side, my solution is correct."	Kairis sold 16 tickets. That is twice as many tickets as Grace sold. How many tickets did Grace sell? Let t represent the number of tickets Grace sold. $2t = 16$ $\frac{2t}{2} = \frac{16}{2}$ $t = 8$ "So, Grace sold 8 tickets."	At the grocery store, there are 5 lines of people at the checkouts. There are the same number of people in each line. The manager counts to determine the total number of people at the checkouts, including 6 employees (including the manager). They counted 51 people. How many people are in each line? Let n represent the number of people in each line. $5n + 6 = 51$ $5n + 6 - 6 = 51 - 6$ $5n = 45$ $n = 9$ "I know $5 \times 9 = 45$, so $n = 9$. There are 9 people in each line."

Observations/Documentation

Patterning and Algebra

Activity 9 Assessment

Using Equations with Two Operations to Solve Problems

Variables and Equations			
Evaluates a numerical expression using the order of operations $2 \times (30 + 18) - 3 = 2 \times 48 - 3$ $= 96 - 3$ $= 93$ "I have to do the operation in brackets first, then the multiplication, and then the subtraction."	Writes an algebraic expression to describe an unknown value Subtract five from a number, then multiply by two $(n - 5) \times 2$ "I let n represent the number. I used brackets so 5 would be subtracted first."	Evaluates an algebraic expression using substitution $(n - 5) \times 2$ "To find the value of the expression when n equals 12, I substitute 12 for n." $(n - 5) \times 2 = (12 - 5) \times 2$ $= 7 \times 2$ $= 14$	Solves equations involving one operation using different strategies $23 = e + 15$ $23 - 15 = e + 15 - 15$ $8 = e$ "I used the inverse operation, subtracting 15 from each side."
Observations/Documentation			

Activity 9 Assessment

Using Equations with Two Operations to Solve Problems

Variables and Equations (cont'd)

Solves equations involving two operations using different strategies	Verifies the solution to an equation	Solves problems using equations involving one or two operations	Flexibly works with equations to solve problems using a variety of strategies
$29 = 3z + 2$ $29 - 2 = 3z + 2 - 2$ $27 = 3z$ $\frac{27}{3} = \frac{3z}{3}$ $9 = z$ "I performed the order of operations in the reverse order to isolate the variable. I subtracted 2 from each side, then divided each side by 3."	$29 = 3z + 2$ "To verify, substitute $z = 9$. Left side = 29 Right side = $3(9) + 2$ $= 27 + 2$ $= 29$ Since the left side equals the right side, my solution is correct."	Kairis sold 16 tickets. That is twice as many tickets as Grace sold. How many tickets did Grace sell? Let t represent the number of tickets Grace sold. $2t = 16$ $\frac{2t}{2} = \frac{16}{2}$ $t = 8$ "So, Grace sold 8 tickets."	At the grocery store, there are 5 lines of people at the checkouts. There are the same number of people in each line. The manager counts to determine the total number of people at the checkouts, including 6 employees (including the manager). They counted 51 people. How many people are in each line? Let n represent the number of people in each line. $5n + 6 = 51$ $5n + 6 - 6 = 51 - 6$ $5n = 45$ $n = 9$ "I know $5 \times 9 = 45$, so $n = 9$. There are 9 people in each line."
Observations/Documentation			

Patterning and Algebra

Activity 10 Assessment

Consolidating Variables and Equations

Variables and Equations			
Evaluates a numerical expression using the order of operations $2 \times (30 + 18) - 3 = 2 \times 48 - 3$ $= 96 - 3$ $= 93$ "I have to do the operation in brackets first, then the multiplication, and then the subtraction."	Writes an algebraic expression to describe an unknown value Subtract five from a number, then multiply by two $(n - 5) \times 2$ "I let n represent the number. I used brackets so 5 would be subtracted first."	Evaluates an algebraic expression using substitution $(n - 5) \times 2$ "To find the value of the expression when n equals 12, I substitute 12 for n." $(n - 5) \times 2 = (12 - 5) \times 2$ $= 7 \times 2$ $= 14$	Solves equations involving one operation using different strategies $23 = e + 15$ $23 - 15 = e + 15 - 15$ $8 = e$ "I used the inverse operation, subtracting 15 from each side."
Observations/Documentation			

Activity 10 Assessment
Consolidating Variables and Equations

Variables and Equations (cont'd)

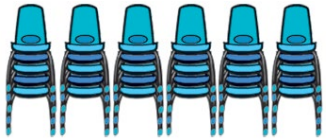
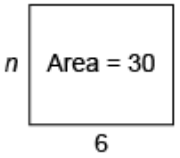
Solves equations involving two operations using different strategies	Verifies the solution to an equation	Solves problems using equations involving one or two operations	Flexibly works with equations to solve problems using a variety of strategies
$29 = 3z + 2$ $29 - 2 = 3z + 2 - 2$ $27 = 3z$ $\frac{27}{3} = \frac{3z}{3}$ $9 = z$ "I performed the order of operations in the reverse order to isolate the variable. I subtracted 2 from each side, then divided each side by 3."	$29 = 3z + 2$ "To verify, substitute $z = 9$. Left side = 29 Right side = $3(9) + 2$ $= 27 + 2$ $= 29$ Since the left side equals the right side, my solution is correct."	Kairis sold 16 tickets. That is twice as many tickets as Grace sold. How many tickets did Grace sell? Let t represent the number of tickets Grace sold. $2t = 16$ $\frac{2t}{2} = \frac{16}{2}$ $t = 8$ "So, Grace sold 8 tickets."	At the grocery store, there are 5 lines of people at the checkouts. There are the same number of people in each line. The manager counts to determine the total number of people at the checkouts, including 6 employees (including the manager). They counted 51 people. How many people are in each line? Let n represent the number of people in each line. $5n + 6 = 51$ $5n + 6 - 6 = 51 - 6$ $5n = 45$ $n = 9$ "I know $5 \times 9 = 45$, so $n = 9$. There are 9 people in each line."

Observations/Documentation

Patterning and Algebra

Activity 10 Assessment

Consolidating Variables and Equations

Using Variables to Represent a Problem as an Equation			
Interprets word problems/pictures and identifies the unknown part Our class needs to set up rows of 6 chairs for a presentation. There are 30 chairs altogether. How many rows do we need?  "The unknown is the number of rows of 6 chairs needed to make an array of 30 chairs."	Translates word problems into equations using variables, operations, and numbers  "The unknown, n, is the number of rows. I know there are 6 chairs in each row and a total of 30 chairs. So, $6n = 30$."	Describes equivalent relationships using more than one equation (including formulas)  "I know the area of a rectangle is base multiplied by height, which is 30. If the base is 6, then the height must be n. I could write the equation $30 = 6n$ or $30 \div 6 = n$."	Flexibly writes algebraic equations using a variety of strategies $6n = 30$ $30 \div n = 6$ "I can use the inverse operation to rewrite the equation."
Observations/Documentation			

Name_____ Date_____

Measurement
Unit 1 Line Master 1a

Perimeter and Area

Recording Sheets

My perimeter is: _____

Width (m)	Length (m)	Area (m^2)

Name_____ Date_____

Measurement
Unit 1 Line Master 1b

Perimeter and Area (cont'd)

Recording Sheets

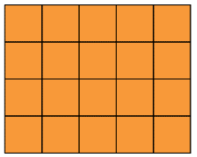
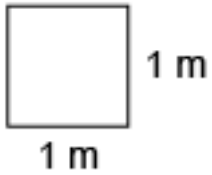
I have _____ knitted squares.

Width (number of squares)	Length (number of squares)	Perimeter (number of squares)	Perimeter (cm)

Measurement

Activity 1 Assessment

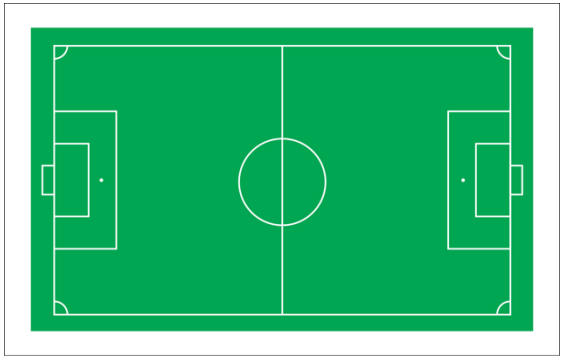
Estimating and Measuring Area in Square Metres

Relationships Among Standard Units of 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."	Relates a centimetre/metre to a square centimetre/metre  "A square with side length 1 m has an area of 1 m^2."	Expresses the relationship between square centimetres, square metres, and square kilometres "1 m = 100 cm, so 1 m^2 = 100 cm × 100 cm = 10 000 cm^2 1 km = 1000 m, so 1 km^2 = 1000 m × 1000 m = 1 000 000 m^2"
Observations/Documentation		

Measurement

Activity 1 Assessment

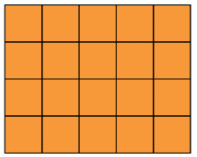
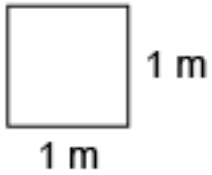
Estimating and Measuring Area in Square Metres

Relationships Among Standard Units of Area (cont'd)		
Identifies which metric unit should be used to measure an area The Classroom Floor "I could use a metre stick to determine the length and width of the classroom. So, I would use a square metre to measure the area of the floor."	Uses benchmarks to estimate area using metric units, then measures to check (square centimetre, square metre) The Classroom Floor "I visualize covering the classroom floor with about 50 tabletops, so I estimate its area to be about 50 m^2. When I measured to check, the classroom was 8 m long and 6 m wide. So, the actual area is 8 m × 6 m = 48 m^2. My estimate was close."	Flexibly chooses an appropriate metric unit to estimate and measure area and explains reasoning  "I'd estimate and measure the area of the soccer field in square metres. I could use square centimetres, but the number would be so large that it would be difficult to relate to."
Observations/Documentation		

Measurement

Activity 2 Assessment

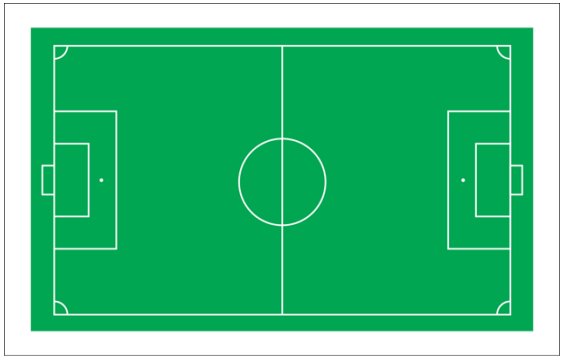
Exploring the Relationships among Metric Units of Area

Relationships Among Standard Units of 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."	Relates a centimetre/metre to a square centimetre/metre  "A square with side length 1 m has an area of 1 m^2."	Expresses the relationship between square centimetres, square metres, and square kilometres "1 m = 100 cm, so 1 m^2 = 100 cm × 100 cm = 10 000 cm^2 1 km = 1000 m, so 1 km^2 = 1000 m × 1000 m = 1 000 000 m^2"
Observations/Documentation		

Measurement

Activity 2 Assessment

Exploring the Relationships among Metric Units of Area

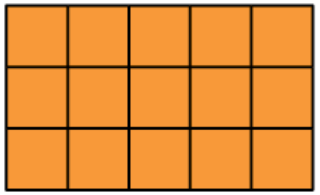
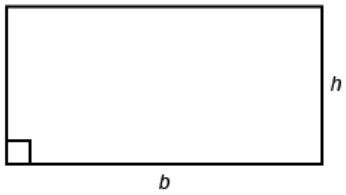
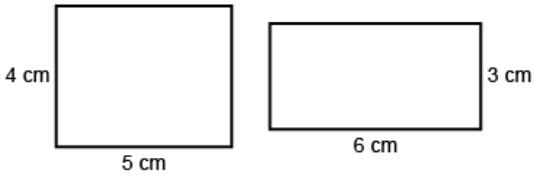
Relationships Among Standard Units of Area (cont'd)		
Identifies which metric unit should be used to measure an area The Classroom Floor "I could use a metre stick to determine the length and width of the classroom. So, I would use a square metre to measure the area of the floor."	Uses benchmarks to estimate area using metric units, then measures to check (square centimetre, square metre) The Classroom Floor "I visualize covering the classroom floor with about 50 tabletops, so I estimate its area to be about 50 m^2. When I measured to check, the classroom was 8 m long and 6 m wide. So, the actual area is 8 m × 6 m = 48 m^2. My estimate was close."	Flexibly chooses an appropriate metric unit to estimate and measure area and explains reasoning  "I'd estimate and measure the area of the soccer field in square metres. I could use square centimetres, but the number would be so large that it would be difficult to relate to."
Observations/Documentation		

