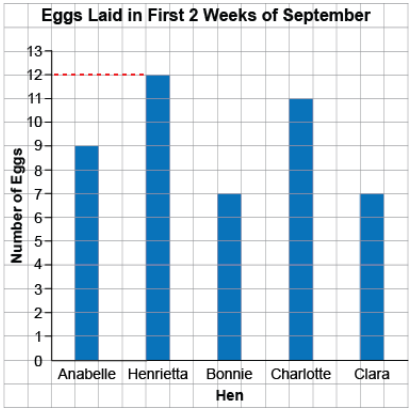
Data Management and Probability

Activity 1 Assessment

Interpreting Bar Graphs

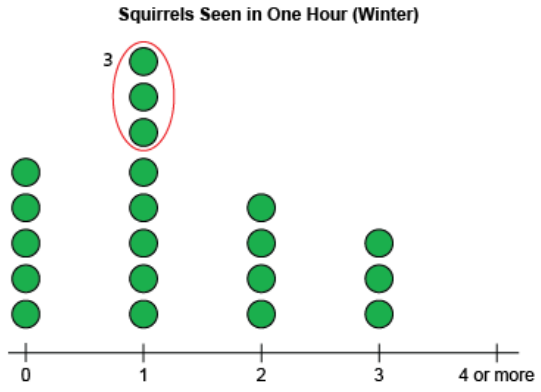
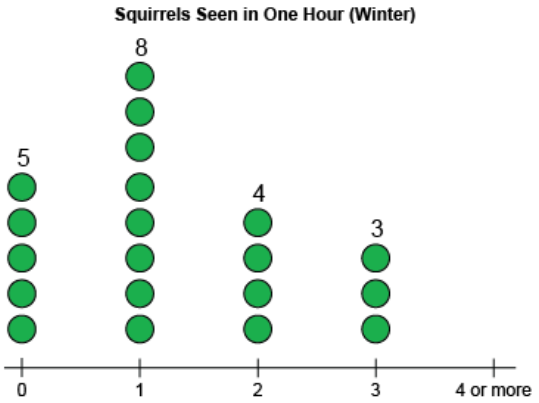
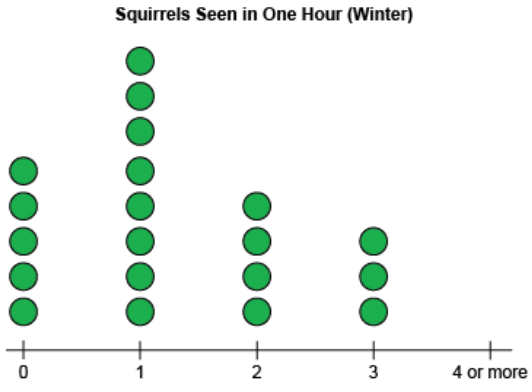
Reading and Interpreting Data Displays		
Notices the basic shape of graph "This bar is the longest. This bar is the shortest."	Counts symbols or squares to read data "1, 2, 3, …, 10, 11, 12 squares are shaded. Henrietta laid 12 eggs."	Uses scale to read data  "The bar has height 12. Henrietta laid 12 eggs."
Observations/Documentation		

Data Management and Probability

Activity 1 Assessment

Interpreting Bar Graphs

Reading and Interpreting Data Displays (con't)

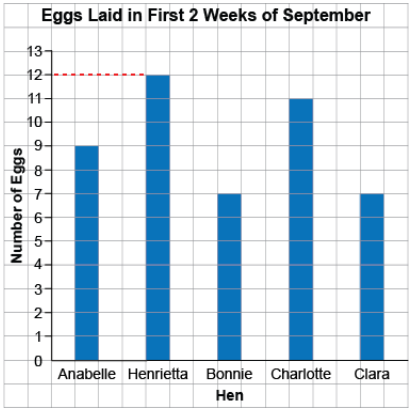
Makes direct comparisons between data	Uses data to answer some questions	Draws conclusions from data
		
"1 squirrel was seen 3 more times than 0 squirrels."	"5 + 8 + 4 + 3 = 20; 20 students were surveyed."	"Most students saw 1 squirrel in one hour in the winter."

Observations/Documentation

Data Management and Probability

Activity 2 Assessment

Interpreting Dot Plots

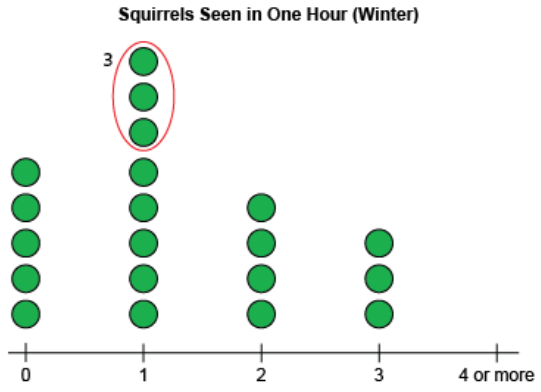
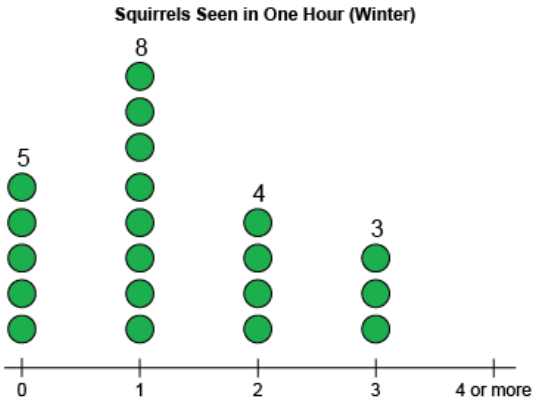
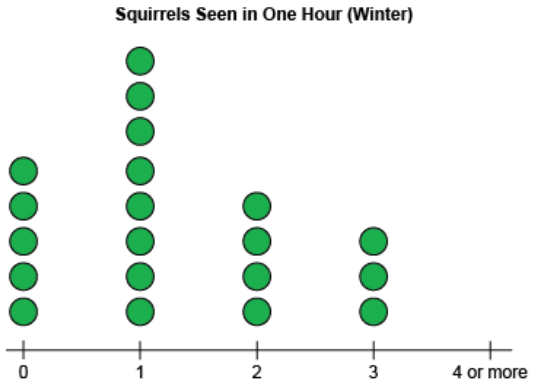
Reading and Interpreting Data Displays		
Notices the basic shape of graph "This bar is the longest. This bar is the shortest."	Counts symbols or squares to read data "1, 2, 3, …, 10, 11, 12 squares are shaded. Henrietta laid 12 eggs."	Uses scale to read data  "The bar has height 12. Henrietta laid 12 eggs."
Observations/Documentation		

Data Management and Probability

Activity 2 Assessment

Interpreting Dot Plots

Reading and Interpreting Data Displays (con't)

Makes direct comparisons between data	Uses data to answer some questions	Draws conclusions from data
		
"1 squirrel was seen 3 more times than 0 squirrels."	"5 + 8 + 4 + 3 = 20; 20 students were surveyed."	"Most students saw 1 squirrel in one hour in the winter."

Observations/Documentation

Data Management and Probability

Activity 3 Assessment

Collecting Data

Formulating Questions			
Makes statements that don't generate answers "I like to go swimming when it is hot outside."	Formulates questions to learn about people (no response options) "What do you do most often when it is very hot outside?"	Formulates questions to learn about people (incomplete response options) "What do you do most often when it is very hot outside: swim, find shade, turn up AC, drink water?"	Formulates clear questions with complete response options to collect relevant data What do you do most often when it is very hot outside: swim, find shade, turn up AC, drink water, other?"
Observations/Documentation			

Data Management and Probability

Activity 3 Assessment
Collecting Data

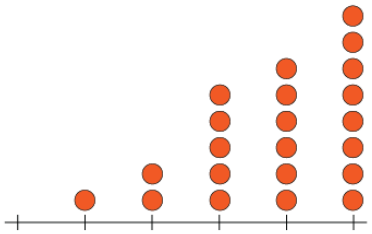
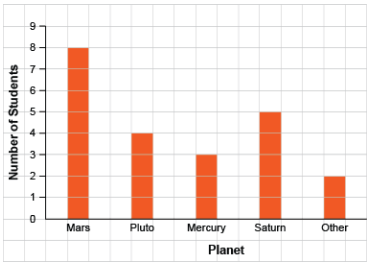
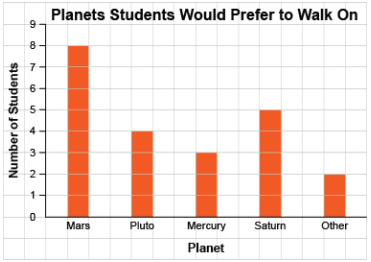
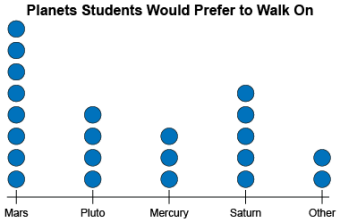
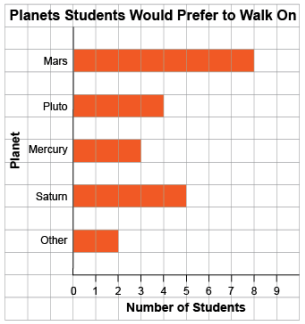
Collecting and Interpreting Data			
Uses knowledge of first-hand and second-hand data to decide on method of collection "To find the number of glasses of water my classmates drink a day, I will ask a survey question. To find the population of different cities in Alberta, I will use the Internet."	Predicts answers to inform research or how question is asked "I know I drink about 4 glasses of water a day. So, I will add numbers that are a little less than and a little more than 4 as possible responses. How many glasses of water do you drink a day? 3, 4, 5, more than 5"	Uses various resources and tools to collect data "How many glasses of water do you drink a day? 3, 4, 5, more than 5" 3 glasses: 3 students 4 glasses: 6 students 5 glasses: 4 students More than 5 glasses: 2 students Population of some cities in Alberta: Grand Prairie: about 68 000 Medicine Hat: about 65 000 Lethbridge: about 100 000	Uses collected data to answer questions and draw conclusions "Most students in my class drink about 4 glasses of water a day. Of the 3 cities, Lethbridge has the greatest population and Medicine Hat has the least."
Observations/Documentation			

Data Management and Probability

Activity 4 Assessment

Drawing Bar Graphs

Creating Graphical Displays

Creates graph but does not relate sample responses to labels	Creates graph with labels but omits title or scale	Successfully creates graphs (always of same type)	Creates graphs flexibly; shows same data on different graph types
			 

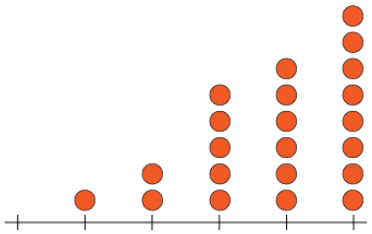
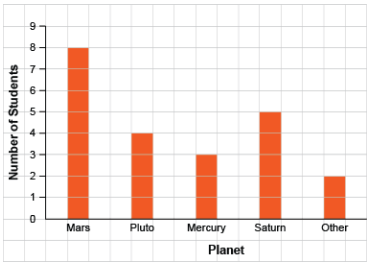
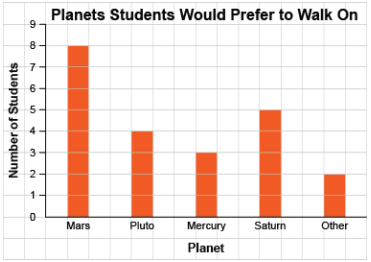
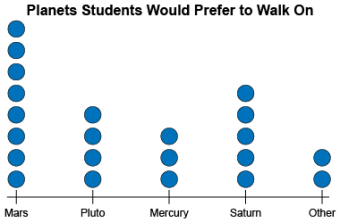
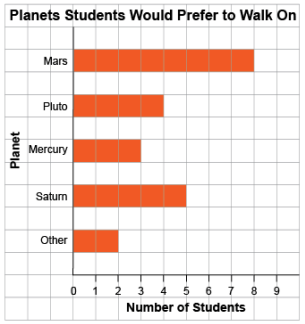
Observations/Documentation

Data Management and Probability

Activity 5 Assessment

Drawing Dot Plots

Creating Graphical Displays

Creates graph but does not relate sample responses to labels	Creates graph with labels but omits title or scale	Successfully creates graphs (always of same type)	Creates graphs flexibly; shows same data on different graph types
			 

Observations/Documentation

Name_____ Date_____

Master 72

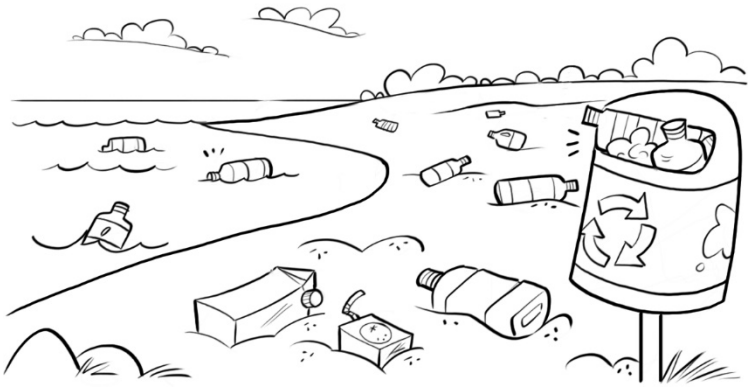
Connections: Protecting Our Environment

Did You Know?

20 000 plastic bottles are bought around the world every second.

It takes a lot more water to make a plastic bottle than it does to fill it.

It can take up to 1000 years for plastic to decompose.
That's 10 times as long as a person might live!



What Can We Do to Help Protect Our Environment?

- Drink water from reusable bottles.
- Place lunch and snacks in reusable containers.
- Use reusable cloth bags.
- Use paper straws.

Do you do any of these things?

How much plastic do you save?

Plastic Footprint Challenge

Over one week, collect data on the number of single-use plastics you use each day.

Record how many of each type you use (for example, bottles, bags, straws, and cutlery).

Display the data and present them to the class.

You may choose to use more than one graph.

Data Management and Probability

Activity 6 Assessment

First Nations, Métis, or Inuit Representations of Data

Ways of Representing Data			
Understands the importance of offering thanks when receiving gifts from the land (e.g., food, sticks) "It is important to thank the land because it provides us with food and things we need to live: 'kinanâskomitin' means 'thank you' in Cree."	Engages in oral practices (conversations, stories) to describe the results of the game to encourage others "On their first toss, Stick Tosser 1 scored 10 points. I said 'ahkameyimok,' which means 'never give up' in Cree. They then scored 100 points on their second toss."	Keeps track of own results and reflects on effectiveness of strategy "I realized that when I set the stick a little closer to the front of my foot, I could toss the stick farther. With practice, I was scoring 1000 points most of the time."	Tells a story about own learnings and observations during the game "I noticed that with more practice and encouragement from others, by the fourth toss I was able to score the greatest number of points."
Observations/Documentation			

Master 73

Background Information: Oral Tradition

Some Key Points of Oral Traditional

- observations, details, and significant events are:
  - stored in memory
  - passed on through conversations and oral story sharing
  - passed down through generations
- some may depict significant points through drawn representations to help memory recall (e.g., pictographs, winter counts)
- oral stories are shared and passed down intergenerationally to teach life lessons, worldview, connection to land, and history
- descriptive language is embedded in oral traditions to teach ways of being and knowing

Further Background Knowledge

Tell Me That Story Again: The Indigenous Tradition of Oral Storytelling

Blair First Rider: Aboriginal Cultures and the Oral Tradition

Oral Traditions – ASBA Indigenous Insights Series

Indigenous Peoples Atlas of Canada – Métis Oral Tradition

Our Way of Being Métis – Storytelling

Walking Together: First Nations, Métis and Inuit Perspectives in Curriculum – Oral Traditions, Beginning Together

Other Resources

Move & Play through Traditional Games Activities

Your ATA Library – Mathematics: Indigenous Math

Math First Peoples Teacher Resource Guide

Name_____ Date _____

Master 74a

Stick Toss Game Setup Options and Instructions

Photos of Materials

Sticks

Hula hoops, box, tape, measuring tape

Name_____ Date _____

Master 74b

Stick Toss Game Setup Options and Instructions

Participants:

- Stick Gatherers (data recorders)
- Stick Tossers
- Caller (teacher, or students could take turns)
- Uplifters (all students should be encouraging others when it is not their turn)

Setup:

See the diagrams of 4 possible ways to set up the game on the pages that follow.

For example:

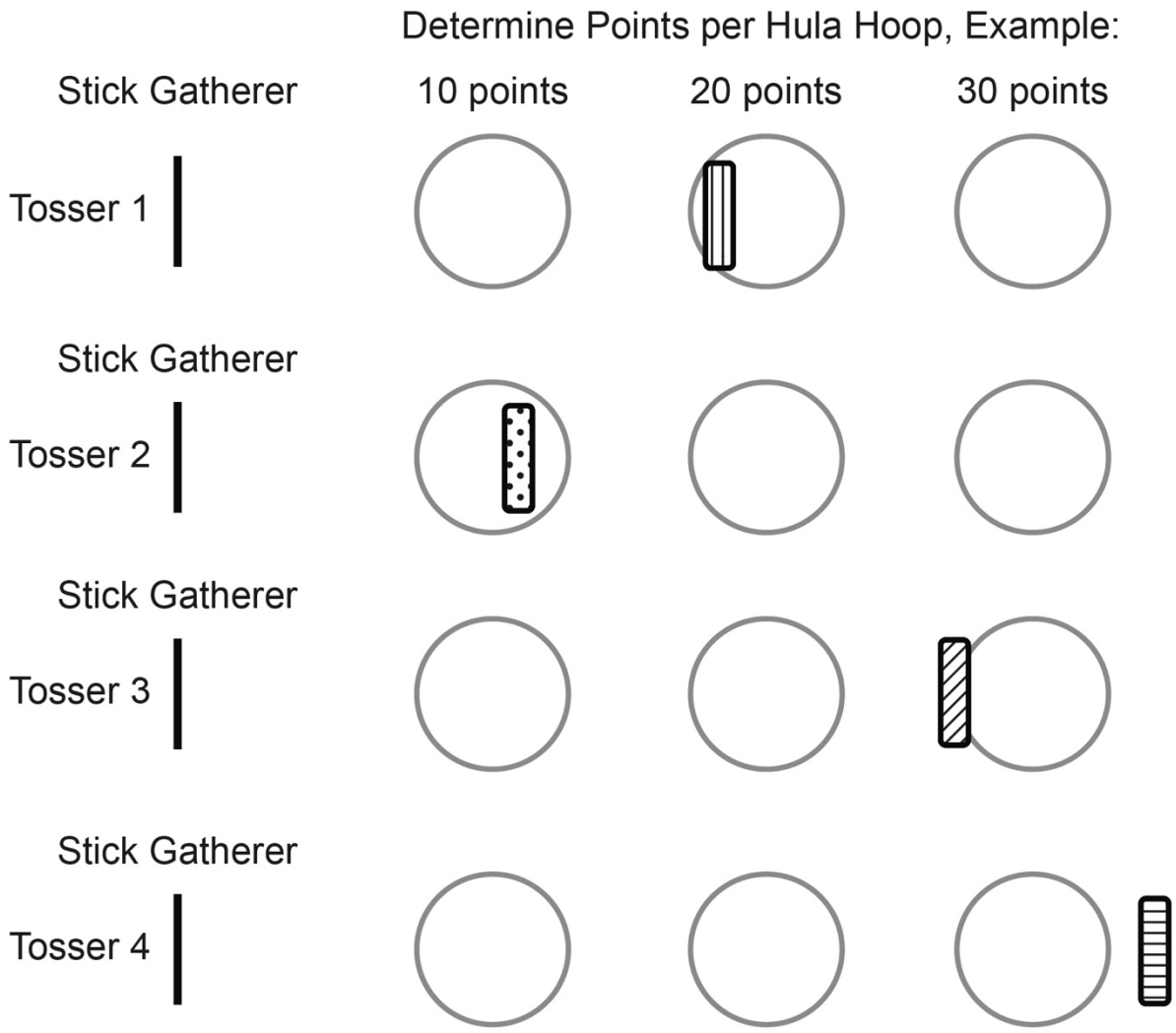
- Mark sections on the ground to determine points. Create a point system per targeted section.
- Points may correlate with numeracy reinforcement; for example, the closest section: 10 points; mid-section: 100 points; farthest section: 1000 points.
- Determine the number of tosses each student gets.
- Determine whether **Stick Tossers** get to practise before data are recorded.
- The **Stick Gatherers** (data recorders) record the number of points per toss.
- Divide students into pairs: **Stick Tosser** and **Stick Gatherer**.
- 4 or more **Stick Tossers** toss from a marked line on the ground at the same time, while others stand in line and wait for their turn.

Name_____ Date _____

Master 74c

Stick Toss Game Setup Options and Instructions

Using Hula Hoops



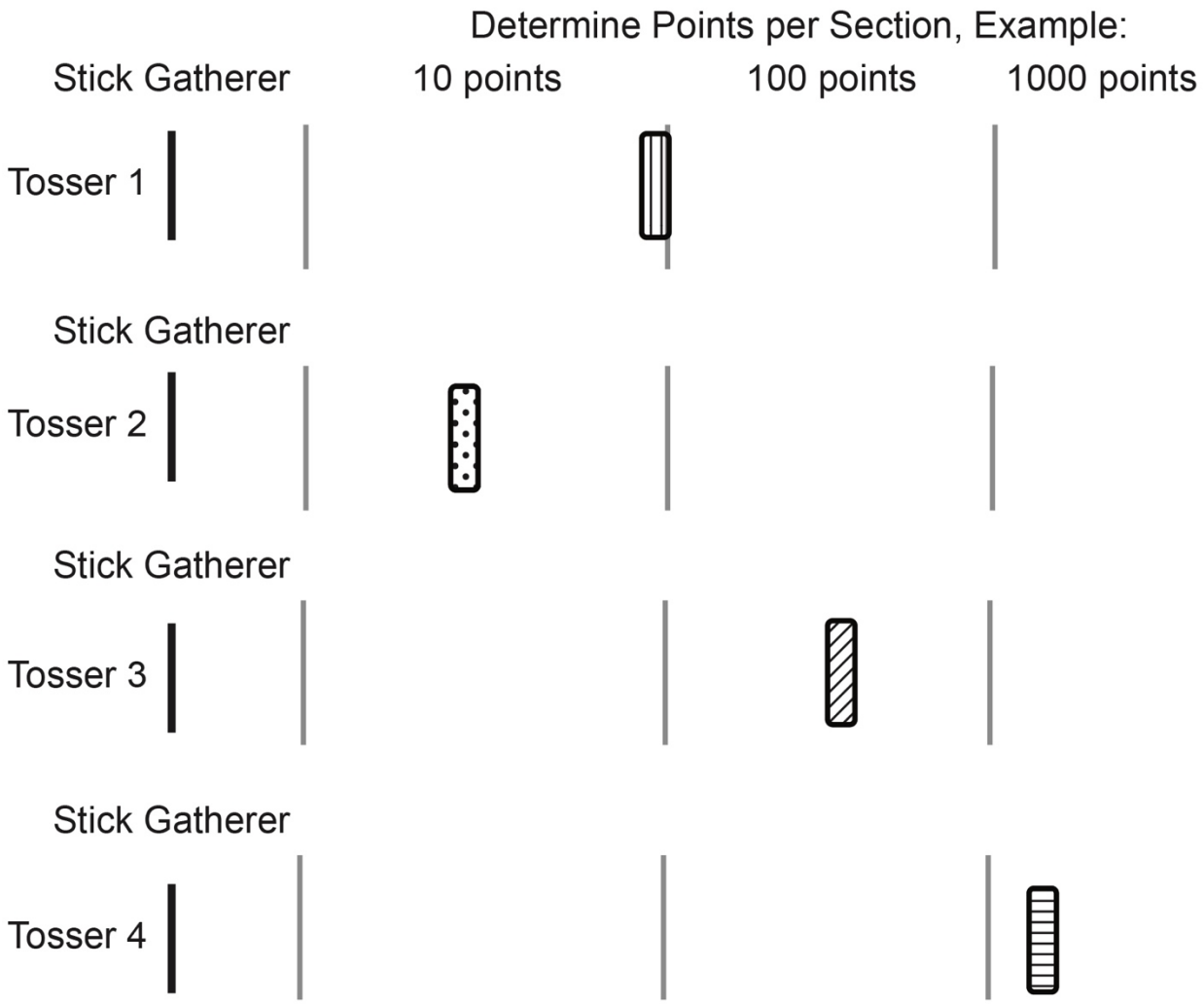
Toss and Hula Hoop Target

Name_____ Date _____

Master 74d

Stick Toss Game Setup Options and Instructions

Using Lines (tape or sticks)



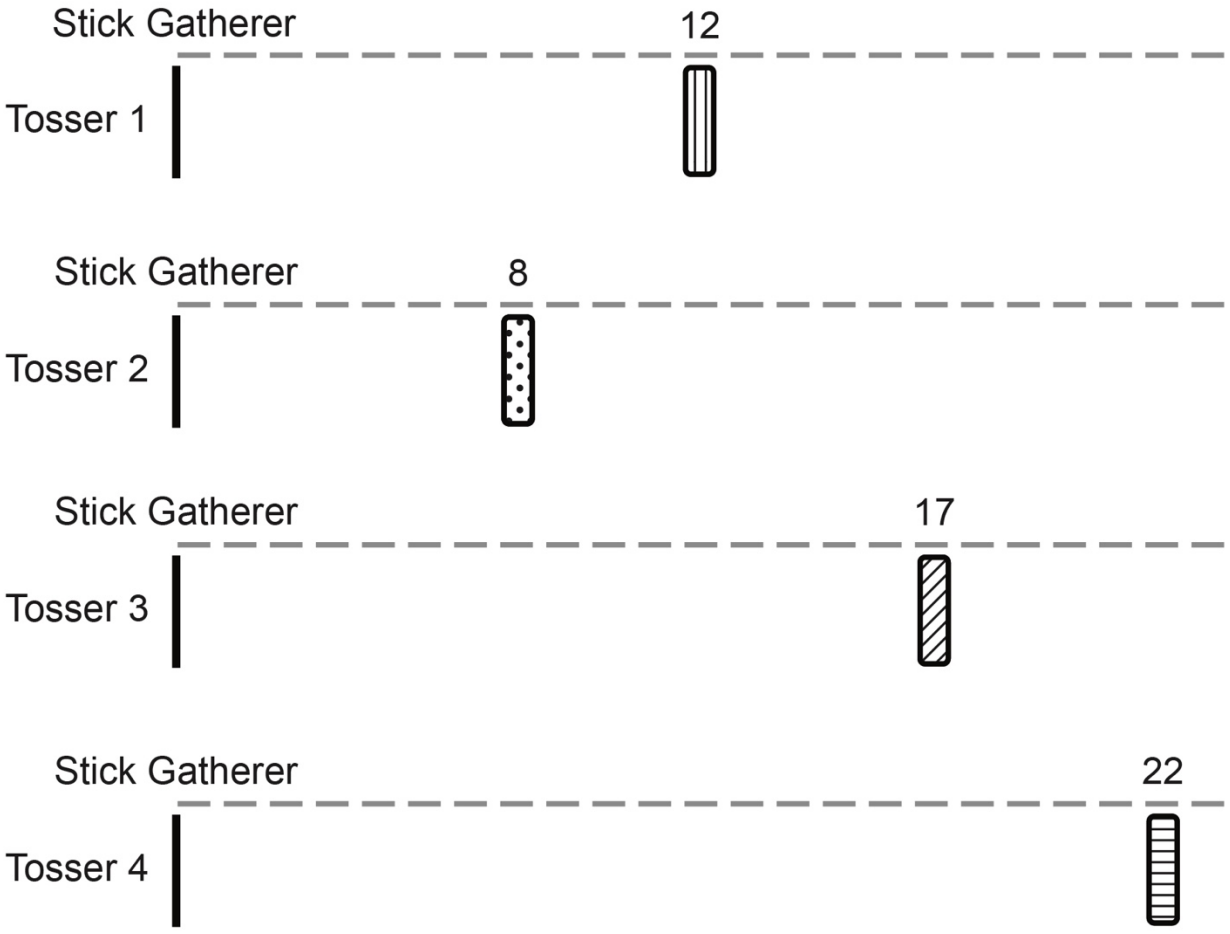
Toss and Section Points

Name _____ Date _____

Master 74e

Stick Toss Game Setup Options and Instructions

Measuring Distance



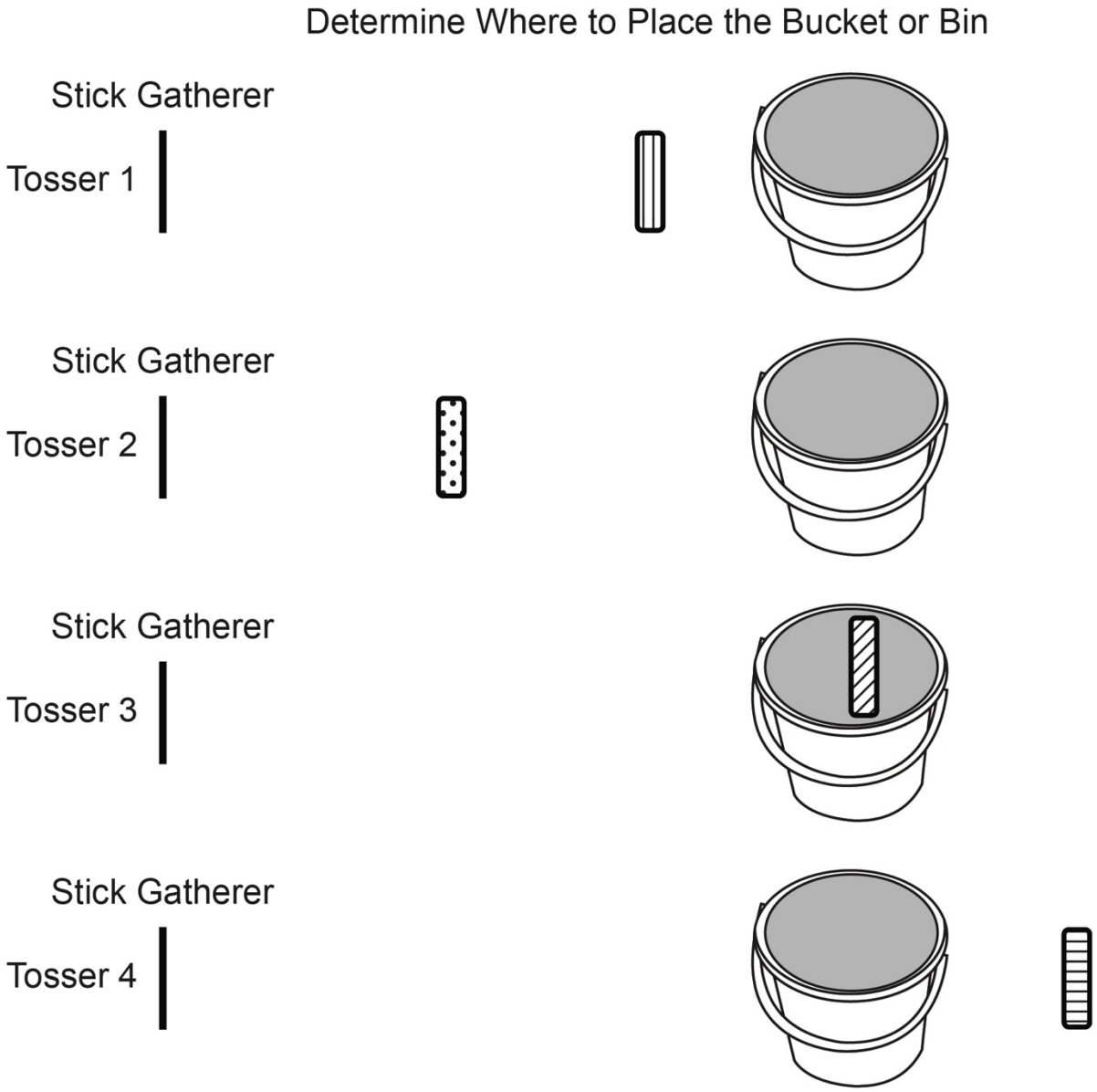
Toss and Measure

Name_____ Date _____

Master 74f

Stick Toss Game Setup Options and Instructions

Tossing to a Bucket (bucket, bin, or box)



Toss and Get in Bucket
How many tries did it take?

Name_____ Date _____

Master 75

Stick Toss Game Recording Sheet

Name: _____

Toss	Toss 1	Toss 2	Toss 3	Toss 4	TOTAL
Points					

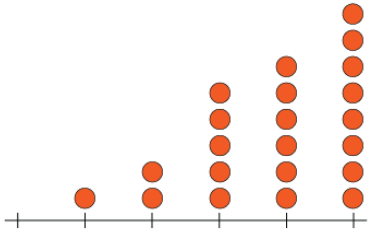
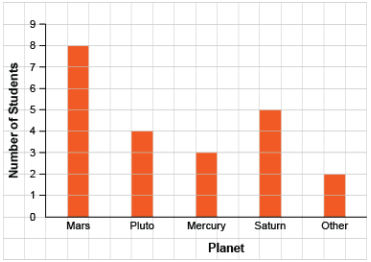
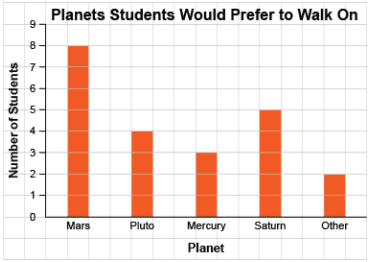
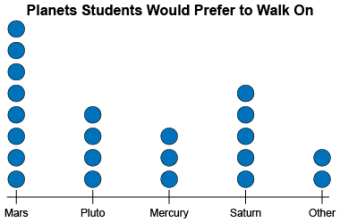
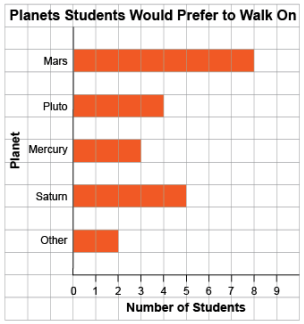
Name: _____

Toss	Toss 1	Toss 2	Toss 3	Toss 4	TOTAL
Points					

Data Management and Probability

Activity 7 Assessment
Consolidation

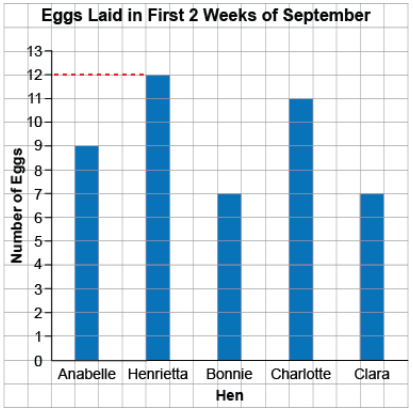
Creating Graphical Displays

Creates graph but does not relate sample responses to labels	Creates graph with labels but omits title or scale	Successfully creates graphs (always of same type)	Creates graphs flexibly; shows same data on different graph types
			 

Observations/Documentation

Data Management and Probability

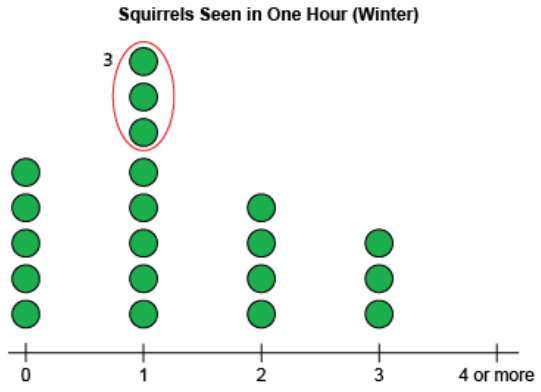
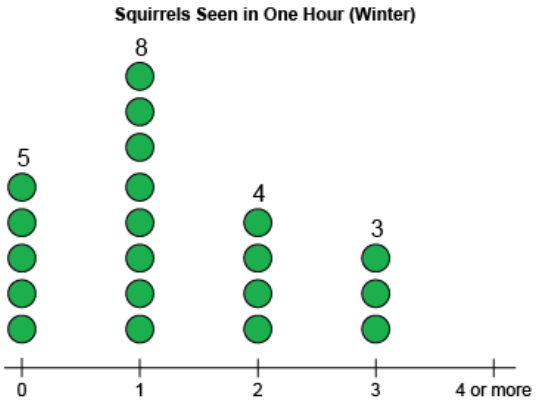
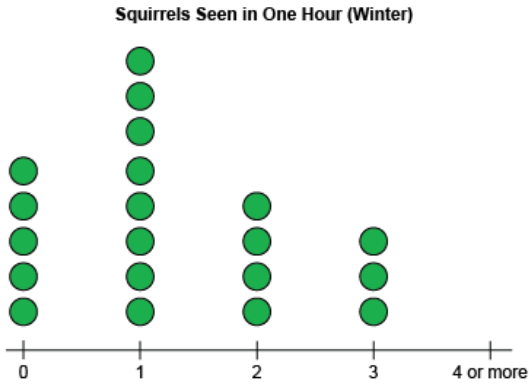
Activity 7 Assessment
Consolidation

Reading and Interpreting Data Displays		
Notices the basic shape of graph "This bar is the longest. This bar is the shortest."	Counts symbols or squares to read data "1, 2, 3, …, 10, 11, 12 squares are shaded. Henrietta laid 12 eggs."	Uses scale to read data  "The bar has height 12. Henrietta laid 12 eggs."
Observations/Documentation		

Data Management and Probability

Activity 7 Assessment
Consolidation

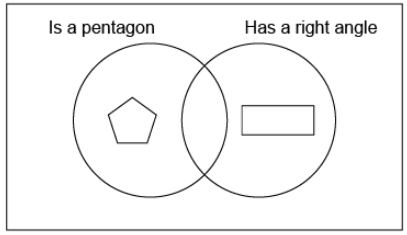
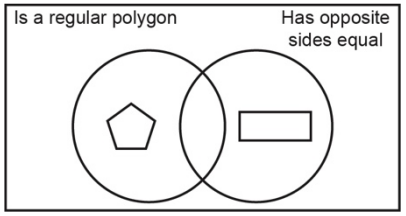
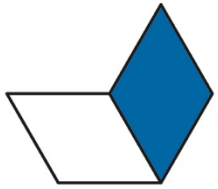
Reading and Interpreting Data Displays (con't)

Makes direct comparisons between data	Uses data to answer some questions	Draws conclusions from data
		
"1 squirrel was seen 3 more times than 0 squirrels."	"5 + 8 + 4 + 3 = 20; 20 students were surveyed."	"Most students saw 1 squirrel in one hour in the winter."