Measurement

Activity 3 Assessment

Relating Perimeter and Area of Rectangles

Measuring Area and Perimeter of Rectangles

Recognizes that the perimeter of a rectangle is the distance around and area is the number of tiles that cover it  "Perimeter of rectangle: 3 + 5 + 3 + 5 = 16, 16 units; Area: 3 × 5 = 15, 15 square units."	Uses algebraic formulas to determine the perimeter and area of a rectangle  "To determine the perimeter of a rectangle, I use the formula $P = 2b + 2h$ and to determine the area, I use the formula $A = b \times h$. For a rectangle with b = 6 m and h = 3 m: Perimeter: 2 × 6 m + 2 × 3 m = 18 m Area: 6 m × 3 m = 18 m^2."	Compares the perimeters and areas of rectangles  "Both rectangles have a perimeter of 18 cm: 2 × 4 + 2 × 5 = 18; 2 × 6 + 2 × 3 = 18. The rectangles have different areas: 4 cm × 5 cm = 20 cm^2 and 6 cm × 3 cm = 18 cm^2.""
Observations/Documentation		

Measurement

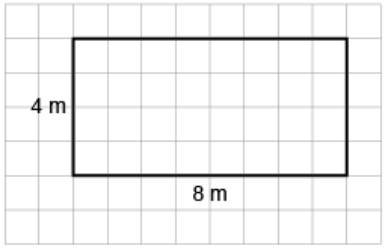
Activity 3 Assessment

Relating Perimeter and Area of Rectangles

Measuring Area and Perimeter of Rectangles (cont'd)

Constructs a rectangle with given perimeter/area and explains strategy used

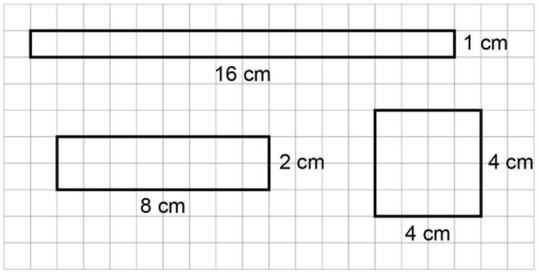
Perimeter = 24 m



"To construct a rectangle with perimeter 24 m, the sum of the base and height needs to be 24 m ÷ 2 = 12 m. I chose 8 m and 4 m. To determine the area, I multiplied the base by the height: 8 m × 4 m = 32 m^2."

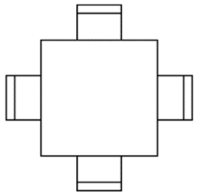
Constructs different rectangles for a given area and describes the rectangle with the least perimeter

Area = 16 cm^2



"The rectangle with the least perimeter is a square."

Flexibly solves problems involving a given area and/or perimeter in a variety of contexts.



A square table can seat 1 student on each side. 24 tables are pushed together to make 1 large rectangular table. What is the greatest number of students who could be seated?

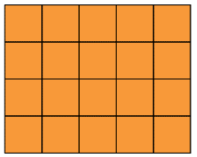
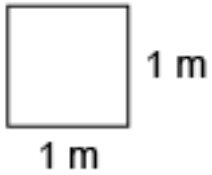
"For an area of 24 square units, the length and width can be: 1 and 24; 2 and 12; 3 and 8; 4 and 6. For the greatest number of students, the perimeter has to be the greatest, which means its width is the least, 1 unit, and the length is 24 units. The perimeter is 50 units, so 50 students can be seated."

Observations/Documentation

Measurement

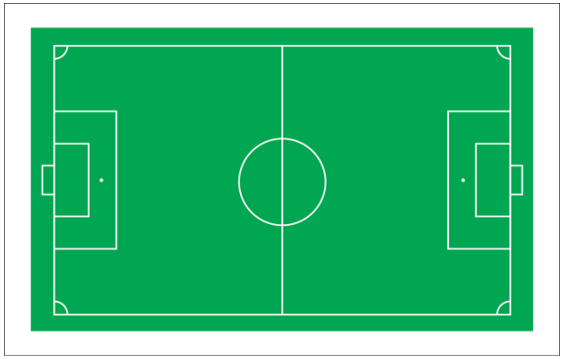
Activity 4 Assessment

Consolidating Area and Perimeter

Relationships Among Standard Units of 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."	Relates a centimetre/metre to a square centimetre/metre  "A square with side length 1 m has an area of 1 m^2."	Expresses the relationship between square centimetres, square metres, and square kilometres "1 m = 100 cm, so 1 m^2 = 100 cm × 100 cm = 10 000 cm^2 1 km = 1000 m, so 1 km^2 = 1000 m × 1000 m = 1 000 000 m^2"
Observations/Documentation		

Measurement

Activity 4 Assessment
Consolidating Area and Perimeter

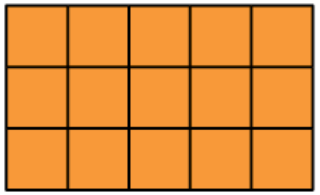
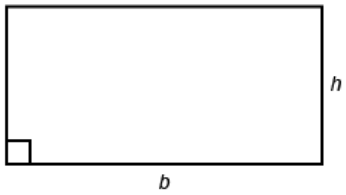
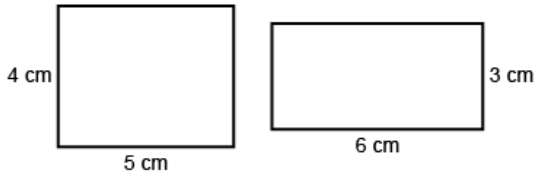
Relationships Among Standard Units of Area (cont'd)		
Identifies which metric unit should be used to measure an area The Classroom Floor "I could use a metre stick to determine the length and width of the classroom. So, I would use a square metre to measure the area of the floor."	Uses benchmarks to estimate area using metric units, then measures to check (square centimetre, square metre) The Classroom Floor "I visualize covering the classroom floor with about 50 tabletops, so I estimate its area to be about 50 m^2. When I measured to check, the classroom was 8 m long and 6 m wide. So, the actual area is 8 m × 6 m = 48 m^2. My estimate was close."	Flexibly chooses an appropriate metric unit to estimate and measure area and explains reasoning  "I'd estimate and measure the area of the soccer field in square metres. I could use square centimetres, but the number would be so large that it would be difficult to relate to."
Observations/Documentation		

Measurement

Activity 4 Assessment

Consolidating Area and Perimeter

Measuring Area and Perimeter of Rectangles

Recognizes that the perimeter of a rectangle is the distance around and area is the number of tiles that cover it  "Perimeter of rectangle: 3 + 5 + 3 + 5 = 16, 16 units; Area: 3 × 5 = 15, 15 square units."	Uses algebraic formulas to determine the perimeter and area of a rectangle  "To determine the perimeter of a rectangle, I use the formula $P = 2b + 2h$ and to determine the area, I use the formula $A = b \times h$. For a rectangle with b = 6 m and h = 3 m: Perimeter: 2 × 6 m + 2 × 3 m = 18 m Area: 6 m × 3 m = 18 m^2."	Compares the perimeters and areas of rectangles  "Both rectangles have a perimeter of 18 cm: 2 × 4 + 2 × 5 = 18; 2 × 6 + 2 × 3 = 18. The rectangles have different areas: 4 cm × 5 cm = 20 cm^2 and 6 cm × 3 cm = 18 cm^2.""
Observations/Documentation		

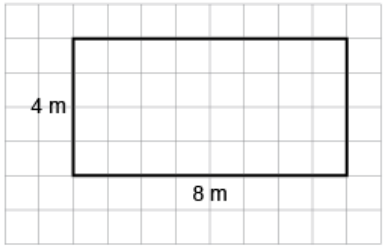
Measurement

Activity 4 Assessment
Consolidating Area and Perimeter

Measuring Area and Perimeter of Rectangles (cont'd)

Constructs a rectangle with given perimeter/area and explains strategy used

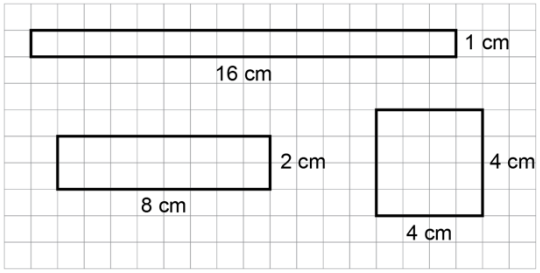
Perimeter = 24 m



"To construct a rectangle with perimeter 24 m, the sum of the base and height needs to be 24 m ÷ 2 = 12 m. I chose 8 m and 4 m. To determine the area, I multiplied the base by the height: 8 m × 4 m = 32 m^2."

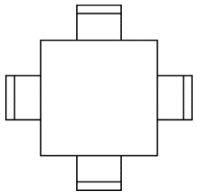
Constructs different rectangles for a given area and describes the rectangle with the least perimeter

Area = 16 cm^2



"The rectangle with the least perimeter is a square."

Flexibly solves problems involving a given area and/or perimeter in a variety of contexts.



A square table can seat 1 student on each side. 24 tables are pushed together to make 1 large rectangular table. What is the greatest number of students who could be seated?

"For an area of 24 square units, the length and width can be: 1 and 24; 2 and 12; 3 and 8; 4 and 6. For the greatest number of students, the perimeter has to be the greatest, which means its width is the least, 1 unit, and the length is 24 units. The perimeter is 50 units, so 50 students can be seated."

Observations/Documentation

Name_____ Date_____

Geometry
Unit 1 Line Master 1a

Symmetry in First Nations Regalia

First Nations Regalia: The Story

Since time immemorial, First Nations have and continue to have a deep-rooted connection to the natural world, which is evident in regalia designs. Material and symbols from the natural world are included in the designs. They might include inspirations and elements from water, land, and sky. For example, reflections of plants and medicines, flowers, sky (sun, moon, stars), water, and animals and their tracks might be found in some designs.

Symmetry in a design reflects living in balance and harmony with oneself, others, and the natural world. Each person's regalia tells a unique story and there is significance and meaning embedded in the colours, symbols, shapes, and designs.

Traditionally, shells, paints, bones, talons, animal teeth, bark, plants, flowers, and quillwork were used to create designs on clothing made from plant and tree fibers and animal hides. Today, regalia and their designs may be created from traditional natural materials, but they may also include silk or synthetic ribbon, fabrics, canvas, plastic or glass beads, and metal.

Designs are unique to each person and family and vary from nation to nation, community to community, and family to family. Designs and colour choices may come from the passing down of symbols within family and community, dreams, reflections of the natural world, and favourite things. Regalia designs tell a unique and personal story. The design and style of regalia are significant to the style of powwow dance.

Name_____ Date_____

Geometry
Unit 1 Line Master 1b

Symmetry in First Nations Regalia (cont'd)

Music and dance have always been a part of ceremony within First Nations cultural ways. Various styles of powwow dance and regalia designs have emerged over time to become what they are today. Each style of powwow dance has a purpose and the regalia worn is distinct to each style of dance.

Traditionally, music and dance were done for healing, ceremony, and celebration. Contemporary powwow dance is often competitive, although roots of healing, ceremony, and celebration continue within both contemporary and traditional powwows.

Some dance styles include traditional, fancy, and jingle. Capes can be found in most women's powwow dance regalia. Copying regalia designs and powwow dances does not honour First Nations deep-rooted cultural connection to the regalia and dance. However, some powwows feature an 'Intertribal' dance where all are welcome to respectfully participate in that round of the powwow. It would be best to inquire of powwow organizers as to whether they have that category of dance at their powwow and what the requirements are to respectfully participate.

Name_____ Date_____

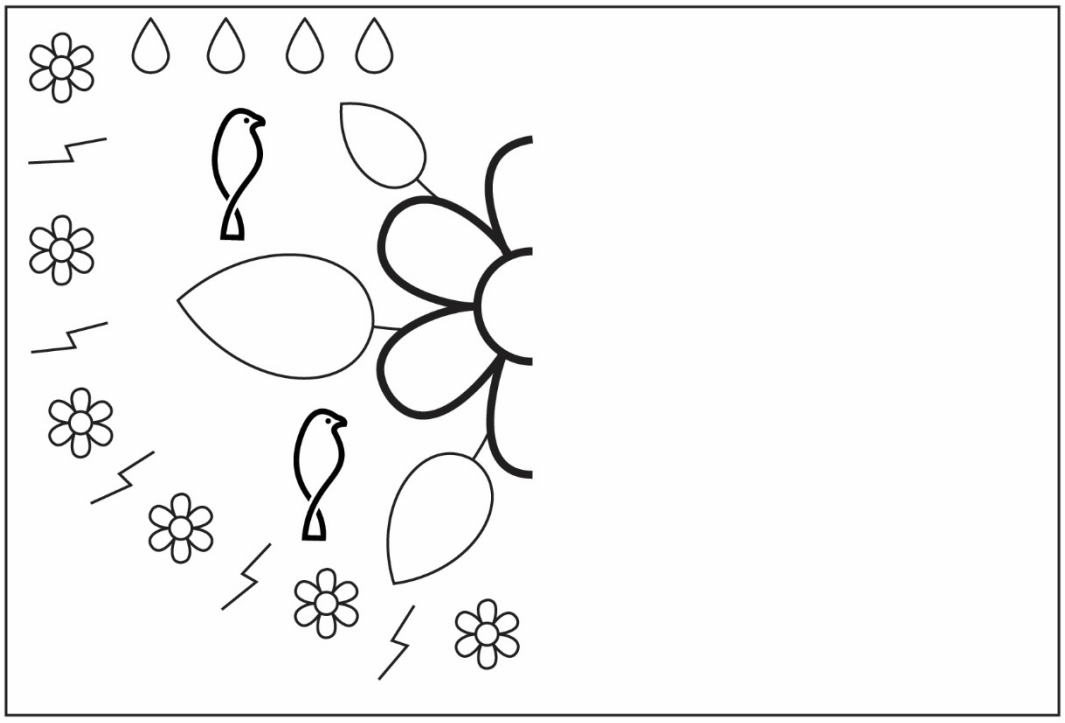
Geometry
Unit 1 Line Master 1c

Symmetry in First Nations Regalia (cont'd)

Stories Through Symmetry

1. What symmetrical designs can be found within First Nations regalia?

2. Complete this symmetrical design, then add colour.



Name_____ Date_____

Geometry
Unit 1 Line Master 1d

Symmetry in First Nations Regalia (cont'd)

Extension

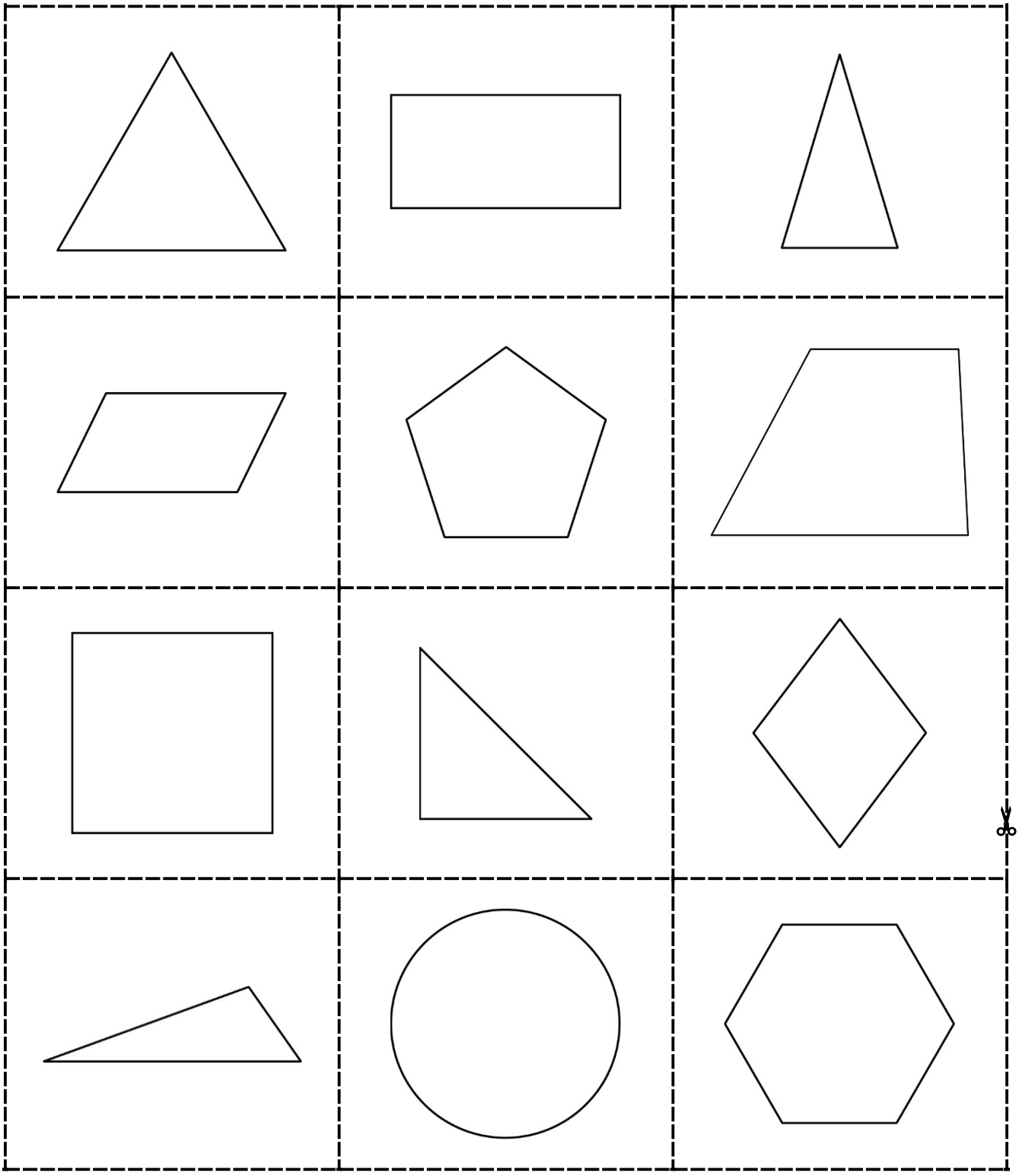
3. Share a story of your choice through a symmetrical design.

4. What is the meaning and significance of your symmetrical design? What story does your design tell?

Name_____ Date_____

Geometry
Unit 1 Line Master 2a

Is It Symmetrical?

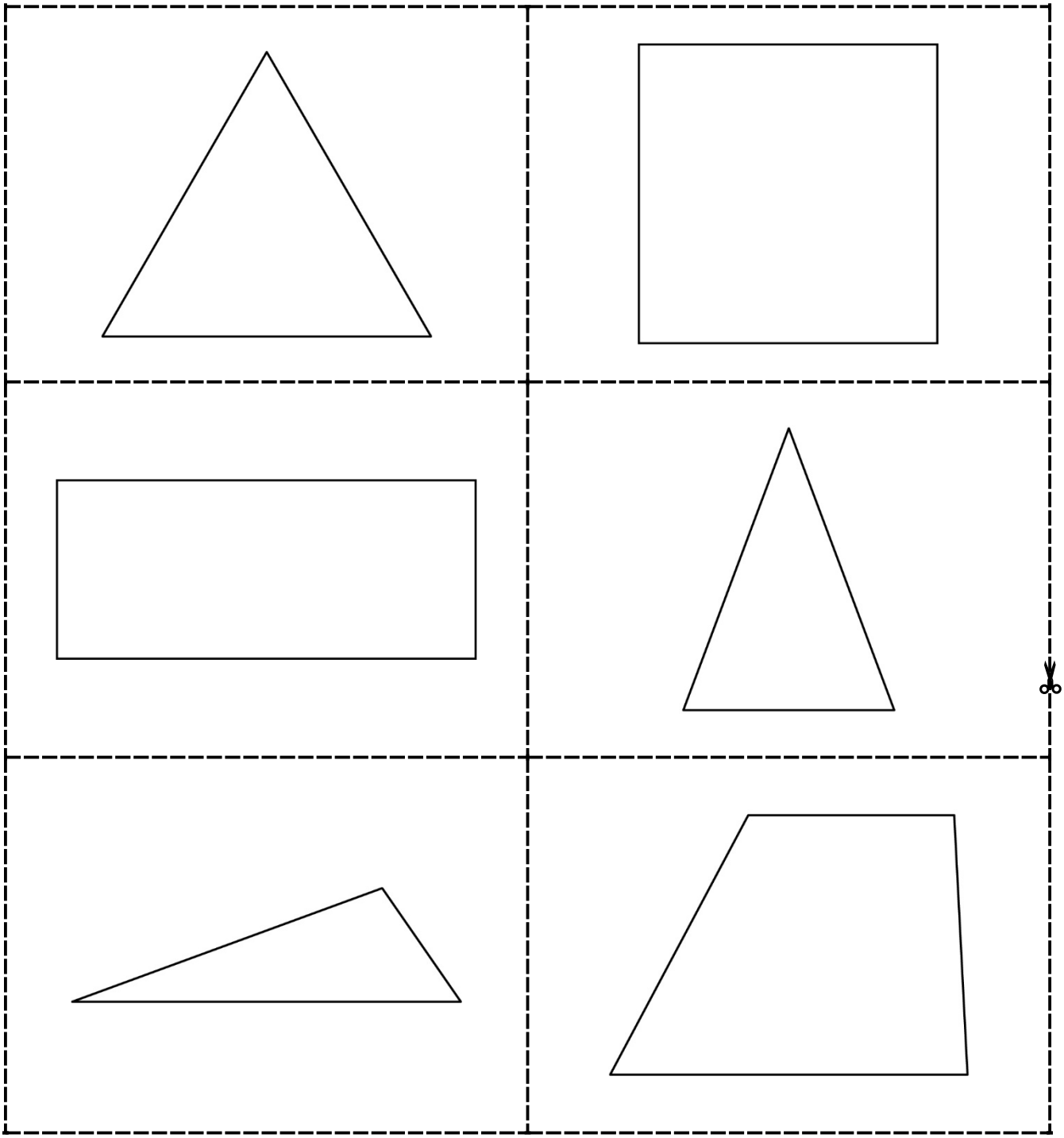


Name_____ Date_____

Geometry
Unit 1 Line Master 2b

Is It Symmetrical?