Observations/Documentation

Geometry

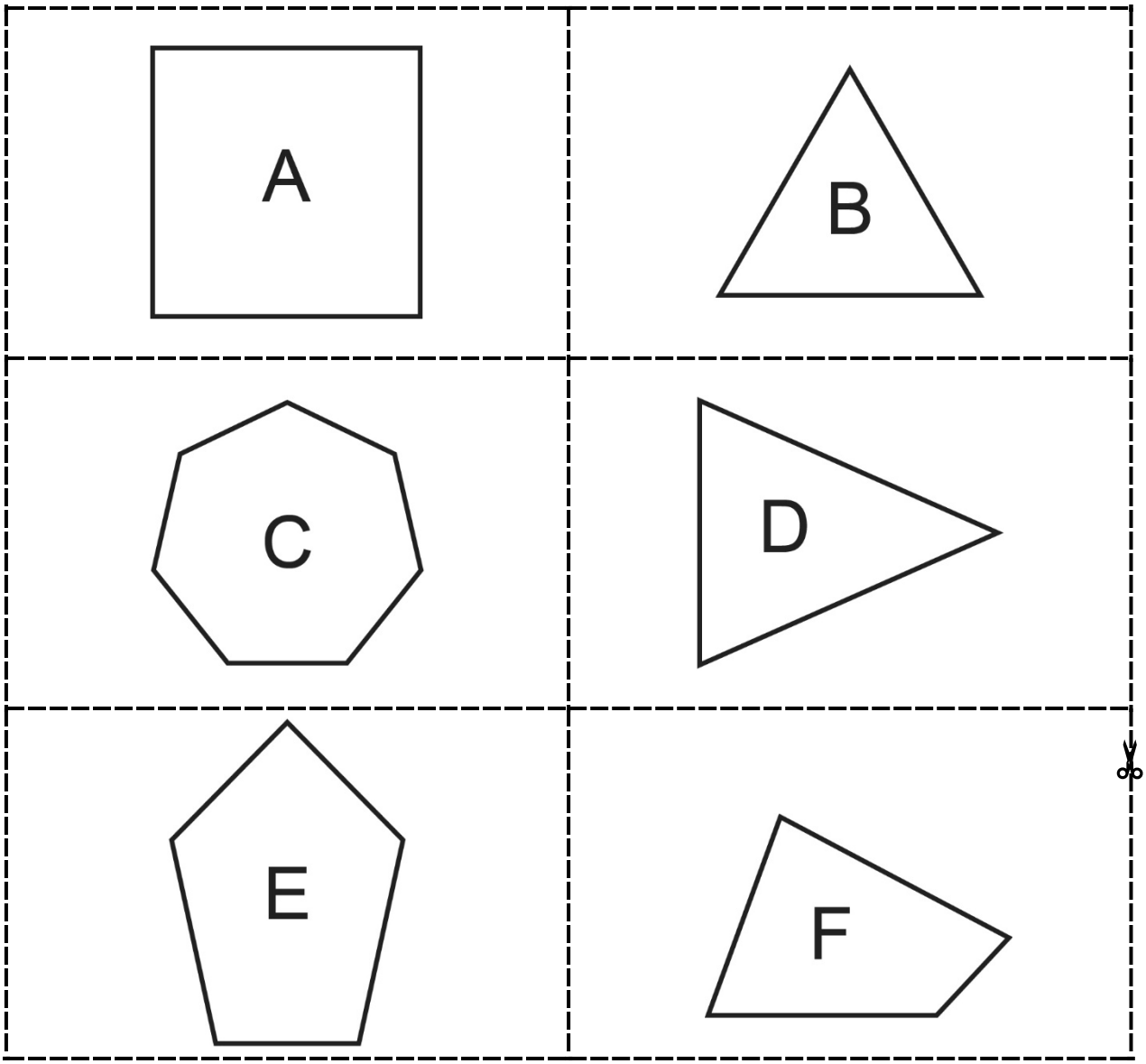
Activity 1 Assessment
Sorting Polygons

Investigating Geometric Properties of 2-D Shapes			
Uses geometric properties to compare and sort shapes	Sorts and classifies shapes in more than one way using geometric properties	Investigates the relationships between the sides and between the vertices of a polygon	Notices that geometric properties of a polygon do not change after a transformation
			
"I need a shape with 5 sides and at least one right angle to go in the overlap."	"The sorting rule could also be 'Is a regular polygon and has opposite sides equal.'"	"A rectangle has 2 pairs of parallel sides. The connected sides are perpendicular, so it has four 90° angles. It is an irregular polygon."	"After a rotation, the image faces a different way but still has 4 equal sides and opposite angles equal."
Observations/Documentation			

Name_____ Date_____

Master 62a

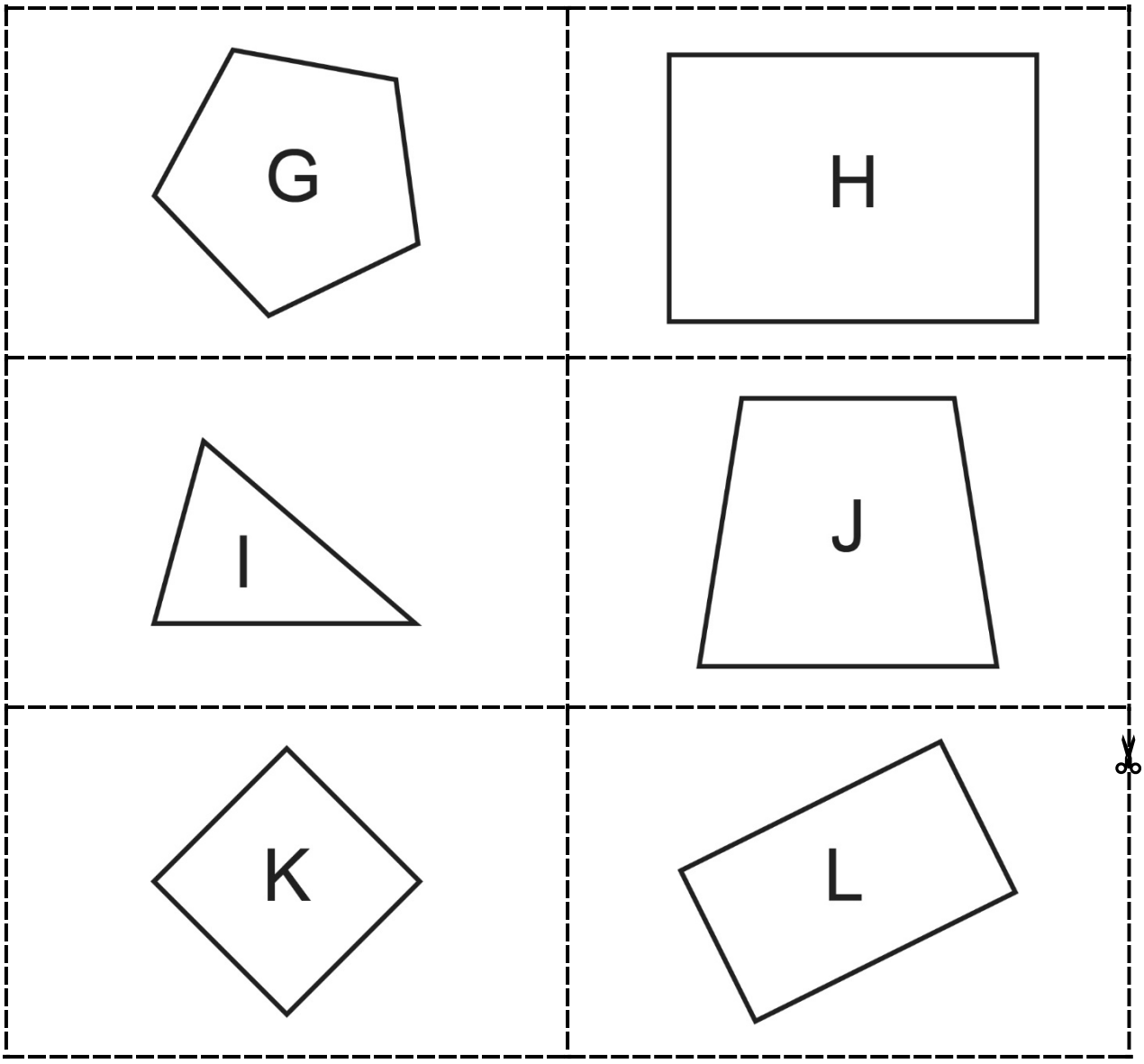
Polygons



Name_____ Date_____

Master 62b

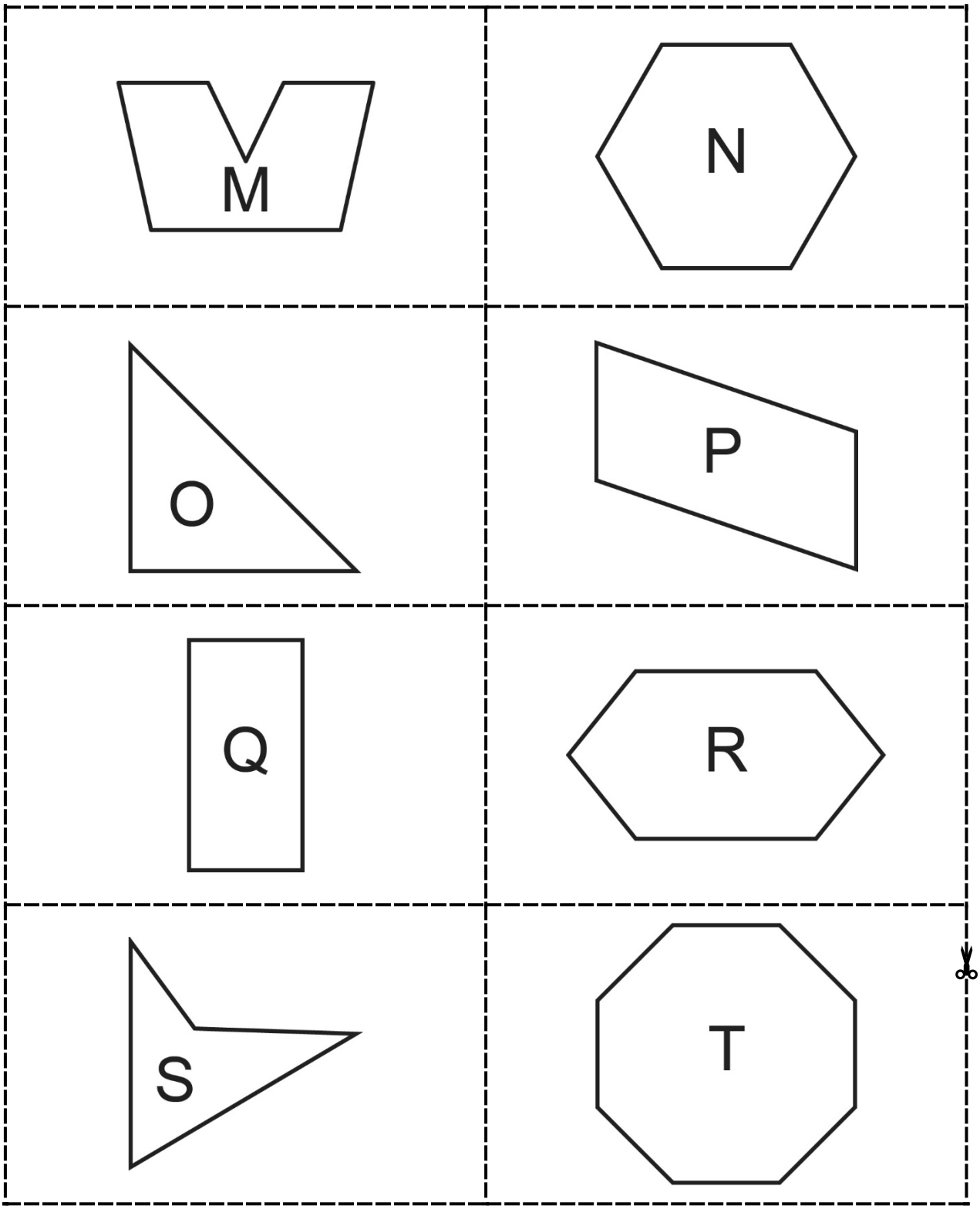
Polygons



Name_____ Date_____

Master 62c

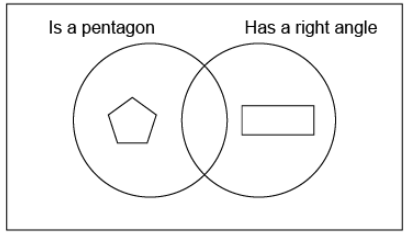
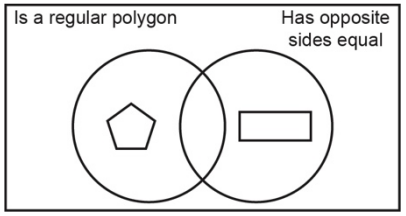
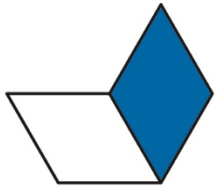
Polygons



Geometry

Activity 2 Assessment

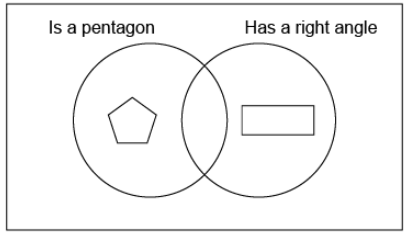
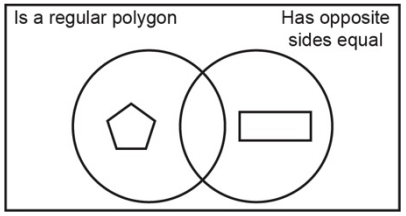
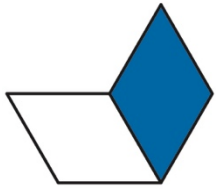
What's the Sorting Rule?

Investigating Geometric Properties of 2-D Shapes			
Uses geometric properties to compare and sort shapes	Sorts and classifies shapes in more than one way using geometric properties	Investigates the relationships between the sides and between the vertices of a polygon	Notices that geometric properties of a polygon do not change after a transformation
			
"I need a shape with 5 sides and at least one right angle to go in the overlap."	"The sorting rule could also be 'Is a regular polygon and has opposite sides equal.'"	"A rectangle has 2 pairs of parallel sides. The connected sides are perpendicular, so it has four 90° angles. It is an irregular polygon."	"After a rotation, the image faces a different way but still has 4 equal sides and opposite angles equal."
Observations/Documentation			

Geometry

Activity 3 Assessment
Geometric Relationships

Investigating Geometric Properties of 2-D Shapes

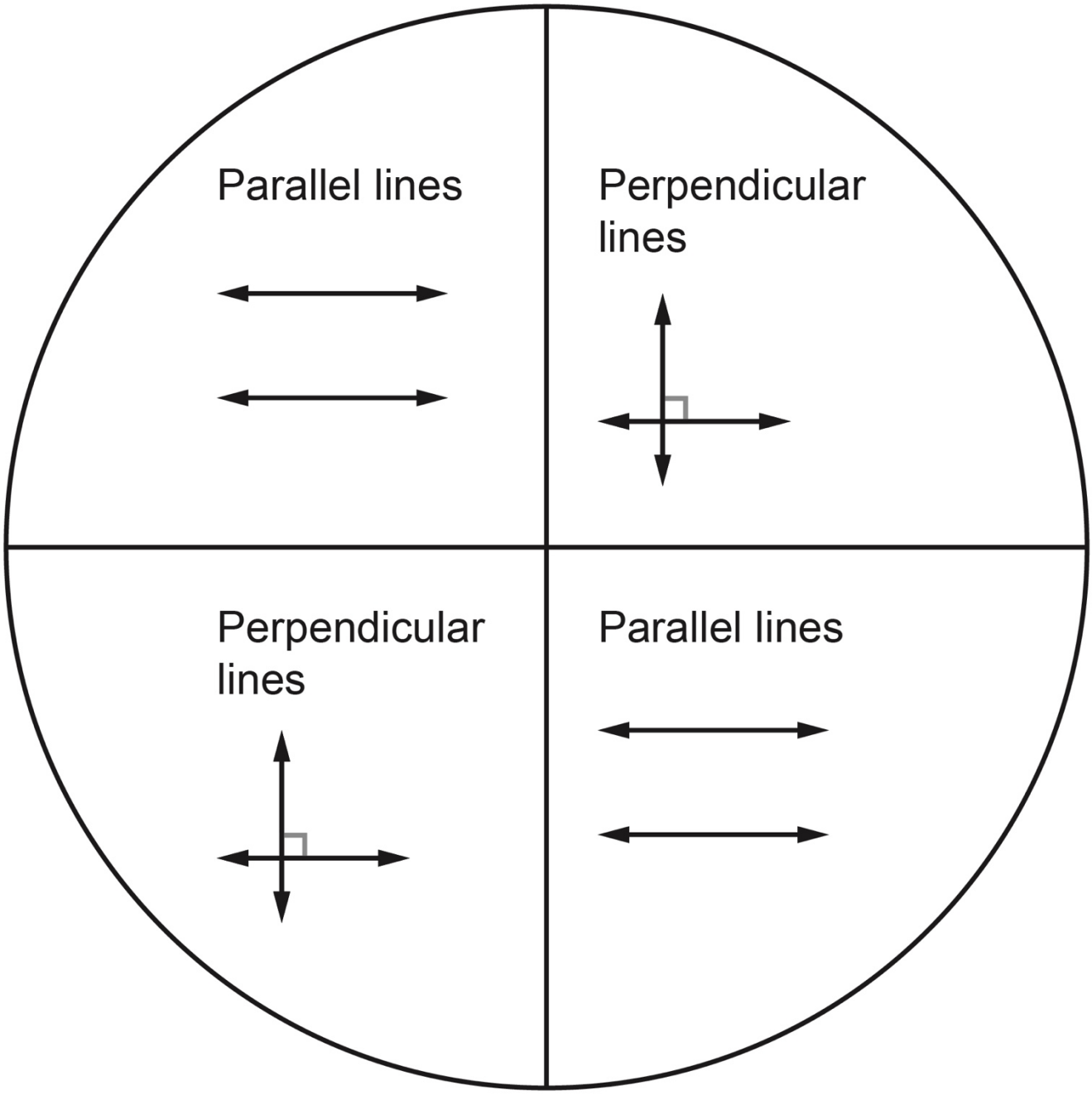
Uses geometric properties to compare and sort shapes	Sorts and classifies shapes in more than one way using geometric properties	Investigates the relationships between the sides and between the vertices of a polygon	Notices that geometric properties of a polygon do not change after a transformation
			
"I need a shape with 5 sides and at least one right angle to go in the overlap."	"The sorting rule could also be 'Is a regular polygon and has opposite sides equal.'"	"A rectangle has 2 pairs of parallel sides. The connected sides are perpendicular, so it has four 90° angles. It is an irregular polygon."	"After a rotation, the image faces a different way but still has 4 equal sides and opposite angles equal."

Observations/Documentation

Name _____ Date _____

Master 63a

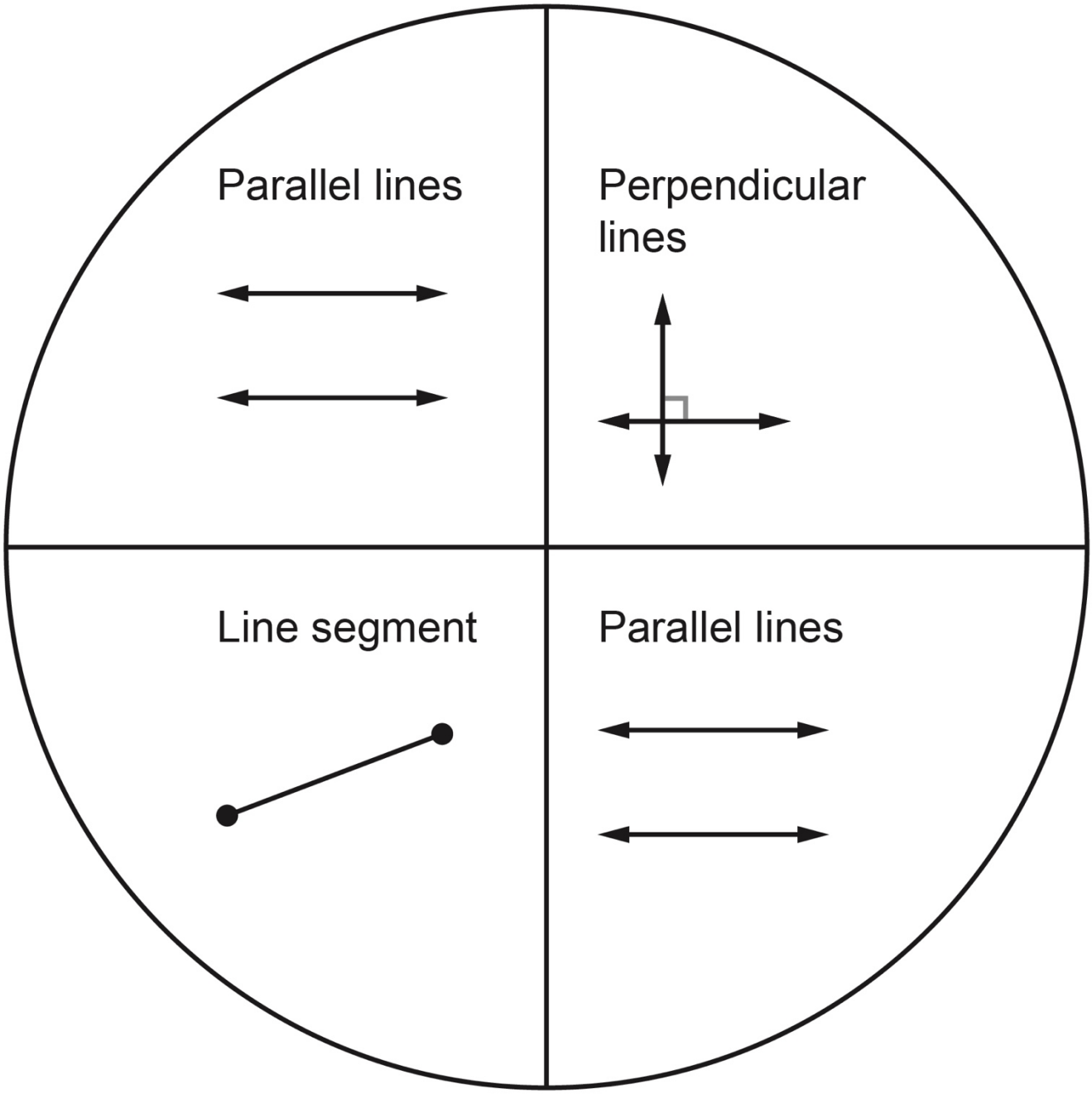
Dot, Dot, Draw!



Name _____ Date _____

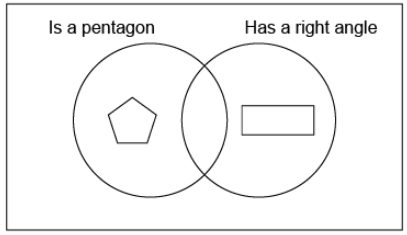
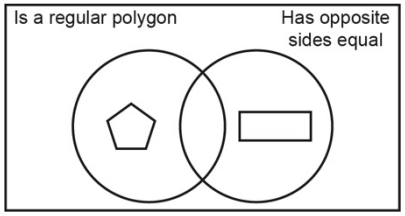
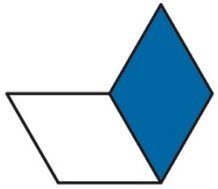
Master 63b

Dot, Dot, Draw!



Geometry

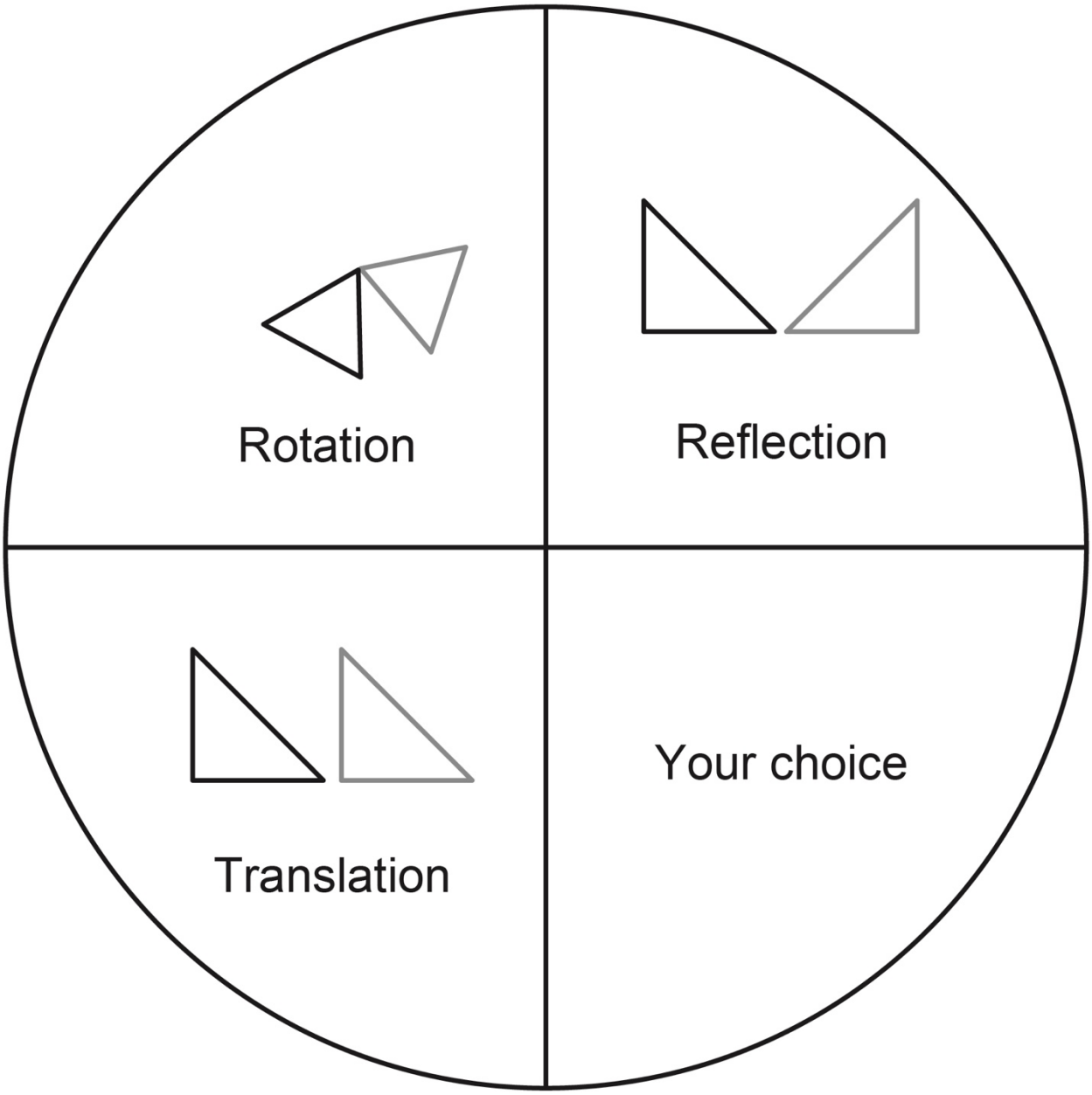
Activity 4 Assessment
Transforming Shapes

Investigating Geometric Properties of 2-D Shapes			
Uses geometric properties to compare and sort shapes	Sorts and classifies shapes in more than one way using geometric properties	Investigates the relationships between the sides and between the vertices of a polygon	Notices that geometric properties of a polygon do not change after a transformation
			
"I need a shape with 5 sides and at least one right angle to go in the overlap."	"The sorting rule could also be 'Is a regular polygon and has opposite sides equal.'"	"A rectangle has 2 pairs of parallel sides. The connected sides are perpendicular, so it has four 90° angles. It is an irregular polygon."	"After a rotation, the image faces a different way but still has 4 equal sides and opposite angles equal."
Observations/Documentation			

Name _____ Date _____

Master 64

Spinning for Transformations

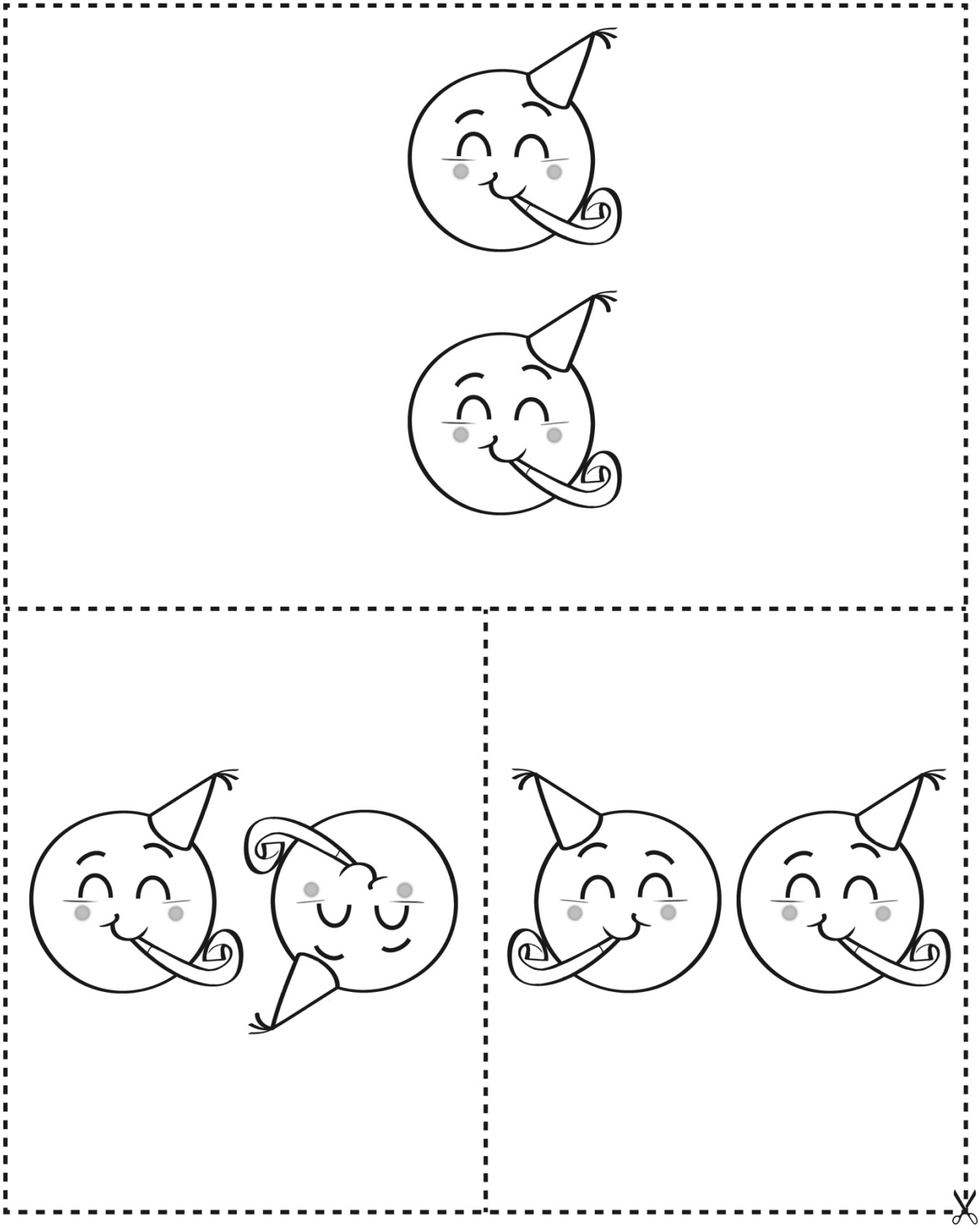


Name _____ Date _____

Master 65a

Transformation Images

Translation

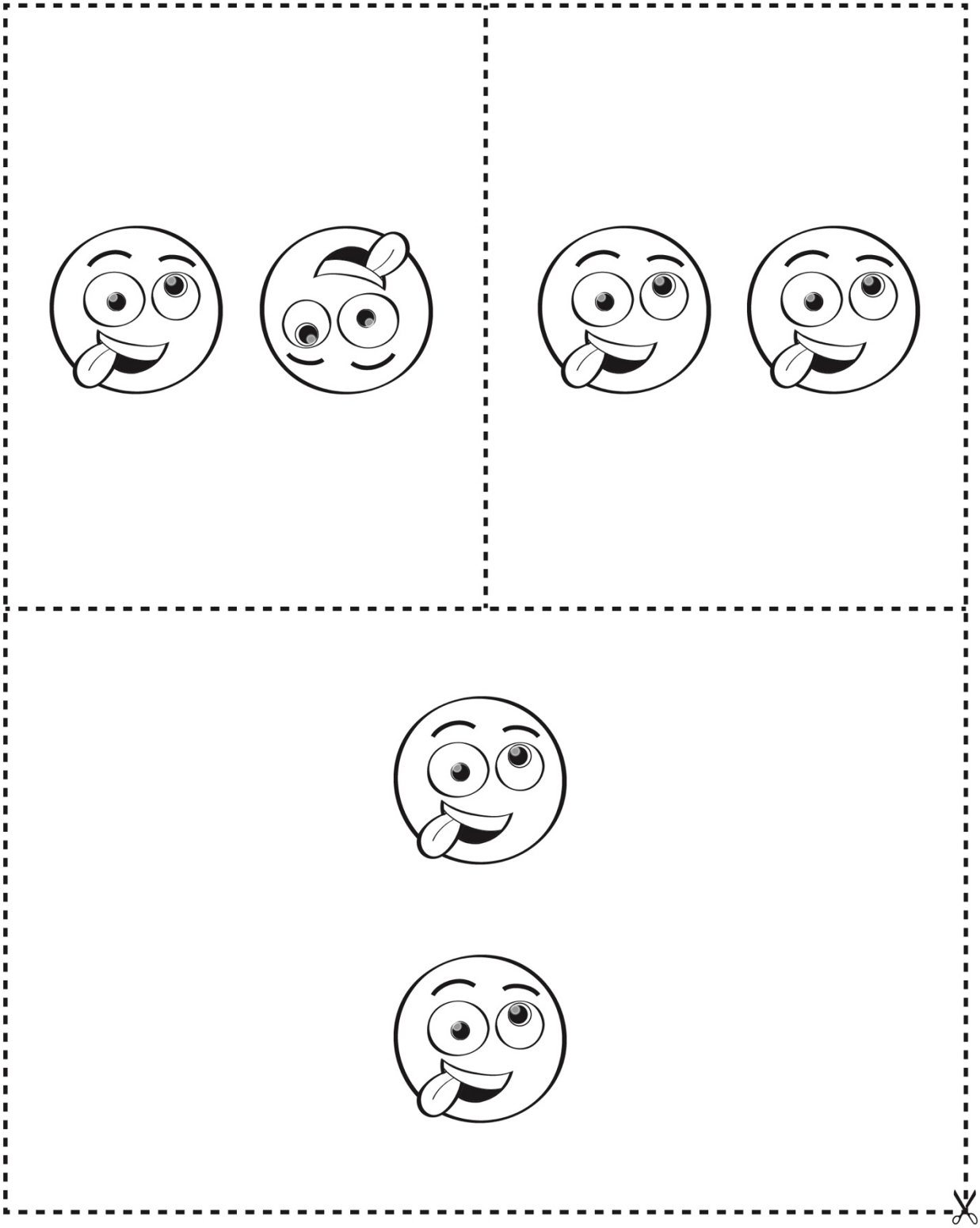


Name _____ Date _____

Master 65b

Transformation Images

Rotation

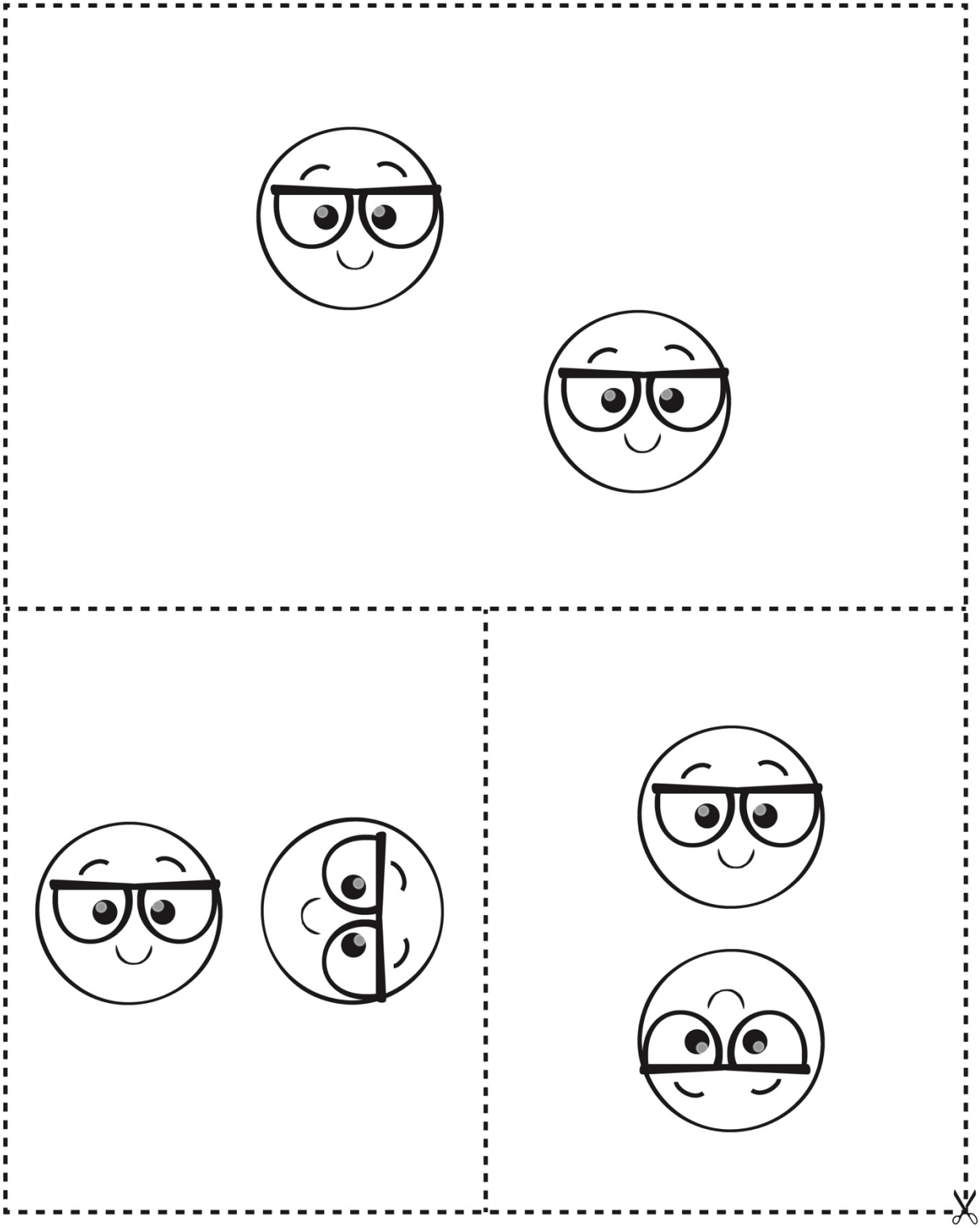


Name _____ Date _____

Master 65c

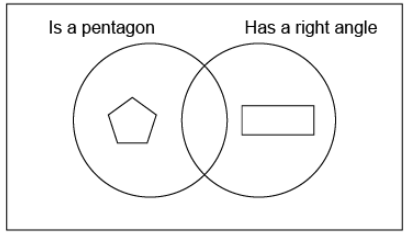
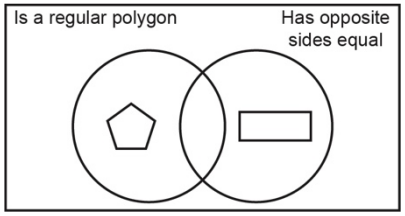
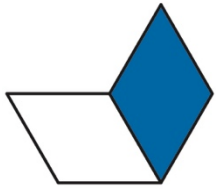
Transformation Images

Reflection



Geometry

Activity 5 Assessment
Consolidation

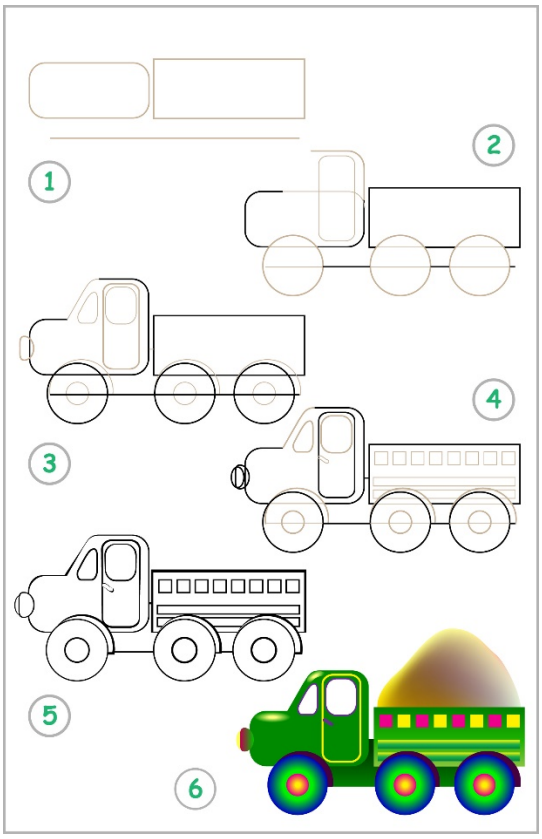
Investigating Geometric Properties of 2-D Shapes			
Uses geometric properties to compare and sort shapes	Sorts and classifies shapes in more than one way using geometric properties	Investigates the relationships between the sides and between the vertices of a polygon	Notices that geometric properties of a polygon do not change after a transformation
			
"I need a shape with 5 sides and at least one right angle to go in the overlap."	"The sorting rule could also be 'Is a regular polygon and has opposite sides equal.'"	"A rectangle has 2 pairs of parallel sides. The connected sides are perpendicular, so it has four 90° angles. It is an irregular polygon."	"After a rotation, the image faces a different way but still has 4 equal sides and opposite angles equal."
Observations/Documentation			

Name_____ Date_____

Master 66

Connections: Drawing from Shapes

Many artists start their drawings with simple shapes like circles, rectangles, and triangles.

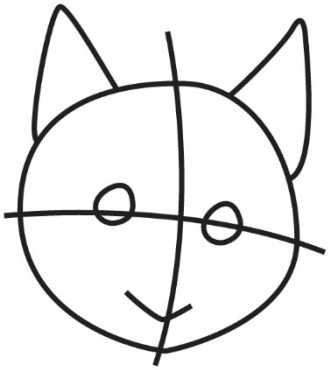


To draw this truck, the artist started with a line, a rectangle, and a rectangle with rounded corners.

What other shapes were used to finish the drawing?
What do they represent?

When first learning to draw, it is often easiest to start with simple shapes as guides.

For example, to draw a cat, we might start with a circle for the head and triangles for the ears.



Try using shapes to draw a picture of your favourite animal.

Name_____ Date_____

Master 67

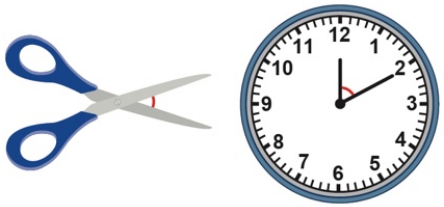
Attributes of Shapes Instructions

Number rolled	Team who rolled	Other team
1	Point to a shape.	Name the shape in two ways.
2	Point to two shapes.	Explain how the shapes are alike and how they are different.
3	Name an attribute to sort by.	Point to all shapes with that attribute.
4	Point to a shape that would be in the overlap of a Venn diagram.	Name two attributes that could have been used to sort. If possible, find a shape that belongs in each loop.
5	Name an attribute.	Point to a shape with that attribute. Draw or describe a new shape that has the same attribute.
6	Choose a shape. Create a riddle to describe your shape.	Solve the riddle. Point to the shape.

Geometry

Activity 6 Assessment
Investigating Angles

Comparing Angles

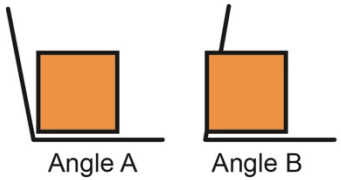
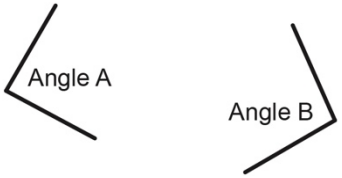
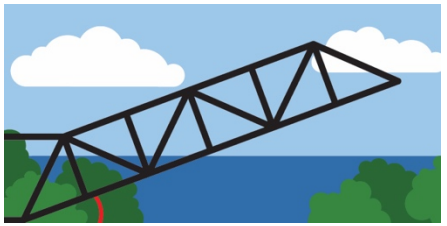
Recognizes angles in various situations (including shapes, clock, motion)	Classifies angles using 90° benchmark (i.e., is or is not a right angle)	Compares directly by superimposing, using a right angle
 "I see an angle between the blades of scissors and between the hands of a clock as they move."	 "The first angle is a right angle. The others are not right angles."	 "This triangle has angles less than a right angle. The angle is greater than a right angle."

Observations/Documentation

Geometry

Activity 6 Assessment
Investigating Angles

Comparing Angles (con't)

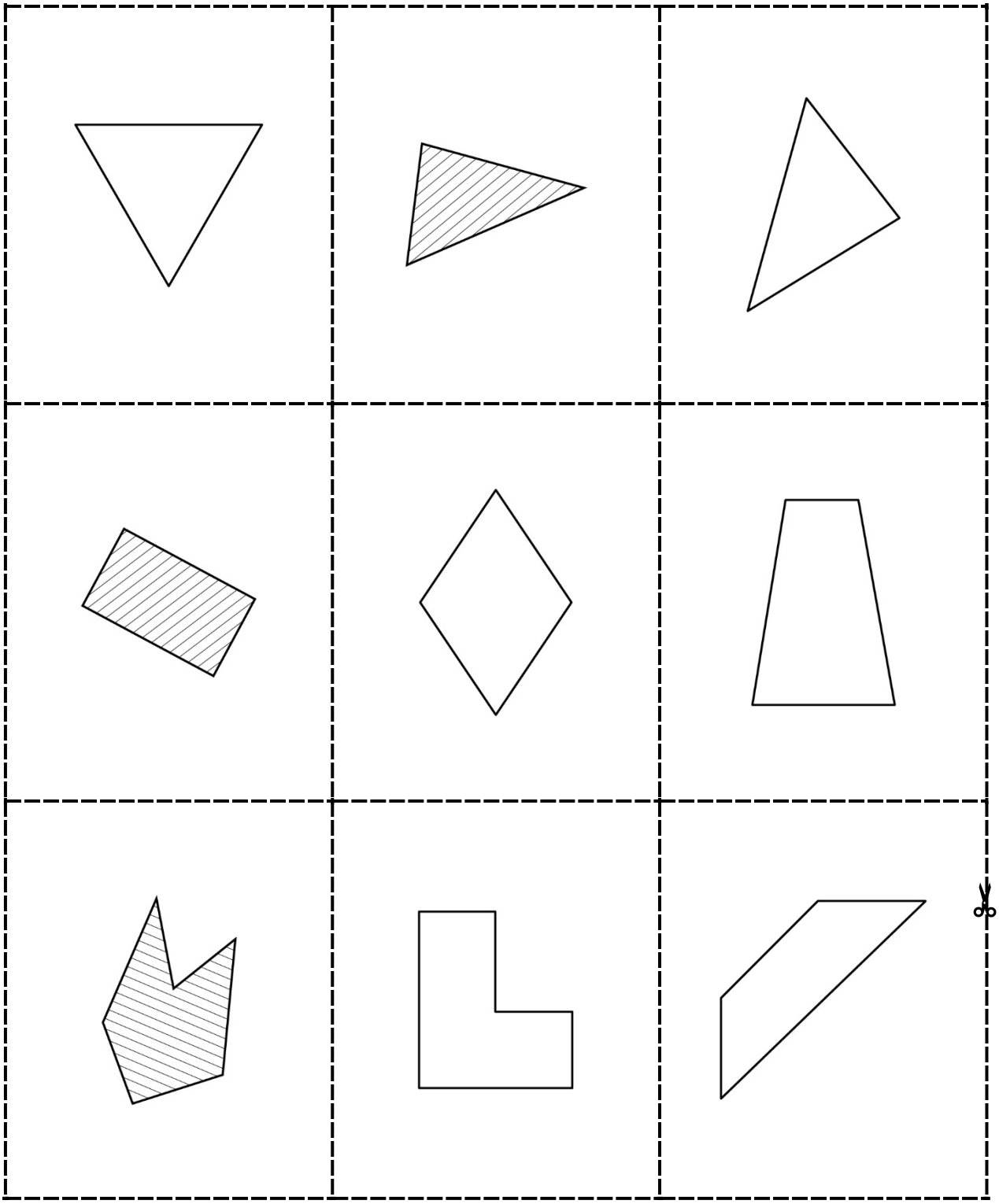
Compares angles indirectly, using a third angle	Estimates and compares angles flexibly	Uses angles to explore and better understand the world around them
		
"Angle A is a bit bigger than a right angle. Angle B is a bit smaller than a right angle. So, Angle A is bigger than Angle B."	"I think Angle B is a little bigger. I placed Angle A on top of Angle B, and it just fit inside. So, Angle B is a bit bigger."	"As the drawbridge goes up, the angle gets bigger. As the bridge comes back down, the angle gets smaller."