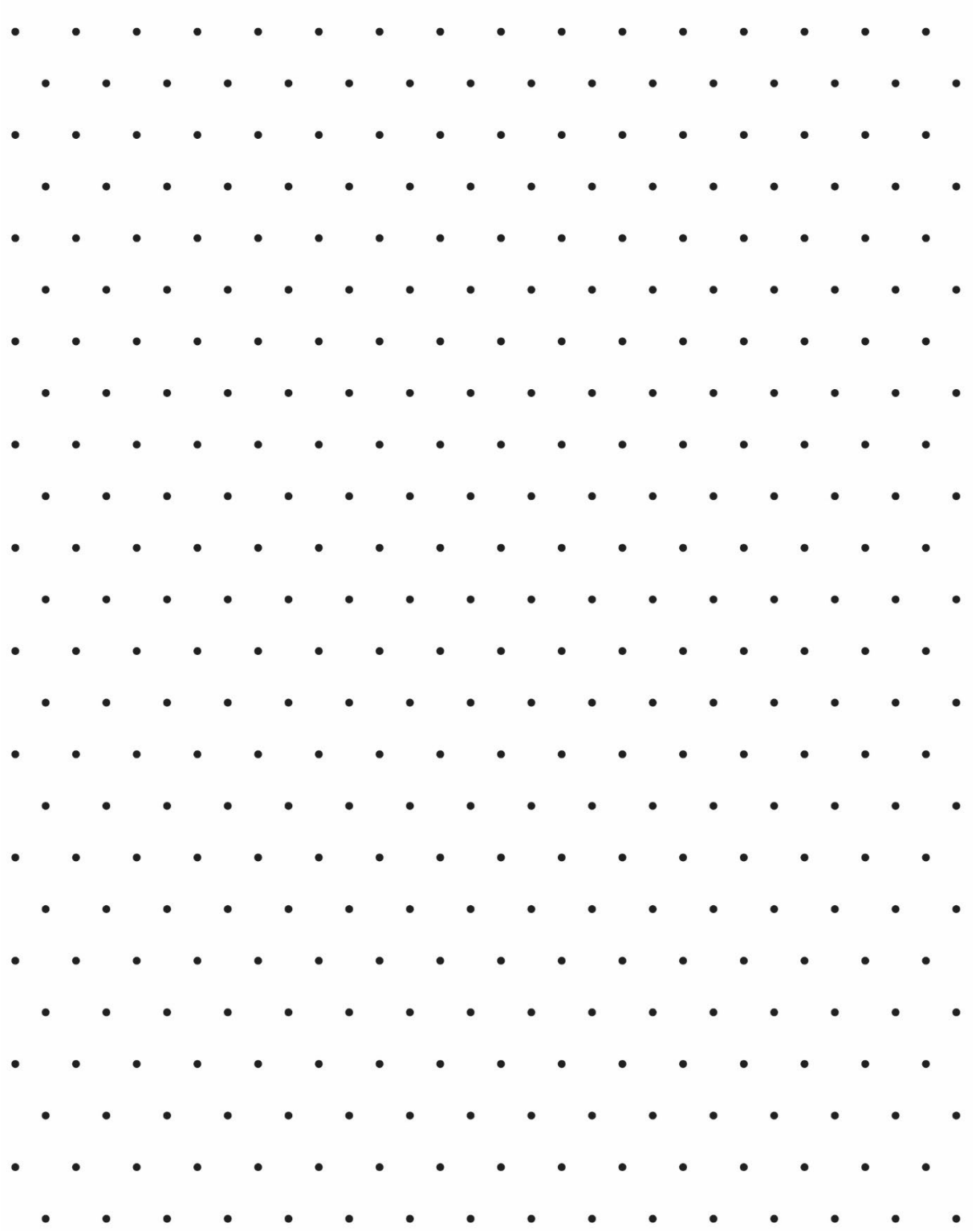
Accommodation



Name _____ Date _____

Geometry
Unit 1 Line Master 3

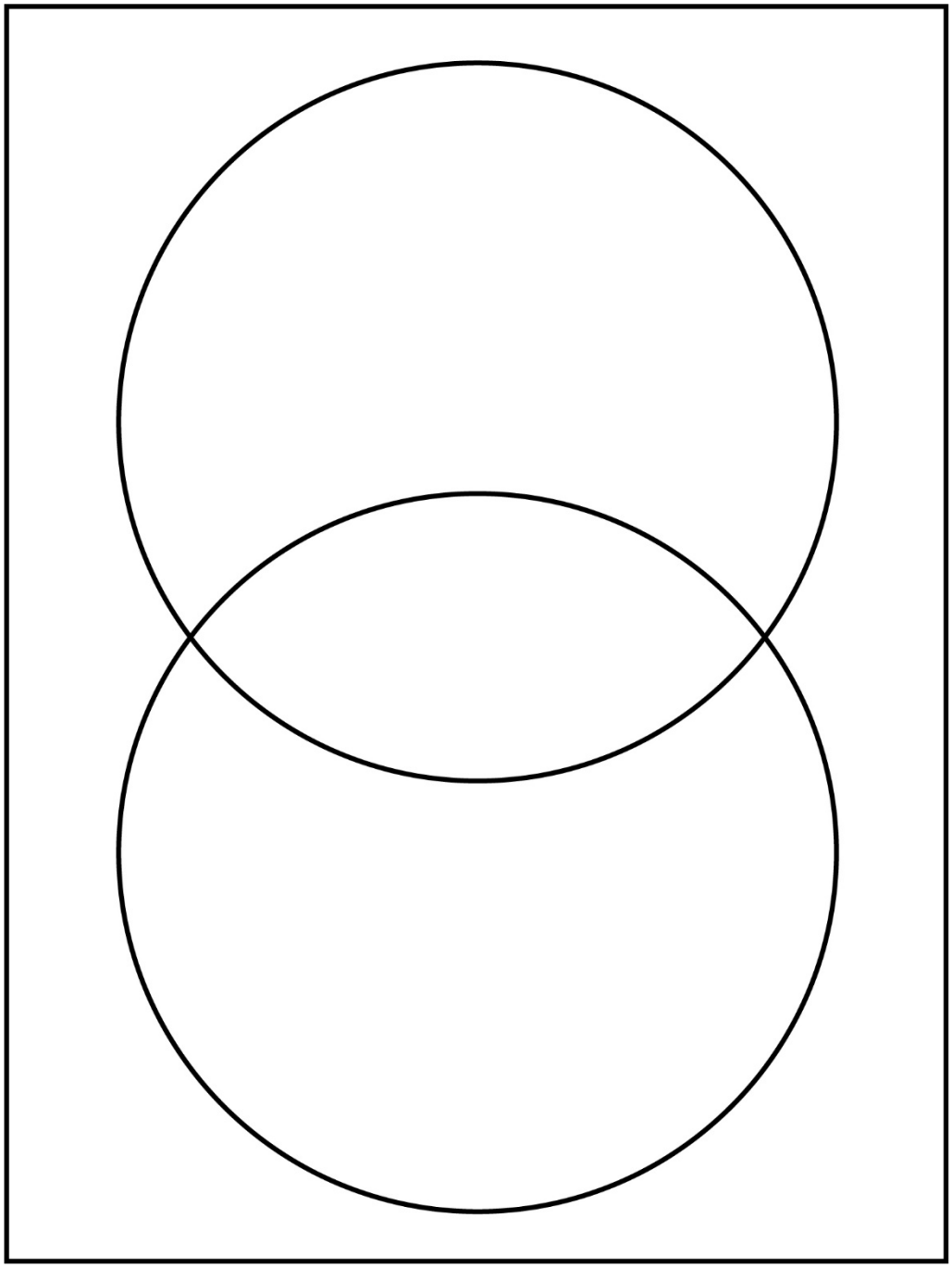
Triangular Dot Paper



Name_____ Date_____

Geometry
Unit 1 Line Master 4

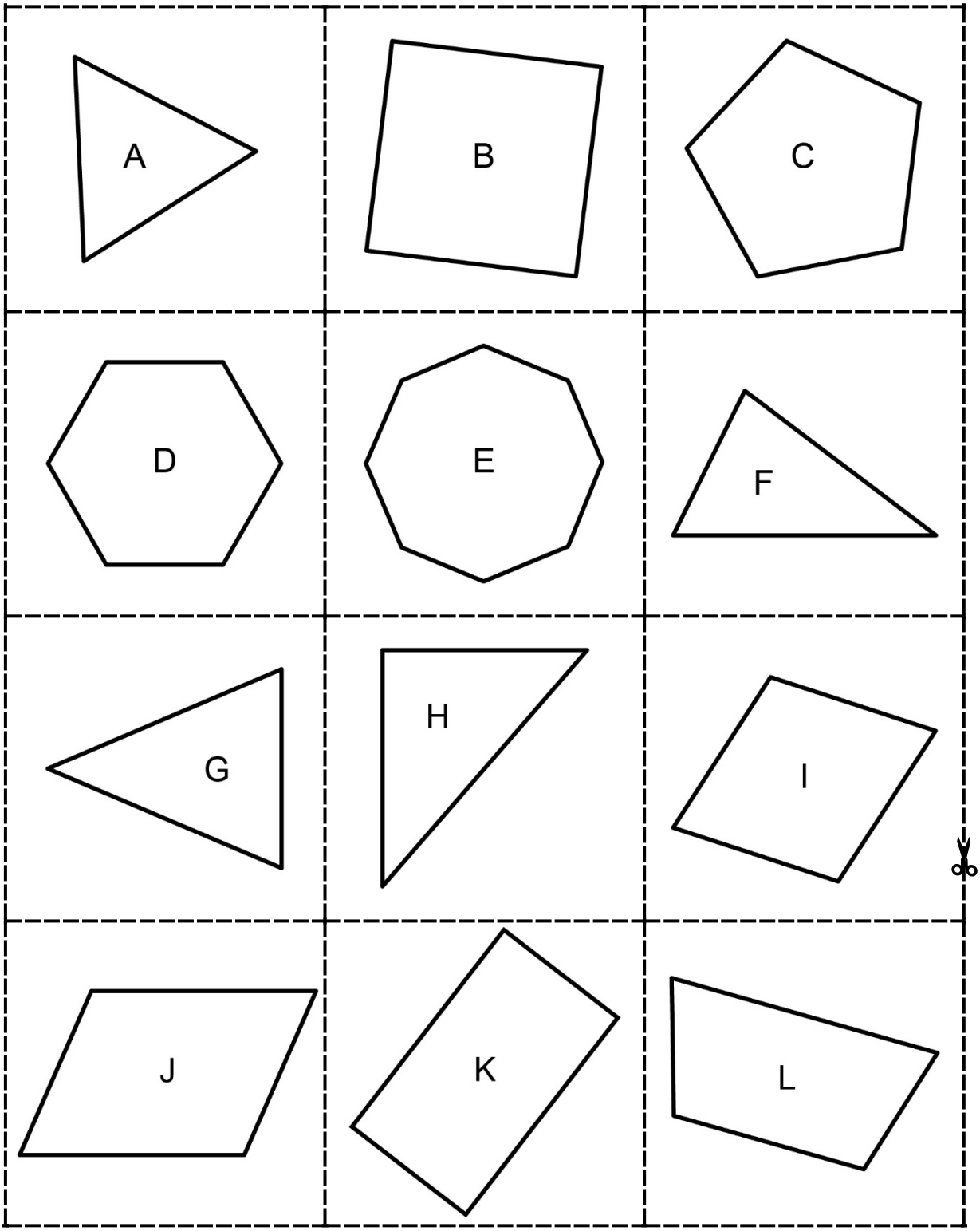
Venn Diagram



Name_____ Date_____

Geometry
Unit 1 Line Master 5a

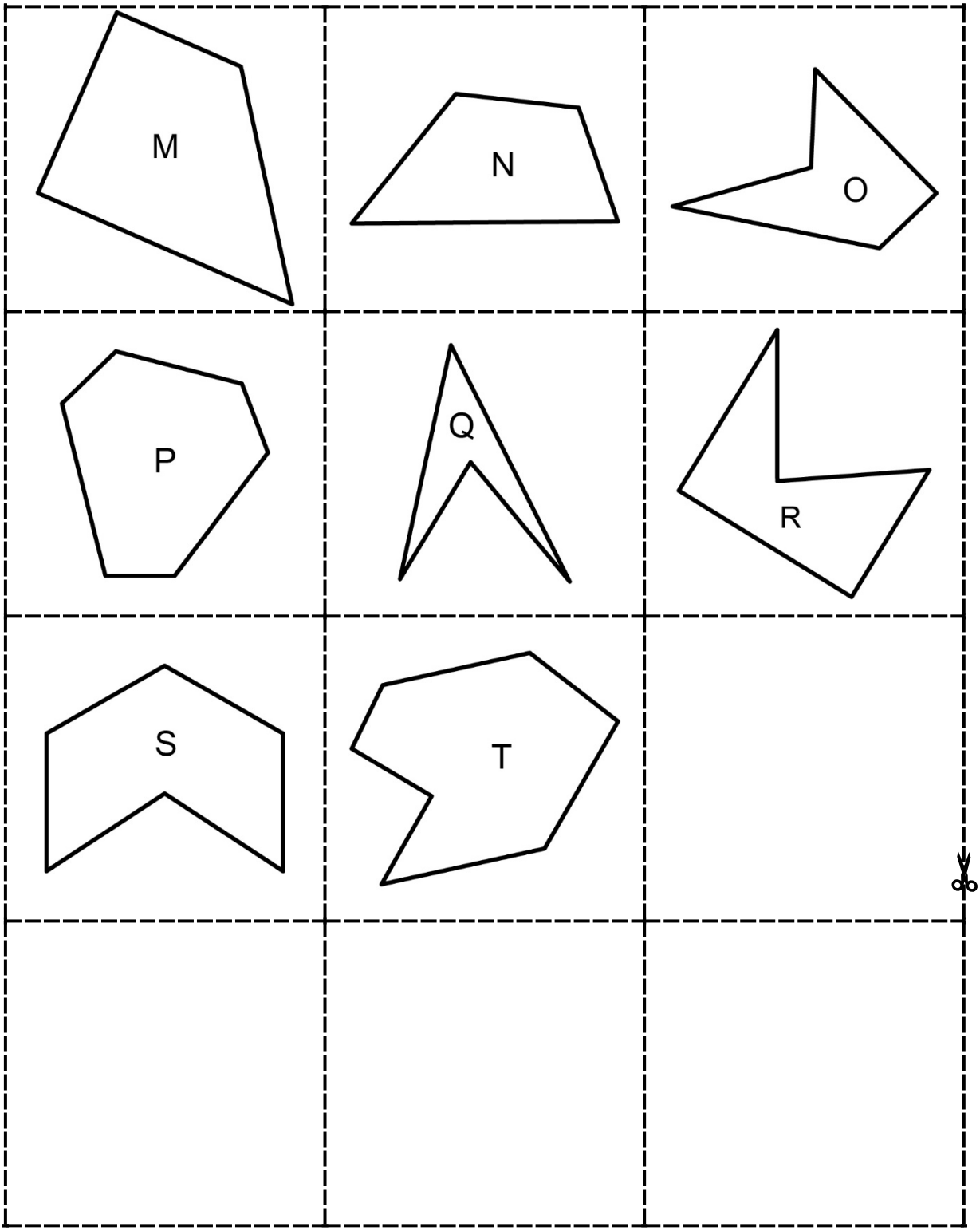
Polygon Cards



Name_____ Date_____

Geometry
Unit 1 Line Master 5b

Polygon Cards (cont'd)



Name_____ Date_____

Geometry
Unit 1 Line Master 6a

Rotation Symmetry and 2-D Shapes

If you can rotate a 2-D shape less than one full turn and it still looks the same, the shape has rotation symmetry.

Let's explore what we mean by this.

All regular polygons have rotation symmetry. The number of times a shape can be rotated within 360°(one full turn) and still look the same is called the *order of rotation symmetry*. When determining if a shape has rotation symmetry, we rotate it about its centre.

Cut out or trace the shapes below and rotate them about their centre to see for yourself.

The order of rotation symmetry of a regular polygon is equal to the number of sides or angles!

A shape has *rotation symmetry* if it coincides with itself in less than one full turn about the centre of the shape.

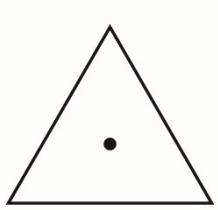
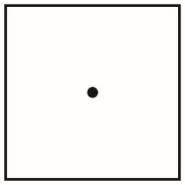
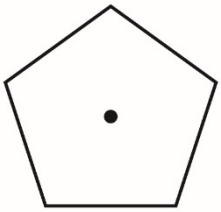
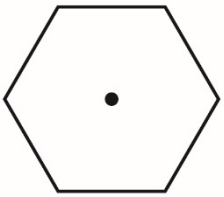
The number of times a shape coincides with itself within a rotation of 360°, including either the beginning or ending position, is its *order of rotation symmetry*.

Name_____ Date_____

Geometry
Unit 1 Line Master 6b

Rotation Symmetry and 2-D Shapes(cont'd)

Fill in the missing numbers.

An equilateral triangle has 3 equal sides and 3 equal angles. In one full turn about its centre, an equilateral triangle coincides with itself (looks the same) 3 times. So, an equilateral triangle has *order of rotation symmetry* 3.	
A square has ___ equal sides and ___ equal angles. In one full turn about its centre, a square coincides with itself (looks the same) ____ times. So, a square has *order of rotation symmetry* ____.	
A regular pentagon has ___ equal sides and ___ equal angles. In one full turn about its centre, a regular pentagon coincides with itself (looks the same) ____ times. So, a regular pentagon has *order of rotation symmetry* ____.	
A regular hexagon has ___ equal sides and ___ equal angles. In one full turn about its centre, a regular hexagon coincides with itself (looks the same) ____ times. So, a regular hexagon has *order of rotation symmetry* ____.	

Name_____ Date_____

Geometry
Unit 1 Line Master 6b

Rotation Symmetry and 2-D Shapes(cont'd)

Repeat for a regular polygon of your choice. A _____ has ___ equal sides and ___ equal angles. In one full turn about its centre, a _____ coincides with itself (looks the same) ____ times. So, a _____ has *order of rotation symmetry* ____.	Draw the polygon here with the centre marked.

On Line Master 7, we will use this information to write code to model rotation symmetry.

Name_____ Date_____

Geometry
Unit 1 Line Master 7a

Coding and Rotation Symmetry

Let's use coding to model rotation symmetry of 2-D shapes.

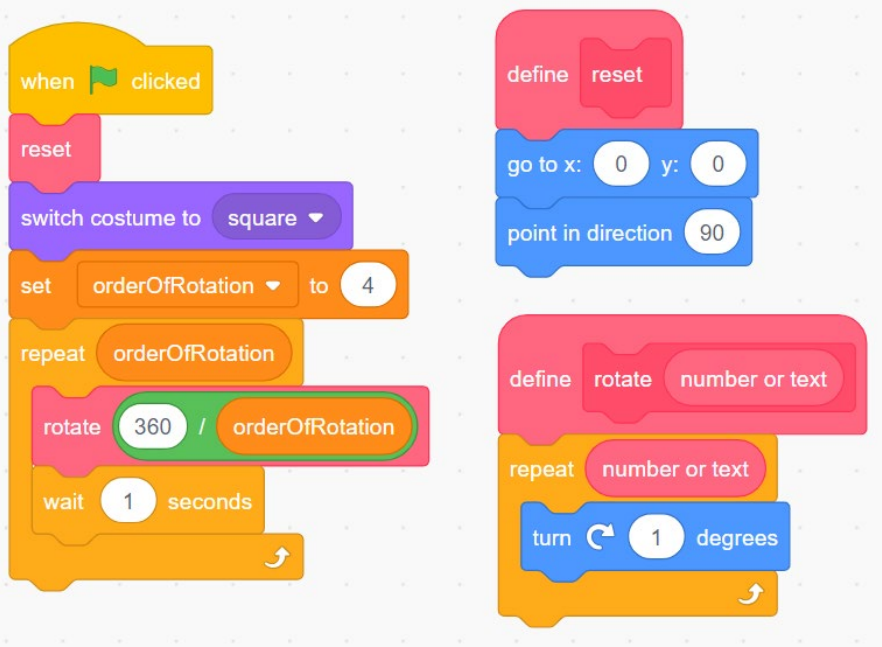
1. Click the link to access Scratch: Order of Rotation:

   https://scratch.mit.edu/projects/879134601/editor/

   - Click the green flag to run the application.

     You will see that in one complete turn, the square is rotated 4 times since its order of rotation is 4. Each time, it looks like the original square.

2. Let's examine the code so that we understand how it works.
   We will then alter the code to model order of rotation for a triangle, pentagon, and hexagon.



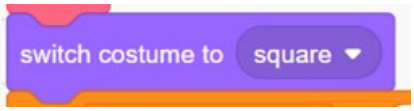
   - The ***reset*** block has been created to ensure the shape starts in the centre of the stage and faces the correct direction before rotating.

Name_____ Date_____

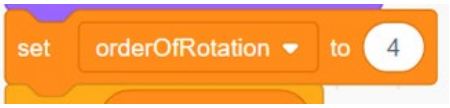
Geometry
Unit 1 Line Master 7b

Coding and Rotation Symmetry (cont'd)

- "Costumes" have been prepared for a triangle, square, pentagon and hexagon. To model the order of rotation for a square, the square costume is selected. You can click on the ***Costumes*** tab to see the other 2-D shapes that have been prepared.

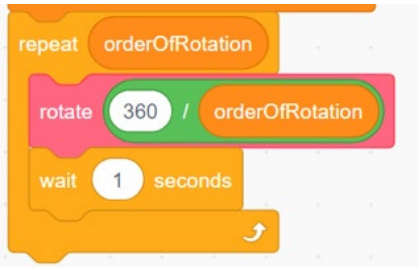


- A variable called ***orderOfRotation*** holds the number of rotations required to model rotation symmetry and bring the shape back to its starting position. As the programmer or coder, you will need to change this value depending on the shape you are using. Since we are starting with a square, we use the value 4.

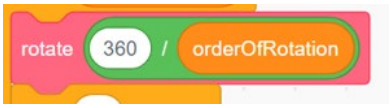


- The ***repeat*** block contains code that will rotate the square 4 times, since the orderOfRotation is currently set to 4.

A loop is a repetition of instructions used in code. In Scratch, the ***repeat*** block represents the loop.



- The ***rotate*** block was created so that the rotation happens gradually, like an animation. To calculate the angle of rotation, we need to divide 360° by the order of rotation. So, for the square, each rotation will be 360° ÷ 4 = 90°.

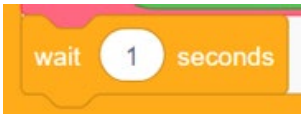


Name_____ Date_____

Geometry
Unit 1 Line Master 7c

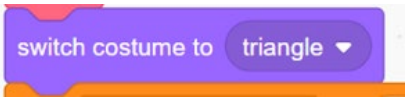
Coding and Rotation Symmetry (cont'd)

- The ***wait*** block is used to pause the block for 1 second before doing the next rotation. You can alter this value if you wish to pause it for a shorter or longer time.



3. Now that we have examined the code, let's alter the code so that it will model rotation symmetry for other polygons. We will start with an equilateral triangle.

- Use the pull-down menu to change the costume to a triangle.



- A triangle has order of rotation of 3, so adjust the value for the orderOfRotation variable:

That's it! Click on the green flag to run the application.
Does it rotate 3 times?
Does the triangle look the same each time?
If not, look through the code and instructions carefully to debug.

4. Go ahead and alter the code to model rotation symmetry for a pentagon and a hexagon.

Name_____ Date_____

Geometry
Unit 1 Line Master 8a

Coding Designs with Rotation Symmetry

Designs found in nature as well as those created by artists sometimes have rotation symmetry. We will use coding to create neat designs that have rotation symmetry.

1. Let's start with some code that creates a design of a circle of squares.

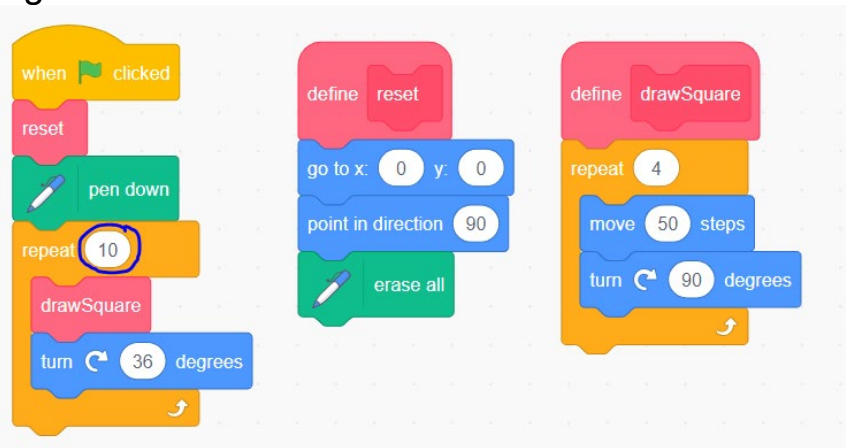
   - Click the link to access Scratch: Designs and Rotation Symmetry.

     https://scratch.mit.edu/projects/879197398/editor/

     Click on the green flag.

   - What is the rotation symmetry of this circle of squares design?

     The code gives us a hint!



Name_____ Date_____

Geometry
Unit 1 Line Master 8b

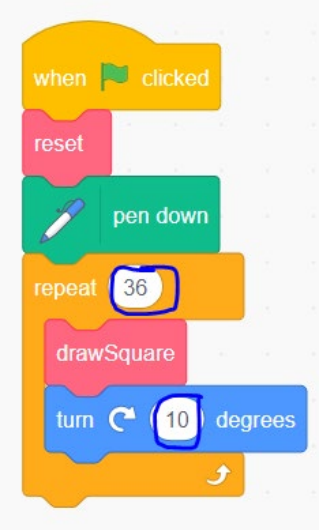
Coding Designs with Rotation Symmetry (cont'd)

2. Let's alter the code to create a design that has a rotation symmetry of 36, rather than 10.

   We need to change two values to do this:

   - Change the value of the repeat block to 36.
   - Change the rotation angle after each square is drawn. The product of the repeat block and turn block must be 360°. So, since the repeat is now 36, we divide 360° by 36:
     360° ÷ 36 = 10°
     So, the new turn value is 10 degrees.

     Try it out! Does it draw 36 squares in a full circle?