Observations/Documentation

Name_____ Date_____

Master 68a

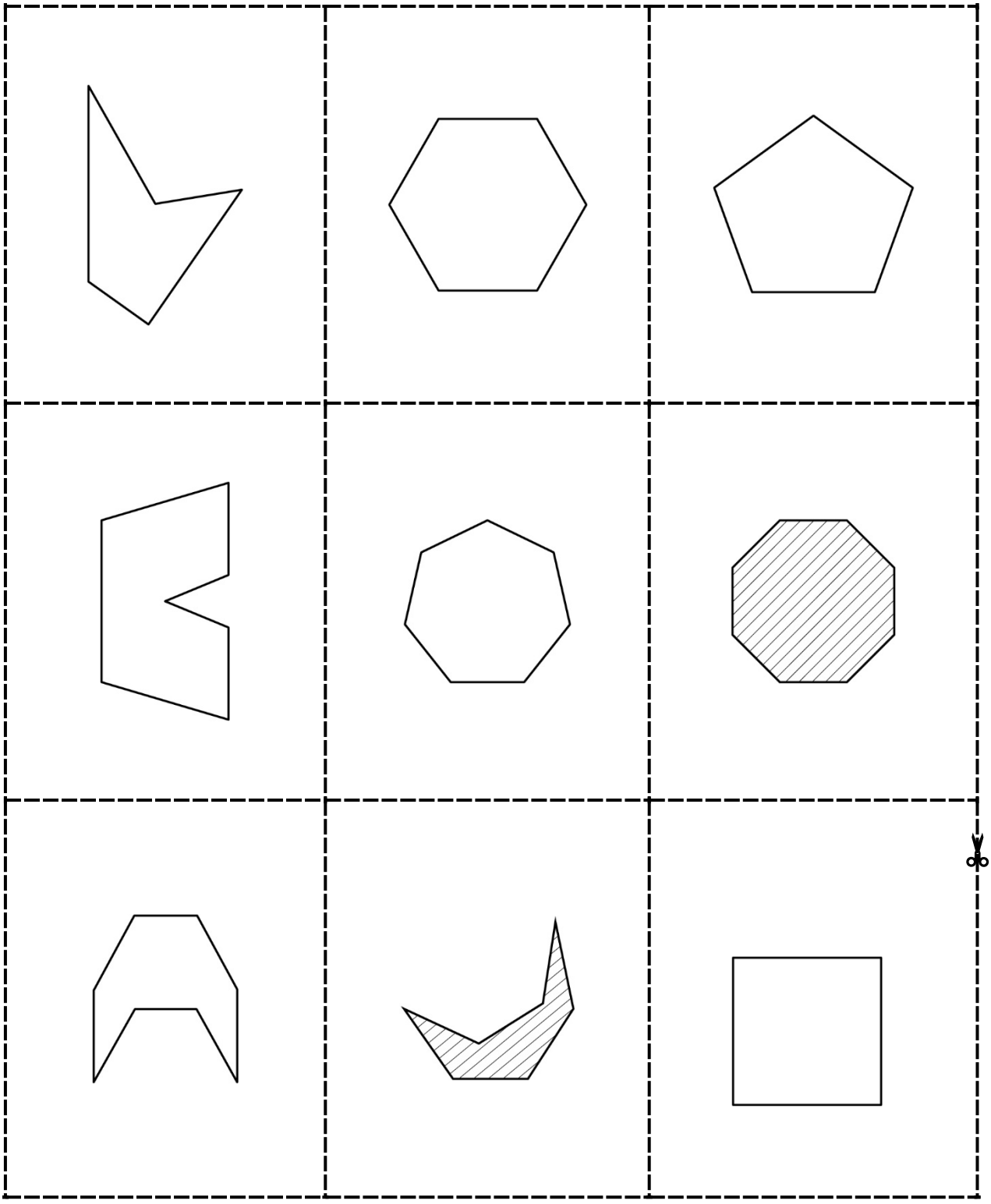
2-D Shapes



Name_____ Date_____

Master 68b

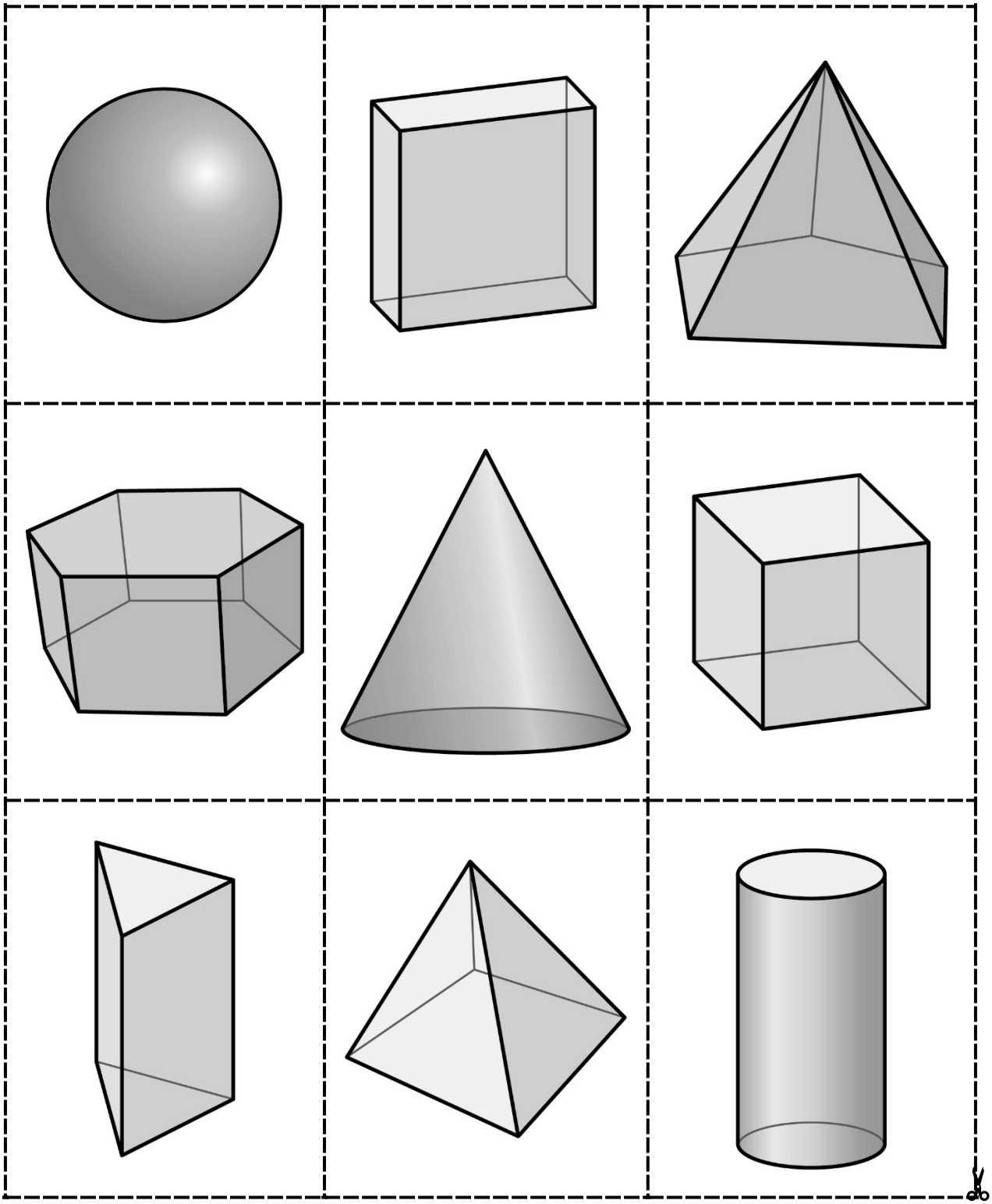
2-D Shapes



Name _____ Date _____

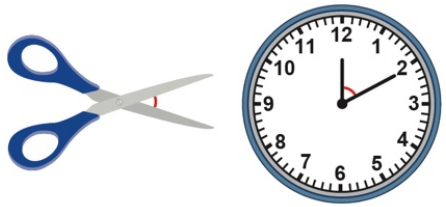
Master 69

3-D Solids



Geometry

Activity 7 Assessment
Comparing Angles

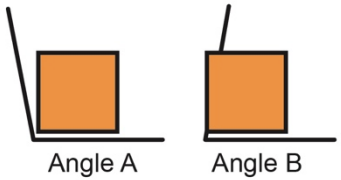
Comparing Angles		
Recognizes angles in various situations (including shapes, clock, motion)  "I see an angle between the blades of scissors and between the hands of a clock as they move."	Classifies angles using 90° benchmark (i.e., is or is not a right angle)  "The first angle is a right angle. The others are not right angles."	Compares directly by superimposing, using a right angle  "This triangle has angles less than a right angle. The angle is greater than a right angle."
Observations/Documentation		

Geometry

Activity 7 Assessment
Comparing Angles

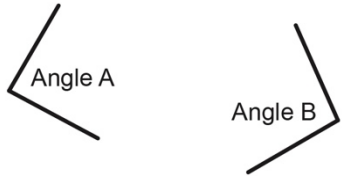
Comparing Angles (con't)

Compares angles indirectly, using a third angle



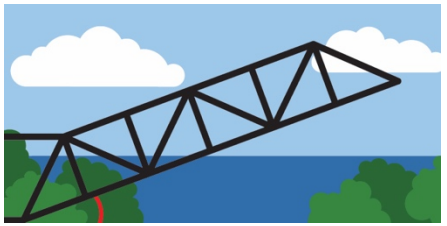
"Angle A is a bit bigger than a right angle. Angle B is a bit smaller than a right angle. So, Angle A is bigger than Angle B."

Estimates and compares angles flexibly



"I think Angle B is a little bigger. I placed Angle A on top of Angle B, and it just fit inside. So, Angle B is a bit bigger."

Uses angles to explore and better understand the world around them



"As the drawbridge goes up, the angle gets bigger. As the bridge comes back down, the angle gets smaller."

Observations/Documentation

Name_____ Date_____

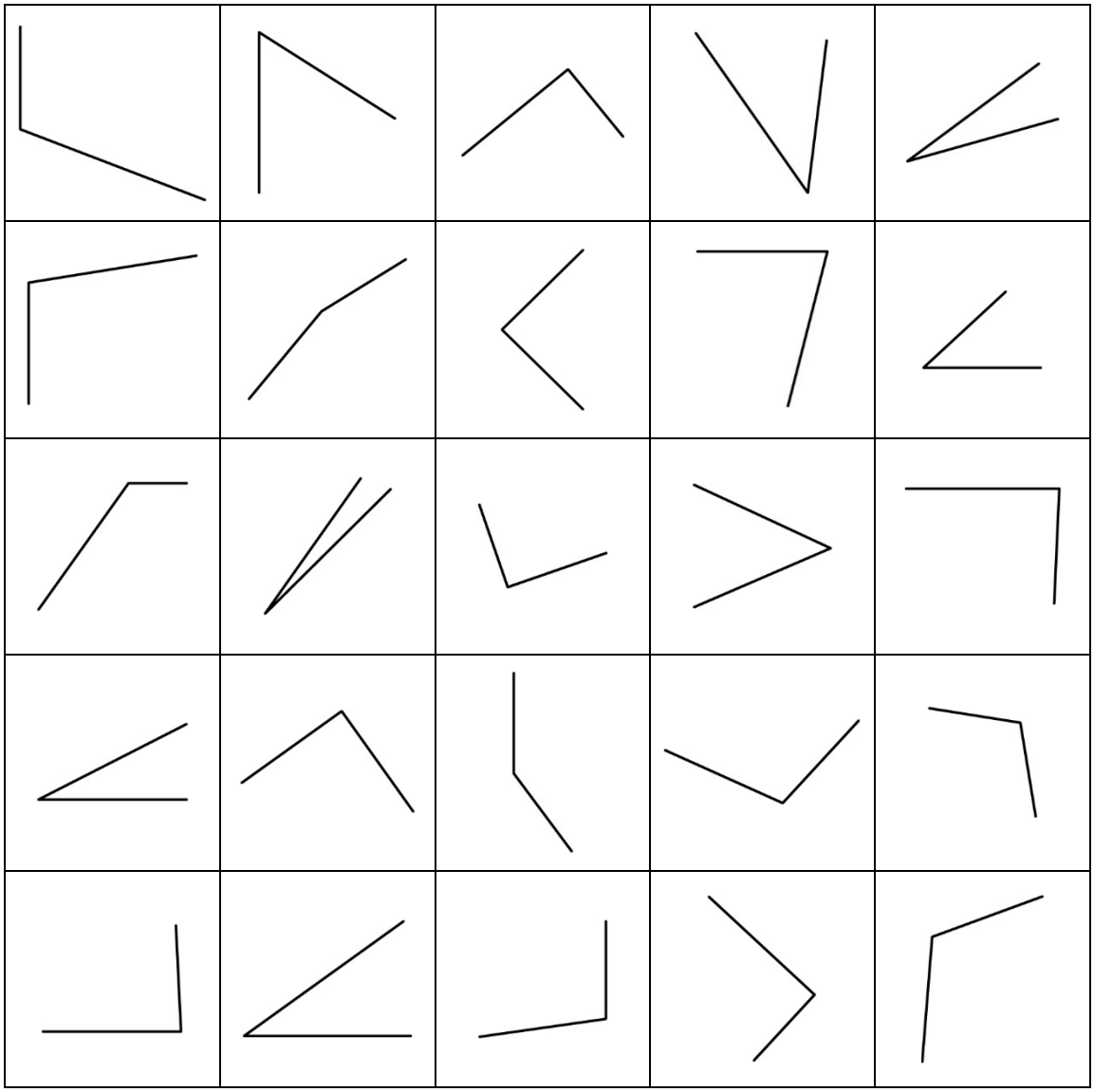
Master 70a

Angle Search

☐ Angle is less than a right angle.

☐ Angle is a right angle.

☐ Angle is greater than a right angle.

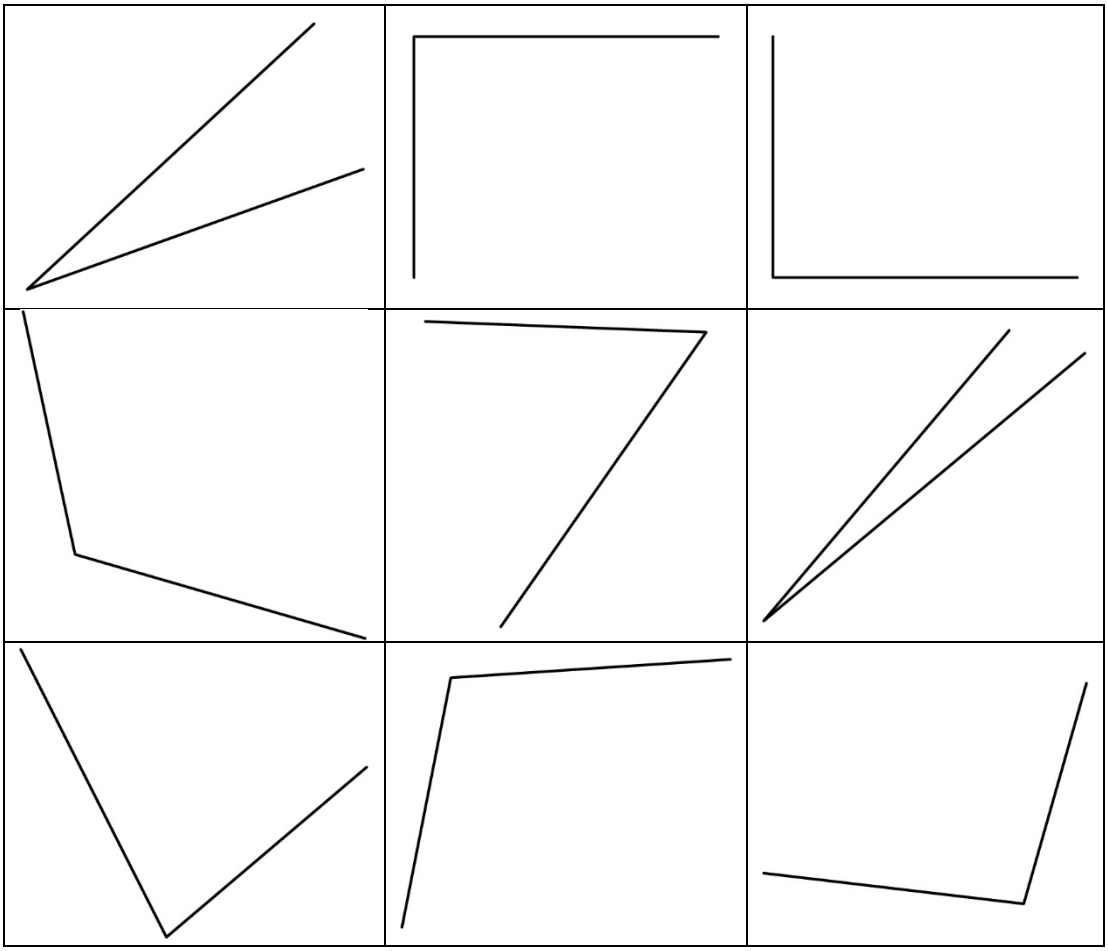


Name_____ Date_____

Master 70b

Angle Search (Accommodation)

- ☐ Angle is less than a right angle.
- ☐ Angle is a right angle.
- ☐ Angle is greater than a right angle.



Name_____ Date_____

Master 71

Connections: Art with Geometry

This art of a fox was created by Isla, a young student artist.
She used lots of lines, angles, and shapes to create the drawing.
How would you describe this art to a friend?

Create your own piece of art that meets these criteria.

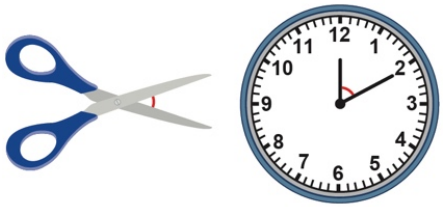
- has at least 3 different shapes
- has at least 4 of each type of angle (right angle, angle greater than a right angle, and angle less than a right angle)

You might choose to use Pattern Blocks create your art.

Geometry

Activity 8 Assessment
Consolidation

Comparing Angles

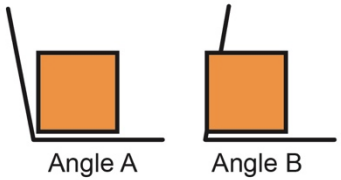
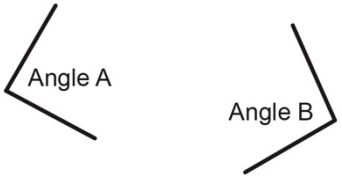
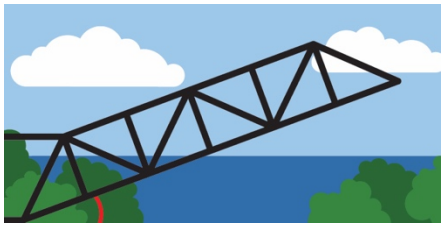
Recognizes angles in various situations (including shapes, clock, motion)	Classifies angles using 90° benchmark (i.e., is or is not a right angle)	Compares directly by superimposing, using a right angle
 "I see an angle between the blades of scissors and between the hands of a clock as they move."	 "The first angle is a right angle. The others are not right angles."	 "This triangle has angles less than a right angle. The angle is greater than a right angle."

Observations/Documentation

Geometry

Activity 8 Assessment
Consolidation

Comparing Angles (con't)

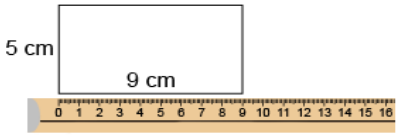
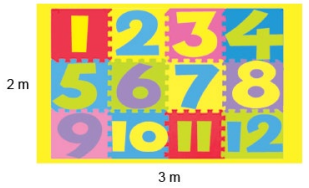
Compares angles indirectly, using a third angle	Estimates and compares angles flexibly	Uses angles to explore and better understand the world around them
		
"Angle A is a bit bigger than a right angle. Angle B is a bit smaller than a right angle. So, Angle A is bigger than Angle B."	"I think Angle B is a little bigger. I placed Angle A on top of Angle B, and it just fit inside. So, Angle B is a bit bigger."	"As the drawbridge goes up, the angle gets bigger. As the bridge comes back down, the angle gets smaller."

Observations/Documentation

Measurement

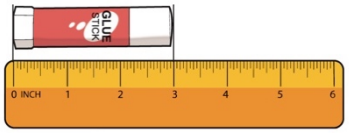
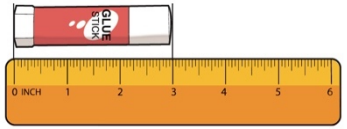
Activity 1 Assessment

Estimating Length

Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Activity 1 Assessment
Estimating Length

Measuring Length and Perimeter (con't)

Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)	Measures using imperial units (inch, foot, yard)	Flexibly approximates conversions among imperial units and between metric and imperial units
 "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	 "The glue stick is 3 inches long."	 "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."

Observations/Documentation

Name_____ Date_____

Master 41

Estimating Length

Measure	Personal Referent
1 cm	
10 cm	
1 m	

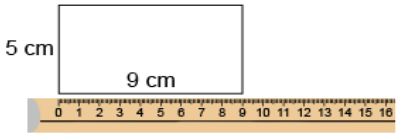
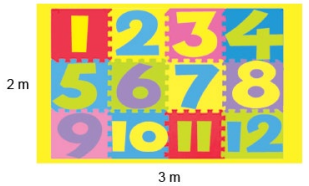
Use your personal referents.
Estimate each measure.

Object	Referent Used	Estimate
Height of a water bottle		
Height of a desk		
Width of an eraser		
Width of the whiteboard		
Length of a paper clip		
Height of classroom door		
Length of a square Pattern Block		
Width of a sheet of paper		
Width of classroom		
Your choice _____		

Measurement

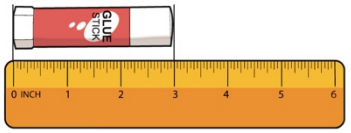
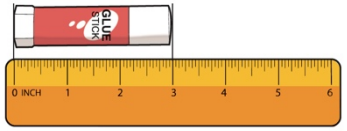
Activity 2 Assessment

The Metre

Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Activity 2 Assessment
The Metre

Measuring Length and Perimeter (con't)

Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)	Measures using imperial units (inch, foot, yard)	Flexibly approximates conversions among imperial units and between metric and imperial units
 "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	 "The glue stick is 3 inches long."	 "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."

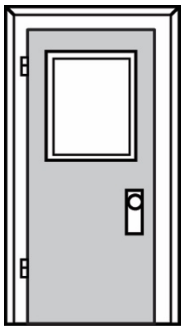
Observations/Documentation

Name _____ Date _____

Master 42a

How Many Metres? (Part 1)

Height of Classroom Door



Our estimate is

_____

Our measure is

_____

Length of Teacher's Desk

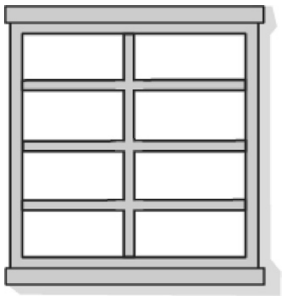
Our estimate is

_____

Our measure is

_____

Width of Window



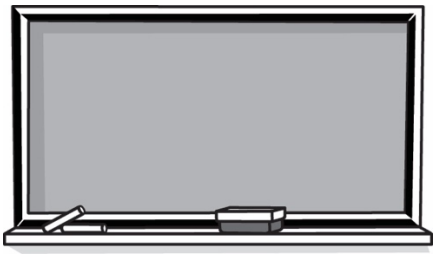
Our estimate is

_____

Our measure is

_____

Length of Blackboard



Our estimate is

_____

Our measure is

_____

Name _____ Date _____

Master 42b

How Many Metres? (Part 2)

Width of Hallway

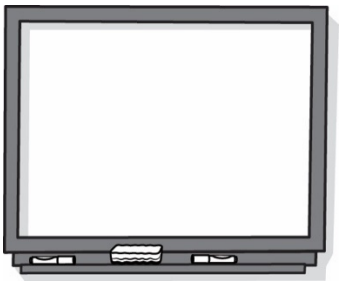
Our estimate is

_____

Our measure is

_____

Length of Whiteboard



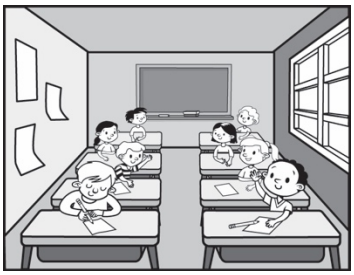
Our estimate is

_____

Our measure is

_____

Length of Classroom



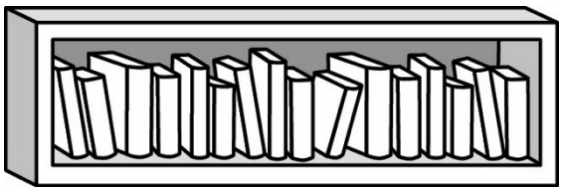
Our estimate is

_____

Our measure is

_____

Length of Bookshelf



Our estimate is

_____

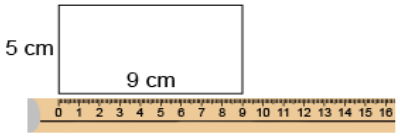
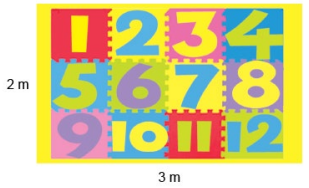
Our measure is

_____

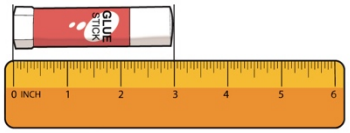
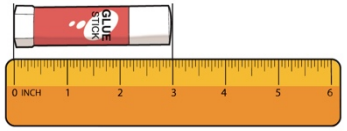
Measurement

Activity 3 Assessment

The Centimetre

Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

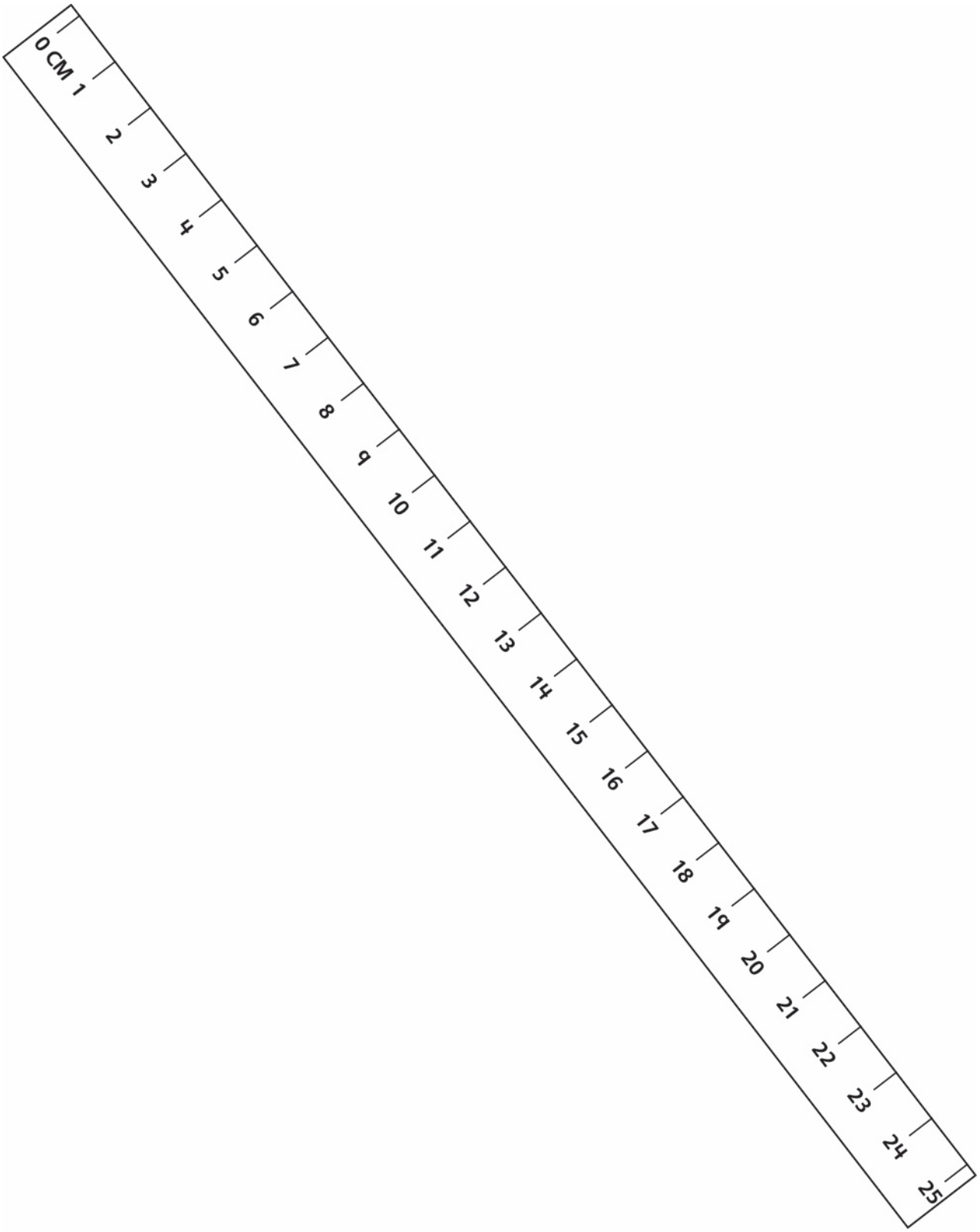
Activity 3 Assessment
The Centimetre

Measuring Length and Perimeter (con't)		
Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)  "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	Measures using imperial units (inch, foot, yard)  "The glue stick is 3 inches long."	Flexibly approximates conversions among imperial units and between metric and imperial units  "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."
Observations/Documentation		

Name_____ Date _____

Master 43

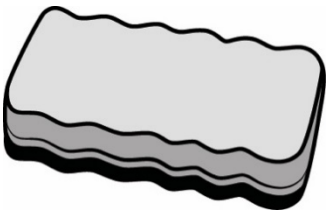
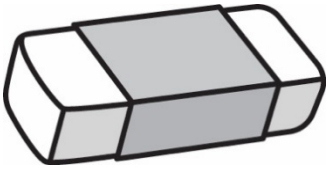
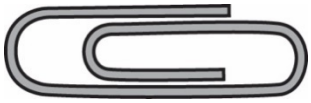
Centimetre Ruler



Name _____ Date _____

Master 44a

How Many Centimetres?

Whiteboard Eraser  Our estimate is _____ Our measure is _____	**Marker**  Our estimate is _____ Our measure is _____
Eraser  Our estimate is _____ Our measure is _____	**Large Paper Clip**  Our estimate is _____ Our measure is _____

Name _____ Date _____

Master 44b

How Many Centimetres?

Small Scissors

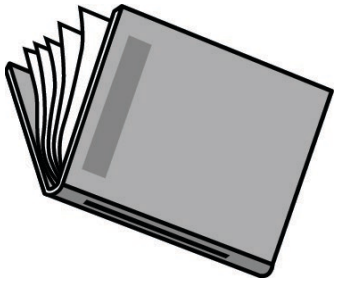
Our estimate is

_____

Our measure is

_____

Length of Book



Our estimate is

_____

Our measure is

_____

Length of Crayon

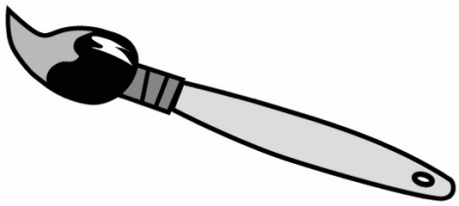
Our estimate is

_____

Our measure is

_____

Length of Paint Brush



Our estimate is

_____

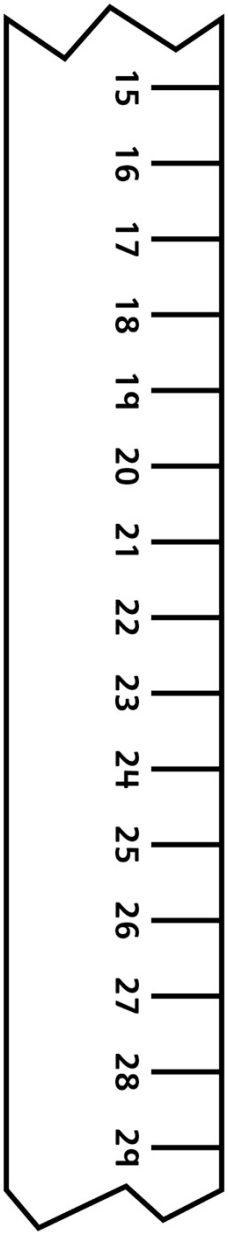
Our measure is

_____

Name _____ Date _____

Master 45

Broken Ruler
(for Combined Grades Extension)

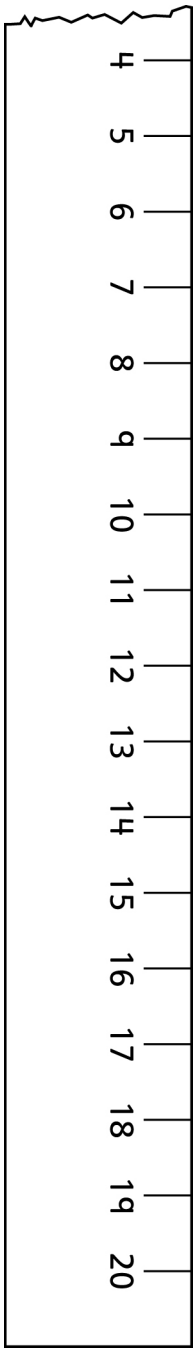


Name _____ Date _____

Master 46a

Broken Rulers

Ruler A

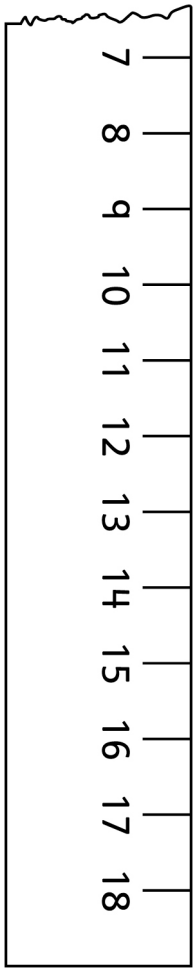


Name _____ Date _____

Master 46b

Broken Rulers

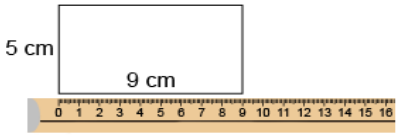
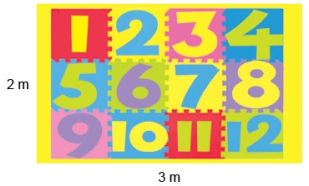
Ruler B



Measurement

Activity 4 Assessment

Estimating and Measuring in Millimetres

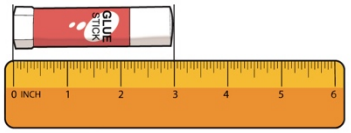
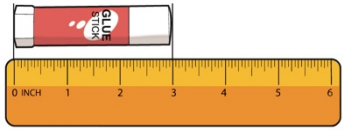
Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Measurement

Activity 4 Assessment

Estimating and Measuring in Millimetres

Measuring Length and Perimeter (con't)

Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)	Measures using imperial units (inch, foot, yard)	Flexibly approximates conversions among imperial units and between metric and imperial units
 "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	 "The glue stick is 3 inches long."	 "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."

Observations/Documentation

Name_____ Date_____

Master 47

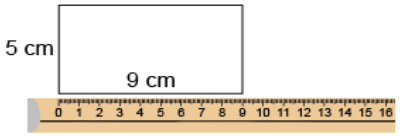
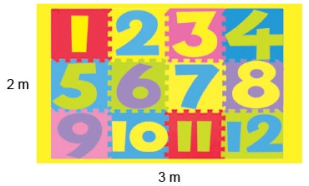
Our Measures

Object	Length, Width, or Height	Estimate	Measure

Measurement

Activity 5 Assessment

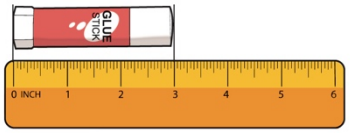
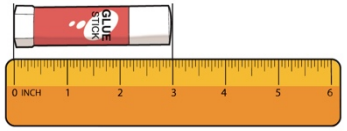
Metres, Centimetres, or Millimetres?

Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Measurement

Activity 5 Assessment

Metres, Centimetres, or Millimetres?

Measuring Length and Perimeter (con't)		
Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)  "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	Measures using imperial units (inch, foot, yard)  "The glue stick is 3 inches long."	Flexibly approximates conversions among imperial units and between metric and imperial units  "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."
Observations/Documentation		

Name _____ Date _____

Master 48a

Metres, Centimetres, or Millimetres?