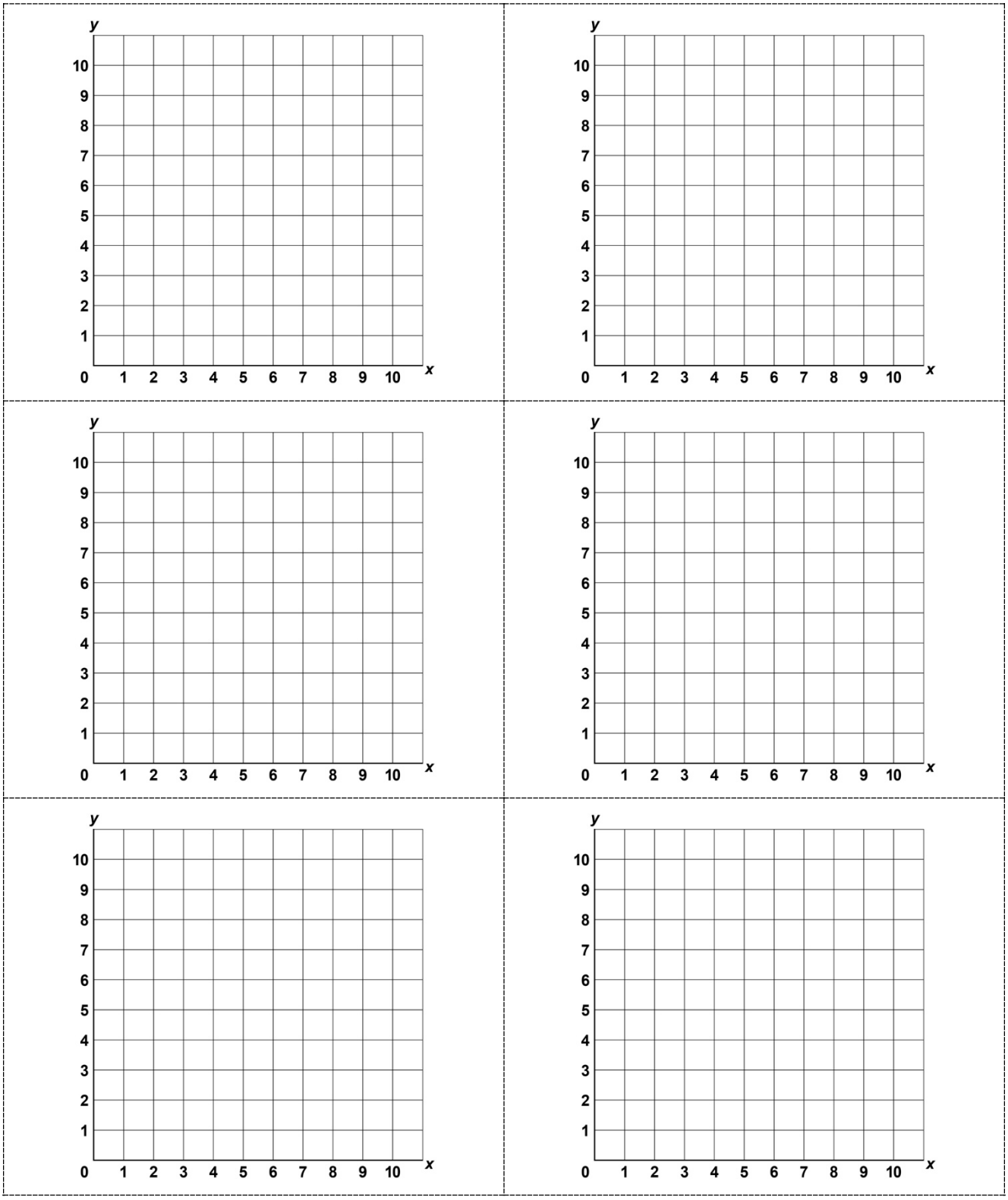
3. Alter the code to create other designs with a circle of squares by changing the order of rotation. Remember that the product of the value of the repeat block and the turn block must be 360°.

   - Share your designs with your classmates.

Name_____ Date_____

Geometry
Unit 1 Line Master 9

Coordinate Grids



Geometry

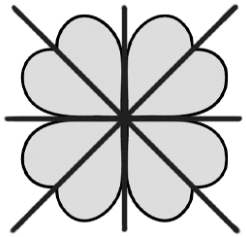
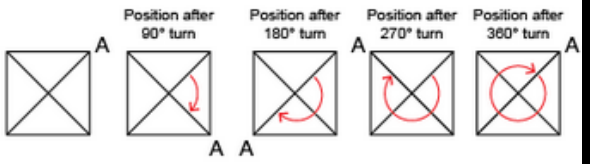
Activity 1 Assessment

Recognizing Symmetry in First Nations Designs

Recognizing Symmetry in First Nations Regalia			
Describes features of First Nations regalia "I see many colours, images, symbols, materials that are the same on both sides of powwow regalia."	Identifies components of symmetry in First Nations regalia "Powwow regalia have symmetrical qualities that are created by shapes that mirror each other."	Understands and describes the significance of First Nations powwow dance regalia. "First Nations powwow regalia symbolize connection to the natural world, cultural teachings, and traditions within the colours, designs, and dance."	Identifies a symmetrical design that has personal meaning and significance. "Different designs can be used to share a story."
Observations/Documentation			

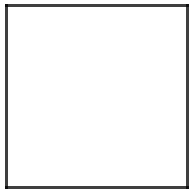
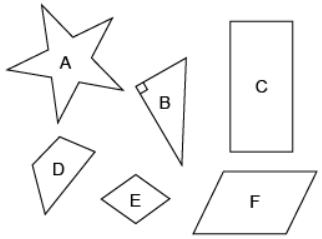
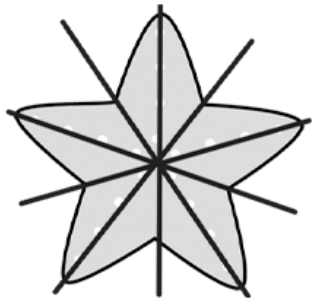
Geometry

Activity 2 Assessment
Understanding Line Symmetry

Understanding Symmetry		
Recognizes symmetry on 2-D and 3-D shapes	Shows line(s) of symmetry on 2-D shapes	Describes order of rotation symmetry of 2-D shapes
 ”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.”	 “I drew 4 lines to show the lines of symmetry on the clover. I used a Mira to check.”	 “A square has rotation symmetry of order 4.”
Observations/Documentation		

Geometry

Activity 2 Assessment
Understanding Line Symmetry

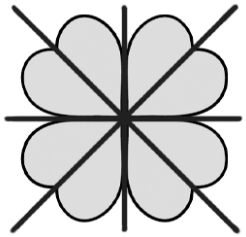
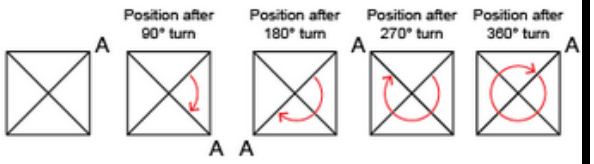
Understanding Symmetry (cont'd)		
Relates number of reflection and rotation symmetries of regular polygons to number of equal sides and angles  "A square has 4 equal sides and 4 equal angles. So, it has 4 lines of symmetry and order of rotation symmetry 4."	Classifies 2-D shapes by the number of reflection or rotation symmetries  "I classified the shapes by order of rotation symmetry. Shapes B and D have order of rotation symmetry 1, Shapes C, E, and F have order of rotation symmetry 2, and Shape A has order of rotation symmetry 5."	Recognizes line and rotation symmetry in the environment  "A starfish has 5 lines of symmetry and order of rotation symmetry 5."
Observations/Documentation		

Geometry

Activity 3 Assessment

Investigating Reflection and Rotation Symmetry

Understanding Symmetry

Recognizes symmetry on 2-D and 3-D shapes	Shows line(s) of symmetry on 2-D shapes	Describes order of rotation symmetry of 2-D shapes
		
"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."	"I drew 4 lines to show the lines of symmetry on the clover. I used a Mira to check."	"A square has rotation symmetry of order 4."

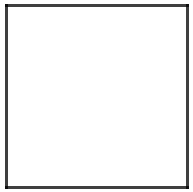
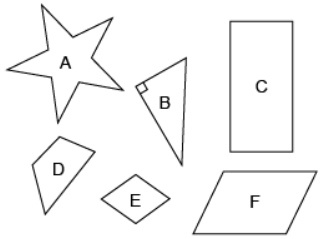
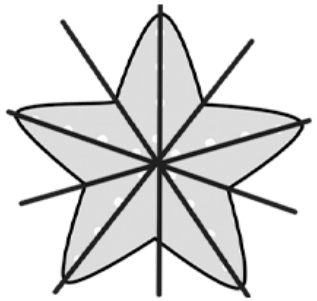
Observations/Documentation

Geometry

Activity 3 Assessment

Investigating Reflection and Rotation Symmetry

Understanding Symmetry (cont'd)

Relates number of reflection and rotation symmetries of regular polygons to number of equal sides and angles	Classifies 2-D shapes by the number of reflection or rotation symmetries	Recognizes line and rotation symmetry in the environment
		
"A square has 4 equal sides and 4 equal angles. So, it has 4 lines of symmetry and order of rotation symmetry 4."	"I classified the shapes by order of rotation symmetry. Shapes B and D have order of rotation symmetry 1, Shapes C, E, and F have order of rotation symmetry 2, and Shape A has order of rotation symmetry 5."	"A starfish has 5 lines of symmetry and order of rotation symmetry 5."

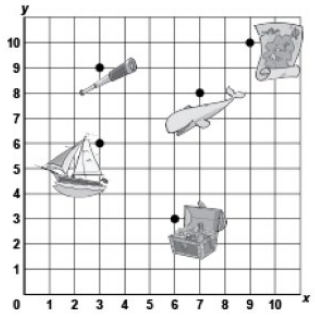
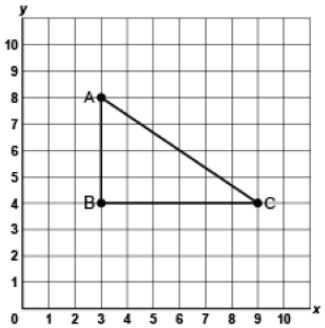
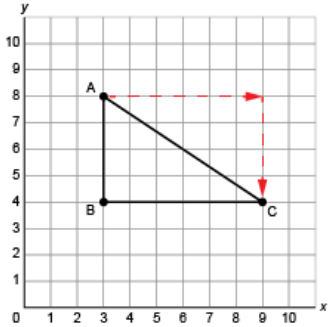
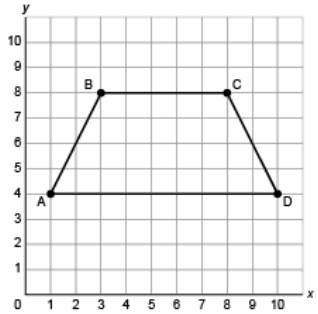
Observations/Documentation

Geometry

Activity 4 Assessment

Plotting and Reading Coordinates

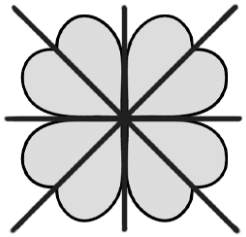
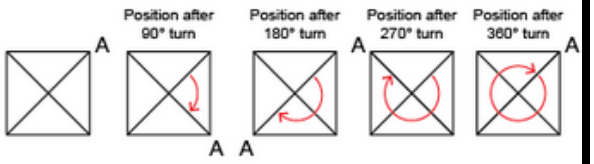
Locating and Plotting Points on a Coordinate Grid

Uses coordinates to describe the location of points on a grid	Plots, locates, and labels points on a grid	Uses positional language to describe the location of a point on a grid in relation to another point	Flexibly models and describes the location of the vertices of a polygon on a grid
			
"The treasure chest is located at (6, 3)."	"I plotted A(3, 8), B(3, 4) and C(9, 4). I joined the points to create a right triangle."	"Move right 6 squares and down 4 squares from Point A to get to Point C."	"The vertices of the trapezoid are at: A(1, 4), B(3, 8), C(8, 8), D (10, 4)."