Length of Pen

We will use

mm **cm** **m**

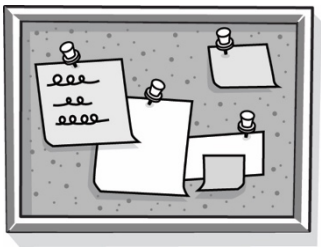
We will use

ruler or **metre stick**

Our measure is

_____

Length of Bulletin Board



We will use

mm **cm** **m**

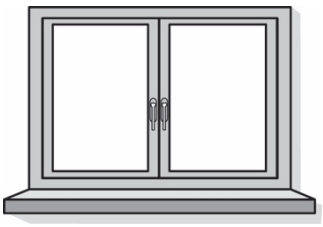
We will use

ruler or **metre stick**

Our measure is

_____

Length of Window Ledge



We will use

mm **cm** **m**

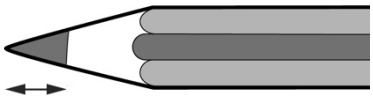
We will use

ruler or **metre stick**

Our measure is

_____

Pencil Point



We will use

mm **cm** **m**

We will use

ruler or **metre stick**

Our measure is

_____

Name _____ Date _____

Master 48b

Metres, Centimetres, or Millimetres? (for Extension)

Length of Your Shoe

We will use

mm **cm** **m**

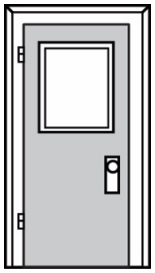
We will use

ruler or **metre stick**

Our measure is

_____

Height of Classroom Door



We will use

mm **cm** **m**

We will use

ruler or **metre stick**

Our measure is

_____

Height of a Classmate

We will use

mm **cm** **m**

We will use

ruler or **metre stick**

Our measure is

_____

Width of a Letter in a Book

We will use

mm **cm** **m**

We will use

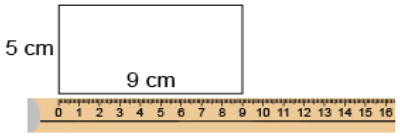
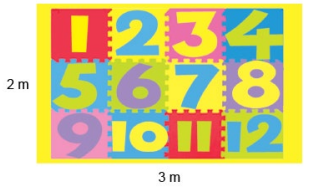
ruler or **metre stick**

Our measure is

_____

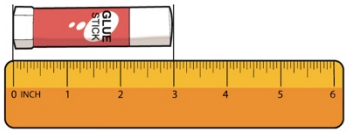
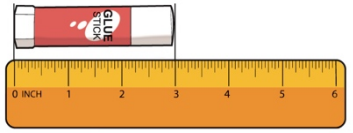
Measurement

Activity 6 Assessment
Measuring Length

Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Measurement

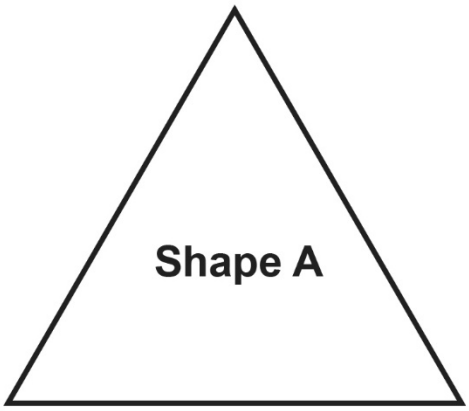
Activity 6 Assessment
Measuring Length

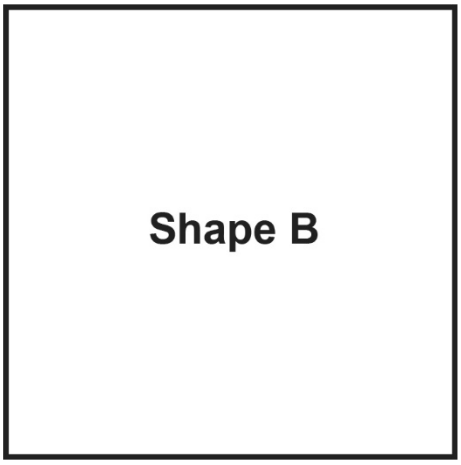
Measuring Length and Perimeter (con't)		
Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)  "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	Measures using imperial units (inch, foot, yard)  "The glue stick is 3 inches long."	Flexibly approximates conversions among imperial units and between metric and imperial units  "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."
Observations/Documentation		

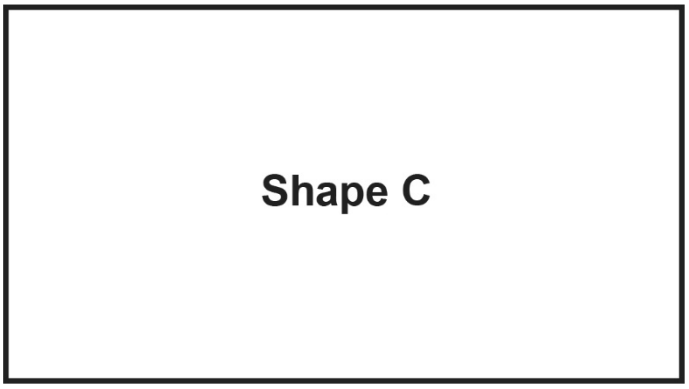
Name_____ Date_____

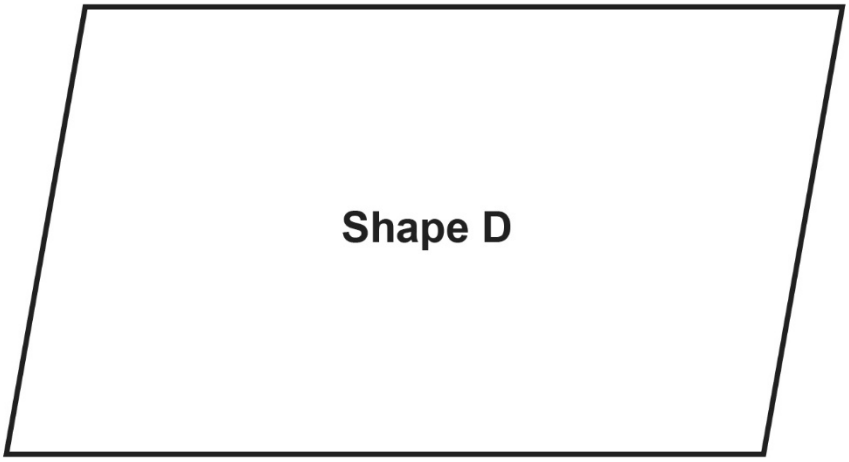
Master 49a

2-D Shapes





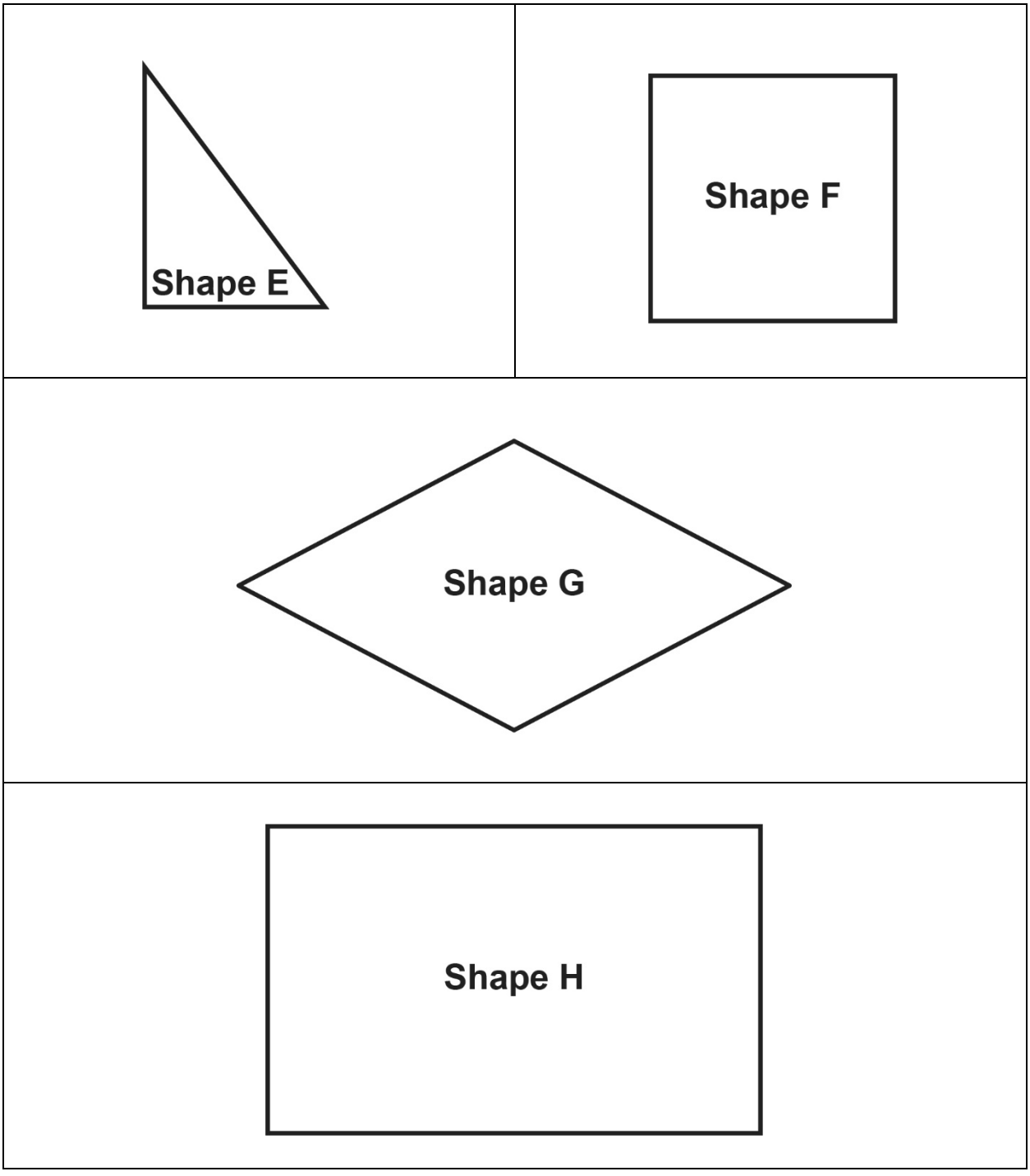




Name_____ Date_____

Master 49b

2-D Shapes



Name_____ Date_____

Master 50

3-D Objects Recording Sheet

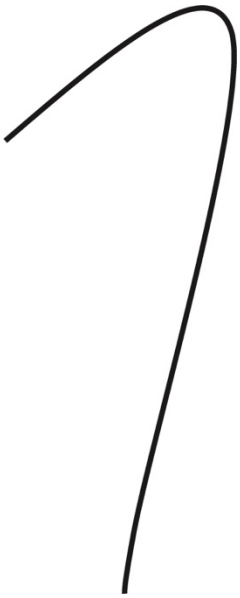
Height			
Width			
Length			
Object			

Name _____ Date _____

Master 51

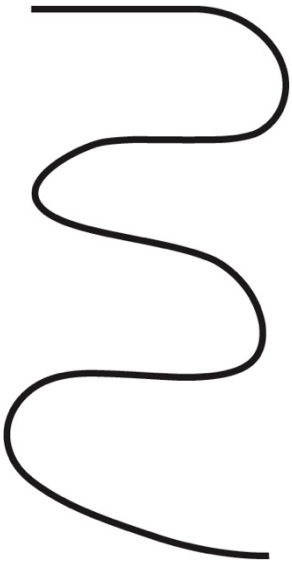
Measuring Curves

Curve A

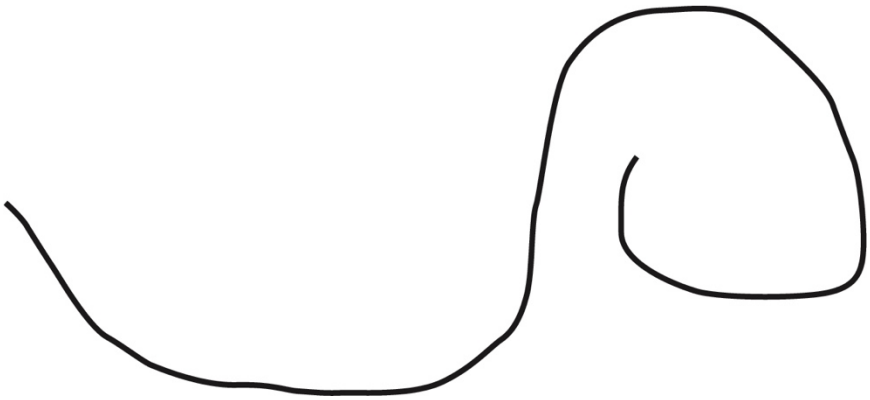


Curve B

Curve C



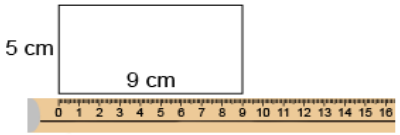
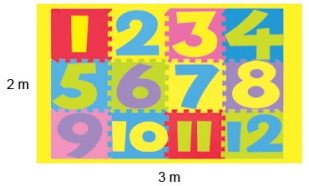
Curve D



Measurement

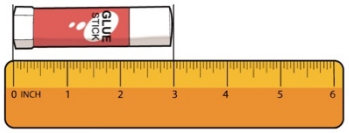
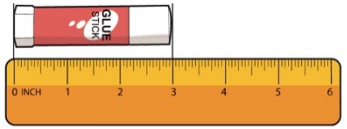
Activity 7 Assessment

Imperial Measures

Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Measurement

Activity 7 Assessment
Imperial Measures

Measuring Length and Perimeter (con't)		
Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)  "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	Measures using imperial units (inch, foot, yard)  "The glue stick is 3 inches long."	Flexibly approximates conversions among imperial units and between metric and imperial units  "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."
Observations/Documentation		

Name_____ Date _____

Master 52a

Matching Measures

2 inches	6 inches
1 foot	12 inches
1 yard	36 inches
4 inches	1 inch
6 feet	Choose Your Own

Name_____ Date _____

Master 52b

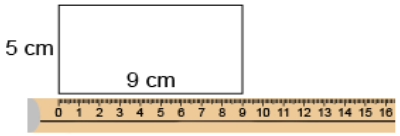
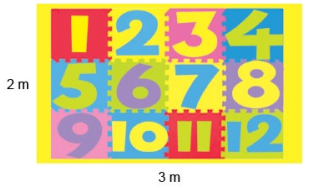
Matching Measures

*Note: copy on a different coloured paper than Master 52a

5 cm	15 cm
30 cm	30 cm
1 m	3 feet
10 cm	$2\frac{1}{2}$ cm
2 m	Choose Your Own

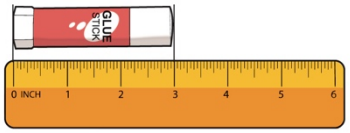
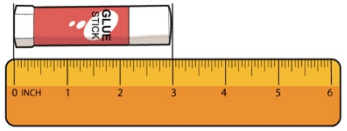
Measurement

Activity 8 Assessment
Measuring Perimeter

Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Measurement

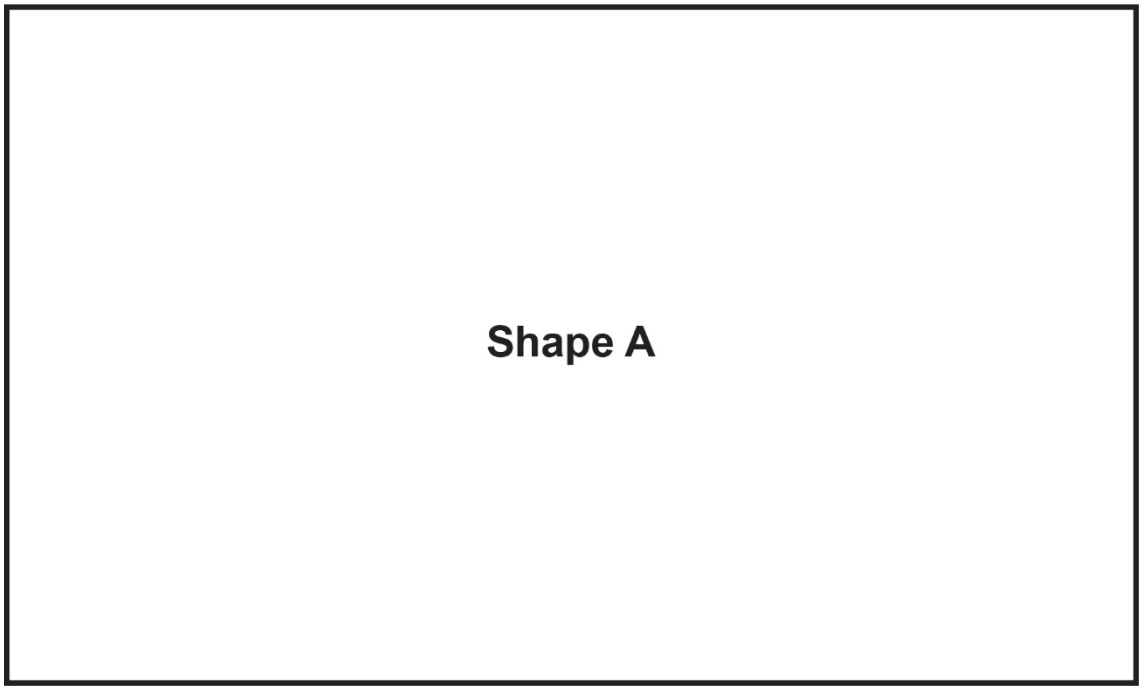
Activity 8 Assessment
Measuring Perimeter

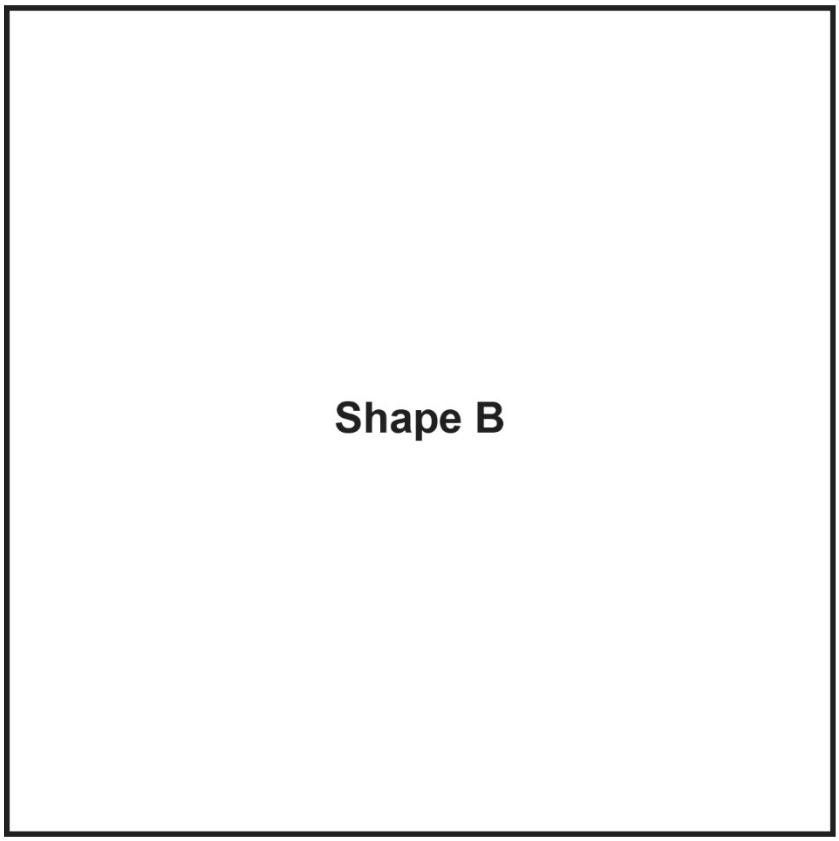
Measuring Length and Perimeter (con't)		
Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)  "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	Measures using imperial units (inch, foot, yard)  "The glue stick is 3 inches long."	Flexibly approximates conversions among imperial units and between metric and imperial units  "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."
Observations/Documentation		

Name_____ Date_____

Master 53a

Perimeter Shapes

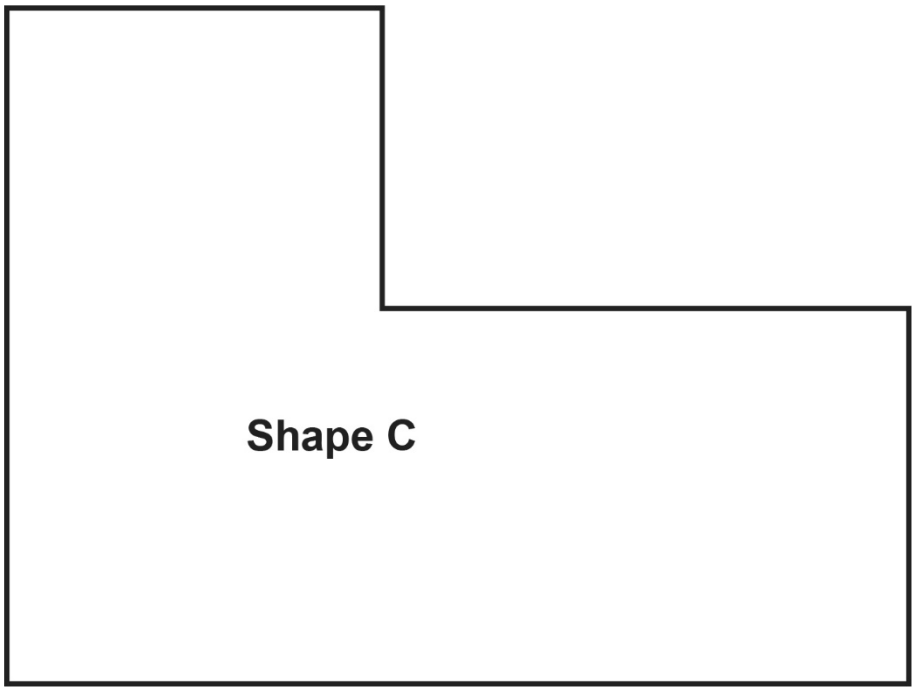




Name_____ Date_____

Master 53b

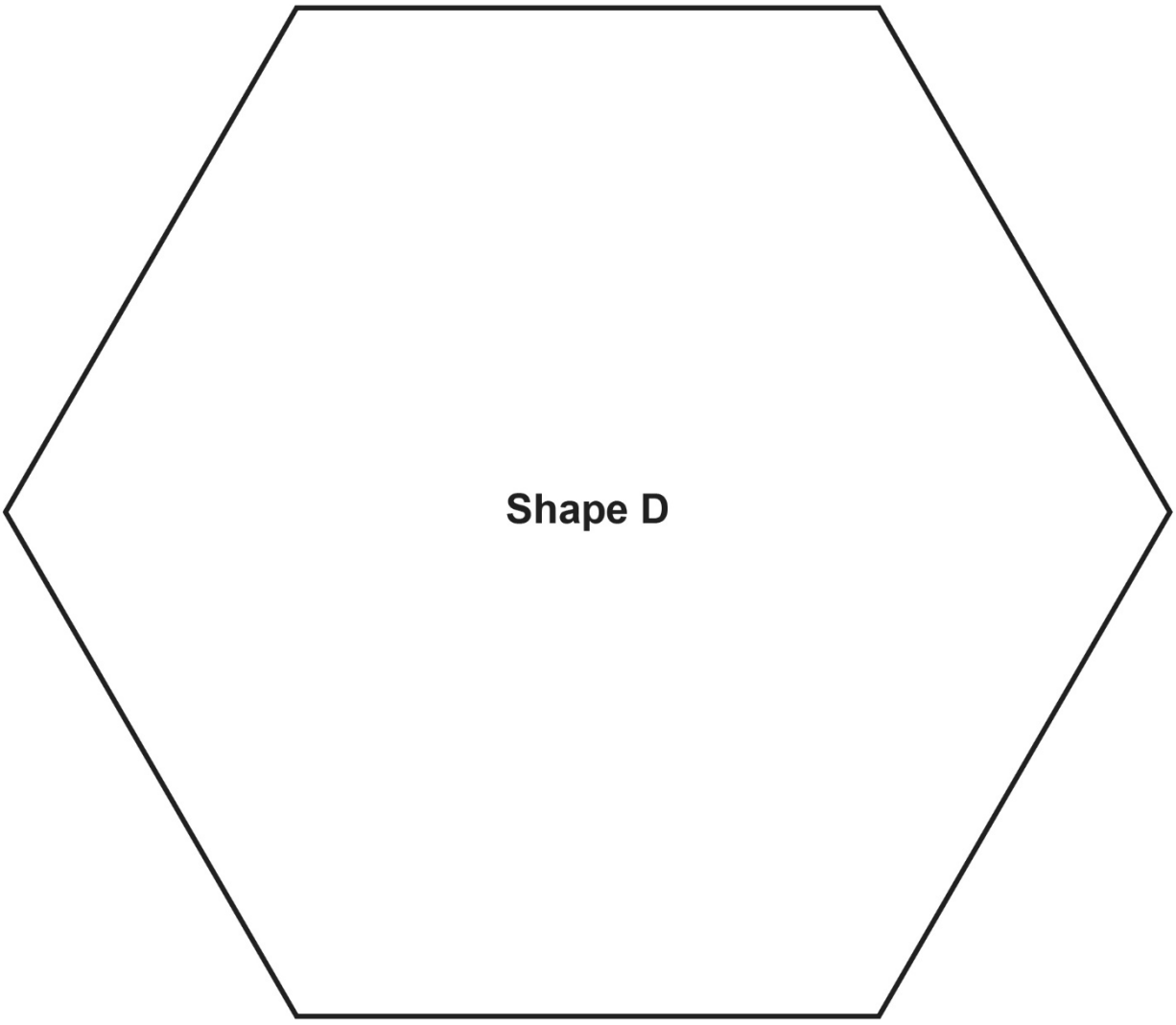
Perimeter Shapes



Name_____ Date_____

Master 53c

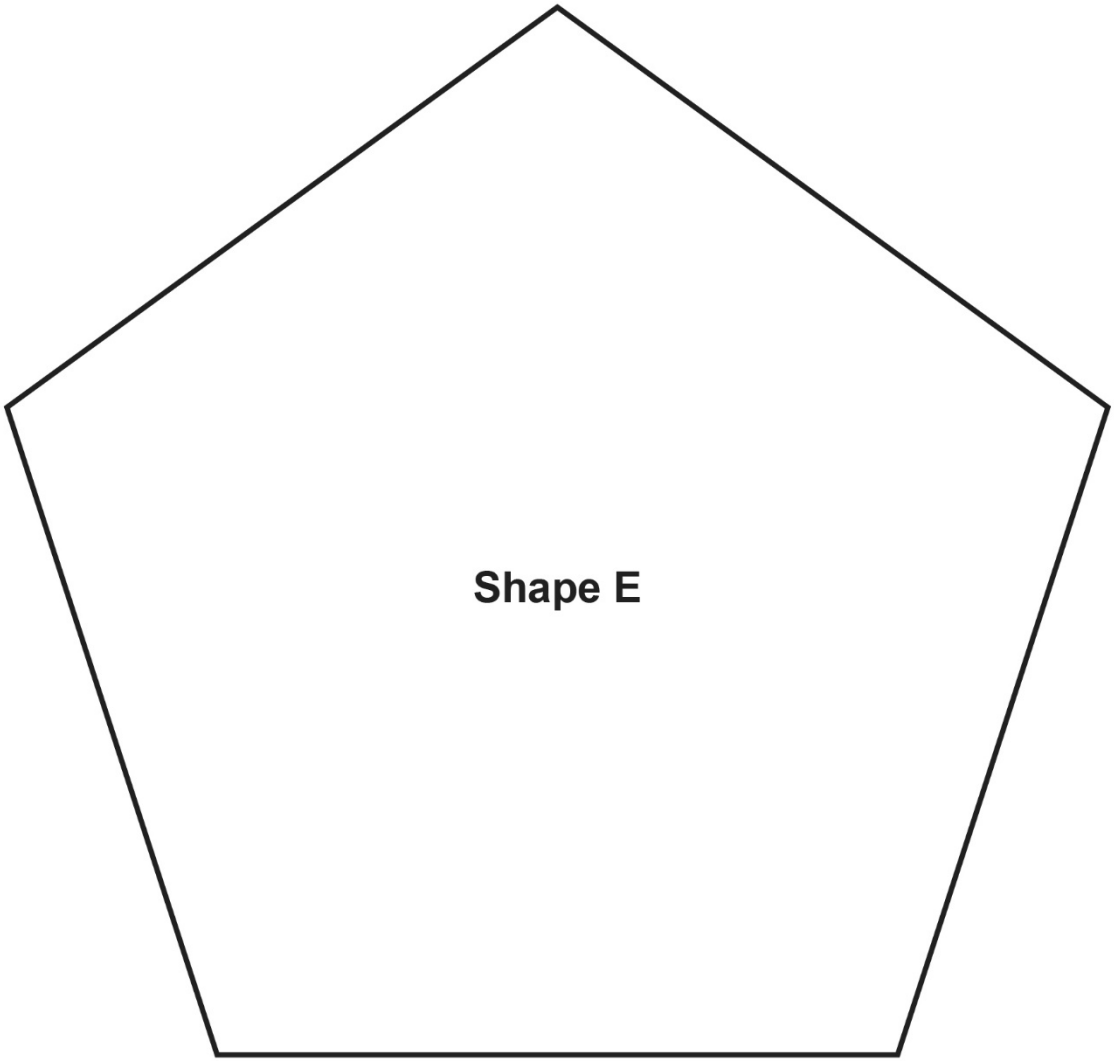
Perimeter Shapes



Name_____ Date_____

Master 53d

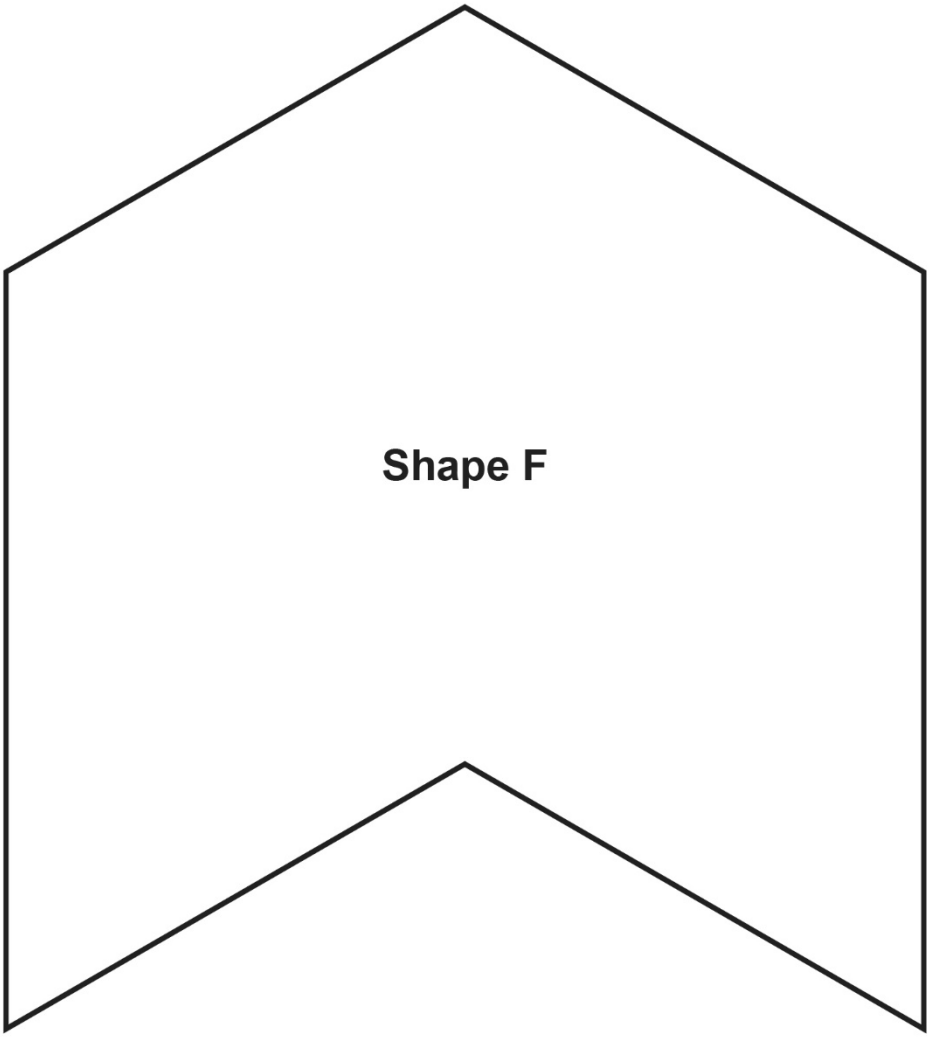
Perimeter Shapes



Name_____ Date_____

Master 53e

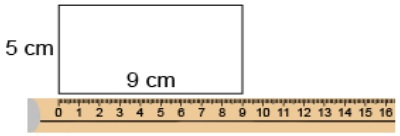
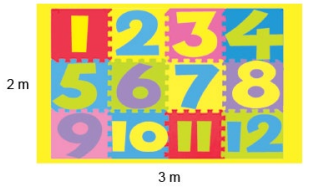
Perimeter Shapes



Measurement

Activity 9 Assessment

How Many Can You Make?

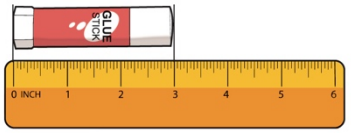
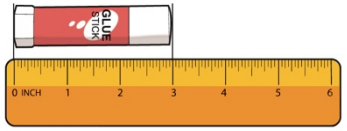
Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Measurement

Activity 9 Assessment

How Many Can You Make?

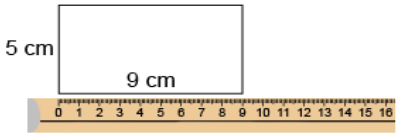
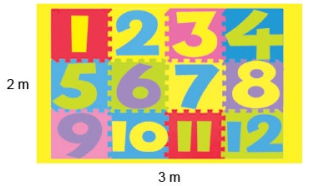
Measuring Length and Perimeter (con't)

Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)	Measures using imperial units (inch, foot, yard)	Flexibly approximates conversions among imperial units and between metric and imperial units
 "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	 "The glue stick is 3 inches long."	 "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."

Observations/Documentation

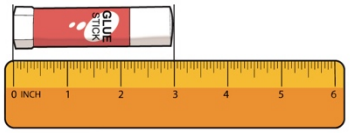
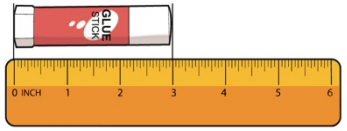
Measurement

Activity 10 Assessment
Consolidation

Measuring Length and Perimeter		
Uses benchmarks to estimate in standard units (m, cm, mm) "I used a big step as a referent for one metre. The classroom is about 7 big steps, or 7 m wide. Its perimeter is about 30 big steps, or 30 m."	Measures using standard units (m, cm, mm)  "The perimeter is 28 cm."	Selects and uses appropriate standard units  "I would use m because cm and mm are too small. The perimeter is 10 m because 3 + 2 + 3 + 2 = 10."
Observations/Documentation		

Measurement

Activity 10 Assessment
Consolidation

Measuring Length and Perimeter (con't)		
Relates standard units of length (1 m = 100 cm, 1 cm = 10 mm, 1 m = 1000 mm)  "The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm. Since 1 m = 1000 mm, 8 m = 8000 mm."	Measures using imperial units (inch, foot, yard)  "The glue stick is 3 inches long."	Flexibly approximates conversions among imperial units and between metric and imperial units  "There are about 2 cm in 1 inch. So, 3 inches is about 3 × 2 cm, or 6 cm. The glue stick is about 6 cm long."
Observations/Documentation		

Name_____ Date_____

Master 54a

Instructions for Centres

Length Centre

Task A: Estimating and Measuring Length

- Find an object whose length you would measure in millimetres.
  Find an object whose length you would measure in centimetres.
  Find another object whose length you would measure in metres.
- Estimate the length of each, then measure to check.
- How close were your estimates?
  Is any object more than 100 cm long?
  More than 2000 mm long? Explain.

Task B: Converting Between Units

- Find an object whose length you would measure in inches.
- Measure its length to the nearest inch,
  then convert the measure to centimetres.
- Measure with a centimetre ruler to check your conversion.
- Find an object whose length you would measure in yards.
- Measure its length to the nearest yard,
  then convert the measure to metres and to feet.
- Check your work. Describe the strategy you used.

Name_____ Date_____

Master 54b

Instructions for Centres

Perimeter Centre

Task A: Estimating and Measuring Perimeter

- Roll the number cubes.
  Use the numbers rolled to make a two-digit number.
  Record the number.
- Find something in the classroom that has a perimeter of about that many centimetres.
- Measure to check.
- How close was your estimate to the actual measure?

Task B: Drawing Shapes with the Same Perimeter

- Roll the number cubes.
  Use one number for length and the other for width.
- Draw a rectangle on 1-cm grid paper with that length and width.
  Find its perimeter.
- Draw three more shapes with the same perimeter.

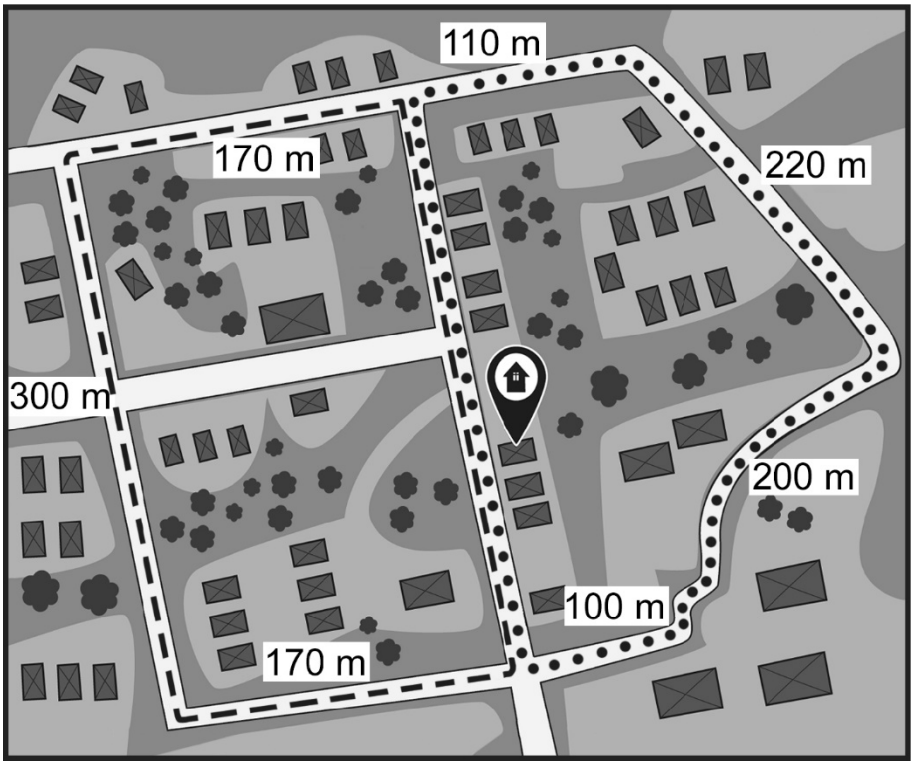
Name_____ Date_____

Master 55

Connections: Neighbourhood Walk

When you walk around the outside of a park, a building, or a neighbourhood, you are walking around its perimeter.

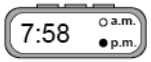
Tristan and his mom walk around their neighbourhood every night after dinner.
Sometimes, they walk to the end of the street and turn left.
Sometimes, they turn right.
The two paths are shown on this map.
How far do they walk along each path?
Which path is longer?
How much longer is it?



Measurement

Activity 11 Assessment

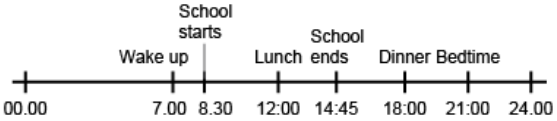
Relationships Among Units of Time

Using Measurement of Time		
Understands relationships among time units (hours, minutes, seconds) "1 h = 60 min Or, 1 min = $\frac{1}{60}$ of an hour	Uses relationships among time units to represent equivalent lengths of time *The movie takes 2 h. How many minutes is that?* "1 h = 60 min So, 2 h = 120 min"	Uses intervals to say the time (e.g., to the nearest minute)   "Both the analogue and digital clocks read: Seven fifty-eight p.m., or 2 minutes before 8 p.m."
Observations/Documentation		

Measurement

Activity 11 Assessment

Relationships Among Units of Time

Using Measurement of Time (con't)		
Tells time in more than one way  "It is 10 min after 9, or 50 min before 10."	Tells time using 24-hour clocks  "I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."	Flexibly solves problems involving time using various strategies and the relationships among units Student A arrived at a party at 1:40 p.m. Student B arrived at 25 min to 2 in the afternoon. Student C arrived at 14:05. Who arrived first? Who arrived last? "Student A: 1:40 p.m. Student B: 1:35 p.m. Student C: 2:05 p.m. Student B arrived first. Student C arrived last."
Observations/Documentation		

Name_____ Date_____

Master 56a

Go Fish! Cards

5 min	**300 s**
1 min	**60 s**
3 h	**180 min**
5 h	**300 min**
3 min	**180 s**

Name_____ Date_____

Master 56b

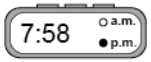
Go Fish! Cards

1 h	**60 min**
240 s	**4 min**
360 min	**6 h**
2 h	**120 min**
480 s	**8 min**

Measurement

Activity 12 Assessment

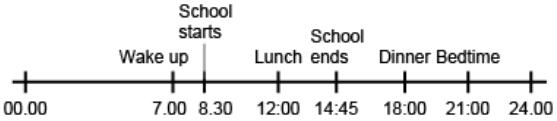
Telling Time in One- and Five-Minute Intervals

Using Measurement of Time		
Understands relationships among time units (hours, minutes, seconds) "1 h = 60 min Or, 1 min = $\frac{1}{60}$ of an hour	Uses relationships among time units to represent equivalent lengths of time *The movie takes 2 h. How many minutes is that?* "1 h = 60 min So, 2 h = 120 min"	Uses intervals to say the time (e.g., to the nearest minute)   "Both the analogue and digital clocks read: Seven fifty-eight p.m., or 2 minutes before 8 p.m."
Observations/Documentation		

Measurement

Activity 12 Assessment

Telling Time in One- and Five-Minute Intervals

Using Measurement of Time (con't)		
Tells time in more than one way  "It is 10 min after 9, or 50 min before 10."	Tells time using 24-hour clocks  "I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."	Flexibly solves problems involving time using various strategies and the relationships among units Student A arrived at a party at 1:40 p.m. Student B arrived at 25 min to 2 in the afternoon. Student C arrived at 14:05. Who arrived first? Who arrived last? "Student A: 1:40 p.m. Student B: 1:35 p.m. Student C: 2:05 p.m. Student B arrived first. Student C arrived last."
Observations/Documentation		

Name_____ Date_____

Master 57

Time Task A

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

Times

a) two forty-two

b) 34 minutes before 5

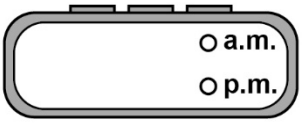
c) 10 minutes to 7

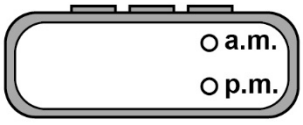
d) six fifty

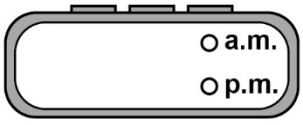
e) 18 minutes to 3

f) 26 minutes past 4

Clocks



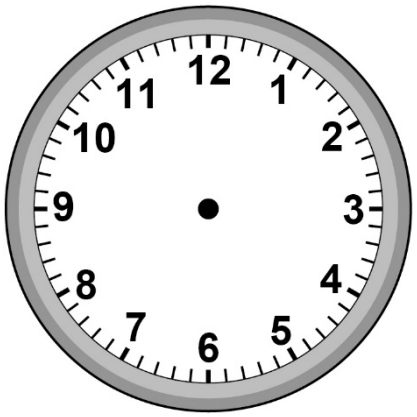




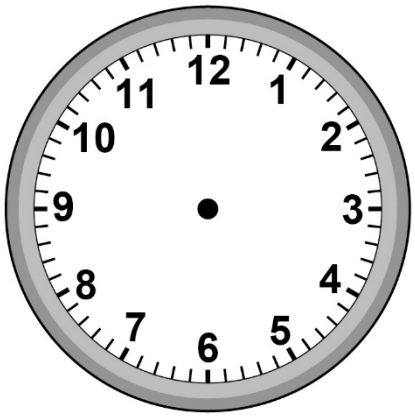
Name_____ Date_____

Master 58a

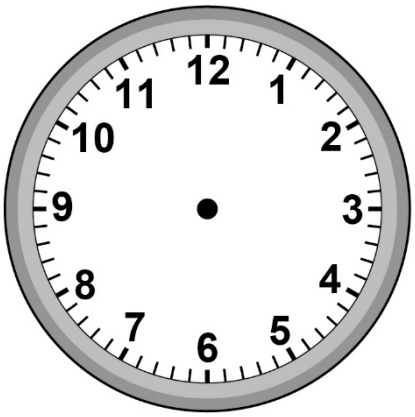
Time Task B



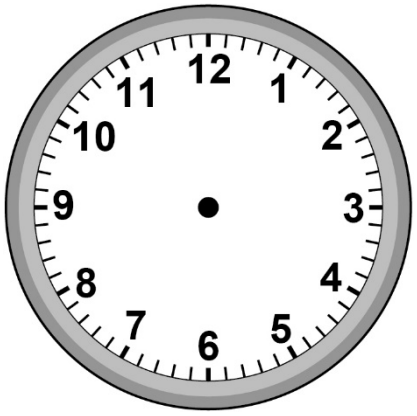
Five past three



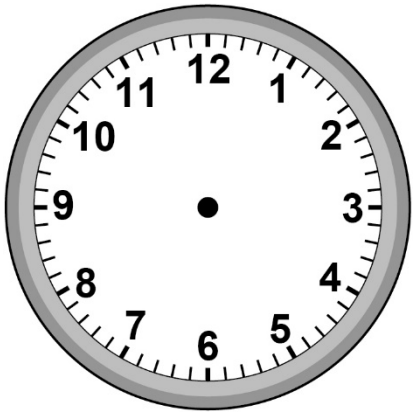
Four thirty-six



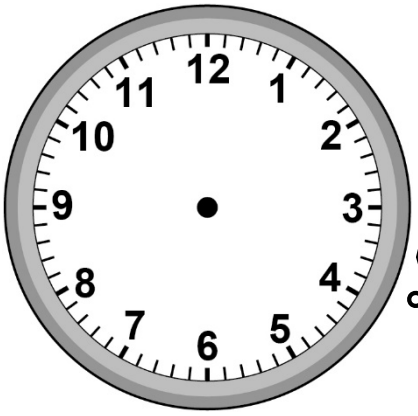
Twelve thirty



Eight minutes to two



Seven fifteen



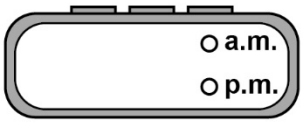
Twenty-five to four

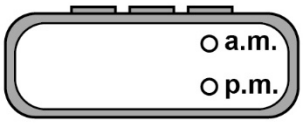
Name_____ Date_____

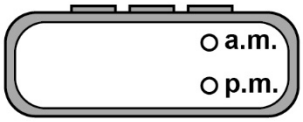
Master 58b

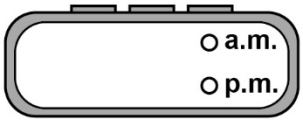
Time Task B (cont'd)

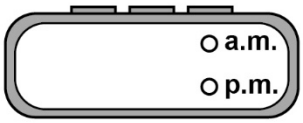
Digital Clocks

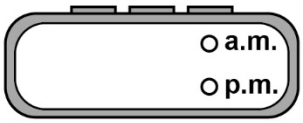








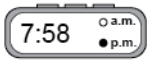




Measurement

Activity 13 Assessment

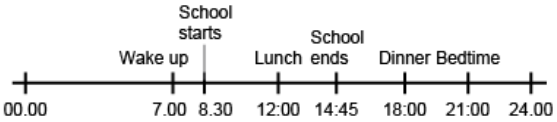
Telling Time on a 24-Hour Clock

Using Measurement of Time		
Understands relationships among time units (hours, minutes, seconds) "1 h = 60 min Or, 1 min = $\frac{1}{60}$ of an hour	Uses relationships among time units to represent equivalent lengths of time *The movie takes 2 h. How many minutes is that?* "1 h = 60 min So, 2 h = 120 min"	Uses intervals to say the time (e.g., to the nearest minute)   "Both the analogue and digital clocks read: Seven fifty-eight p.m., or 2 minutes before 8 p.m."
Observations/Documentation		

Measurement

Activity 13 Assessment

Telling Time on a 24-Hour Clock

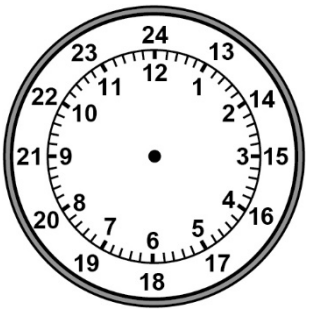
Using Measurement of Time (con't)		
Tells time in more than one way  "It is 10 min after 9, or 50 min before 10."	Tells time using 24-hour clocks  "I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."	Flexibly solves problems involving time using various strategies and the relationships among units Student A arrived at a party at 1:40 p.m. Student B arrived at 25 min to 2 in the afternoon. Student C arrived at 14:05. Who arrived first? Who arrived last? "Student A: 1:40 p.m. Student B: 1:35 p.m. Student C: 2:05 p.m. Student B arrived first. Student C arrived last."
Observations/Documentation		

Name_____ Date_____

Master 59

Schedule My Day

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



24-hour time	12-hour time	Activity

Name_____ Date_____

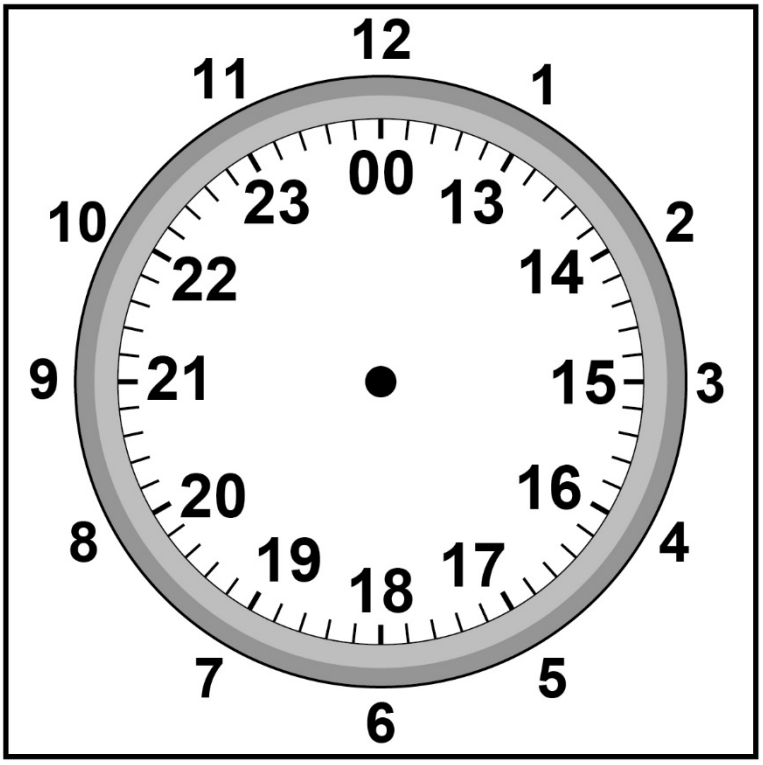
Master 60

Time Conversion Clock

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

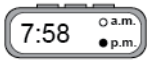
Look at the inside numbers to find the hour of the 24-hour time (for example, 13 of 13:59).

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



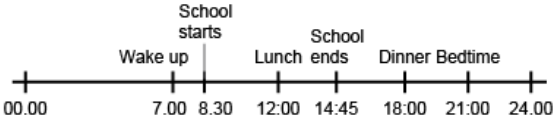
Measurement

Activity 14 Assessment
Consolidation

Using Measurement of Time		
Understands relationships among time units (hours, minutes, seconds) "1 h = 60 min Or, 1 min = $\frac{1}{60}$ of an hour	Uses relationships among time units to represent equivalent lengths of time *The movie takes 2 h. How many minutes is that?* "1 h = 60 min So, 2 h = 120 min"	Uses intervals to say the time (e.g., to the nearest minute)   "Both the analogue and digital clocks read: Seven fifty-eight p.m., or 2 minutes before 8 p.m."
Observations/Documentation		

Measurement

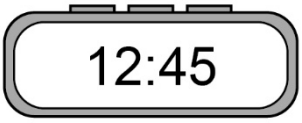
Activity 14 Assessment
Consolidation

Using Measurement of Time (con't)		
Tells time in more than one way  "It is 10 min after 9, or 50 min before 10."	Tells time using 24-hour clocks  "I created a timeline to record the times of my daily activities using a 24-hour clock. I converted 12-hour p.m. times to 24-hour times."	Flexibly solves problems involving time using various strategies and the relationships among units Student A arrived at a party at 1:40 p.m. Student B arrived at 25 min to 2 in the afternoon. Student C arrived at 14:05. Who arrived first? Who arrived last? "Student A: 1:40 p.m. Student B: 1:35 p.m. Student C: 2:05 p.m. Student B arrived first. Student C arrived last."
Observations/Documentation		

Name_____ Date_____

Master 61a

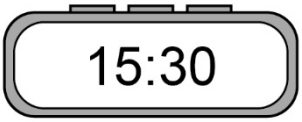
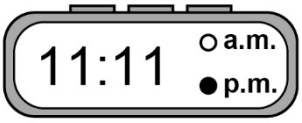
Connect the Times! Cards

I have:	Who has?
	3 min
I have:	Who has?
180 s	Midnight
I have:	Who has?
	480 min
I have:	Who has?
8 h	Half past 3 in the afternoon

Name_____ Date_____

Master 61b

Connect the Times! Cards (cont'd)

I have:  	Who has? 120 s
I have: 2 min	Who has? 23:11
I have:  	Who has? 
I have: One minute past one	Who has? 18:00

Name_____ Date_____

Master 61c

Connect the Times! Cards (cont'd)

I have:	Who has?
6 p.m.	5 h
I have:	Who has?
300 min	2:05 p.m.
I have:	Who has?
14:05	
I have:	Who has?
Fifteen minutes after seven	1 h

Name_____ Date_____

Master 61d

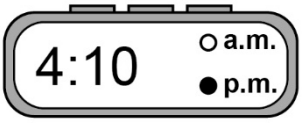
Connect the Times! Cards (cont'd)

I have: 60 min	Who has? half an hour
I have: 30 min	Who has? 19:25
I have: 7:25 p.m.	Who has? 360 min
I have: 6 h	Who has? 9:10 p.m.

Name_____ Date_____

Master 61e

Connect the Times! Cards (cont'd)

I have:	Who has?
	Twenty minutes after nine
I have:	Who has?
Forty minutes before ten	Fifty minutes before five in the afternoon
I have:	Who has?
	150 s
I have:	Who has?
Two and one-half minutes	600 s

Name_____ Date_____

Master 61f

Connect the Times! Cards (cont'd)

I have: 10 min	Who has? Fifty-nine minutes to eleven
I have: One minute after ten	Who has? 
I have: 40 minutes before 10	Who has? 90 min
I have: One and one-half hours	Who has? Fifteen minutes to one

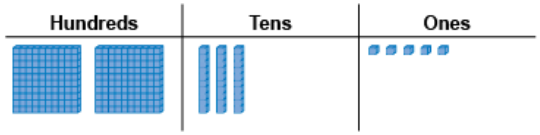
Number

Activity 1 Assessment

Representing Numbers to 10 000

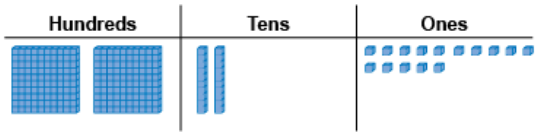
Representing Numbers Using Place Value

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



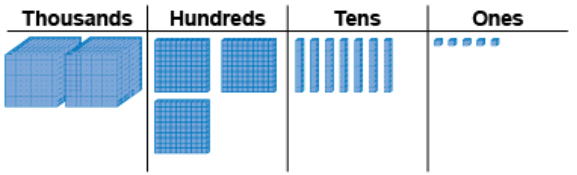
"I modelled 235. I used the digits of the number to tell me how many of each block I needed."

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



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

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



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

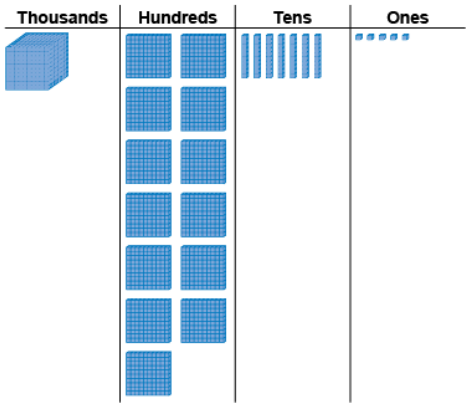
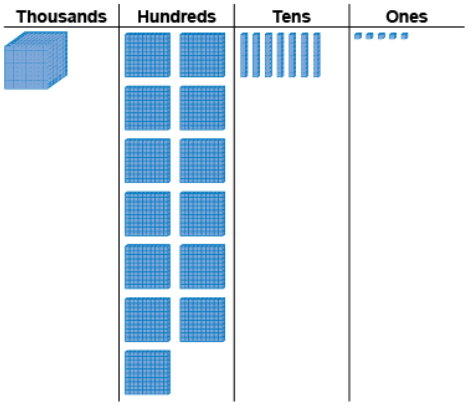
Observations/Documentation

Number

Activity 1 Assessment

Representing Numbers to 10 000

Representing Numbers Using Place Value (cont'd)

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

Observations/Documentation

Name_____ Date_____

Master 1a

Place-Value Charts

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

Thousands	Hundreds	Tens	Ones

Name_____ Date_____

Master 1b

Place-Value Charts (cont'd)

Ten Thousands	Thousands	Hundreds	Tens	Ones

Ten Thousands	Thousands	Hundreds	Tens	Ones

Ten Thousands	Thousands	Hundreds	Tens	Ones

Name_____ Date_____

Master 2a

Place-Value Game Cards

Numerals

4342	6528	1205
1089	1204	8867
9625	2084	3412

Name_____ Date_____

Master 2b

Place-Value Game Cards

Expanded Form

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

Name_____ Date_____

Master 2c

Place-Value Game Cards

Words

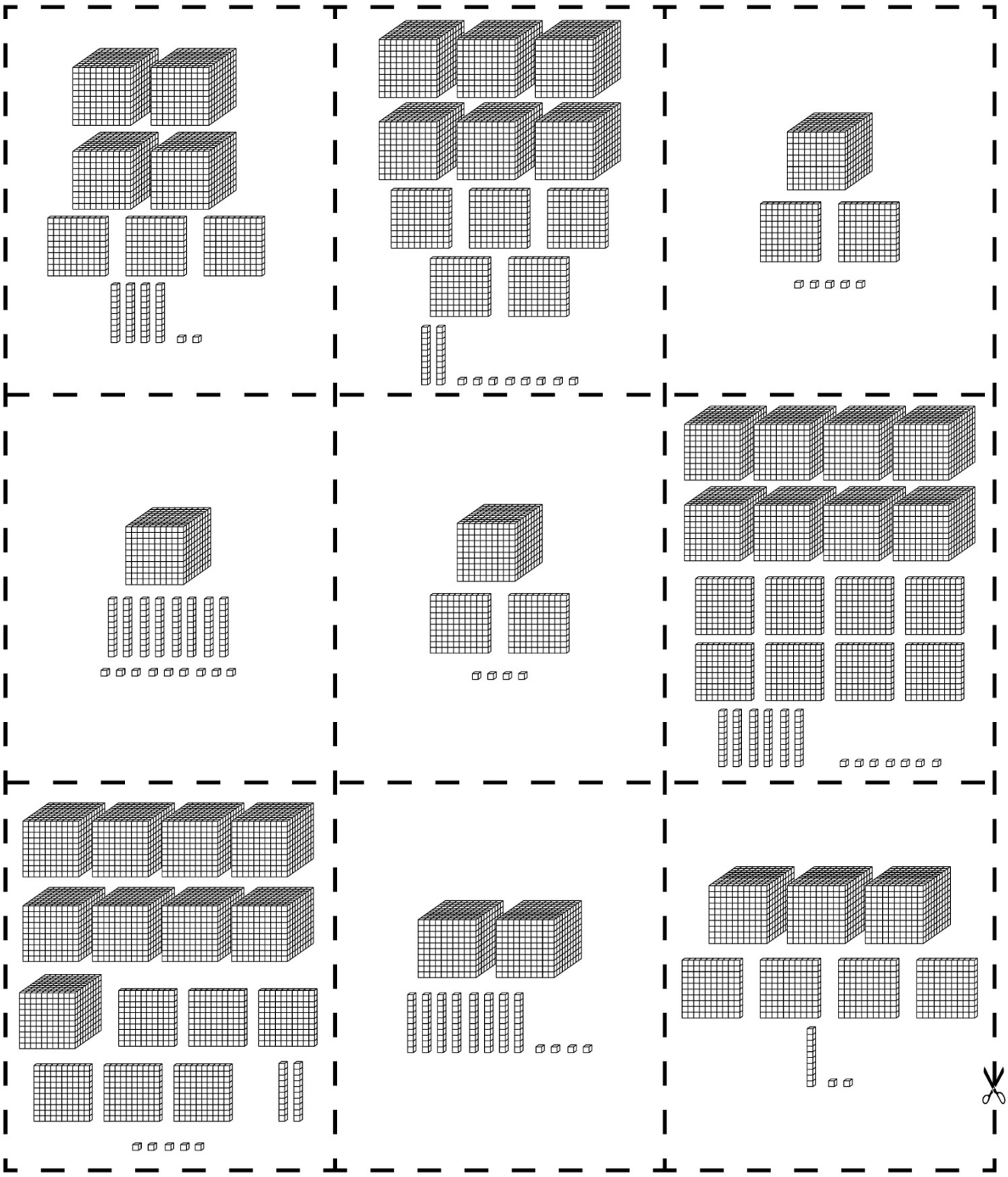
Four thousand three hundred forty-two	Six thousand five hundred twenty-eight	One thousand two hundred five
One thousand eighty-nine	One thousand two hundred four	Eight thousand eight hundred sixty-seven
Nine thousand six hundred twenty-five	Two thousand eighty-four	Three thousand four hundred twelve

Name_____ Date_____

Master 2d

Place-Value Game Cards

Base Ten Blocks



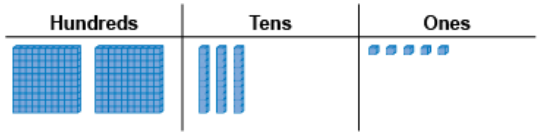
Number

Activity 2 Assessment

Composing and Decomposing Numbers to 10 000

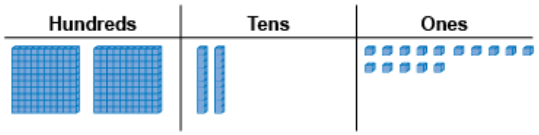
Representing Numbers Using Place Value

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



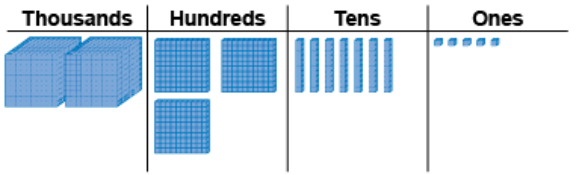
"I modelled 235. I used the digits of the number to tell me how many of each block I needed."

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



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

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



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

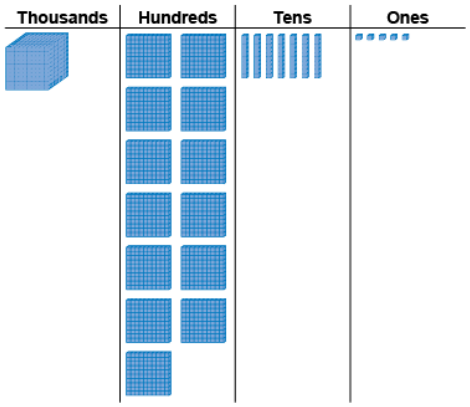
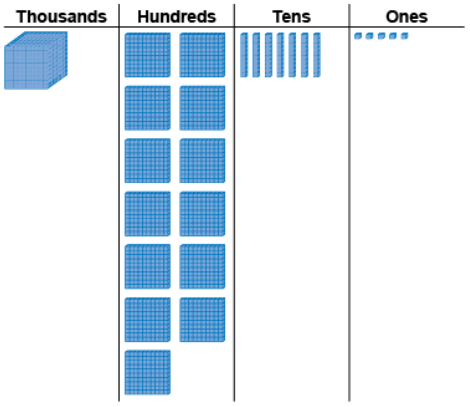
Observations/Documentation

Number

Activity 2 Assessment

Composing and Decomposing Numbers to 10 000

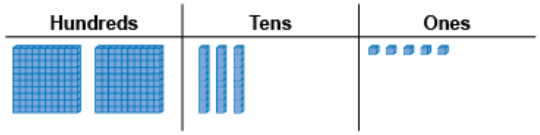
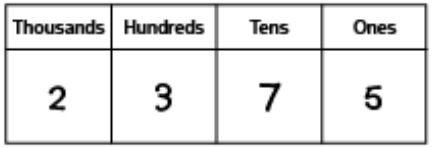
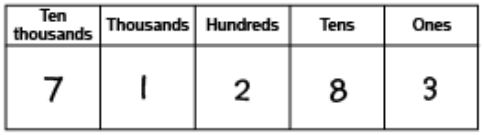
Representing Numbers Using Place Value (cont'd)

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

Observations/Documentation

Number

Activity 3 Assessment
Representing Larger Numbers

Representing Numbers Using Place Value		
Models 4-digit number using Base Ten Blocks (decomposes in one way).  "2375: I used the digits of the number to tell me how many of each block I needed."	Represents 4-digit number on place-value chart (decomposes in one way).  "2375 has 2 thousands, 3 hundreds, 7 tens, and 5 ones."	Represents 5-digit number on place-value chart (decomposes in one way).  "71 283: I used the digits of the number to tell me the number to write in each column."
Observations/Documentation		

Number

Activity 3 Assessment
Representing Larger Numbers

Representing Numbers Using Place Value (cont'd)

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

Ten thousands	Thousands	Hundreds	Tens	Ones
7	1	2	8	3

"7 ten-thousands, 1 thousand, 2 hundreds, 8 tens, and 3 ones can also be 71 thousands, 2 hundreds, and 83 ones."

Represents numbers using expanded form.

Ten thousands	Thousands	Hundreds	Tens	Ones
7	1	2	8	3

"71 283 =
70 000 + 1000 + 200 + 80 + 3"

Represents numbers flexibly using place-value relationships.

"71 283 =
70 000 + 1000 + 200 + 80 + 3
Or 71 000 + 100 + 180 + 3
Or 71 000 + 283"

Observations/Documentation

Name_____ Date_____

Master 3

Place-Value Charts to Ten Thousands

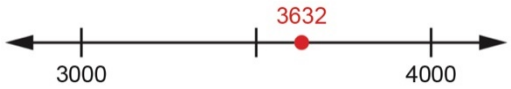
Ten Thousands	Thousands	Hundreds	Tens	Ones

Ten Thousands	Thousands	Hundreds	Tens	Ones

Ten Thousands	Thousands	Hundreds	Tens	Ones

Number

Activity 4 Assessment
Rounding Numbers

Rounding Numbers		
Uses the first digit to round, not considering the other digits "To the nearest thousand, 3632 rounds to 3000. I kept the 3 and changed all the other digits to 0."	Identifies benchmark numbers (multiples of 10, 100, 1000, or 10 0000) "3632 is between 3000 and 4000."	Compares to benchmark numbers (multiples of 10, 100, 1000, or 10 000)  "3632 is closer to 4000 than to 3000."
Observations/Documentation		

Number

Activity 4 Assessment
Rounding Numbers

Rounding Numbers (con't)		
Uses benchmark numbers to round to the nearest ten, hundred, thousand, or ten thousand "Since 3632 is closer to 4000 than to 3000, 3632 rounded to the nearest thousand is 4000."	Flexibly rounds numbers to different places "34 528 rounded to the nearest ten thousand is 30 000, to the nearest thousand is 35 000, to the nearest hundred is 34 500, and to the nearest 10 is 34 530."	Identifies situations where rounding numbers is appropriate "The driving distance between Calgary and Edmonton is about 300 km. The exact number is not needed."
Observations/Documentation		

Name_____ Date _____

Master 4

Round to Connect

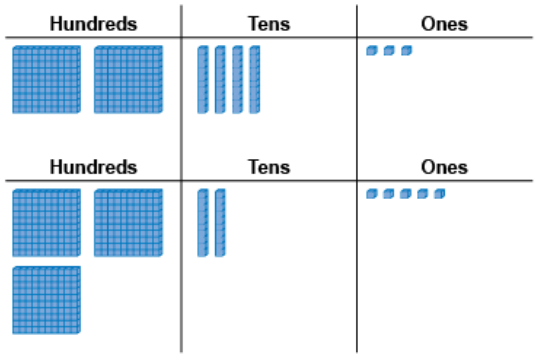
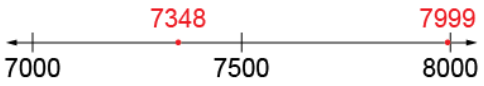
1000	60 000	4000	2000	1000	50 000
30 000	40 000	10 000	5000	60 000	7000
20 000	70 000	3000	6000	4000	30 000
10 000	5000	7000	70 000	2000	1000
40 000	3000	6000	1000	5000	20 000
3000	20 000	2000	30 000	50 000	4000
60 000	10 000	6000	40 000	70 000	50 000

Number

Activity 5 Assessment

Comparing and Ordering Numbers

Comparing and Ordering Quantities

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

Observations/Documentation

Number

Activity 5 Assessment
Comparing and Ordering Numbers

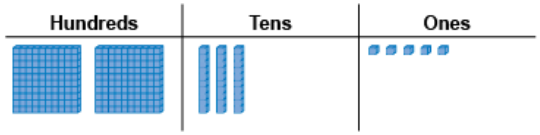
Comparing and Ordering Quantities (cont'd)		
Uses place value understanding to compare numbers, digit by digit  "Both start with 5. 4 thousands is less than 6 thousands, both have 3 hundreds, 2 tens is greater than 0 tens, and 0 ones is less than 2 ones. So, 54 320 is less than 56 302."	Compares and orders three or more numbers using a variety of strategies **54 320 56 302 35 560** "I first compare using ten thousands, then compare 54 320 and 56 302 using thousands."	Compares numbers flexibly and records comparisons symbolically (<, =, >) **54 320 < 56 302** "Both numbers have 5 ten thousands, but 56 302 has more thousands."
Observations/Documentation		

Number

Activity 6 Assessment
Consolidation

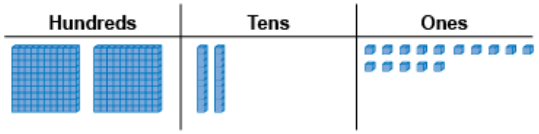
Representing Numbers Using Place Value

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



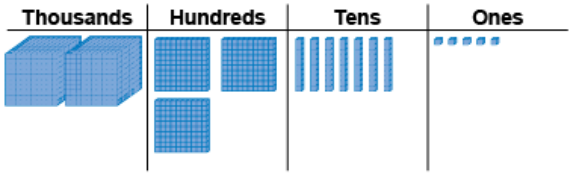
"I modelled 235. I used the digits of the number to tell me how many of each block I needed."

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



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

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



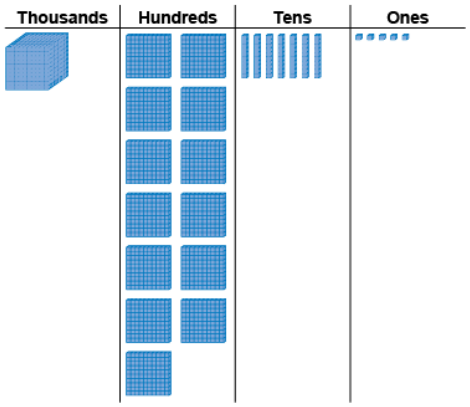
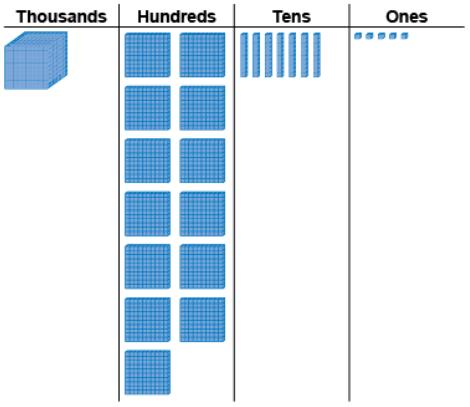
"I modelled 2375. I used the digits of the number to tell me how many of each block I needed."

Observations/Documentation

Number

Activity 6 Assessment
Consolidation

Representing Numbers Using Place Value (cont'd)

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

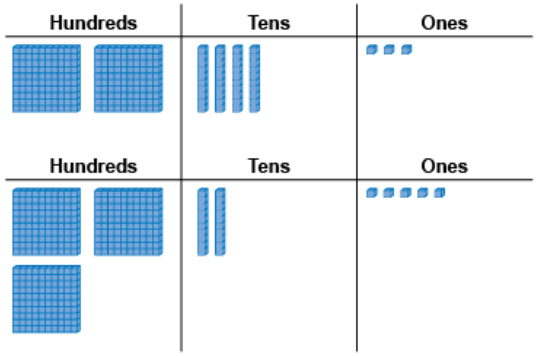
Observations/Documentation

Number

Activity 6 Assessment
Consolidation

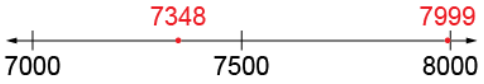
Comparing and Ordering Quantities

Models numbers and compares blocks



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

Compares numbers with benchmarks



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

Visualizes benchmarks on a number line to compare

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

Observations/Documentation

Number

Activity 6 Assessment
Consolidation

Comparing and Ordering Quantities (cont'd)		
Uses place value understanding to compare numbers, digit by digit  "Both start with 5. 4 thousands is less than 6 thousands, both have 3 hundreds, 2 tens is greater than 0 tens, and 0 ones is less than 2 ones. So, 54 320 is less than 56 302."	Compares and orders three or more numbers using a variety of strategies **54 320 56 302 35 560** "I first compare using ten thousands, then compare 54 320 and 56 302 using thousands."	Compares numbers flexibly and records comparisons symbolically (<, =, >) **54 320 < 56 302** "Both numbers have 5 ten thousands, but 56 302 has more thousands."
Observations/Documentation		

Name_____ Date_____

Master 5a

Fill the Card!

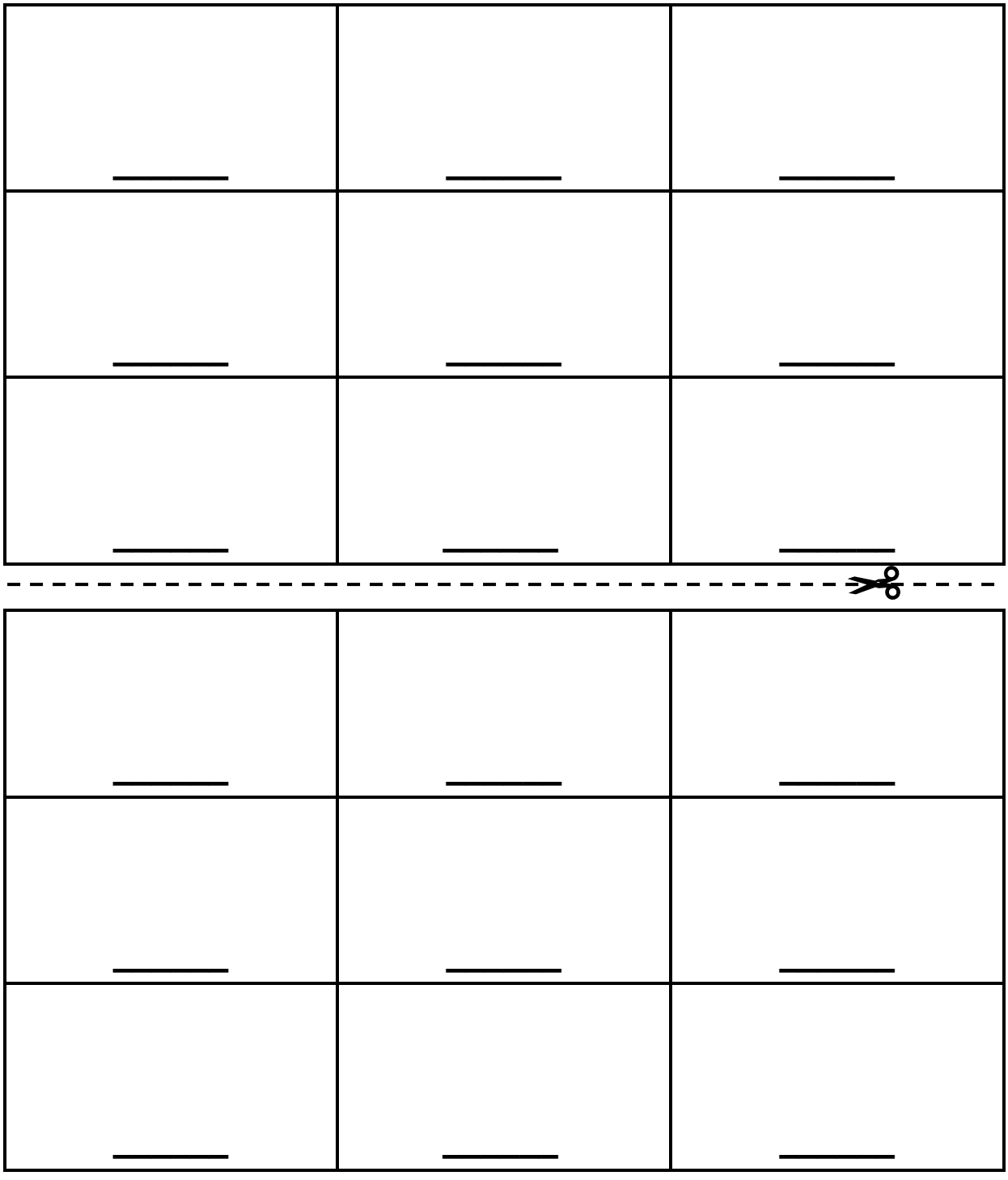
A number between 12 780 and 12 899 _____	**A number greater than 6534** _____	**A number less than 3000** _____
A number with 7 in the hundreds place _____	**A number that rounds to 14 000** _____	**A number with 2 in the tens place** _____
A number between 1000 and 1999 _____	**A number that has "+ 400" when written in expanded form** _____	**A number that rounds to 2400** _____

A number between 12 780 and 12 899 _____	**A number greater than 6534** _____	**A number less than 3000** _____
A number with 7 in the hundreds place _____	**A number that rounds to 14 000** _____	**A number with 2 in the tens place** _____
A number between 1000 and 1999 _____	**A number that has "+ 400" when written in expanded form** _____	**A number that rounds to 2400** _____

Name_____ Date_____

Master 5b

Fill the Card! (Make Your Own)



Name_____ Date_____

Master 6

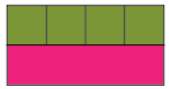
Number Cards (0–9)

0	1	2	3	4
5	6	7	8	9

Number

Activity 7 Assessment

Exploring Equal Parts

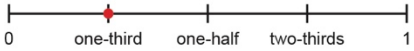
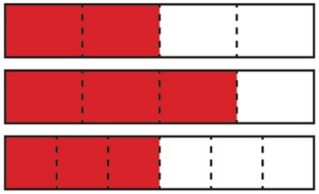
Partitioning Quantities to Form Fractions			
Partitions whole (area or length) into parts that are not equal  "I folded the strip into 4 parts."	Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Names the unit fraction  "Each part represents one-sixth."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"
Observations/Documentation			

Number

Activity 7 Assessment

Exploring Equal Parts

Partitioning Quantities to Form Fractions (con't)

Compares fractions to the benchmark one-half	Understands relationship between number of parts and size of parts	Uses fraction symbol to represent fractional quantities of whole	Compares fractions with the same denominator or same numerator
 "One-third is less than the benchmark one-half."	"When I divide the whole into more parts, the parts get smaller."	 "$\frac{4}{6}$ of the apples are green."	 "$\frac{3}{4} > \frac{2}{4}$ because one more part is shaded." "$\frac{3}{4} > \frac{3}{6}$ because fourths are larger than sixths."

Observations/Documentation

Name_____ Date_____

Master 7a

Paper Shapes

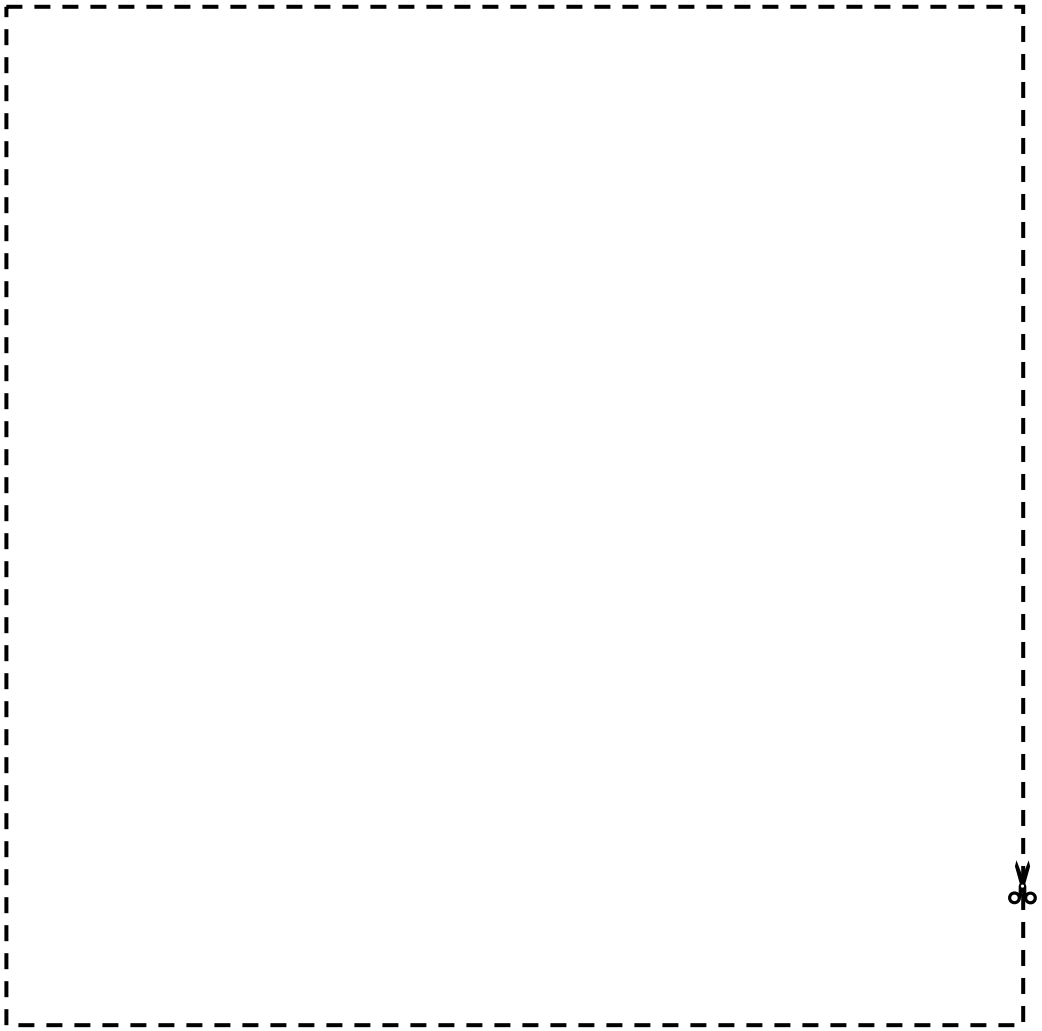
Paper Rectangles

Name_____ Date_____

Master 7b

Paper Shapes (cont'd)

Paper Square

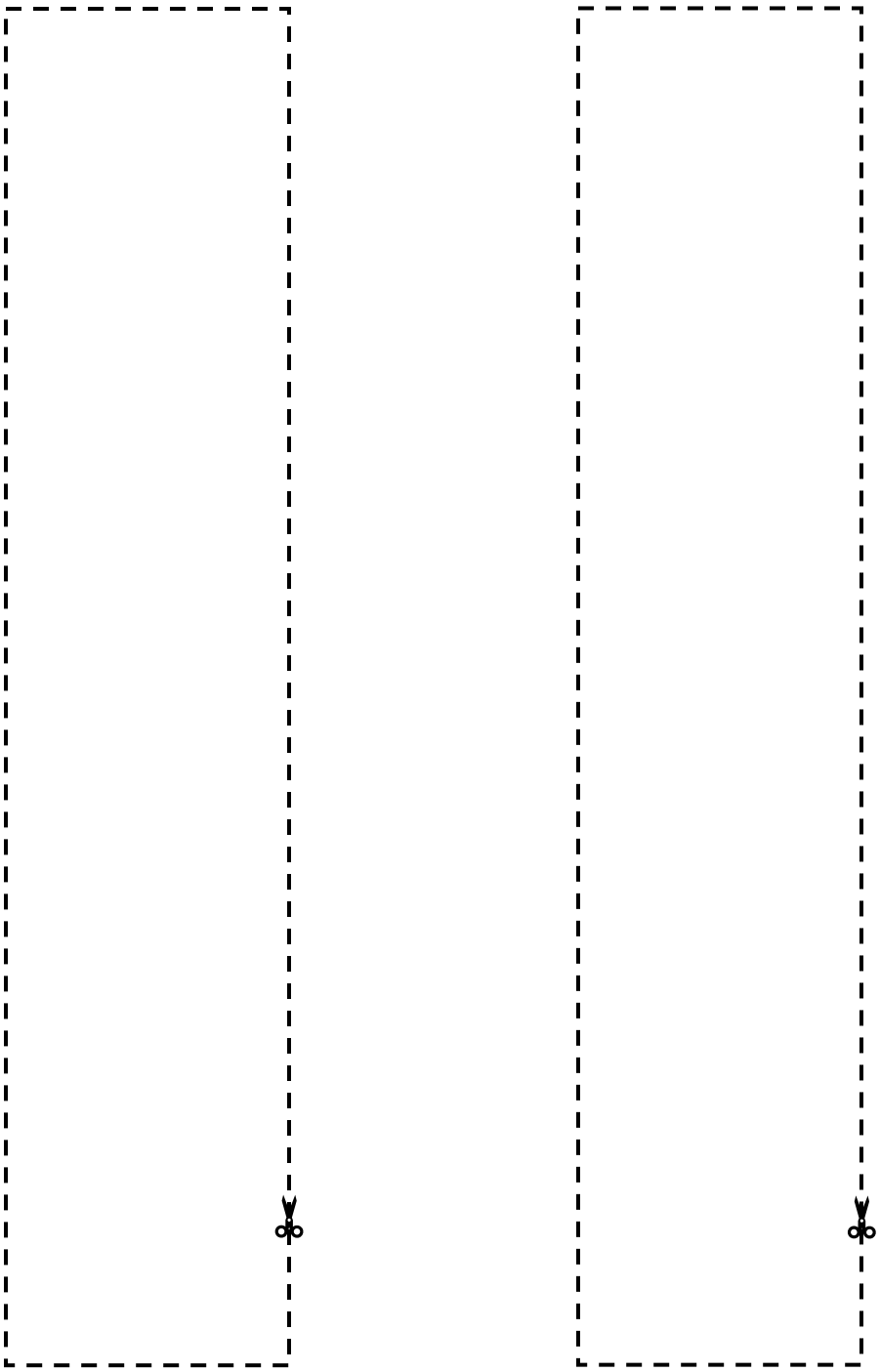


Name_____ Date_____

Master 7c

Paper Shapes (cont'd)

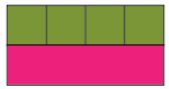
Paper Strips



Number

Activity 8 Assessment

Comparing Fractions 1

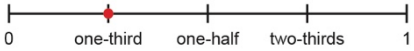
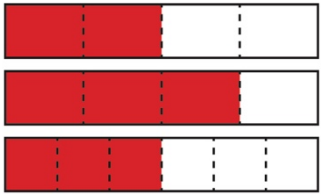
Partitioning Quantities to Form Fractions			
Partitions whole (area or length) into parts that are not equal  "I folded the strip into 4 parts."	Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Names the unit fraction  "Each part represents one-sixth."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"
Observations/Documentation			

Number

Activity 8 Assessment

Comparing Fractions 1

Partitioning Quantities to Form Fractions (con't)

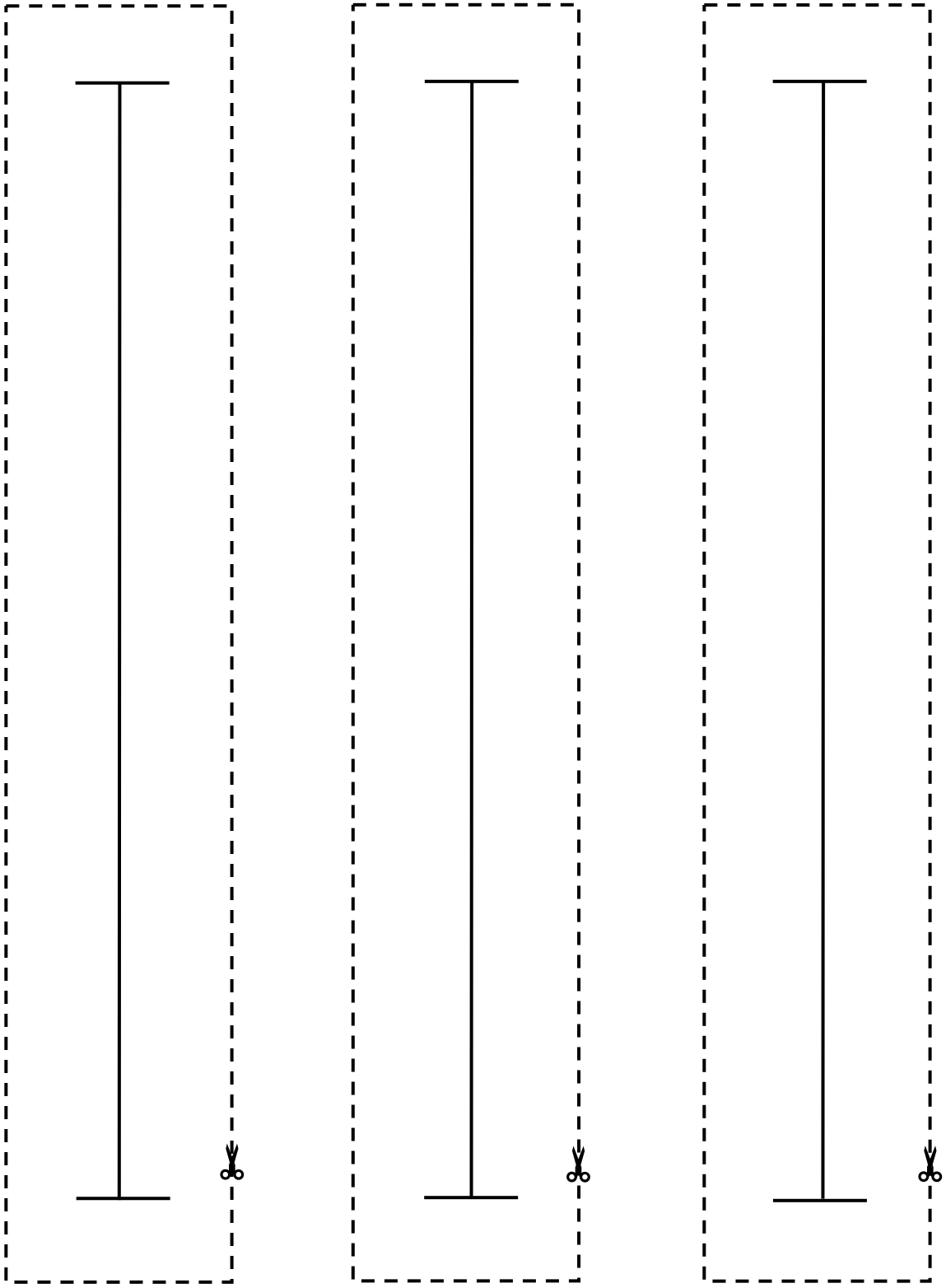
Compares fractions to the benchmark one-half	Understands relationship between number of parts and size of parts	Uses fraction symbol to represent fractional quantities of whole	Compares fractions with the same denominator or same numerator
 "One-third is less than the benchmark one-half."	"When I divide the whole into more parts, the parts get smaller."	 "$\frac{4}{6}$ of the apples are green."	 "$\frac{3}{4} > \frac{2}{4}$ because one more part is shaded." "$\frac{3}{4} > \frac{3}{6}$ because fourths are larger than sixths."