Observations/Documentation

Geometry

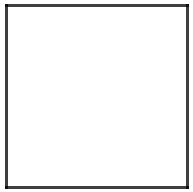
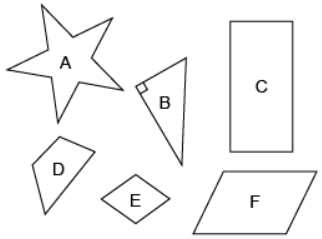
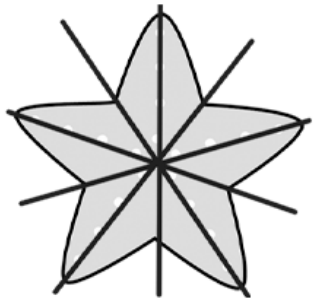
Activity 5 Assessment
Coding and Rotation Symmetry

Understanding Symmetry		
Recognizes symmetry on 2-D and 3-D shapes	Shows line(s) of symmetry on 2-D shapes	Describes order of rotation symmetry of 2-D shapes
 ”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.”	 “I drew 4 lines to show the lines of symmetry on the clover. I used a Mira to check.”	 “A square has rotation symmetry of order 4.”
Observations/Documentation		

Geometry

Activity 5 Assessment
Coding and Rotation Symmetry

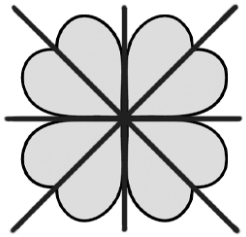
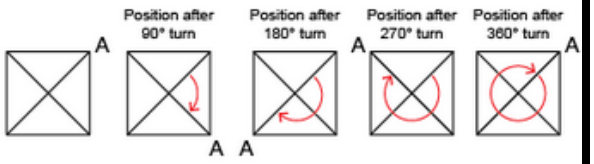
Understanding Symmetry (cont'd)

Relates number of reflection and rotation symmetries of regular polygons to number of equal sides and angles	Classifies 2-D shapes by the number of reflection or rotation symmetries	Recognizes line and rotation symmetry in the environment
		
"A square has 4 equal sides and 4 equal angles. So, it has 4 lines of symmetry and order of rotation symmetry 4."	"I classified the shapes by order of rotation symmetry. Shapes B and D have order of rotation symmetry 1, Shapes C, E, and F have order of rotation symmetry 2, and Shape A has order of rotation symmetry 5."	"A starfish has 5 lines of symmetry and order of rotation symmetry 5."

Observations/Documentation

Geometry

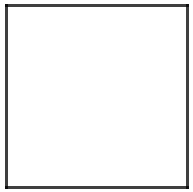
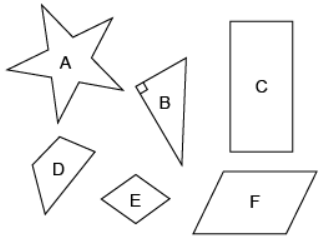
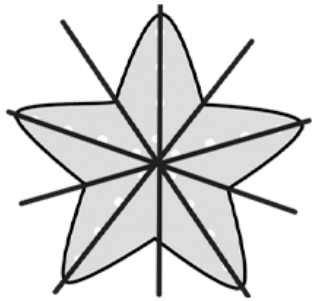
Activity 6 Assessment
Consolidation

Understanding Symmetry		
Recognizes symmetry on 2-D and 3-D shapes	Shows line(s) of symmetry on 2-D shapes	Describes order of rotation symmetry of 2-D shapes
 ”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.”	 “I drew 4 lines to show the lines of symmetry on the clover. I used a Mira to check.”	 “A square has rotation symmetry of order 4.”
Observations/Documentation		

Geometry

Activity 6 Assessment
Consolidation

Understanding Symmetry (cont'd)

Relates number of reflection and rotation symmetries of regular polygons to number of equal sides and angles	Classifies 2-D shapes by the number of reflection or rotation symmetries	Recognizes line and rotation symmetry in the environment
		
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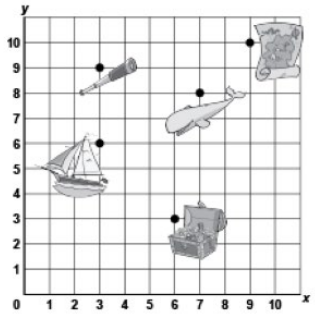
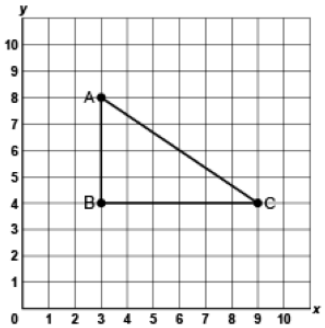
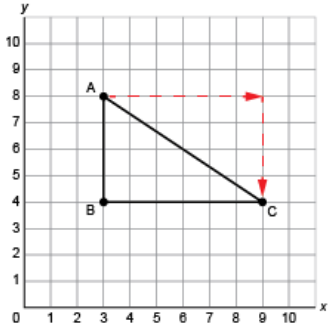
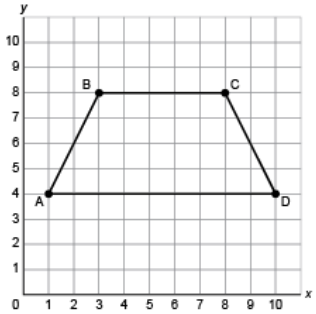
Observations/Documentation

Geometry

Activity 6 Assessment
Consolidation

Locating and Plotting Points on a Coordinate Grid			
Uses coordinates to describe the location of points on a grid	Plots, locates, and labels points on a grid	Uses positional language to describe the location of a point on a grid in relation to another point	Flexibly models and describes the location of the vertices of a polygon on a grid
			
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Observations/Documentation			

Name_____ Date_____

Data Management
Unit 1 Line Master 1a

Data Sets

Set A

Goals Scored by School Soccer Team This Season		
Goals Scored	Number of Games	Frequency
0	I	1
1	II	2
2	IIII	4
3	IIII	4
4	I	1
5	0	0

Set B

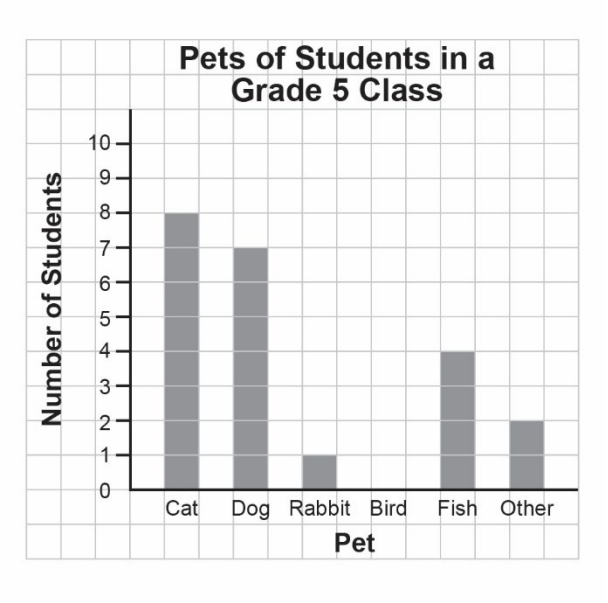
Heights of Students in a Grade 5 Class	
Height (cm)	Number of Students
120–124	I
125–129	II
130–134	𝍸 I
135–139	𝍸 III
140–144	𝍸
145–149	III
150–154	I

Name_____ Date_____

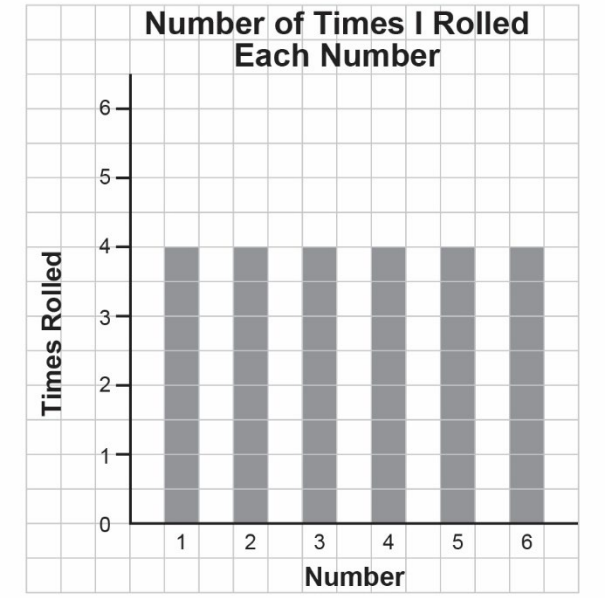
Data Management
Unit 1 Line Master 1b

Data Sets (cont'd)

Set C



Set D



Name_____ Date_____

Data Management
Unit 1 Line Master 1c

Data Sets (cont'd)

Set E

A student's practice times, in seconds, for the 200-m dash:
30, 27, 28, 31, 29, 31, 28, 27, 29, 32, 29, 28, 28, 33, 29

Set F

Pulse rates of Grade 5 Students (beats per minute):
69, 83, 66, 78, 82, 67, 76, 84, 64, 72, 80, 72, 70, 69, 80, 66, 72, 88, 88, 72, 65, 78, 68, 71

Name_____ Date_____

Data Management
Unit 1 Line Master 2

Interpreting Data

Set A

Heights of Grade 5 Students, in Centimetres

138, 127, 137, 152, 133, 141, 138, 148, 134, 136, 146, 138, 134, 140, 138, 132, 141, 142, 123, 134, 144, 138, 129, 136, 145, 132

Set B

Speeds of 20 Cars Recorded by Speed Camera in 50 km/h Zone

48, 46, 50, 52, 55, 61, 52, 54, 50, 49, 45, 50, 52, 58, 52, 60, 49, 52, 57, 61

Set C

Where Grade 5 Students Usually Do Their Homework

Location	Number of Students
Kitchen	7
Living Room	11
Bedroom	18
Dining Room	5
Other	4

Set D

A student bought 5 boxes of candy-coated chocolates.
They counted the number of blue chocolates in each.

Box	Number of Blue Chocolates
1	12
2	9
3	12
4	14
5	11

Statistics

Activity 1 Assessment

Formulating Questions to Collect Data

Data Collection		
Differentiates between open-ended and closed-list questions What is your favourite fruit? "This is an open-ended question because respondents can answer in their own words."	Collects data using closed-list questions and categories "What is your favourite fruit: orange, apple, banana, grapes, or other?" Orange, apple, apple, grapes, other, banana, orange, …, orange, apple	Categorizes collected data **Fruit** / **Tally** Orange / 𝍸 ||| Apple / 𝍸 𝍸 Banana / |||| Grapes / 𝍸 | Other / | "I marked a tally each time a student chose a particular fruit."
Observations/Documentation		

Statistics

Activity 1 Assessment

Formulating Questions to Collect Data

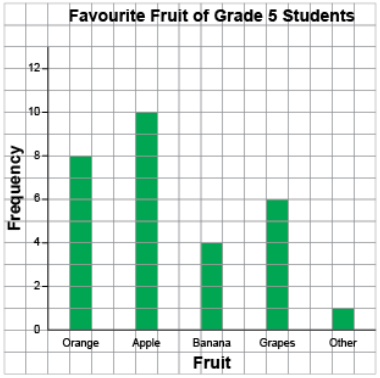
Data Collection (cont'd)

Organizes categorized data in frequency tables

Fruit	Frequency
Orange	8
Apple	10
Banana	4
Grapes	6
Other	1

"I organized the data in a frequency table so I can see and compare the numbers of students who chose each fruit."

Represents data using bar graphs and dot plots



"I showed the data on a bar graph."

Flexibly represents data based on frequency (including stem-and-leaf plots)

Masses of Dogs Seen in One Day

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

Key: 1 \| 2 means 12 kg

"I see the same number of dogs had a mass between 20 kg and 29 kg as between 30 and 39 kg."

Observations/Documentation

Statistics

Activity 2 Assessment

Investigating Frequency of Data

Data Collection

Differentiates between open-ended and closed-list questions

What is your favourite fruit?
"This is an open-ended question because respondents can answer in their own words."

Collects data using closed-list questions and categories

"What is your favourite fruit: orange, apple, banana, grapes, or other?"

Orange, apple, apple, grapes, other, banana, orange, …, orange, apple

Categorizes collected data

Fruit	Tally
Orange	𝍸 |||
Apple	𝍸 𝍸
Banana	||||
Grapes	𝍸 |
Other	|

"I marked a tally each time a student chose a particular fruit."

Observations/Documentation

Statistics

Activity 2 Assessment
Investigating Frequency of Data

Data Collection (cont'd)

Organizes categorized data in frequency tables

Fruit	Frequency
Orange	8
Apple	10
Banana	4
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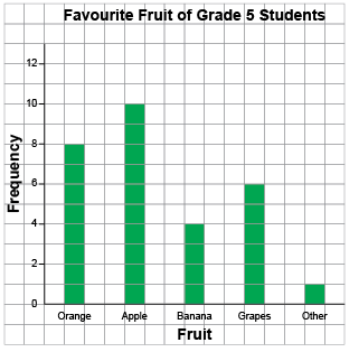

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Observations/Documentation

Statistics

Activity 2 Assessment

Investigating Frequency of Data

Frequency and Mode

Notices changes in frequency across categories in tables and graphs

Age	Number of Students
9	𝍸
10	𝍸 𝍸 𝍸
11	𝍸
12	𝍸

“I see more students are 10 years old than 9 years old.”

Counts individual data points to determine frequency

Age	Number of Students	Frequency
9	𝍸	5
10	𝍸 𝍸 𝍸	15
11	𝍸	4
12	𝍸	1

“Five students are 9 years old and 15 students are 10 years old.”

Identifies mode as a measure of frequency

Age	Number of Students	Frequency
9	𝍸	5
10	𝍸 𝍸 𝍸	15
11	𝍸	4
12	𝍸	1

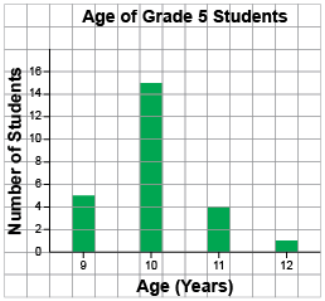
“The mode is 10 years old because it has the highest frequency, 15.”

Observations/Documentation

Activity 2 Assessment
Investigating Frequency of Data

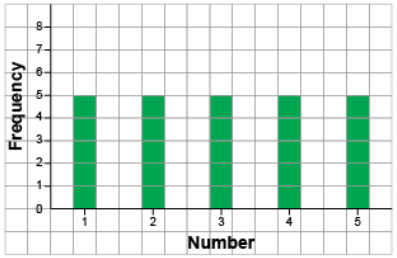
Frequency and Mode (cont'd)

Identifies the mode in various representations of data



"The mode is 10 years old because it is the category with the tallest bar."

Recognizes data sets with no mode, one mode, or multiple modes



"The data set has no mode because all the bars are the same height."

Uses the mode to justify possible answers

Sandwich	Frequency
Grilled Cheese	15
Hamburger	7
Hot Dog	5
Pulled Pork	8
Other	3

"The mode is grilled cheese sandwich, so I am going to focus on selling different types of grilled cheese sandwiches on my food truck."

Observations/Documentation

Statistics

Activity 3 Assessment

Representing Data

Data Collection

Differentiates between open-ended and closed-list questions

What is your favourite fruit?
"This is an open-ended question because respondents can answer in their own words."

Collects data using closed-list questions and categories

"What is your favourite fruit: orange, apple, banana, grapes, or other?"

Orange, apple, apple, grapes, other, banana, orange, …, orange, apple

Categorizes collected data

Fruit	Tally
Orange	𝍸 |||
Apple	𝍸 𝍸
Banana	||||
Grapes	𝍸 |
Other	|

"I marked a tally each time a student chose a particular fruit."

Observations/Documentation

Statistics

Activity 3 Assessment
Representing Data

Data Collection (cont'd)

Organizes categorized data in frequency tables

Fruit	Frequency
Orange	8
Apple	10
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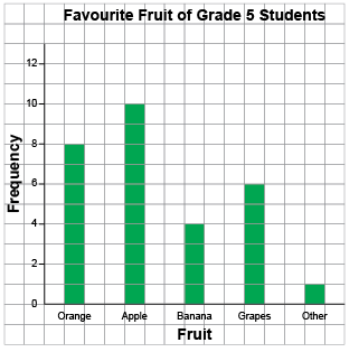
Other	1

"I organized the data in a frequency table so I can see and compare the numbers of students who chose each fruit."

Represents data using bar graphs and dot plots



"I showed the data on a bar graph."

Flexibly represents data based on frequency (including stem-and-leaf plots)

Masses of Dogs Seen in One Day

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

Key: 1 \| 2 means 12 kg

"I see the same number of dogs had a mass between 20 kg and 29 kg as between 30 and 39 kg."

Observations/Documentation

Statistics

Activity 3 Assessment

Representing Data

Frequency and Mode

Notices changes in frequency across categories in tables and graphs

Age	Number of Students
9	𝍸
10	𝍸 𝍸 𝍸
11	𝍸
12	|

"I see more students are 10 years old than 9 years old."

Counts individual data points to determine frequency

Age	Number of Students	Frequency
9	𝍸	5
10	𝍸 𝍸 𝍸	15
11	𝍸	4
12	|	1

"Five students are 9 years old and 15 students are 10 years old."

Identifies mode as a measure of frequency

Age	Number of Students	Frequency
9	𝍸	5
10	𝍸 𝍸 𝍸	15
11	𝍸	4
12	|	1

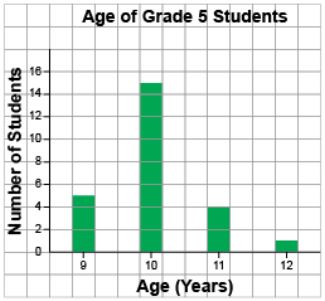
"The mode is 10 years old because it has the highest frequency, 15."

Observations/Documentation

Activity 3 Assessment
Representing Data

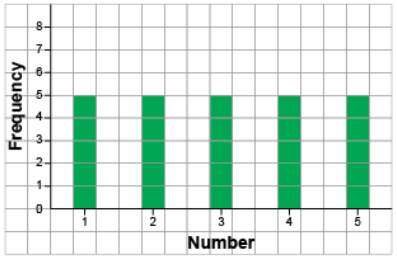
Frequency and Mode (cont'd)

Identifies the mode in various representations of data



"The mode is 10 years old because it is the category with the tallest bar."

Recognizes data sets with no mode, one mode, or multiple modes



"The data set has no mode because all the bars are the same height."

Uses the mode to justify possible answers

Sandwich	Frequency
Grilled Cheese	15
Hamburger	7
Hot Dog	5
Pulled Pork	8
Other	3

"The mode is grilled cheese sandwich, so I am going to focus on selling different types of grilled cheese sandwiches on my food truck."

Observations/Documentation

Statistics

Activity 4 Assessment

Interpreting Data

Data Collection		
Differentiates between open-ended and closed-list questions What is your favourite fruit? "This is an open-ended question because respondents can answer in their own words."	Collects data using closed-list questions and categories "What is your favourite fruit: orange, apple, banana, grapes, or other?" Orange, apple, apple, grapes, other, banana, orange, …, orange, apple	Categorizes collected data **Fruit** / **Tally** Orange / 𝍸 ||| Apple / 𝍸 𝍸 Banana / |||| Grapes / 𝍸 | Other / | "I marked a tally each time a student chose a particular fruit."
Observations/Documentation		

Statistics

Activity 4 Assessment
Interpreting Data

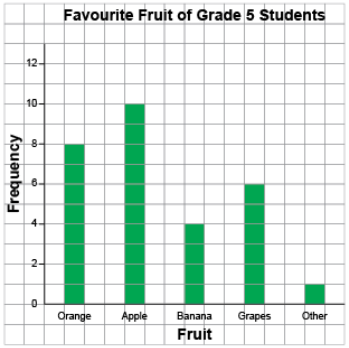
Data Collection (cont'd)

Organizes categorized data in frequency tables

Fruit	Frequency
Orange	8
Apple	10
Banana	4
Grapes	6
Other	1

"I organized the data in a frequency table so I can see and compare the numbers of students who chose each fruit."

Represents data using bar graphs and dot plots



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Observations/Documentation

Statistics

Activity 4 Assessment

Interpreting Data

Frequency and Mode

Notices changes in frequency across categories in tables and graphs

Age	Number of Students
9	𝍸
10	𝍸 𝍸 𝍸
11	||||
12	|

"I see more students are 10 years old than 9 years old."

Counts individual data points to determine frequency

Age	Number of Students	Frequency
9	𝍸	5
10	𝍸 𝍸 𝍸	15
11	||||	4
12	|	1

"Five students are 9 years old and 15 students are 10 years old."

Identifies mode as a measure of frequency

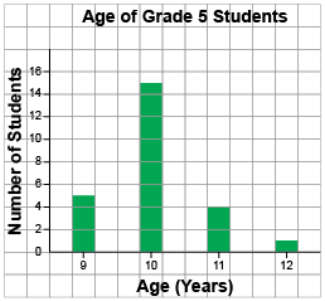
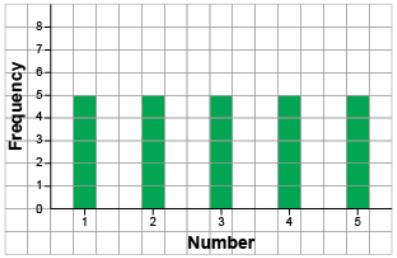
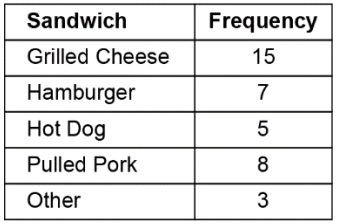
Age	Number of Students	Frequency
9	𝍸	5
10	𝍸 𝍸 𝍸	15
11	||||	4
12	|	1

"The mode is 10 years old because it has the highest frequency, 15."

Observations/Documentation

Activity 4 Assessment
Interpreting Data

Frequency and Mode (cont'd)

Identifies the mode in various representations of data	Recognizes data sets with no mode, one mode, or multiple modes	Uses the mode to justify possible answers
 "The mode is 10 years old because it is the category with the tallest bar."	 "The data set has no mode because all the bars are the same height."	 "The mode is grilled cheese sandwich, so I am going to focus on selling different types of grilled cheese sandwiches on my food truck."

Sandwich	Frequency
Grilled Cheese	15
Hamburger	7
Hot Dog	5
Pulled Pork	8
Other	3

Observations/Documentation

Statistics

Activity 5 Assessment
Consolidating Data Management

Data Collection		
Differentiates between open-ended and closed-list questions What is your favourite fruit? "This is an open-ended question because respondents can answer in their own words."	Collects data using closed-list questions and categories "What is your favourite fruit: orange, apple, banana, grapes, or other?" Orange, apple, apple, grapes, other, banana, orange, …, orange, apple	Categorizes collected data **Fruit** / **Tally** Orange / 𝍸 ||| Apple / 𝍸 𝍸 Banana / |||| Grapes / 𝍸 | Other / | "I marked a tally each time a student chose a particular fruit."
Observations/Documentation		

Statistics

Activity 5 Assessment
Consolidating Data Management

Data Collection (cont'd)

Organizes categorized data in frequency tables

Fruit	Frequency
Orange	8
Apple	10
Banana	4
Grapes	6
Other	1

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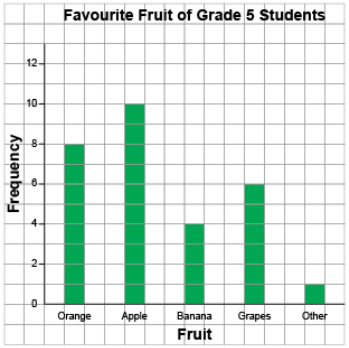
Represents data using bar graphs and dot plots



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Observations/Documentation

Statistics

Activity 5 Assessment

Consolidating Data Management

Frequency and Mode

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11	𝍸	4
12	|	1

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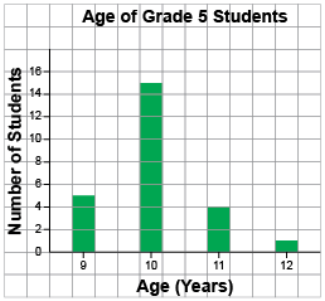
Observations/Documentation

Activity 5 Assessment
Consolidating Data Management

Frequency and Mode (cont'd)

Identifies the mode in various representations of data



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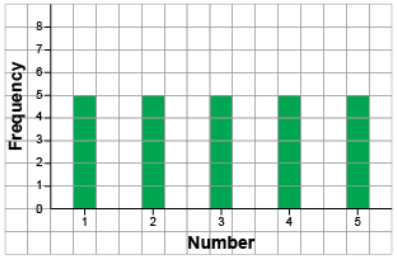

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