Observations/Documentation

Name_____ Date_____

Master 8

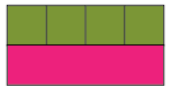
Number Lines



Number

Activity 9 Assessment

Comparing Fractions 2

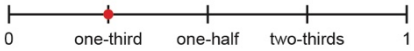
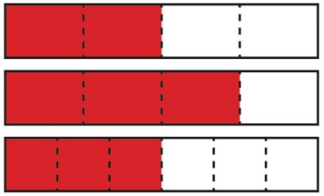
Partitioning Quantities to Form Fractions			
Partitions whole (area or length) into parts that are not equal  "I folded the strip into 4 parts."	Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Names the unit fraction  "Each part represents one-sixth."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"
Observations/Documentation			

Number

Activity 9 Assessment

Comparing Fractions 2

Partitioning Quantities to Form Fractions (con't)

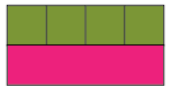
Compares fractions to the benchmark one-half	Understands relationship between number of parts and size of parts	Uses fraction symbol to represent fractional quantities of whole	Compares fractions with the same denominator
 "One-third is less than the benchmark one-half."	"When I divide the whole into more parts, the parts get smaller."	 "$\frac{4}{6}$ of the apples are green."	 "$\frac{3}{4} > \frac{2}{4}$ because one more part is shaded." "$\frac{3}{4} > \frac{3}{6}$ because fourths are larger than sixths."

Observations/Documentation

Number

Activity 10 Assessment

Comparing and Ordering Fractions

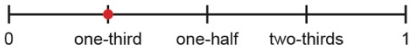
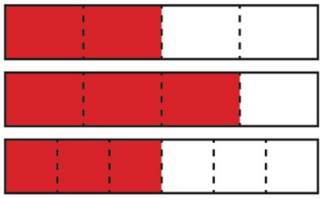
Partitioning Quantities to Form Fractions			
Partitions whole (area or length) into parts that are not equal	Partitions whole (area or length) into equal parts	Names the unit fraction	Counts parts using unit fractions
 “I folded the strip into 4 parts.”	 “I folded the line into 4 equal parts.”	 “Each part represents one-sixth.”	 “1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths”
Observations/Documentation			

Number

Activity 10 Assessment

Comparing and Ordering Fractions

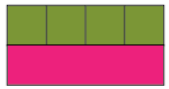
Partitioning Quantities to Form Fractions

Compares fractions to the benchmark one-half	Understands relationship between number of parts and size of parts	Uses fraction symbol to represent fractional quantities of whole	Compares fractions with the same denominator
 "One-third is less than the benchmark one-half."	"When I divide the whole into more parts, the parts get smaller."	 "$\frac{4}{6}$ of the apples are green."	 "$\frac{3}{4} > \frac{2}{4}$ because one more part is shaded." "$\frac{3}{4} > \frac{3}{6}$ because fourths are larger than sixths."

Observations/Documentation

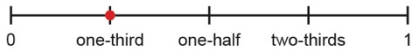
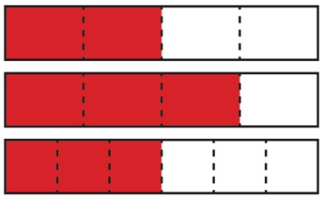
Number

Activity 11 Assessment
Consolidation

Partitioning Quantities to Form Fractions			
Partitions whole (area or length) into parts that are not equal  "I folded the strip into 4 parts."	Partitions whole (area or length) into equal parts  "I folded the line into 4 equal parts."	Names the unit fraction  "Each part represents one-sixth."	Counts parts using unit fractions  "1 one-fourth, 2 one-fourths, 3 one-fourths, 4 one-fourths"
Observations/Documentation			

Number

Activity 11 Assessment
Consolidation

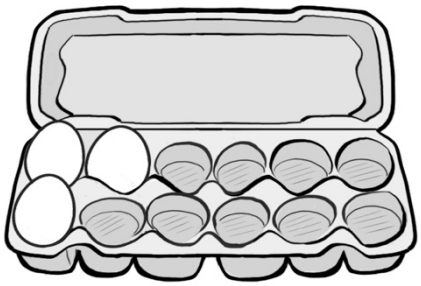
Partitioning Quantities to Form Fractions (con't)			
Compares fractions to the benchmark one-half  "One-third is less than the benchmark one-half."	Understands relationship between number of parts and size of parts "When I divide the whole into more parts, the parts get smaller."	Uses fraction symbol to represent fractional quantities of whole  "$\frac{4}{6}$ of the apples are green."	Compares fractions with the same denominator or same numerator  "$\frac{3}{4} > \frac{2}{4}$ because one more part is shaded." "$\frac{3}{4} > \frac{3}{6}$ because fourths are larger than sixths."
Observations/Documentation			

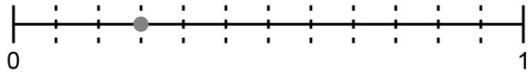
Name _____ Date _____

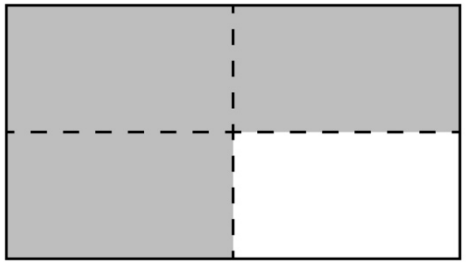
Master 9a

Fraction Cards

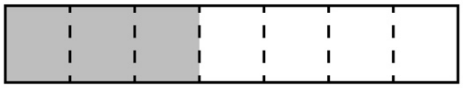
$\frac{3}{12}$

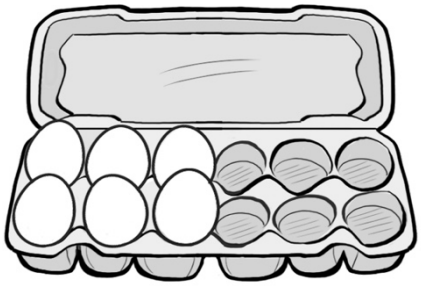






$\frac{3}{7}$

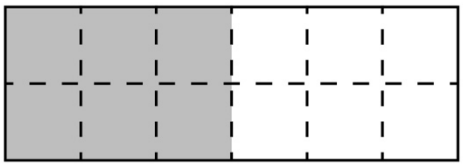


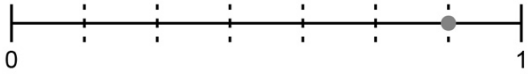


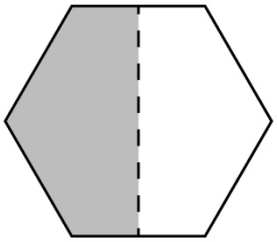
Name _____ Date _____

Master

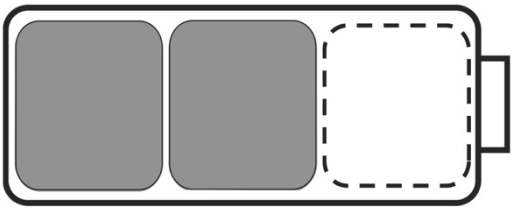
Fraction Cards (cont'd)

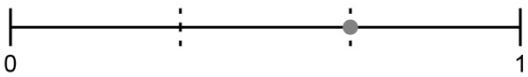


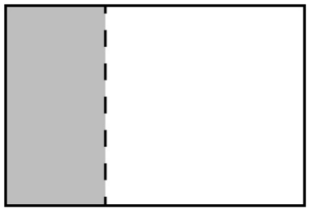




$\frac{1}{2}$



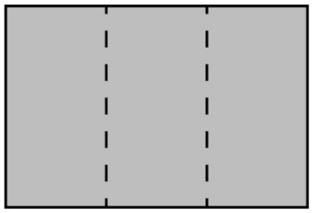
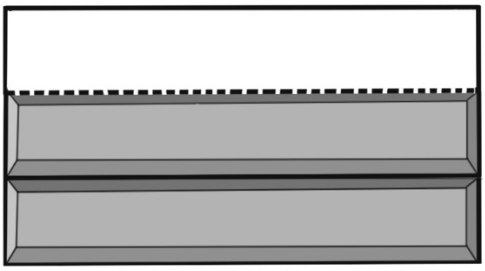
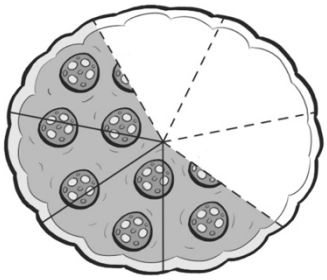
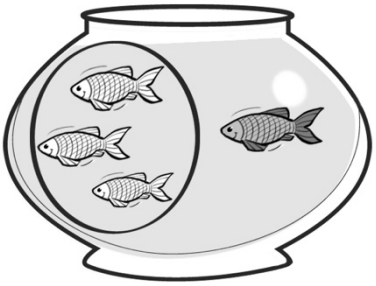
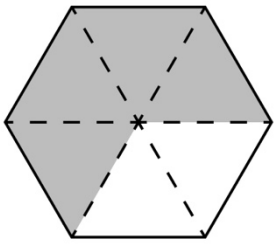
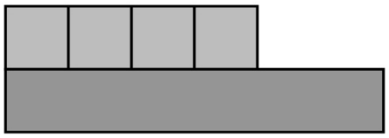




Name _____ Date _____

Master 9c

Fraction Cards (cont'd)

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

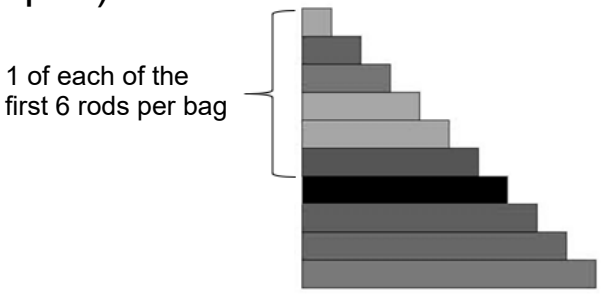
Name_____ Date_____

Master 31

Filling Fractions! Instructions

Group size: 2

Materials:
- Student Card 5: Filling Fractions! (2 per pair)
- Paper bags of Relational Rods (1 of each of the first 6 rods per bag, 2 bags per pair)
- Dry-erase markers (2 per pair)



Goal: To be the first to colour all your fraction parts

Instructions:

Player A: Without looking, take one rod from each bag.

Put the shorter rod on top of the longer rod, aligned at one end.

The longer rod is the whole.

What fraction have you modelled?

Colour parts of strips on your game board to show that fraction.

For example, for $\frac{3}{5}$, colour three parts of a strip showing fifths.

Player B: Take a turn.

Continue to take turns until one of you colours all your fraction parts.

Number

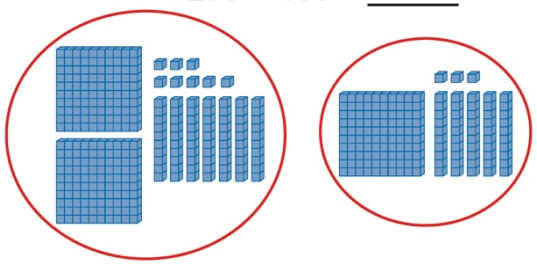
Activity 12 Assessment

Modelling Addition and Subtraction

Developing Meaning of Addition and Subtraction

Models concretely to add and subtract

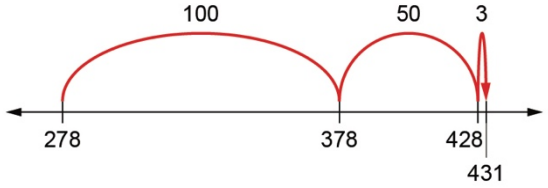
278 + 153 = _____



"278" "378, 388, 398, 408, 418, 428, 429, 430, 431"

Models and symbolizes addition and subtraction

278 + 153 = _____



"I add 5 tens and 3 ones.
78 + 53 = 78 + 50 + 3, or 131"

Uses standard algorithm to add and subtract

$$\begin{array}{r} {}^{1}2\,{}^{1}7\ 8 \\ +\ 1\ 5\ 3 \\ \hline 4\ 3\ 1 \end{array} \qquad \begin{array}{r} {}^{2}\not{1}\not{3}\,{}^{1}1 \\ -\ 4\ 2 \\ \hline 8\ 9 \end{array}$$

Observations/Documentation

Number

Activity 12 Assessment

Modelling Addition and Subtraction

Developing Meaning of Addition and Subtraction (con't)		
Estimates sums and differences to check reasonableness 131 – 42 = 89 "130 – 40 = 90, which is close to 89 so my answer is reasonable."	Creates and solves problems "There are 131 birds in the tree. Some birds flew away. Now there are 42 birds in the tree. How many birds flew away?" 131 − □ = 42 89 birds flew away.	Uses properties and inverse operations of addition and subtraction to solve problems 131 − □ = 42 "I can think addition to help me solve the problem: 42 + □ = 131"
Observations/Documentation		

Number

Activity 13 Assessment

Estimating Sums and Differences

Estimating Sums and Differences			
Uses front-end estimation Estimate: 48 + 18 + 17 40 + 10 + 10 = 60 “I estimate about 60.”	Uses rounding to write each number to the nearest ten Estimate: 48 + 18 + 17 50 + 20 + 20 = 90 “I estimate about 90.”	Uses rounding and compensation Estimate: 48 + 18 + 17 “I’ll round two up and one down so the numbers balance.” 50 + 20 + 10 = 80 “I estimate about 80.”	Estimates flexibly to check reasonableness of solution 15 + 51 + 39 = 107 Estimate to check: 15 + 39 is about 50. 51 is close to 50. 50 + 50 = 100 “Since 107 is close to 100, the solution seems reasonable.”
Observations/Documentation			

Number

Activity 14 Assessment

Using Mental Math to Add and Subtract

Developing Fluency for Addition and Subtraction		
Fluently adds and subtracts within 5 "I know 4 + 1 = 5 and 5 – 1 = 4."	Fluently adds and subtracts to 10 "I know 8 + 2 = 10 and 10 – 2 = 8." (complements to 10)	Fluently adds and subtracts to 20 "I can use doubles. I know 9 + 9 = 18 and 18 – 9 = 9."
Observations/Documentation		

Uses known sums and differences to solve addition and subtraction equations "25 + 37 = □ I know 25 + 30 = 55, and 55 plus 5 is 60, and 2 more makes 62." (decomposing, known facts)	Develops mental strategies and algorithms 29 + 32 = □ I take 1 from 32 and give it to 29 to get 30 + 31. 30 + 30 = 60, and 1 more is 61." (compensation)	Estimates sums and differences 49 + 38 = □ "49 is close to 50. 38 is close to 40. 50 + 40 = 90" (using benchmarks)
Observations/Documentation		

Number

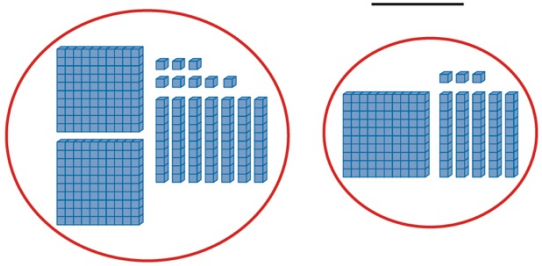
Activity 14 Assessment

Using Mental Math to Add and Subtract

Developing Meaning of Addition and Subtraction

Models concretely to add and subtract

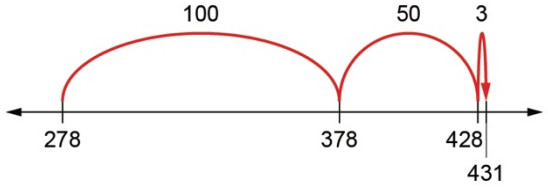
278 + 153 = _____



"278" "378, 388, 398, 408, 418, 428, 429, 430, 431"

Models and symbolizes addition and subtraction

278 + 153 = _____



"I add 5 tens and 3 ones.
78 + 53 = 78 + 50 + 3, or 131"

Uses standard algorithm to add and subtract

$$\begin{array}{r} {}^{1}2\,{}^{1}7\,8 \\ +\ 1\,5\,3 \\ \hline 4\,3\,1 \end{array} \qquad \begin{array}{r} {}^{2}\not{1}\not{3}\,{}^{1}1 \\ -\ 4\,2 \\ \hline 8\,9 \end{array}$$

Observations/Documentation

Number

Activity 14 Assessment

Using Mental Math to Add and Subtract

Developing Meaning of Addition and Subtraction (con't)		
Estimates sums and differences to check reasonableness 131 – 42 = 89 "130 – 40 = 90, which is close to 89 so my answer is reasonable."	Creates and solves problems "There are 131 birds in the tree. Some birds flew away. Now there are 42 birds in the tree. How many birds flew away?" 131 − □ = 42 89 birds flew away.	Uses properties and inverse operations of addition and subtraction to solve problems 131 − □ = 42 "I can think addition to help me solve the problem: 42 + □ = 131"
Observations/Documentation		

Number

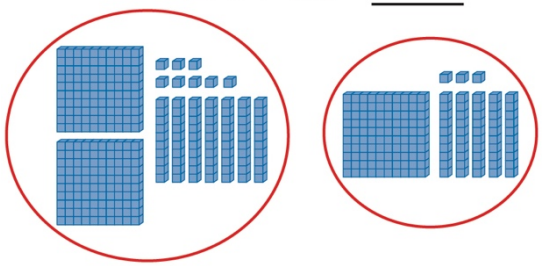
Activity 15 Assessment

Creating and Solving Problems

Developing Meaning of Addition and Subtraction

Models concretely to add and subtract

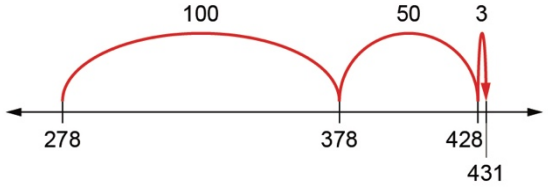
278 + 153 = _____



"278" "378, 388, 398, 408, 418, 428, 429, 430, 431"

Models and symbolizes addition and subtraction

278 + 153 = _____



"I add 5 tens and 3 ones.
78 + 53 = 78 + 50 + 3, or 131"

Uses standard algorithm to add and subtract

$$\begin{array}{r} {}^{1}2\,{}^{1}7\,8 \\ +\ 1\,5\,3 \\ \hline 4\,3\,1 \end{array} \qquad \begin{array}{r} {}^{2}\not{1}\not{3}\,{}^{1}1 \\ -\ 4\,2 \\ \hline 8\,9 \end{array}$$

Observations/Documentation

Number

Activity 15 Assessment

Creating and Solving Problems

Developing Meaning of Addition and Subtraction (con't)		
Estimates sums and differences to check reasonableness 131 – 42 = 89 "130 – 40 = 90, which is close to 89 so my answer is reasonable."	Creates and solves problems "There are 131 birds in the tree. Some birds flew away. Now there are 42 birds in the tree. How many birds flew away?" 131 − □ = 42 89 birds flew away.	Uses properties and inverse operations of addition and subtraction to solve problems 131 − □ = 42 "I can think addition to help me solve the problem: 42 + □ = 131"
Observations/Documentation		

Number

Activity 15 Assessment

Creating and Solving Problems

Developing Fluency for Addition and Subtraction		
Fluently adds and subtracts within 5 "I know 4 + 1 = 5 and 5 – 1 = 4."	Fluently adds and subtracts to 10 "I know 8 + 2 = 10 and 10 – 2 = 8." (complements to 10)	Fluently adds and subtracts to 20 "I can use doubles. I know 9 + 9 = 18 and 18 – 9 = 9."
Observations/Documentation		

Uses known sums and differences to solve addition and subtraction equations "25 + 37 = □ I know 25 + 30 = 55, and 55 plus 5 is 60, and 2 more makes 62." (decomposing, known facts)	Develops mental strategies and algorithms 29 + 32 = □ I take 1 from 32 and give it to 29 to get 30 + 31. 30 + 30 = 60, and 1 more is 61." (compensation)	Estimates sums and differences 49 + 38 = □ "49 is close to 50. 38 is close to 40. 50 + 40 = 90" (using benchmarks)
Observations/Documentation		

Name_____ Date_____

Master 10

Story Problems

12 students are on the school bus.
13 students get on at the next stop.
How many students are now on the bus?

Join, result unknown: 12 + 13 = ?

A farmer is selling 78 cobs at her corn stand.
By lunch time, she has 23 cobs left.
How many cobs did she sell?

Separate, change unknown: 78 − ? = 23

Freddy the fox has some eggs for winter in his den.
He collects 17 more eggs.
Now he has 45 eggs.
How many eggs did Freddy have to begin with?

Join, start unknown: ? + 17 = 45

Anna lives 78 m from the school.
Brooklyn lives 14 m farther away than Anna.
How far does Brooklyn live from the school?

Compare, larger section unknown: 78 + 14 = ?

Number

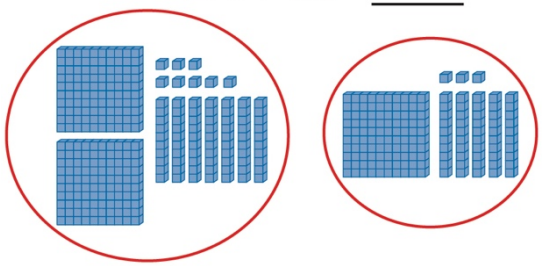
Activity 16 Assessment

Creating and Solving Problems with Larger Numbers

Developing Meaning of Addition and Subtraction

Models concretely to add and subtract

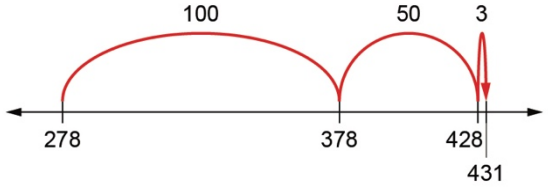
278 + 153 = _____



"278" "378, 388, 398, 408, 418, 428, 429, 430, 431"

Models and symbolizes addition and subtraction

278 + 153 = _____



"I add 5 tens and 3 ones.
78 + 53 = 78 + 50 + 3, or 131"

Uses standard algorithm to add and subtract

$$\begin{array}{r} {}^{1}2\,{}^{1}7\,8 \\ +\ 1\,5\,3 \\ \hline 4\,3\,1 \end{array} \qquad \begin{array}{r} {}^{2}\not{1}\not{3}\,{}^{1}1 \\ -\ 4\,2 \\ \hline 8\,9 \end{array}$$

Observations/Documentation

Number

Activity 16 Assessment

Creating and Solving Problems with Larger Numbers

Developing Meaning of Addition and Subtraction (con't)		
Estimates sums and differences to check reasonableness 131 – 42 = 89 "130 – 40 = 90, which is close to 89 so my answer is reasonable."	Creates and solves problems "There are 131 birds in the tree. Some birds flew away. Now there are 42 birds in the tree. How many birds flew away?" 131 − □ = 42 89 birds flew away.	Uses properties and inverse operations of addition and subtraction to solve problems 131 − □ = 42 "I can think addition to help me solve the problem: 42 + □ = 131"
Observations/Documentation		

Number

Activity 16 Assessment

Creating and Solving Problems with Larger Numbers

Developing Fluency for Addition and Subtraction		
Fluently adds and subtracts within 5 "I know 4 + 1 = 5 and 5 – 1 = 4."	Fluently adds and subtracts to 10 "I know 8 + 2 = 10 and 10 – 2 = 8." (complements to 10)	Fluently adds and subtracts to 20 "I can use doubles. I know 9 + 9 = 18 and 18 – 9 = 9."
Observations/Documentation		

Uses known sums and differences to solve addition and subtraction equations "25 + 37 = □ I know 25 + 30 = 55, and 55 plus 5 is 60, and 2 more makes 62." (decomposing, known facts)	Develops mental strategies and algorithms 29 + 32 = □ I take 1 from 32 and give it to 29 to get 30 + 31. 30 + 30 = 60, and 1 more is 61." (compensation)	Estimates sums and differences 49 + 38 = □ "49 is close to 50. 38 is close to 40. 50 + 40 = 90" (using benchmarks)
Observations/Documentation		

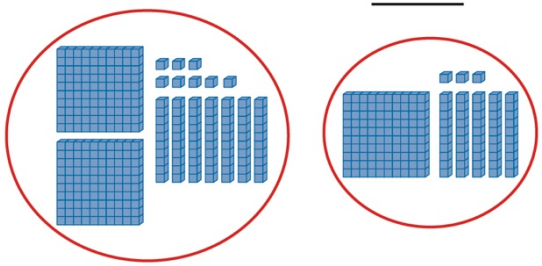
Number

Activity 17 Assessment
Consolidation

Developing Meaning of Addition and Subtraction

Models concretely to add and subtract

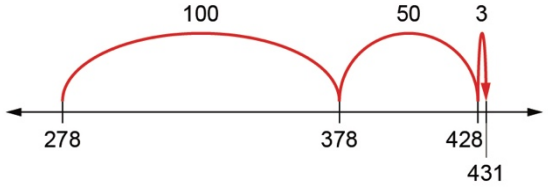
278 + 153 = _____



"278" "378, 388, 398, 408, 418, 428, 429, 430, 431"

Models and symbolizes addition and subtraction

278 + 153 = _____



"I add 5 tens and 3 ones.
78 + 53 = 78 + 50 + 3, or 131"

Uses standard algorithm to add and subtract

$$\begin{array}{r} {}^{1}2\,{}^{1}7\;8 \\ +\;1\;5\;3 \\ \hline 4\;3\;1 \end{array} \qquad \begin{array}{r} {}^{2}\not{1}\not{3}\,{}^{1}1 \\ -\;4\;2 \\ \hline 8\;9 \end{array}$$

Observations/Documentation

Number

Activity 17 Assessment
Consolidation

Developing Meaning of Addition and Subtraction (con't)		
Estimates sums and differences to check reasonableness 131 – 42 = 89 "130 – 40 = 90, which is close to 89 so my answer is reasonable."	Creates and solves problems "There are 131 birds in the tree. Some birds flew away. Now there are 42 birds in the tree. How many birds flew away?" 131 − □ = 42 89 birds flew away.	Uses properties and inverse operations of addition and subtraction to solve problems 131 − □ = 42 "I can think addition to help me solve the problem: 42 + □ = 131"
Observations/Documentation		

Number

Activity 17 Assessment
Consolidation

Developing Fluency for Addition and Subtraction		
Fluently adds and subtracts within 5 "I know 4 + 1 = 5 and 5 – 1 = 4."	Fluently adds and subtracts to 10 "I know 8 + 2 = 10 and 10 – 2 = 8." (complements to 10)	Fluently adds and subtracts to 20 "I can use doubles. I know 9 + 9 = 18 and 18 – 9 = 9."
Observations/Documentation		

Uses known sums and differences to solve addition and subtraction equations "25 + 37 = □ I know 25 + 30 = 55, and 55 plus 5 is 60, and 2 more makes 62." (decomposing, known facts)	Develops mental strategies and algorithms 29 + 32 = □ I take 1 from 32 and give it to 29 to get 30 + 31. 30 + 30 = 60, and 1 more is 61." (compensation)	Estimates sums and differences 49 + 38 = □ "49 is close to 50. 38 is close to 40. 50 + 40 = 90" (using benchmarks)
Observations/Documentation		

Name_____ Date_____

Master 11a

Game Cards: Mental Math

M 48 + 51 **Points** Roll 1 number cube.	**M** 65 + 17 **Points** Roll 2 number cubes. Make a 2-digit number.	**M** 23 + 21 **Points** Roll 2 number cubes. Make the smaller 2-digit number.
M 55 + 45 **Points** Roll 3 number cubes. Make the smallest 3-digit number.	**M** 74 − 39 **Points** Roll 2 number cubes. Make the smaller 2-digit number.	**M** 19 + 21 **Points** Roll 2 number cubes. Make the bigger 2-digit number.
M 72 + 17 **Points** Roll 1 number cube.	**M** 69 − 24 **Points** Roll 2 number cubes. Make a 2-digit number.	**M** 91 − 45 **Points** Roll 2 number cubes. Make the smaller 2-digit number.
M 34 + 56 **Points** Roll 2 number cubes. Make the smaller 2-digit number.	**M** 78 − 69 **Points** Roll 2 number cubes. Make the bigger 2-digit number.	**M** 35 + 19 **Points** Roll 3 number cubes. Make the smallest 3-digit number.

Name_____ Date_____

Master 11b

Game Cards: Story Problems

P Blue Team scored 48 points in Round 1 of the bean bag toss. They scored 91 points in Round 2. How many points do they have now? **Points** Roll 1 number cube.	**P** Red Team has 74 points. They are disqualified in Round 2 and have to take away 39 points. How many points do they have left? **Points** Roll 2 number cubes. Make a 2-digit number.	**P** Billy burst 12 balloons at the Balloon Pop. Billy burst 5 fewer balloons than Betty. How many balloons did Betty burst? **Points** Roll 2 number cubes. Make the smaller 2-digit number.
P Team Orange had 56 points after Round 1. They had 94 points after Round 2. How many points did they get in Round 2? **Points** Roll 3 number cubes. Make the smallest 3-digit number.	**P** Team Blue has 121 more points than Team Red. Team Blue has 257 points. How many points does Team Red have? **Points** Roll 2 number cubes. Make the smaller 2-digit number.	**P** There were 42 students in line for Tug-of-War. Some students left the line. Now there are 27 students in line. How many students left the line? **Points** Roll 2 number cubes. Make the bigger 2-digit number.

Name_____ Date_____

Master 11c

Game Cards: Story Problems

P The Balloon Pop game used 571 balloons. There were 850 balloons to start. How many balloons are left? **Points** Roll 1 number cube.	**P** Tilly scored 86 points at the three-legged race. That gave her a total of 197 points. How many points did she have before the three-legged race? **Points** Roll 2 number cubes. Make a 2-digit number.	**P** 276 students and 19 teachers participated in Fun Day. How many people participated altogether? **Points** Roll 2 number cubes. Make the smaller 2-digit number.
P Becky took 33 jumps in the sack race before she fell. That is 9 more jumps than Oliver took. How many jumps did Oliver take? **Points** Roll 2 number cubes. Make the smaller 2-digit number.	**P** This year, 295 people participated in Fun Day. Last year, 332 people participated. How many more people participated last year? **Points** Roll 1 number cube.	**P** 276 ribbons were given out. There were 118 ribbons left. How many ribbons were there to start with? **Points** Roll 1 number cube.

Name_____ Date _____

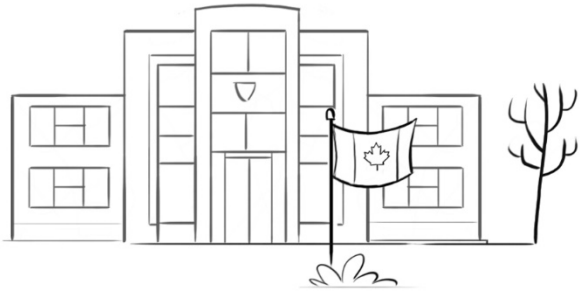
Master 12

Connections: How Many Minutes? Seconds?

Grace brushes her teeth for 2 minutes every morning. That is 120 seconds.

She takes 3 minutes to get dressed. That is 180 seconds.

She takes 5 minutes to eat her breakfast. That is 300 seconds.



She takes 6 minutes to walk from her house to school. That is 360 seconds.

How many minutes does Grace spend getting ready for school altogether? How many seconds?

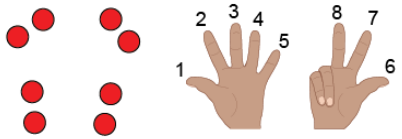
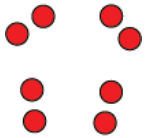
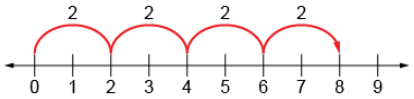
How many minutes and seconds do you take?

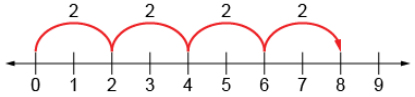
Number

Activity 18 Assessment

Exploring Repeated Addition

Multiplying 1-Digit Numbers

Groups objects and counts by 1s	Groups objects and skip-counts	Uses repeated addition	Models using multiplicative thinking
	 “2, 4, 6, 8”	 “2 + 2 + 2 + 2 = 8.”	 “4 rows of 2 is 8.”
Observations/Documentation			

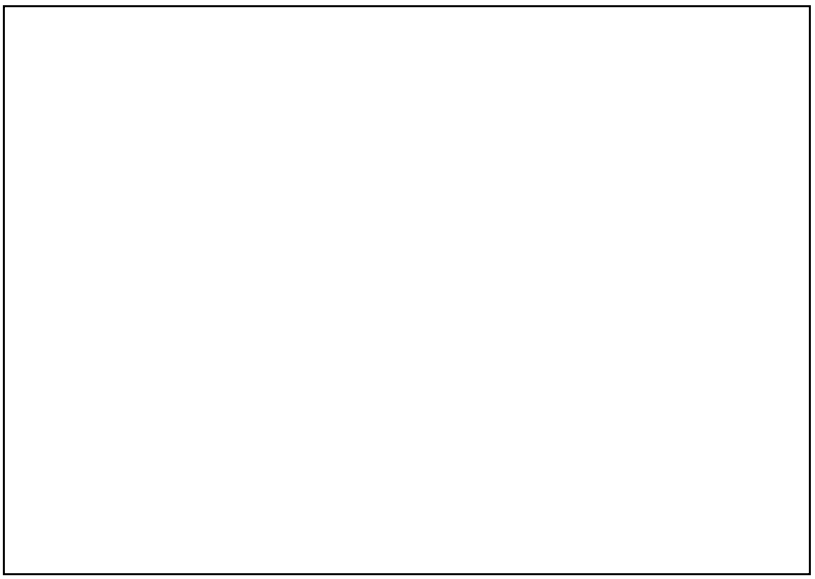
Understands relationship between operations	Uses multiplication symbol	Multiplies fluently (e.g., uses properties of multiplication)	Creates and solves problems involving equal groups
 “I can think of 2 + 2 + 2 + 2 = 8 as 4 groups of 2.”	“4 × 2 = 8” 	“4 × 2 = 8 2 × 4 = 8”	4 × 2 = 8 “There are 4 bicycles in the shed. How many wheels are there altogether?”
Observations/Documentation			

Name _____ Date _____

Master 13

Our Repeated Addition Problems Recording Sheet

Picture of Object



How many

_____ on _____ _____?

_____ on _____ _____?

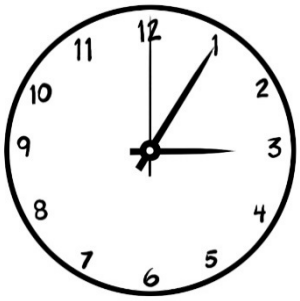
_____ on _____ _____?

_____ on _____ _____?

Name _____ Date _____

Master 14

How Many? Objects



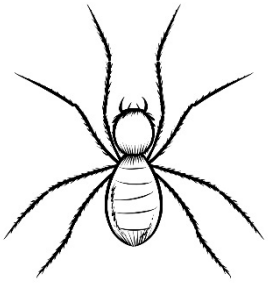
1 clock has 3 hands.

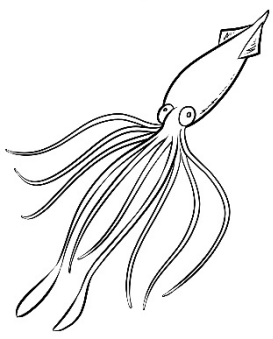
1 insect has 6 legs.

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7

1 week has 7 days.

1 spider has 8 legs.





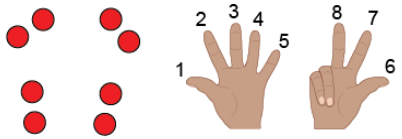
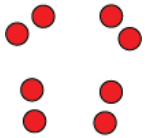
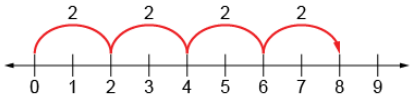
1 squid has 10 limbs.

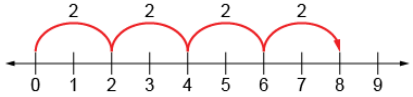
Number

Activity 19 Assessment

Repeated Addition and Multiplication

Multiplying 1-Digit Numbers

Groups objects and counts by 1s	Groups objects and skip-counts	Uses repeated addition	Models using multiplicative thinking
	 “2, 4, 6, 8”	 “2 + 2 + 2 + 2 = 8.”	 “4 rows of 2 is 8.”
Observations/Documentation			

Understands relationship between operations	Uses multiplication symbol	Multiplies fluently (e.g., uses properties of multiplication)	Creates and solves problems involving equal groups
 “I can think of 2 + 2 + 2 + 2 = 8 as 4 groups of 2.”	“4 × 2 = 8” 	“4 × 2 = 8 2 × 4 = 8”	4 × 2 = 8 “There are 4 bicycles in the shed. How many wheels are there altogether?”
Observations/Documentation			

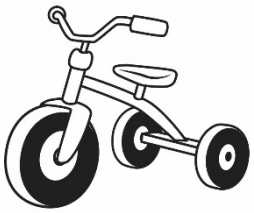
Name_____ Date _____

Master 15a

Repeated Addition Problems

Side A
There are 2 shoes in a pair.
How many shoes are in 4 pairs?

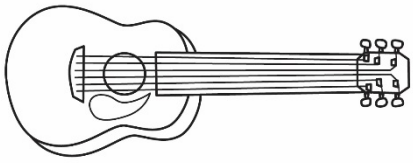
Side A
There are 3 wheels on a tricycle.
How many wheels are on 4 tricycles?



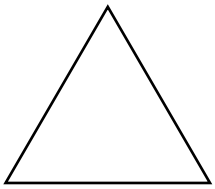
Side A
There are 4 wheels on a car.
How many wheels are on 3 cars?

Side A
A glove has 5 fingers.
How many fingers do 2 gloves have?

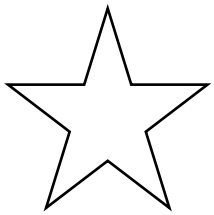
Side A
A guitar has 6 strings.
How many strings do 2 guitars have?



Side A
There are 3 sides on a triangle.
How many sides are on 3 triangles?



Side B
A star has 5 points.
How many points do 5 stars have?



Side B
A wolf has 2 ears.
How many ears do 7 wolves have?

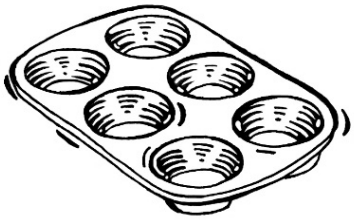
Name_____ Date _____

Master 15b

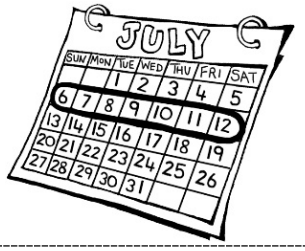
Repeated Addition Problems

Side B
There are 4 leaves on a four-leaf clover.
How many leaves are on 6 four-leaf clovers?

Side B
A muffin tin holds 6 muffins.
How many muffins do 5 tins hold?



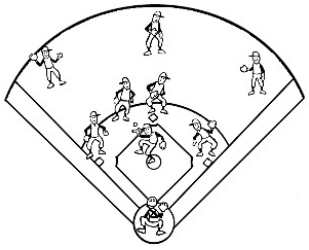
Side B
There are 7 days in a week.
How many days are in 4 weeks?



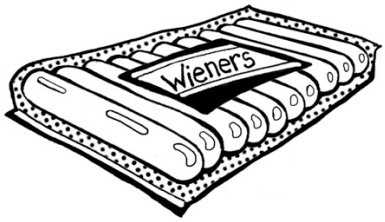
Side B
A scorpion has 8 legs.
How many legs do 3 scorpions have?

Side B
A stop sign has 8 sides.
How many sides do 2 stop signs have?

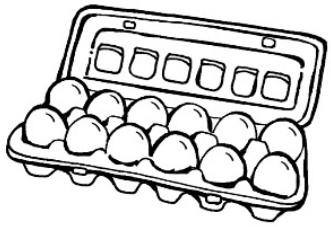
Side B
A baseball team has 9 players.
How many players do 3 teams have?



Side B
Wieners come in packages of 10.
How many wieners are in 3 packages?



Side B
Eggs come in cartons of 12.
How many eggs are in 2 cartons?

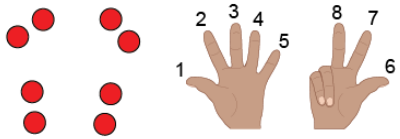
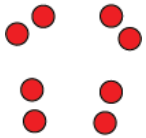
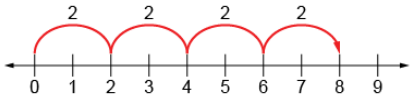


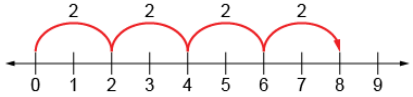
Number

Activity 20 Assessment

Exploring Multiplication

Multiplying 1-Digit Numbers

Groups objects and counts by 1s	Groups objects and skip-counts	Uses repeated addition	Models using multiplicative thinking
	 “2, 4, 6, 8”	 “2 + 2 + 2 + 2 = 8.”	 “4 rows of 2 is 8.”
Observations/Documentation			

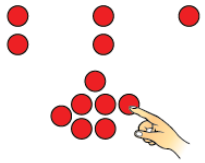
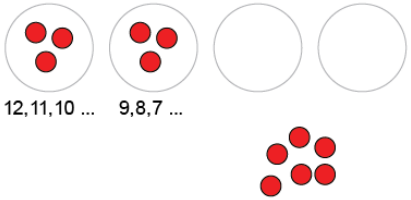
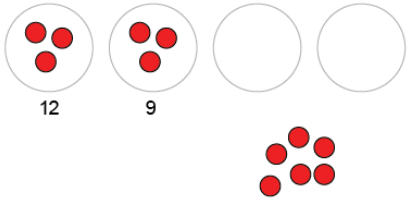
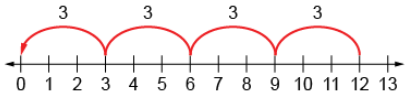
Understands relationship between operations	Uses multiplication symbol	Multiplies fluently (e.g., uses properties of multiplication)	Creates and solves problems involving equal groups
 “I can think of 2 + 2 + 2 + 2 = 8 as 4 groups of 2.”	“4 × 2 = 8” 	“4 × 2 = 8 2 × 4 = 8”	4 × 2 = 8 “There are 4 bicycles in the shed. How many wheels are there altogether?”
Observations/Documentation			

Number

Activity 21 Assessment

Repeated Subtraction and Division

Dividing 1-Digit Numbers

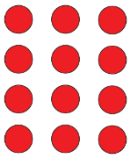
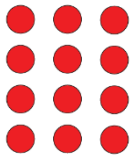
Models using equal sharing	Models using equal grouping, counting by 1s	Models using equal grouping, skip-counting backward	Uses repeated subtraction
	 “I know 3 go in each group.”		 “4 jumps of 3 backward is the same as 12 – 3 – 3 – 3 – 3 = 0.”

Observations/Documentation

Number

Activity 21 Assessment

Repeated Subtraction and Division

Dividing 1-Digit Numbers (con't)			
Models using multiplicative thinking, and uses division symbol  "12 divided into groups of 3 is 4 groups 12 ÷ 3 = 4."	Divides fluently "I know 12 ÷ 4 = 3, so 12 ÷ 3 = 4."	Creates and solves problems involving equal sharing and grouping  "There are 12 wheels on tricycles in the shed. How many tricycles are there?	Understands relationships among operations "I know 12 – 3 – 3 – 3 – 3 = 0, so I also know that 12 ÷ 3 = 4. I also know that 4 × 3 = 12"
Observations/Documentation			

Name_____ Date _____

Master 16a

Division Problems

Equal-Grouping Problems

Priya has 12 ride tickets. Each ride is 3 tickets. How many rides can Priya go on?	Ben has 10 scoops of ice cream. He puts 2 scoops on a cone. How many ice cream cones can he make?
Mother robin brought 8 worms to the nest to feed her babies. Each baby gets 2 worms. How many babies can she feed?	Twelve children are in line for the Ferris wheel. Each car holds 4 children. How many cars do they need?

Equal-Sharing Problems

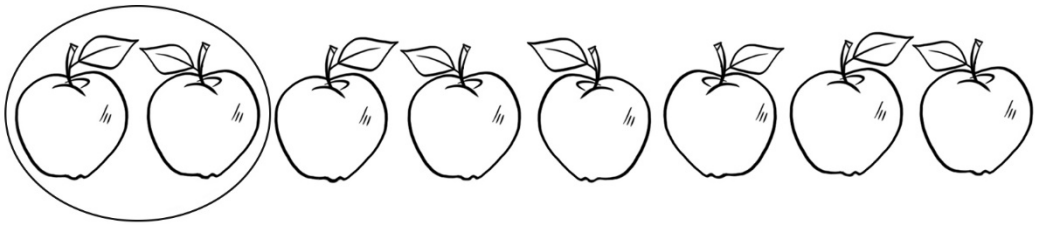
At summer camp, 9 girl campers need to share 3 tents equally. How many girls will be in each tent?	Ben has 10 strawberries to share equally among 5 fruit smoothies. How many strawberries can he put in each?
12 students want to divide themselves into 4 equal teams to play a game. How many students will be on each team?	Felix has 6 toy cars to share equally among 3 loot bags. How many toy cars will be in each bag?

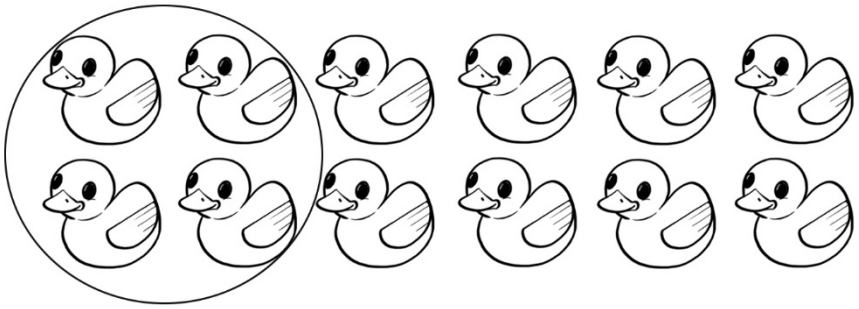
Name _____ Date _____

Master 16b

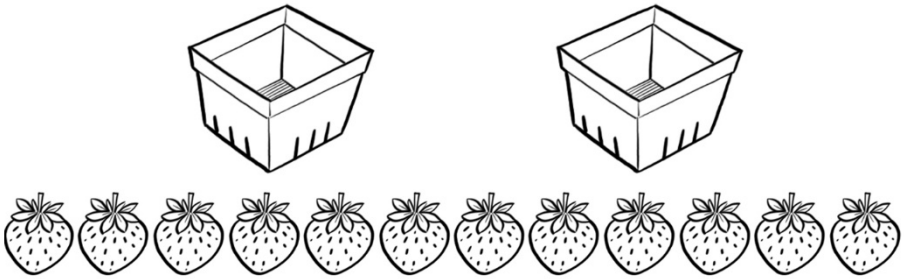
Division Problems (Accommodation)

Equal-Grouping Problems





Equal-Sharing Problems

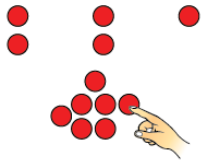
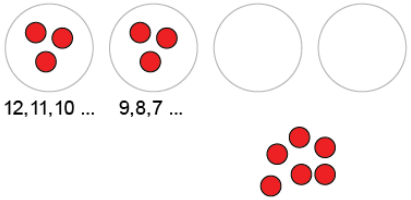
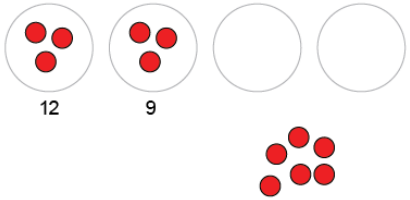
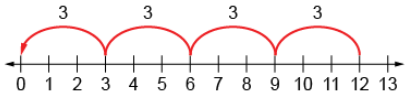


Number

Activity 22 Assessment

Exploring Division

Dividing 1-Digit Numbers

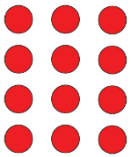
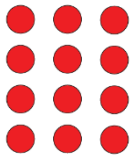
Models using equal sharing	Models using equal grouping, counting by 1s	Models using equal grouping, skip-counting backward	Uses repeated subtraction
	 “I know 3 go in each group.”		 “4 jumps of 3 backward is the same as 12 – 3 – 3 – 3 – 3 = 0.”

Observations/Documentation

Number

Activity 22 Assessment

Exploring Division

Dividing 1-Digit Numbers (con't)			
Models using multiplicative thinking, and uses division symbol  "12 divided into groups of 3 is 4 groups 12 ÷ 3 = 4."	Divides fluently "I know 12 ÷ 4 = 3, so 12 ÷ 3 = 4."	Creates and solves problems involving equal sharing and grouping  "There are 12 wheels on tricycles in the shed. How many tricycles are there?	Understands relationships among operations "I know 12 – 3 – 3 – 3 – 3 = 0, so I also know that 12 ÷ 3 = 4. I also know that 4 × 3 = 12"
Observations/Documentation			

Name_____ Date_____

Master 17

Pawty Planning

It's time to plan a Birthday Pawty for **10** adorable dogs.

To play party games, divide dogs into equal teams.

Games
Tug of War: Teams of 2
Go Fetch: Teams of 3
Obstacle Course: Teams of 5
Hide-and-Seek: Teams of 4

It's time to plan a Birthday Pawty for **4** playful cats.

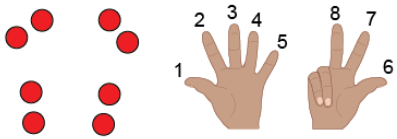
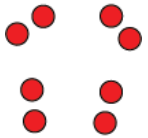
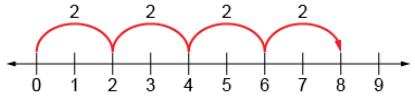
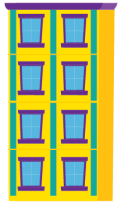
To make loot bags, share treats among 4 bags.

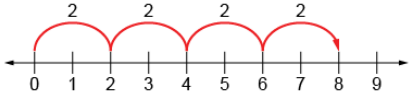
Treats
8 Toy Mice
20 Cat Treats
15 Toy Feathers
12 Dental Treats
5 Play Balls

Number

Activity 23 Assessment
Consolidation

Multiplying 1-Digit Numbers

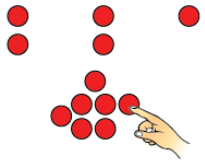
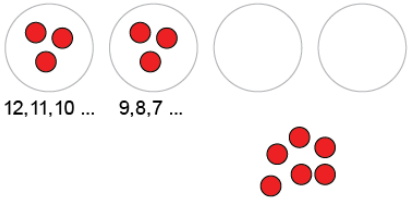
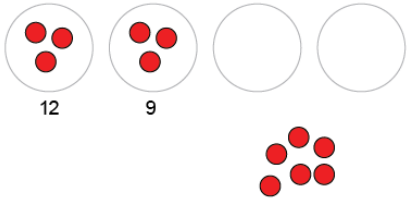
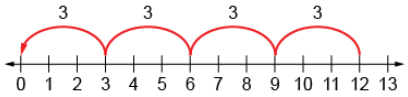
Groups objects and counts by 1s	Groups objects and skip-counts	Uses repeated addition	Models using multiplicative thinking
	 “2, 4, 6, 8”	 “2 + 2 + 2 + 2 = 8.”	 “4 rows of 2 is 8.”
Observations/Documentation			

Understands relationship between operations	Uses multiplication symbol	Multiplies fluently (e.g., uses properties of multiplication)	Creates and solves problems involving equal groups
 “I can think of 2 + 2 + 2 + 2 = 8 as 4 groups of 2.”	“4 × 2 = 8” 	“4 × 2 = 8 2 × 4 = 8”	4 × 2 = 8 “There are 4 bicycles in the shed. How many wheels are there altogether?”
Observations/Documentation			

Number

Activity 23 Assessment
Consolidation

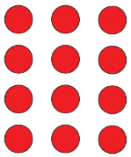
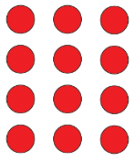
Dividing 1-Digit Numbers

Models using equal sharing	Models using equal grouping, counting by 1s	Models using equal grouping, skip-counting backward	Uses repeated subtraction
	 "I know 3 go in each group."		 "4 jumps of 3 backward is the same as 12 – 3 – 3 – 3 – 3 = 0."

Observations/Documentation

Number

Activity 23 Assessment
Consolidation

Dividing 1-Digit Numbers (con't)			
Models using multiplicative thinking, and uses division symbol  "12 divided into groups of 3 is 4 groups 12 ÷ 3 = 4."	Divides fluently "I know 12 ÷ 4 = 3, so 12 ÷ 3 = 4."	Creates and solves problems involving equal sharing and grouping  "There are 12 wheels on tricycles in the shed. How many tricycles are there?	Understands relationships among operations "I know 12 – 3 – 3 – 3 – 3 = 0, so I also know that 12 ÷ 3 = 4. I also know that 4 × 3 = 12"
Observations/Documentation			

Name _____ Date _____

Master 18a

Item Cards

1	2	3
4	5	6
8	9	10
12		

Name _____ Date _____

Master 18b

Item Cards (for Extension)

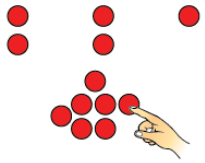
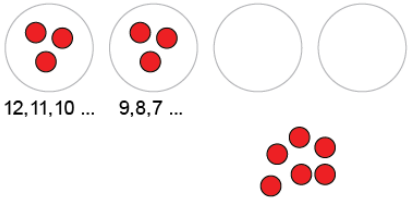
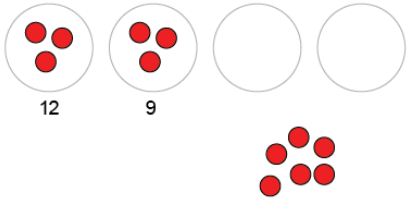
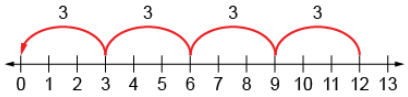
14	15	16
18	20	24
25	28	30
32		

Number

Activity 24 Assessment

Multiplication and Division Fact Families

Dividing 1-Digit Numbers

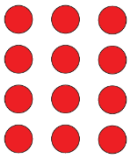
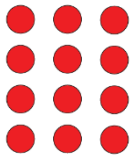
Models using equal sharing	Models using equal grouping, counting by 1s	Models using equal grouping, skip-counting backward	Uses repeated subtraction
	 “I know 3 go in each group.”		 “4 jumps of 3 backward is the same as 12 – 3 – 3 – 3 – 3 = 0.”

Observations/Documentation

Number

Activity 24 Assessment

Multiplication and Division Fact Families

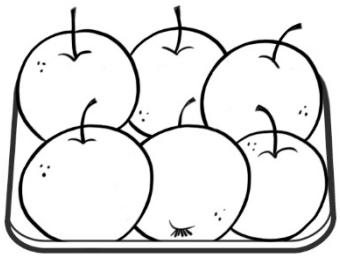
Dividing 1-Digit Numbers (con't)			
Models using multiplicative thinking, and uses division symbol  "12 divided into groups of 3 is 4 groups 12 ÷ 3 = 4."	Divides fluently "I know 12 ÷ 4 = 3, so 12 ÷ 3 = 4."	Creates and solves problems involving equal sharing and grouping  "There are 12 wheels on tricycles in the shed. How many tricycles are there?	Understands relationships among operations "I know 12 – 3 – 3 – 3 – 3 = 0, so I also know that 12 ÷ 3 = 4. I also know that 4 × 3 = 12"
Observations/Documentation			

Name_____ Date_____

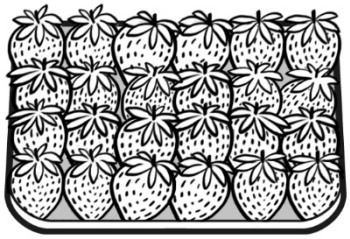
Master 19

Connections: Arrays at the Store

An array is a way of organizing items in equal rows and columns. If you look around the grocery store, you will find many arrays. Why do you think items are packaged in arrays?

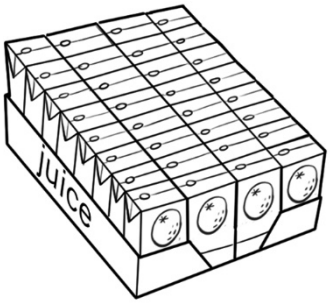


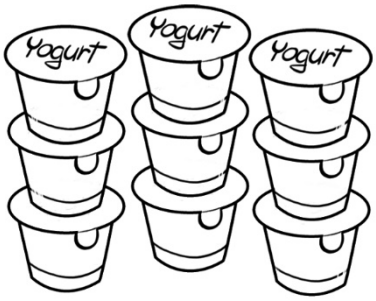
Apples



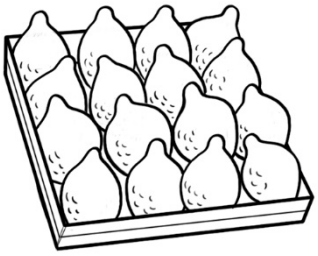
Strawberries

Arrays are a very efficient way to store and package goods. They save space and help us know how many without counting by ones.

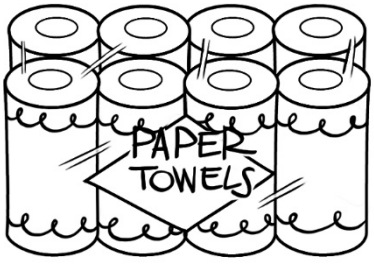




Find how many are in each picture. How did you find out?



Lemons



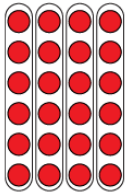
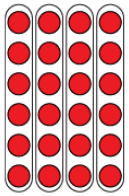
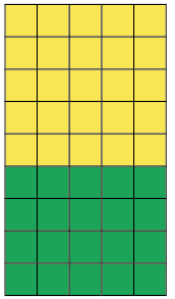
The next time you are in a grocery store, take pictures of some arrays you see and share them with the class.

Number

Activity 25 Assessment

Strategies for Multiplication

Fluency with Multiplication and Division

Recalls and demonstrates multiplication and divisions facts to 5 × 5	Uses inverse operations to solve multiplication and division problems	Uses known facts to determine unknown facts
 "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	 "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	"I can use the distributive property to split the multiplication into facts that I know, then add." $5 \times 9 = \underline{5 \times 5} + \underline{5 \times 4}$ $25 + 20 = 45$ 

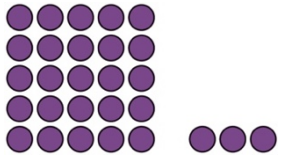
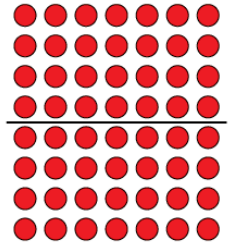
Observations/Documentation

Number

Activity 25 Assessment

Strategies for Multiplication

Fluency with Multiplication and Division (con't)

Solves division problems involving remainders I counted 33 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?  33 ÷ 6 = 5 R3 I round up to 6 pages to be sure all photos will fit.	Estimates to determine if answer to multiplication or division problem is reasonable 33 ÷ 6 = ? 33 is close to 30. 30 ÷ 6 = 5 5 is close to the answer I calculated, 5 R3. So, my answer is reasonable.	Fluently creates and solves whole number multiplication and division problems, with and without remainders There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 

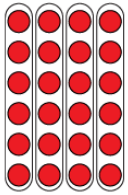
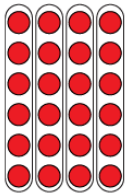
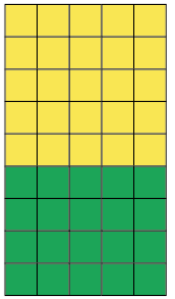
Observations/Documentation

Number

Activity 26 Assessment

Relating Multiplication and Division

Fluency with Multiplication and Division

Recalls and demonstrates multiplication and divisions facts to 5 × 5	Uses inverse operations to solve multiplication and division problems	Uses known facts to determine unknown facts
 "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	 "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	"I can use the distributive property to split the multiplication into facts that I know, then add." $5 \times 9 = \underline{5 \times 5} + \underline{5 \times 4}$ 25 + 20 = 45 

Observations/Documentation

Number

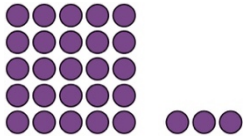
Activity 26 Assessment

Relating Multiplication and Division

Fluency with Multiplication and Division (con't)

Solves division problems involving remainders

I counted 33 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?



33 ÷ 6 = 5 R3

I round up to 6 pages to be sure all photos will fit.

Estimates to determine if answer to multiplication or division problem is reasonable

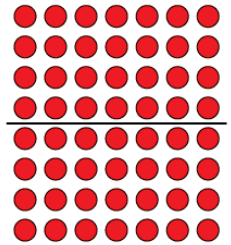
33 ÷ 6 = ?
33 is close to 30.
30 ÷ 6 = 5
5 is close to the answer I calculated, 5 R3.

So, my answer is reasonable.

Fluently creates and solves whole number multiplication and division problems, with and without remainders

There are 56 basketballs with the same number on each of 8 shelves.

8 × □ = 56, so 56 ÷ 8 = □
8 × 7 = 56
Or
8 × 7 = 4 × 7 + 4 × 7
= 28 + 28
= 56



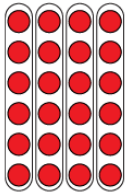
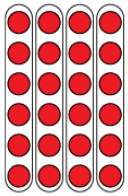
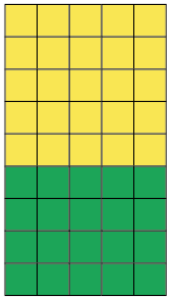
Observations/Documentation

Number

Activity 27 Assessment

Strategies for Division

Fluency with Multiplication and Division

Recalls and demonstrates multiplication and divisions facts to 5 × 5	Uses inverse operations to solve multiplication and division problems	Uses known facts to determine unknown facts
 "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	 "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	"I can use the distributive property to split the multiplication into facts that I know, then add." $5 \times 9 = \underline{5 \times 5} + \underline{5 \times 4}$ $25 + 20 = 45$ 

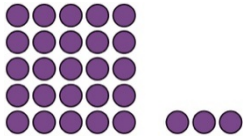
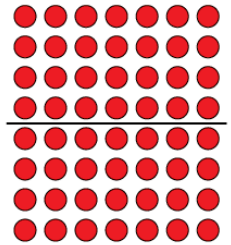
Observations/Documentation

Number

Activity 27 Assessment

Strategies for Division

Fluency with Multiplication and Division (con't)

Solves division problems involving remainders	Estimates to determine if answer to multiplication or division problem is reasonable	Fluently creates and solves whole number multiplication and division problems, with and without remainders
I counted 33 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?  33 ÷ 6 = 5 R3 I round up to 6 pages to be sure all photos will fit.	33 ÷ 6 = ? 33 is close to 30. 30 ÷ 6 = 5 5 is close to the answer I calculated, 5 R3. So, my answer is reasonable.	There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 

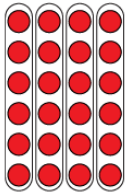
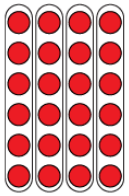
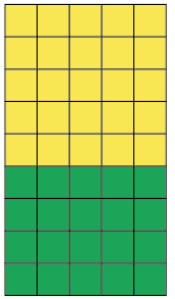
Observations/Documentation

Number

Activity 28 Assessment

Dividing with Remainders

Fluency with Multiplication and Division

Recalls and demonstrates multiplication and divisions facts to 5 × 5	Uses inverse operations to solve multiplication and division problems	Uses known facts to determine unknown facts
 "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	 "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	"I can use the distributive property to split the multiplication into facts that I know, then add." $5 \times 9 = \underline{5 \times 5} + \underline{5 \times 4}$ $25 + 20 = 45$ 

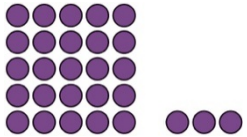
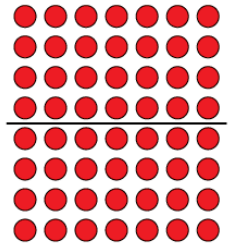
Observations/Documentation

Number

Activity 28 Assessment

Dividing with Remainders

Fluency with Multiplication and Division (con't)

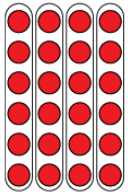
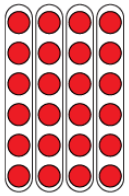
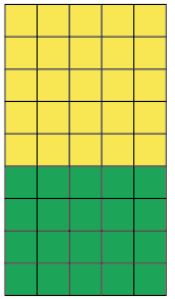
Solves division problems involving remainders I counted 33 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?  33 ÷ 6 = 5 R3 I round up to 6 pages to be sure all photos will fit.	Estimates to determine if answer to multiplication or division problem is reasonable 33 ÷ 6 = ? 33 is close to 30. 30 ÷ 6 = 5 5 is close to the answer I calculated, 5 R3. So, my answer is reasonable.	Fluently creates and solves whole number multiplication and division problems, with and without remainders There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 
Observations/Documentation		

Number

Activity 29 Assessment

Solving Multiplication and Division Problems

Fluency with Multiplication and Division

Recalls and demonstrates multiplication and divisions facts to 5 × 5	Uses inverse operations to solve multiplication and division problems	Uses known facts to determine unknown facts
 "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	 "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	"I can use the distributive property to split the multiplication into facts that I know, then add." $5 \times 9 = \underline{5 \times 5} + \underline{5 \times 4}$ 25 + 20 = 45 

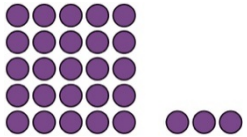
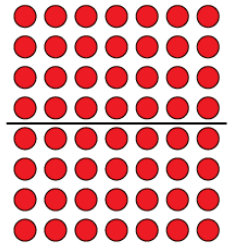
Observations/Documentation

Number

Activity 29 Assessment

Solving Multiplication and Division Problems

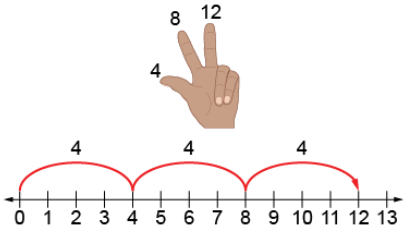
Fluency with Multiplication and Division (con't)

Solves division problems involving remainders I counted 33 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?  33 ÷ 6 = 5 R3 I round up to 6 pages to be sure all photos will fit.	Estimates to determine if answer to multiplication or division problem is reasonable 33 ÷ 6 = ? 33 is close to 30. 30 ÷ 6 = 5 5 is close to the answer I calculated, 5 R3. So, my answer is reasonable.	Fluently creates and solves whole number multiplication and division problems, with and without remainders There are 56 basketballs with the same number on each of 8 shelves. 8 × □ = 56, so 56 ÷ 8 = □ 8 × 7 = 56 Or 8 × 7 = 4 × 7 + 4 × 7 = 28 + 28 = 56 
Observations/Documentation		

Number

Activity 30 Assessment

Building Fluency: The Games Room

Developing Fluency with Multiplication and Division Facts			
Models with concrete materials and counts by 1s 	Uses skip-counting forward and backward 	Works flexibly with numbers (e.g., uses repeated addition or subtraction, familiar facts) 4 + 4 + 4 = 12 I know 2 × 4 = 8 and one more group of 4 is 12, so 3 × 4 = 12. I know 4 × 3 = 12, so 3 × 4 also equals 12.	Fluently multiplies and divides "I just know that 3 × 4 = 12."
Observations/Documentation			

Name_____ Date_____

Master 20

Multiplication Squares Instructions

Group size: 2

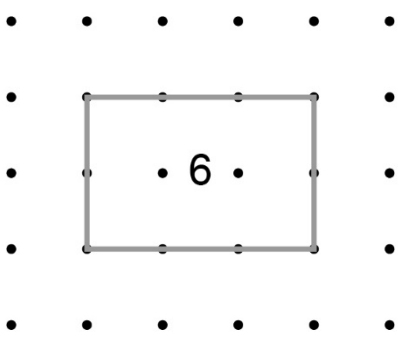
Materials:

- Student Card 17A: Multiplication Squares
- 2 number cubes, labelled 1−6
- 2 dry-erase markers (different colours)

Instructions:

Take turns rolling the number cubes and drawing a matching array on the grid.
Write the product inside the array.

For example, if you roll a 2 and a 3, you can draw an array of 2 rows of 3 squares, or 3 rows of 2 squares.



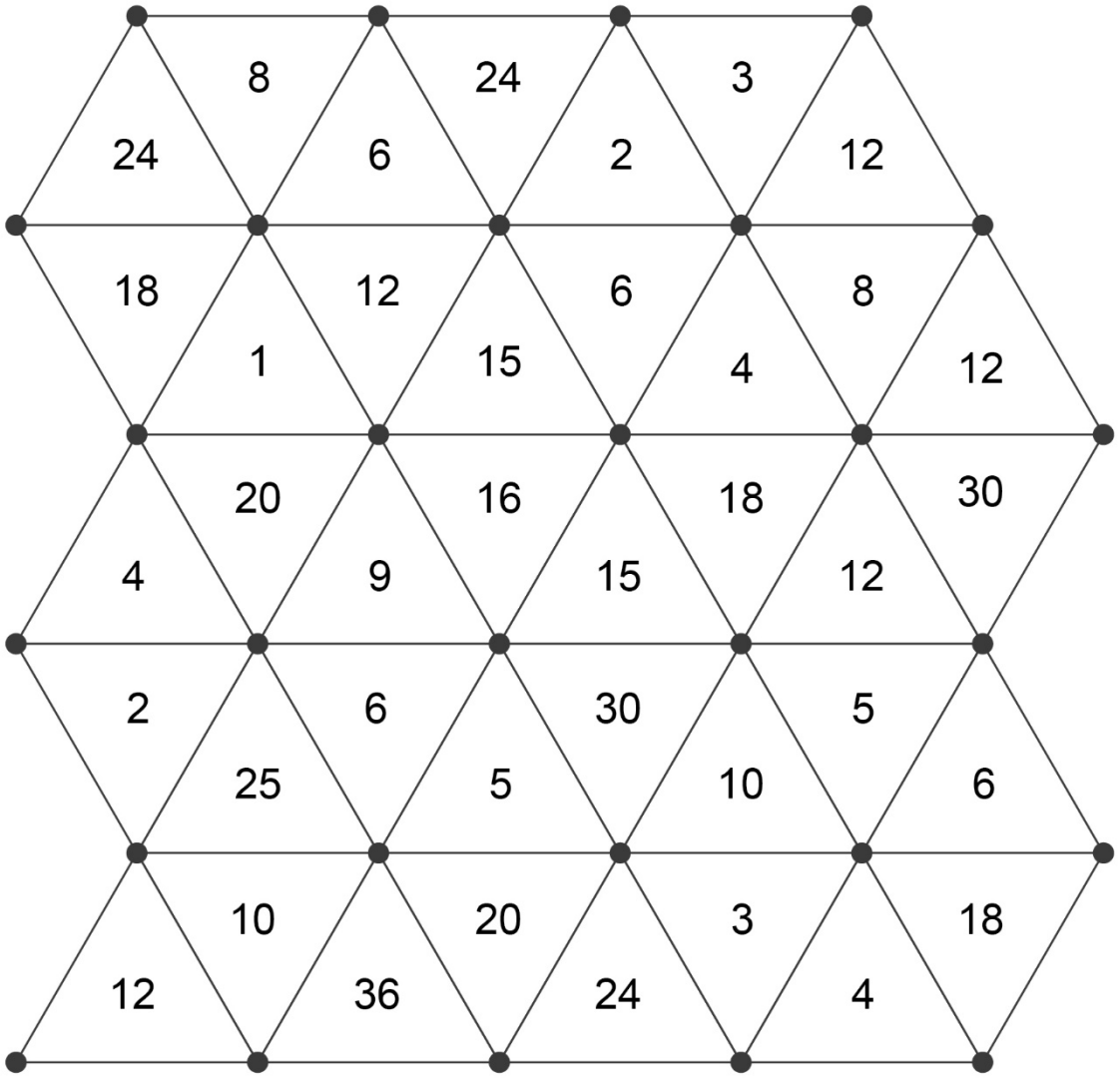
Continue to take turns until one of you runs out of room and cannot draw an array.
The other player wins.

Note: Arrays cannot overlap.

Name_____ Date_____

Master 21

Multiplication Triangles
Game Board



Name_____ Date_____

Master 22

Multiplication Triangles Instructions

Group size: 2

Materials:

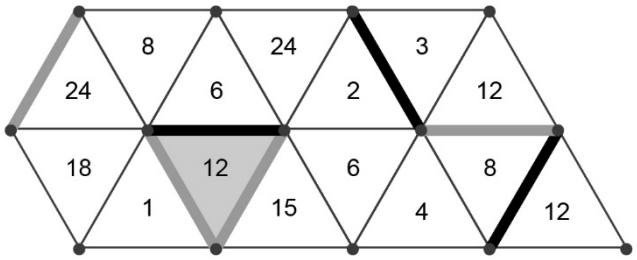
- Master 16: *Multiplication Triangles* Game Board
- 2 number cubes, labelled 1−6
- 2 markers (different colours)

Goal: To make more triangles

Instructions:

Take turns to roll the number cubes and multiply the numbers.
Look for the answer on the board.
Connect any two dots to form a side of the triangle.

When you draw a line that closes a triangle, colour the triangle with your marker. Take another turn.



When all dots have been connected, the player with more triangles coloured wins.

Name_____ Date_____

Master 23a

Divide Me! Game Cards

2	3	4
5	6	8
9	10	12
15	16	18

Name_____ Date_____

Master 23b

Divide Me! Game Cards

20	24	25
30	36	12
18	20	30
6	24	15

Name_____ Date_____

Master 24

Divide Me! Instructions

Group size: 2

Materials:

- Master 17: *Divide Me!* Game Cards
- Number cube, labelled 1−6

Goal: To be the first to have no cards left in your hand

Instructions:

Deal 6 cards each.
Place the remaining cards, face down, in a pile.

Player A: Roll the number cube.
Find a number in your hand that can be divided into groups of that size (with no leftovers).

If you find a card, say the division sentence, then place the card on the table.

30

$30 \div 5 = 6$

If you can't find a card, take a card from the pile.

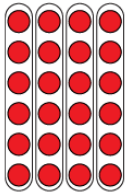
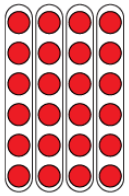
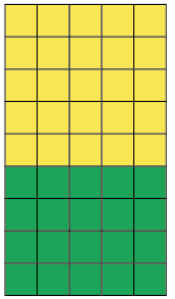
Player B: Take a turn.

Continue to take turns until one of you has no cards left in your hand.

Number

Activity 31 Assessment
Consolidation

Fluency with Multiplication and Division

Recalls and demonstrates multiplication and divisions facts to 5 × 5	Uses inverse operations to solve multiplication and division problems	Uses known facts to determine unknown facts
 "I know that 4 × 6 = 24 and that 24 ÷ 6 = 4. The array shows both facts."	 "I can rewrite 24 ÷ 6 = ? as 6 × ? = 24."	"I can use the distributive property to split the multiplication into facts that I know, then add." $5 \times 9 = \underline{5 \times 5} + \underline{5 \times 4}$ $25 + 20 = 45$ 

Observations/Documentation

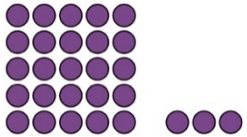
Number

Activity 31 Assessment
Consolidation

Fluency with Multiplication and Division (con't)

Solves division problems involving remainders

I counted 33 photographs to put in an album. Each page can hold 6 photographs. How many pages will I need?



33 ÷ 6 = 5 R3

I round up to 6 pages to be sure all photos will fit.

Estimates to determine if answer to multiplication or division problem is reasonable

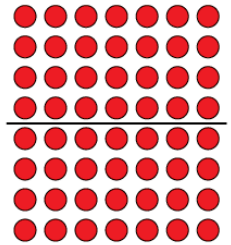
33 ÷ 6 = ?
33 is close to 30.
30 ÷ 6 = 5
5 is close to the answer I calculated, 5 R3.

So, my answer is reasonable.

Fluently creates and solves whole number multiplication and division problems, with and without remainders

There are 56 basketballs with the same number on each of 8 shelves.

8 × □ = 56, so 56 ÷ 8 = □
8 × 7 = 56
Or
8 × 7 = 4 × 7 + 4 × 7
= 28 + 28
= 56

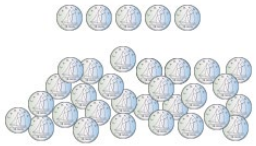
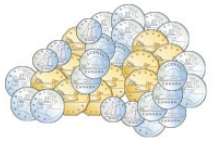


Observations/Documentation

Number

Activity 32 Assessment

Counting Money

Estimating Money Amounts			
Scans quantity of coins (disregards value of the coins)	Uses a referent to estimate the value of a collection of one denomination	Estimates the value of a mixed collection of coins to the nearest dollar	Makes reasonable estimates of mixed collections in dollars and cents
			
"There's a lot of coins. I think it's about $100."	"There's about 5 groups of 5 dimes, so about $2.50."	"I see about 10 loonies and 10 quarters, which is about $12."	"There's $55 dollars in bills and about $4 in loonies and quarters. I don't think the rest of the coins make a dollar. So, my estimate is about $59.50."
Observations/Documentation			

Number

Activity 32 Assessment

Counting Money

Counting Money Amounts			
Skip-counts to find value of collection of coins/bills of one denomination  "5, 10, 15, 20, 25. I count 25 cents."	Sorts coins and/or bills when collection is of mixed denominations.  "10, 20, 25, 30. I count 30 cents."	Skip-counts to count collections of coins and/or bills of different denominations.  "25, 35, 45, 50. I count 50 cents."	Successfully and flexibly counts collections of money of different denominations  "25, 50. I count 50 cents."
Observations/Documentation			

Number

Activity 33 Assessment

Good Money Habits

Responsible Money Management			
Understands the difference between spending, saving, and donating "When I buy something at the store, I spend. When I give to a charity, I donate. When I put money in my piggy bank, I save."	Identifies ways to spend and save responsibly "I can wait for the item to go on sale, or I can buy the item in a thrift shop."	Identifies short- and long-term savings goals Short-term savings goals: pack of trading cards, new baseball cap Long-term savings goals: new cellphone, new bicycle "The long-term goals would take me years to save for."	Creates a savings plan to reach a financial goal "To buy a new baseball cap, I will save $4 of the $7 I earn each week walking the neighbour's dog. I will have enough to buy the cap in 1 or 2 months."
Observations/Documentation			

Name_____ Date _____

Master 25

Spend, Save, and Donate Chart

Spend 	Save 
Donate 	

Number

Activity 34 Assessment

Short-Term and Long-Term Savings Goals

Responsible Money Management			
Understands the difference between spending, saving, and donating "When I buy something at the store, I spend. When I give to a charity, I donate. When I put money in my piggy bank, I save."	Identifies ways to spend and save responsibly "I can wait for the item to go on sale, or I can buy the item in a thrift shop."	Identifies short- and long-term savings goals Short-term savings goals: pack of trading cards, new baseball cap Long-term savings goals: new cellphone, new bicycle "The long-term goals would take me years to save for."	Creates a savings plan to reach a financial goal "To buy a new baseball cap, I will save $4 of the $7 I earn each week walking the neighbour's dog. I will have enough to buy the cap in 1 or 2 months."
Observations/Documentation			

Name_____ Date _____

Master 26

Short-Term or Long-Term?

Short-Term Savings Items 	Long-Term Savings Items 

Name_____ Date _____

Master 27

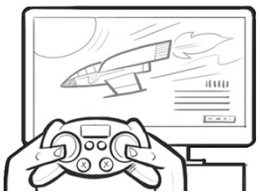
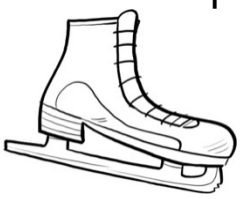
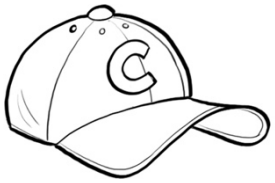
Our Savings Plan

Savings Goal
Item you are saving for: Is the item a short-term or long-term savings goal? Why do you think so? How much might the item cost? How are you earning money? How much of your earnings will you save and how often? How long will it take to reach your goal?

Name_____ Date _____

Master 28

Savings Goals Cards

Pack of trading cards 	Gift for a friend 
Movie ticket 	Video game 
Ice cream with a friend 	New soccer ball 
Get skates sharpened 	New baseball cap 
Donate to local charity 	New clothes 

Name_____ Date _____

Master 29

Earning Money Cards

Walk neighbour's dog $1 per walk	Receive $10 as a gift
Find $5 on way to school	Deliver flyers 20¢ per bunch
Weed the neighbour's lawn 5¢ per weed	Make and sell friendship bracelets $2 per bracelet
Collect bottles for recycling 10¢ per bottle	Receive an allowance $2 per week
Help with the dinner dishes 50¢ per time	Get the neighbour's mail $5 per month

Number

Activity 35 Assessment

Consolidation

Responsible Money Management			
Understands the difference between spending, saving, and donating "When I buy something at the store, I spend. When I give to a charity, I donate. When I put money in my piggy bank, I save."	Identifies ways to spend and save responsibly "I can wait for the item to go on sale, or I can buy the item in a thrift shop."	Identifies short- and long-term savings goals Short-term savings goals: pack of trading cards, new baseball cap Long-term savings goals: new cellphone, new bicycle "The long-term goals would take me years to save for."	Creates a savings plan to reach a financial goal "To buy a new baseball cap, I will save $4 of the $7 I earn each week walking the neighbour's dog. I will have enough to buy the cap in 1 or 2 months."
Observations/Documentation			

Number

Activity 35 Assessment
Consolidation

Counting Money Amounts			
Skip-counts to find value of collection of coins/bills of one denomination	Sorts coins and/or bills when collection is of mixed denominations.	Skip-counts to count collections of coins and/or bills of different denominations.	Successfully and flexibly counts collections of money of different denominations
 "5, 10, 15, 20, 25. I count 25 cents."	 "10, 20, 25, 30. I count 30 cents."	 "25, 35, 45, 50. I count 50 cents."	 "25, 50. I count 50 cents."
Observations/Documentation			

Name_____ Date _____

Master

Money-Wise Scenario Cards

Scenario 1
You spend all your allowance on candy the first day you get it.
Now you don't have any money for the rest of the month.
How would you solve this problem?

Scenario 2
You and your friend go to the movies.
Your friend wants to buy popcorn and doesn't have enough money.
You have some extra money in your pocket.
Describe what you would do and why.

Scenario 3
You lend part of your allowance money to a friend.
Your friend promises to pay you back tomorrow, but doesn't.
It is a month later and they still have not paid you back.
What should you do?

Scenario 4
You really like to buy a treat every day after school.
You also notice you have no money to save for a new bike.
What should you do?

Scenario 5
Your family spends about $100 a week on groceries and $50 on fuel.
How much money does your family need for groceries and fuel for a month?

Name_____ Date _____

Master 30b

Money-Wise Scenario Cards

Scenario 6
You love to read books, but cannot afford to buy a $10 book every week.
What could you do rather than buy books?

Scenario 7
Your family would like to save for a vacation.
What is one thing you would suggest doing so you can help your family save money?

Scenario 8
Your older sibling would like to upgrade to a new phone.
What could they do with their old phone?

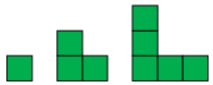
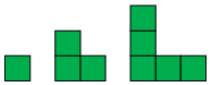
Scenario 9
Your school is collecting donations for the local Food Bank.
How could you help?

Scenario 10
Samir has saved up $100 for a new bike.
Samir brings all the money to school to show their friends.
Is this a good idea?

Patterning and Algebra

Activity 1 Assessment

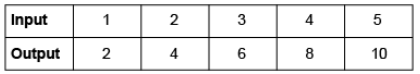
Describing and Extending Patterns

Generalizing and Representing Increasing and Decreasing Patterns			
Recognizes that a pattern increases or decreases  "The terms are getting bigger."	Identifies how a pattern changes (describes rule)  "To get from the first term to the second term, and from the second term to the third term, we add 2 tiles. The pattern grows by 2 tiles each time."	Represents patterns symbolically and writes rules using addition or subtraction 1, 3, 5, … "Start at 1 and add 2 each time." 17, 14, 11, … "Start at 17 and take away 3 each time."	Extends patterns using repeated addition and subtraction 1, 3, 5, 7, 9, 11, … "I added 2 over and over." 17, 14, 11, 8, 5, 2 "I subtracted 3 over and over."
Observations/Documentation			

Activity 1 Assessment

Describing and Extending Patterns

Generalizing and Representing Increasing and Decreasing Patterns (cont'd)

Finds missing terms or errors in patterns	Creates number patterns and identifies finite and infinite whole-number sequences	Uses patterns to solve problems	Identifies and extends patterns involving multiplication
3, 8, 13, 18, 22, 28, …. "Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23."	"85, 75, 65, 55, …. "I skip-counted back by 10s. All the numbers are odd. It is a finite sequence because I will run out of numbers."	"If I save 2 quarters a day, when will I have 10 quarters? 2, 4, 6, 8, 10 I will have 10 quarters after 5 days."	 "Each input number is multiplied by 2."

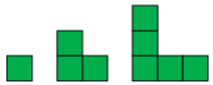
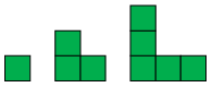
Input	1	2	3	4	5
Output	2	4	6	8	10

Observations/Documentation

Patterning and Algebra

Activity 2 Assessment

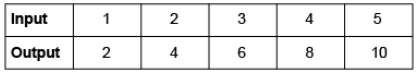
Numerical Sequences

Generalizing and Representing Increasing and Decreasing Patterns			
Recognizes that a pattern increases or decreases  "The terms are getting bigger."	Identifies how a pattern changes (describes rule)  "To get from the first term to the second term, and from the second term to the third term, we add 2 tiles. The pattern grows by 2 tiles each time."	Represents patterns symbolically and writes rules using addition or subtraction 1, 3, 5, … "Start at 1 and add 2 each time." 17, 14, 11, … "Start at 17 and take away 3 each time."	Extends patterns using repeated addition and subtraction 1, 3, 5, 7, 9, 11, … "I added 2 over and over." 17, 14, 11, 8, 5, 2 "I subtracted 3 over and over."
Observations/Documentation			

Activity 2 Assessment

Numerical Sequences

Generalizing and Representing Increasing and Decreasing Patterns (cont'd)

Finds missing terms or errors in patterns	Creates number patterns and identifies finite and infinite whole-number sequences	Uses patterns to solve problems	Identifies and extends patterns involving multiplication
3, 8, 13, 18, 22, 28, …. "Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23."	"85, 75, 65, 55, …. "I skip-counted back by 10s. All the numbers are odd. It is a finite sequence because I will run out of numbers."	"If I save 2 quarters a day, when will I have 10 quarters? 2, 4, 6, 8, 10 I will have 10 quarters after 5 days."	 "Each input number is multiplied by 2."

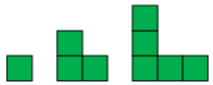
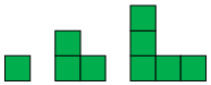
Input	1	2	3	4	5
Output	2	4	6	8	10

Observations/Documentation

Patterning and Algebra

Activity 3 Assessment

Representing Patterns

Generalizing and Representing Increasing and Decreasing Patterns			
Recognizes that a pattern increases or decreases  "The terms are getting bigger."	Identifies how a pattern changes (describes rule)  "To get from the first term to the second term, and from the second term to the third term, we add 2 tiles. The pattern grows by 2 tiles each time."	Represents patterns symbolically and writes rules using addition or subtraction 1, 3, 5, … "Start at 1 and add 2 each time." 17, 14, 11, … "Start at 17 and take away 3 each time."	Extends patterns using repeated addition and subtraction 1, 3, 5, 7, 9, 11, … "I added 2 over and over." 17, 14, 11, 8, 5, 2 "I subtracted 3 over and over."
Observations/Documentation			

Activity 3 Assessment
Representing Patterns

Generalizing and Representing Increasing and Decreasing Patterns (cont'd)			
Finds missing terms or errors in patterns 3, 8, 13, 18, 22, 28, …. "Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23."	Creates number patterns and identifies finite and infinite whole-number sequences "85, 75, 65, 55, …. "I skip-counted back by 10s. All the numbers are odd. It is a finite sequence because I will run out of numbers."	Uses patterns to solve problems "If I save 2 quarters a day, when will I have 10 quarters? 2, 4, 6, 8, 10 I will have 10 quarters after 5 days."	Identifies and extends patterns involving multiplication **Input** 1 2 3 4 5 **Output** 2 4 6 8 10 "Each input number is multiplied by 2."
Observations/Documentation			

Name_____ Date_____

Master 32

What's My Pattern?

Representation Cards

Use a number line.	Use a hundred chart.
Draw a picture.	Use linking cubes or Base Ten Blocks.

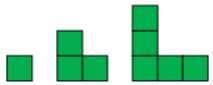
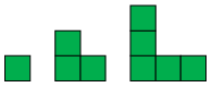
Number Pattern Cards

44, 40, 36, …	100, 95, 90, …
1, 4, 7, ….	20, 26, 32, …
12, 10, 8, …	17, 20, 24, 29, …

Patterning and Algebra

Activity 4 Assessment

Creating Patterns

Generalizing and Representing Increasing and Decreasing Patterns			
Recognizes that a pattern increases or decreases  "The terms are getting bigger."	Identifies how a pattern changes (describes rule)  "To get from the first term to the second term, and from the second term to the third term, we add 2 tiles. The pattern grows by 2 tiles each time."	Represents patterns symbolically and writes rules using addition or subtraction 1, 3, 5, … "Start at 1 and add 2 each time." 17, 14, 11, … "Start at 17 and take away 3 each time."	Extends patterns using repeated addition and subtraction 1, 3, 5, 7, 9, 11, … "I added 2 over and over." 17, 14, 11, 8, 5, 2 "I subtracted 3 over and over."
Observations/Documentation			

Activity 4 Assessment
Creating Patterns

Generalizing and Representing Increasing and Decreasing Patterns (cont'd)

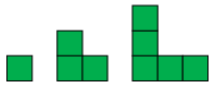
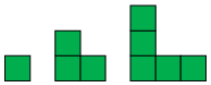
Finds missing terms or errors in patterns	Creates number patterns and identifies finite and infinite whole-number sequences	Uses patterns to solve problems	Identifies and extends patterns involving multiplication
3, 8, 13, 18, 22, 28, …. "Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23."	"85, 75, 65, 55, …. "I skip-counted back by 10s. All the numbers are odd. It is a finite sequence because I will run out of numbers."	"If I save 2 quarters a day, when will I have 10 quarters? 2, 4, 6, 8, 10 I will have 10 quarters after 5 days."	<table><tr><td>**Input**</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>**Output**</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td></tr></table> "Each input number is multiplied by 2."

Observations/Documentation

Patterning and Algebra

Activity 5 Assessment

Identifying Errors and Missing Terms

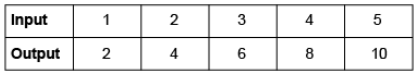
Generalizing and Representing Increasing and Decreasing Patterns			
Recognizes that a pattern increases or decreases  "The terms are getting bigger."	Identifies how a pattern changes (describes rule)  "To get from the first term to the second term, and from the second term to the third term, we add 2 tiles. The pattern grows by 2 tiles each time."	Represents patterns symbolically and writes rules using addition or subtraction 1, 3, 5, … "Start at 1 and add 2 each time." 17, 14, 11, … "Start at 17 and take away 3 each time."	Extends patterns using repeated addition and subtraction 1, 3, 5, 7, 9, 11, … "I added 2 over and over." 17, 14, 11, 8, 5, 2 "I subtracted 3 over and over."
Observations/Documentation			

Patterning and Algebra

Activity 5 Assessment

Identifying Errors and Missing Terms

Generalizing and Representing Increasing and Decreasing Patterns (cont'd)

Finds missing terms or errors in patterns	Creates number patterns and identifies finite and infinite whole-number sequences	Uses patterns to solve problems	Identifies and extends patterns involving multiplication
3, 8, 13, 18, 22, 28, …. "Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23."	"85, 75, 65, 55, …. "I skip-counted back by 10s. All the numbers are odd. It is a finite sequence because I will run out of numbers."	"If I save 2 quarters a day, when will I have 10 quarters? 2, 4, 6, 8, 10 I will have 10 quarters after 5 days."	 "Each input number is multiplied by 2."

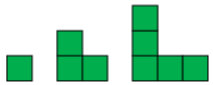
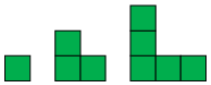
Input	1	2	3	4	5
Output	2	4	6	8	10

Observations/Documentation

Patterning and Algebra

Activity 6 Assessment

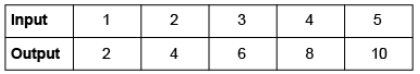
Solving Problems

Generalizing and Representing Increasing and Decreasing Patterns			
Recognizes that a pattern increases or decreases  "The terms are getting bigger."	Identifies how a pattern changes (describes rule)  "To get from the first term to the second term, and from the second term to the third term, we add 2 tiles. The pattern grows by 2 tiles each time."	Represents patterns symbolically and writes rules using addition or subtraction 1, 3, 5, … "Start at 1 and add 2 each time." 17, 14, 11, … "Start at 17 and take away 3 each time."	Extends patterns using repeated addition and subtraction 1, 3, 5, 7, 9, 11, … "I added 2 over and over." 17, 14, 11, 8, 5, 2 "I subtracted 3 over and over."
Observations/Documentation			

Patterning and Algebra

Activity 6 Assessment
Solving Problems

Generalizing and Representing Increasing and Decreasing Patterns (cont'd)

Finds missing terms or errors in patterns	Creates number patterns and identifies finite and infinite whole-number sequences	Uses patterns to solve problems	Identifies and extends patterns involving multiplication
3, 8, 13, 18, 22, 28, …. "Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23."	"85, 75, 65, 55, …. "I skip-counted back by 10s. All the numbers are odd. It is a finite sequence because I will run out of numbers."	"If I save 2 quarters a day, when will I have 10 quarters? 2, 4, 6, 8, 10 I will have 10 quarters after 5 days."	 "Each input number is multiplied by 2."

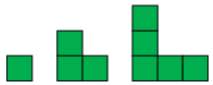
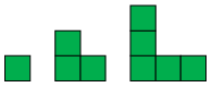
Input	1	2	3	4	5
Output	2	4	6	8	10

Observations/Documentation

Patterning and Algebra

Activity 7 Assessment

Exploring Multiplicative Patterns

Generalizing and Representing Increasing and Decreasing Patterns			
Recognizes that a pattern increases or decreases  "The terms are getting bigger."	Identifies how a pattern changes (describes rule)  "To get from the first term to the second term, and from the second term to the third term, we add 2 tiles. The pattern grows by 2 tiles each time."	Represents patterns symbolically and writes rules using addition or subtraction 1, 3, 5, … "Start at 1 and add 2 each time." 17, 14, 11, … "Start at 17 and take away 3 each time."	Extends patterns using repeated addition and subtraction 1, 3, 5, 7, 9, 11, … "I added 2 over and over." 17, 14, 11, 8, 5, 2 "I subtracted 3 over and over."
Observations/Documentation			

Activity 7 Assessment

Exploring Multiplicative Patterns

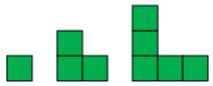
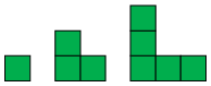
Generalizing and Representing Increasing and Decreasing Patterns (cont'd)

Finds missing terms or errors in patterns	Creates number patterns and identifies finite and infinite whole-number sequences	Uses patterns to solve problems	Identifies and extends patterns involving multiplication
3, 8, 13, 18, 22, 28, …. "Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23."	"85, 75, 65, 55, …. "I skip-counted back by 10s. All the numbers are odd. It is a finite sequence because I will run out of numbers."	"If I save 2 quarters a day, when will I have 10 quarters? 2, 4, 6, 8, 10 I will have 10 quarters after 5 days."	<table><tr><td>Input</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>Output</td><td>2</td><td>4</td><td>6</td><td>8</td><td>10</td></tr></table> "Each input number is multiplied by 2."

Observations/Documentation

Patterning and Algebra

Activity 8 Assessment
Consolidation

Generalizing and Representing Increasing and Decreasing Patterns			
Recognizes that a pattern increases or decreases  "The terms are getting bigger."	Identifies how a pattern changes (describes rule)  "To get from the first term to the second term, and from the second term to the third term, we add 2 tiles. The pattern grows by 2 tiles each time."	Represents patterns symbolically and writes rules using addition or subtraction 1, 3, 5, … "Start at 1 and add 2 each time." 17, 14, 11, … "Start at 17 and take away 3 each time."	Extends patterns using repeated addition and subtraction 1, 3, 5, 7, 9, 11, … "I added 2 over and over." 17, 14, 11, 8, 5, 2 "I subtracted 3 over and over."
Observations/Documentation			

Activity 8 Assessment
Consolidation

Generalizing and Representing Increasing and Decreasing Patterns (cont'd)			
Finds missing terms or errors in patterns 3, 8, 13, 18, 22, 28, …. "Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23."	Creates number patterns and identifies finite and infinite whole-number sequences "85, 75, 65, 55, …. "I skip-counted back by 10s. All the numbers are odd. It is a finite sequence because I will run out of numbers."	Uses patterns to solve problems "If I save 2 quarters a day, when will I have 10 quarters? 2, 4, 6, 8, 10 I will have 10 quarters after 5 days."	Identifies and extends patterns involving multiplication **Input** 1 2 3 4 5 **Output** 2 4 6 8 10 "Each input number is multiplied by 2."
Observations/Documentation			

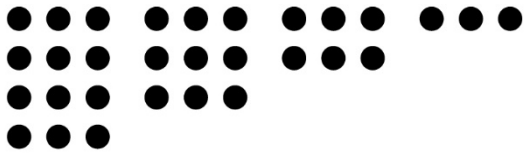
Name_____ Date_____

Master 33a

Fun Day! Patterning Cards (M)

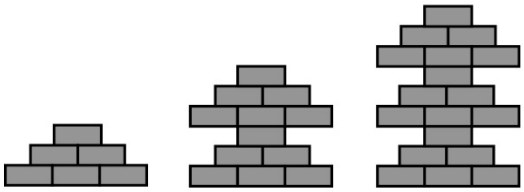
M

What is the pattern rule?



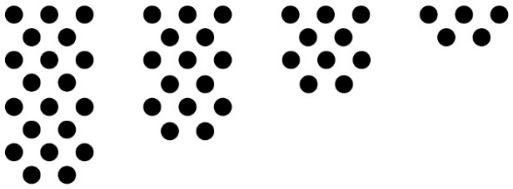
M

What is the pattern rule?



M

What is the pattern rule?



M

What is the pattern rule?

100, 98, 96, 94, …

M

Use this rule to create a pattern.

Start at 27 and add 5 each time.

M

Use this rule to create a pattern.

Start at 31 and take away 3 each time.

Name_____ Date_____

Master 33b

Fun Day! Patterning Cards (M)

M

Use this rule to create a pattern.

Start at 1 and add 6 each time.

M

Use this rule to create a pattern.

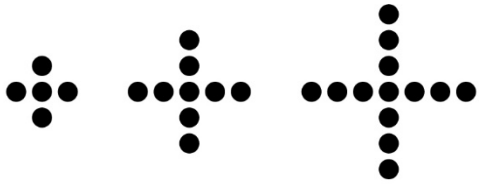
Start at 335 and take away 9 each time.

M

Show this pattern another way.

M

Show this pattern another way.



M

Show this pattern another way.

545, 547, 549, 551, …

M

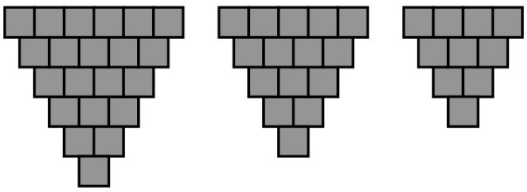
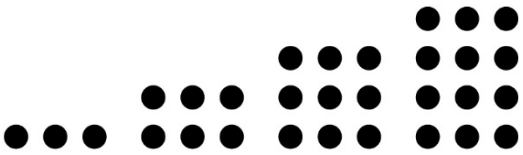
Show this pattern another way.

87, 83, 79, 75, …

Name_____ Date_____

Master 33c

Fun Day! Patterning Cards (P)

P Extend the pattern by 2 more terms. 200, 196, 192, 188, …	**P** Extend the pattern by 2 more terms. 113, 116, 119, 122, …
P Extend the pattern by 2 more terms. 35, 29, 23, 17, …	**P** Extend the pattern by 2 more terms. 5, 10, 15, 20, …
P Extend the pattern by 2 more terms. 	**P** Extend the pattern by 2 more terms. 

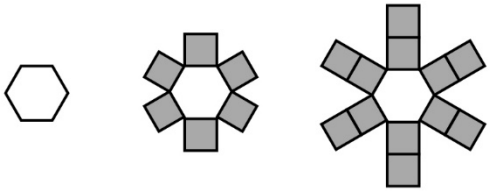
Name_____ Date_____

Master 33d

Fun Day! Patterning Cards (P)

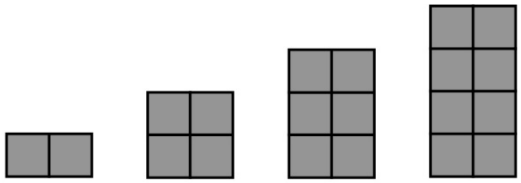
P

Extend the pattern by 2 more terms.



P

Extend the pattern by 2 more terms.



P

Find the missing term.

6, 11, 16, 21, 31, 36, …

P

Find the missing term.

303, 300, 297, 291, 288, …

P

Find and correct the error.

120, 129, 138, 146, 156, …

P

Find and correct the error.

48, 40, 32, 25, 16, 8, …

Name_____ Date_____

Master 34

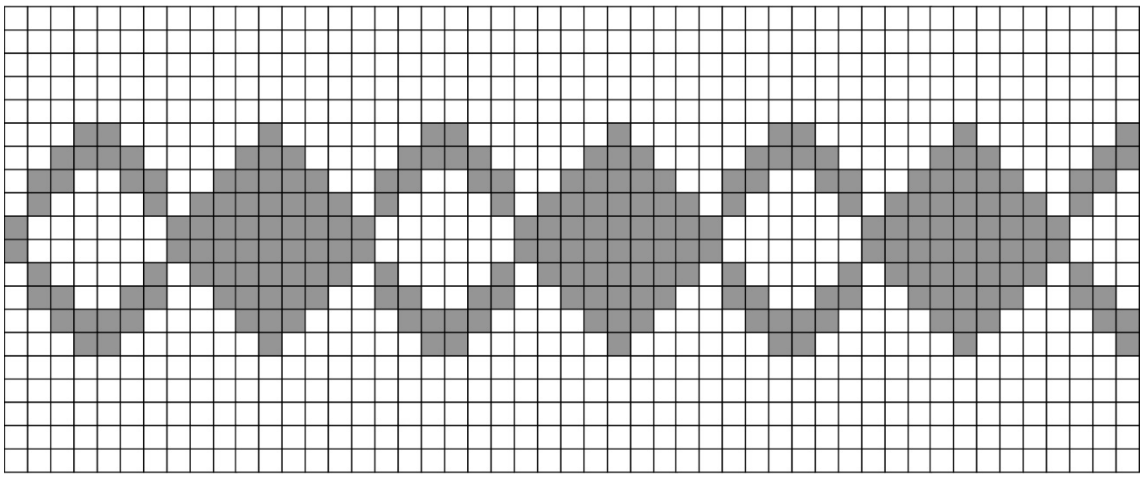
Connections: Vyshyvanka

Vyshyvanka is the Ukranian name for embroidered shirt.

Ukrainian embroidery often contains hidden meanings.

When people embroider shirts or blouses for others, they include symbols that are meant to protect them or bring good luck.

What increasing or decreasing pattern do you see in the stitches?



Copy the pattern on a grid.
What is the pattern rule?

Do some research to learn about the meaning of different symbols in this type of embroidery.

Patterning and Algebra

Activity 9 Assessment

Exploring Number Sentences for Larger Numbers

Variables and Symbols			
Uses equal sign as balance (left side equals right side) and not equal sign as imbalance 18 + 16 = 10 + 24 18 + 16 ≠ 24 – 10 "The equal sign means that the numbers on both sides are worth the same amount."	Uses symbols to represent unknown quantities 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape."	Understands the unknown represents one quantity/value 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Solves equations flexibly 18 + ☐ = 34 34 − ☐ = 18 34 – 18 = ☐ "In all of these equations, the symbol represents the same number, 16."
Observations/Documentation			

Name_____ Date _____

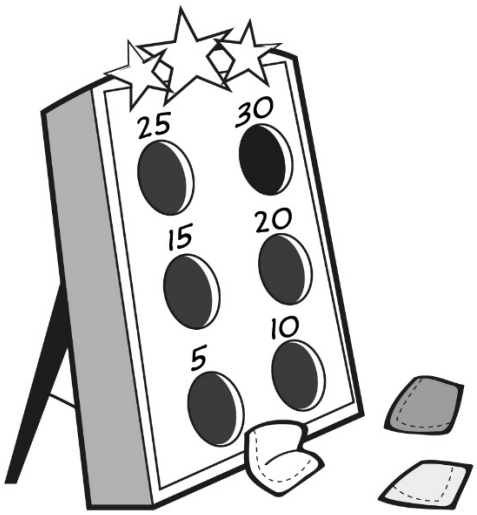
Master 35a

Bean Bag Toss

Amani and Avery each scored 50 points in the bean bag toss.

They each tossed the bean bag 3 times,
but their tosses were not the same.

What might they have scored on each toss?”



For each player, write the score for each toss and a number sentence to show the sum.

Score	Toss 1	Toss 2	Toss 3	Sum
Amani				
Avery				

Name_____ Date _____

Master 35b

Bean Bag Toss

Look at the expressions in each number sentence.
Are the expressions equal?
How do you know? Show your work.

Name_____ Date _____

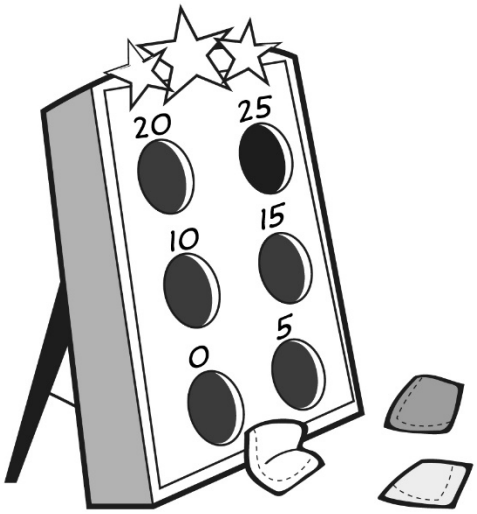
Master 35c

Bean Bag Toss (Accommodations)

Amani and Avery each scored 30 points in the bean bag toss.

They each tossed the bean bag 3 times,
but their tosses were not the same.

What might they have scored on each toss?”



For each player, write the score for each toss and a number sentence to show the sum.

Score	Toss 1	Toss 2	Toss 3	Sum
Amani				
Avery				

Name_____ Date _____

Master 35d

Bean Bag Toss (Accommodations)

Look at the expressions in each number sentence.
Are the expressions equal?
How do you know? Show your work.

Name _____ Date _____

Master 36a

Matching Pairs (100)

10	90
20	80
30	70
40	60
50	50

Name _____ Date _____

Master 36b

Matching Pairs (100)

48	52
15	85
22	78
23	77
24	76

Name _____ Date _____

Master 36c

Matching Pairs (100)

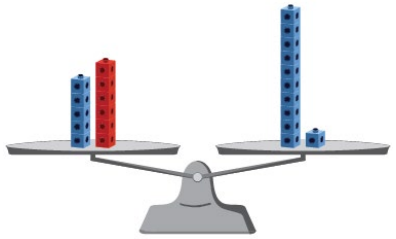
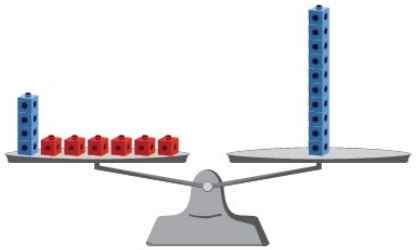
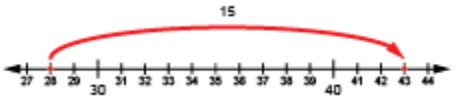
25	75
31	69
44	56
45	55
47	53

Patterning and Algebra

Activity 10 Assessment

Solving Equations Concretely

Solving One-Step Addition and Subtraction Equations

Understands balance as equality	Uses concrete materials to solve for unknown	Uses number relationships (inverse operations)
 "5 + 6 equals 11."	 4 + ☐ = 10 "I added red cubes, one at a time, until the pans balanced; ☐ = 6."	 28 = ☐ − 15 "I rewrote the equation as an addition equation: 28 + 15 = ☐."

Observations/Documentation

Patterning and Algebra

Activity 10 Assessment
Solving Equations Concretely

Solving One-Step Addition and Subtraction Equations (con't)		
Decomposes and recomposes numbers (uses associative property) 28 + 15 = 28 + 2 + 13 28 + 2 + 13 = 30 + 13 30 + 13 = 43	Describes a situation for a given equation with an unknown 20 − ☐ = 13 "I had $20. I spent some money and now I have $13. How much did I spend?"	Uses strategies efficiently and flexibly to solve equations of different types (start, result, and change unknown) 27 = Δ − 18 "I rewrote using addition: 27 + 18 = Δ. Then, I used mental math: 27 + (18 + 2) = 47, and 47 – 2 = 45."
Observations/Documentation		

Patterning and Algebra

Activity 10 Assessment

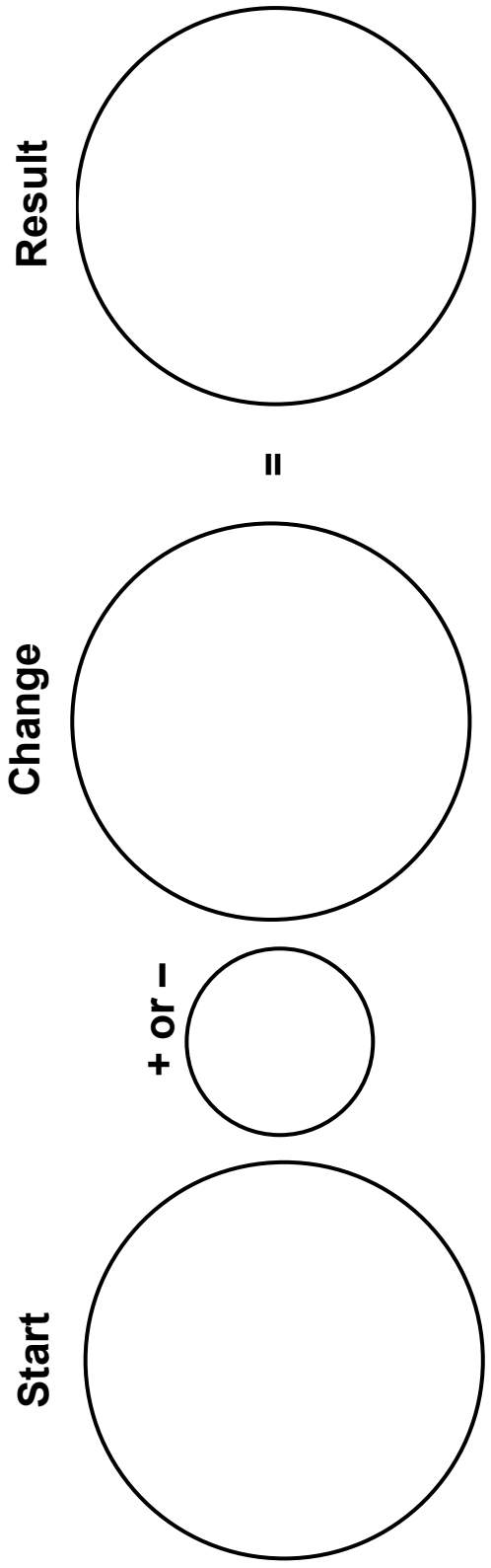
Solving Equations Concretely

Variables and Symbols			
Uses equal sign as balance (left side equals right side) and not equal sign as imbalance 18 + 16 = 10 + 24 18 + 16 ≠ 24 – 10 "The equal sign means that the numbers on both sides are worth the same amount."	Uses symbols to represent unknown quantities 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape."	Understands the unknown represents one quantity/value 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Solves equations flexibly 18 + ☐ = 34 34 − ☐ = 18 34 – 18 = ☐ "In all of these equations, the symbol represents the same number, 16."
Observations/Documentation			

Name_____ Date_____

Master 37a

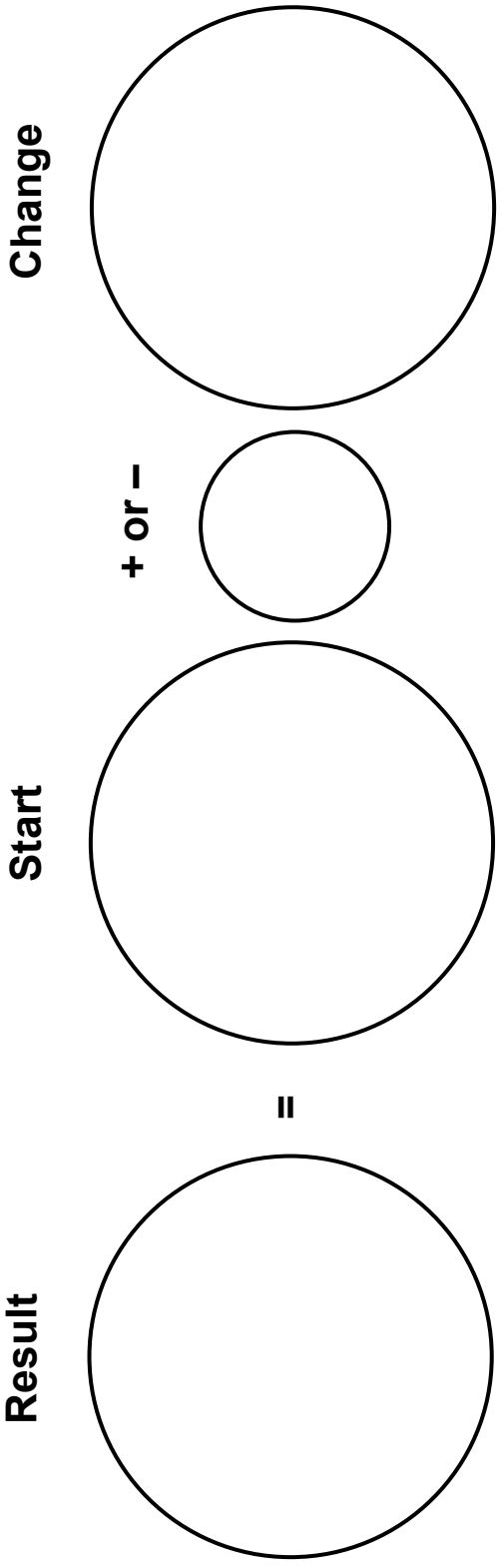
Sneaky Swap



Name_____ Date_____

Master 37b

Sneaky Swap

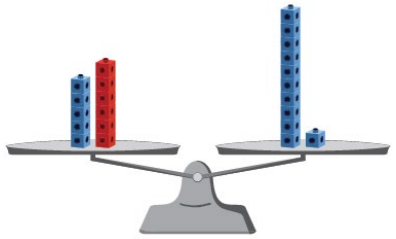
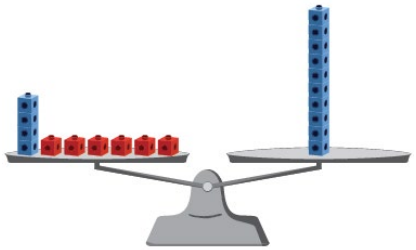
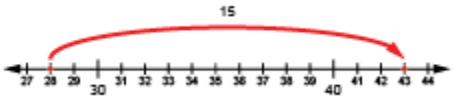


Patterning and Algebra

Activity 11 Assessment

Strategies for Solving Equations

Solving One-Step Addition and Subtraction Equations

Understands balance as equality	Uses concrete materials to solve for unknown	Uses number relationships (inverse operations)
 "5 + 6 equals 11."	 4 + ☐ = 10 "I added red cubes, one at a time, until the pans balanced; ☐ = 6."	 28 = ☐ − 15 "I rewrote the equation as an addition equation: 28 + 15 = ☐."

Observations/Documentation

Patterning and Algebra

Activity 11 Assessment

Strategies for Solving Equations

Solving One-Step Addition and Subtraction Equations (con't)		
Decomposes and recomposes numbers (uses associative property) 28 + 15 = 28 + 2 + 13 28 + 2 + 13 = 30 + 13 30 + 13 = 43	Describes a situation for a given equation with an unknown 20 − ☐ = 13 "I had $20. I spent some money and now I have $13. How much did I spend?"	Uses strategies efficiently and flexibly to solve equations of different types (start, result, and change unknown) 27 = Δ − 18 "I rewrote using addition: 27 + 18 = Δ. Then, I used mental math: 27 + (18 + 2) = 47, and 47 – 2 = 45."
Observations/Documentation		

Patterning and Algebra

Activity 11 Assessment

Strategies for Solving Equations

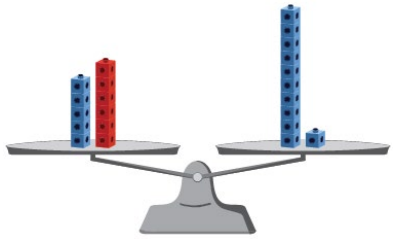
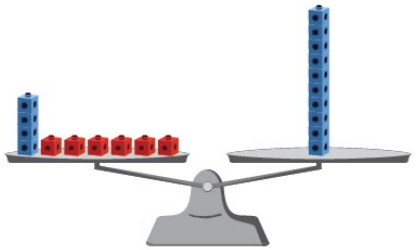
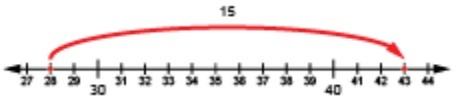
Variables and Symbols			
Uses equal sign as balance (left side equals right side) and not equal sign as imbalance 18 + 16 = 10 + 24 18 + 16 ≠ 24 – 10 "The equal sign means that the numbers on both sides are worth the same amount."	Uses symbols to represent unknown quantities 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape."	Understands the unknown represents one quantity/value 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Solves equations flexibly 18 + ☐ = 34 34 − ☐ = 18 34 – 18 = ☐ "In all of these equations, the symbol represents the same number, 16."
Observations/Documentation			

Patterning and Algebra

Activity 12 Assessment

Creating Equations

Solving One-Step Addition and Subtraction Equations

Understands balance as equality	Uses concrete materials to solve for unknown	Uses number relationships (inverse operations)
		
"5 + 6 equals 11."	4 + ☐ = 10 "I added red cubes, one at a time, until the pans balanced; ☐ = 6."	28 = ☐ − 15 "I rewrote the equation as an addition equation: 28 + 15 = ☐."

Observations/Documentation

Patterning and Algebra

Activity 12 Assessment
Creating Equations

Solving One-Step Addition and Subtraction Equations (con't)		
Decomposes and recomposes numbers (uses associative property) 28 + 15 = 28 + 2 + 13 28 + 2 + 13 = 30 + 13 30 + 13 = 43	Describes a situation for a given equation with an unknown 20 − ☐ = 13 "I had $20. I spent some money and now I have $13. How much did I spend?"	Uses strategies efficiently and flexibly to solve equations of different types (start, result, and change unknown) 27 = Δ − 18 "I rewrote using addition: 27 + 18 = Δ. Then, I used mental math: 27 + (18 + 2) = 47, and 47 – 2 = 45."
Observations/Documentation		

Patterning and Algebra

Activity 12 Assessment

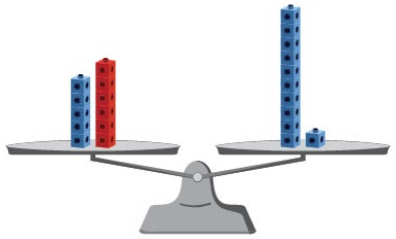
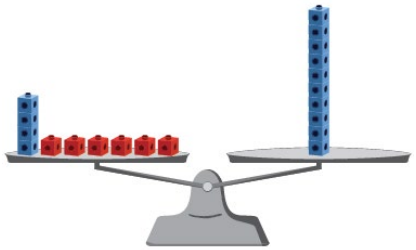
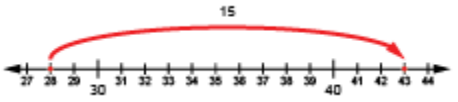
Creating Equations

Variables and Symbols			
Uses equal sign as balance (left side equals right side) and not equal sign as imbalance 18 + 16 = 10 + 24 18 + 16 ≠ 24 – 10 "The equal sign means that the numbers on both sides are worth the same amount."	Uses symbols to represent unknown quantities 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape."	Understands the unknown represents one quantity/value 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Solves equations flexibly 18 + ☐ = 34 34 − ☐ = 18 34 – 18 = ☐ "In all of these equations, the symbol represents the same number, 16."
Observations/Documentation			

Patterning and Algebra

Activity 13 Assessment
Consolidation

Solving One-Step Addition and Subtraction Equations

Understands balance as equality	Uses concrete materials to solve for unknown	Uses number relationships (inverse operations)
		
"5 + 6 equals 11."	4 + ☐ = 10 "I added red cubes, one at a time, until the pans balanced; ☐ = 6."	28 = ☐ − 15 "I rewrote the equation as an addition equation: 28 + 15 = ☐."

Observations/Documentation

Patterning and Algebra

Activity 13 Assessment
Consolidation

Solving One-Step Addition and Subtraction Equations (con't)		
Decomposes and recomposes numbers (uses associative property) 28 + 15 = 28 + 2 + 13 28 + 2 + 13 = 30 + 13 30 + 13 = 43	Describes a situation for a given equation with an unknown 20 − ☐ = 13 "I had $20. I spent some money and now I have $13. How much did I spend?"	Uses strategies efficiently and flexibly to solve equations of different types (start, result, and change unknown) 27 = Δ − 18 "I rewrote using addition: 27 + 18 = Δ. Then, I used mental math: 27 + (18 + 2) = 47, and 47 – 2 = 45."
Observations/Documentation		

Patterning and Algebra

Activity 13 Assessment
Consolidation

Variables and Symbols			
Uses equal sign as balance (left side equals right side) and not equal sign as imbalance 18 + 16 = 10 + 24 18 + 16 ≠ 24 – 10 "The equal sign means that the numbers on both sides are worth the same amount."	Uses symbols to represent unknown quantities 18 + ☐ = 34 "I used a box to represent the unknown, but I could have used a different shape."	Understands the unknown represents one quantity/value 18 + ☐ = 34 "The box represents a number that would be added to 18 to make 34. No matter what the symbol is, it will always represent 16."	Solves equations flexibly 18 + ☐ = 34 34 − ☐ = 18 34 – 18 = ☐ "In all of these equations, the symbol represents the same number, 16."
Observations/Documentation			

Name_____ Date_____

Master 38a

Equation Cards

$20 + \square = 32$	$25 - 4 = 15 + \bigstar$	$35 + \bigstar = 47$	$56 - 21 = \bigstar$
$\blacktriangle + 33 = 41$	$\blacktriangle - 18 = 28$	$17 + 33 = \heartsuit$	$52 - 21 = \heartsuit$
$37 - \Delta = 15$	$\Delta = 37 - 29$	$\square = 49 - 27$	$37 + \square = 43$
$27 + \blacksquare = 46$	$22 - 2 = \blacksquare - 5$	$19 = \bigstar - 22$	$\bigstar + 21 = 29$

Name_____ Date_____

Master 38b

Equation Cards

32 – 11 = ♥	♥ – 29 = 17	▲ – 16 = 13
24 + 5 = ▲ – 5	□ – 23 = 17	★ + 21 = 36
♥ – 5 = 18 – 2	24 – ■ = 8	14 + 15 = Δ

Name_____ Date_____

Master 38c

Equation Cards (Accommodations)

8 + ■ = 9	15 – □ = 6	5 + 3 = ♥	12 – 9 = ▲
Δ + 6 = 13	★ – 8 = 2	■ = 14 – 8	□ = 2 + 4
15 – ♥ = 10	▲ = 13 – 9	14 – Δ = 11	16 = ★ + 9
9 = ▲ – 1	10 – □ = 7	7 = 12 – ♥	8 + ■ = 8

Name_____ Date_____

Master 39a

Four in a Row Game Board

Write one of these numbers in each space of the game board.
The numbers can be in any order.

6, 6, 8, 8, 8, 12, 12, 15, 16, 19, 21, 21, 22, 22,

25, 29, 29, 31, 34, 35, 40, 41, 46, 46, 50

Name_____ Date_____

Master 39b

Three in a Row Game Board

Write one of these numbers in each space of the game board.
The numbers can be in any order.

0, 1, 3, 3, 3, 4, 5, 5, 6, 6, 7, 7, 8, 9, 10, 10

Name_____ Date_____

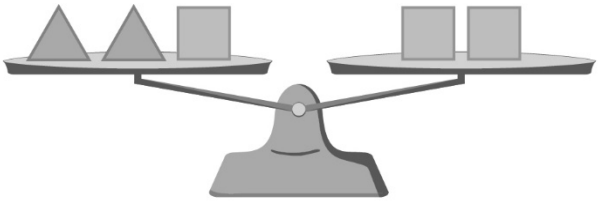
Master 40a

Connections: Balance Puzzles

Do you like to do puzzles?
Have you ever tried a balance puzzle?

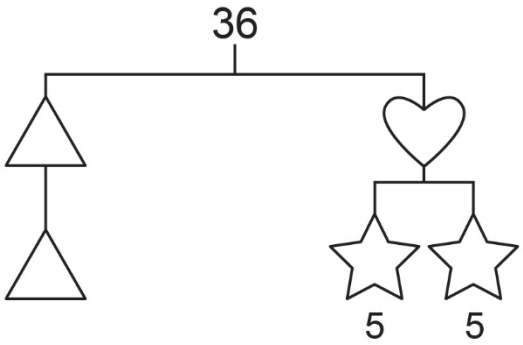
When things are balanced, the quantities on both sides are equal.

What do you know about the shapes on this pan balance?



A triangle has a mass equal to one-half the mass of a square.

What do you know about the shapes on this balance mobile?



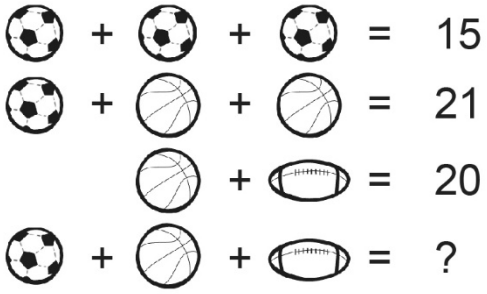
The whole mobile represents 36.
What does each side represent?
Find what each shape represents, given that a star is 5.

Name_____ Date_____

Master 40b

Connections: Balance Puzzles

Solve this puzzle.



Try making a balance puzzle of your own.
Then trade puzzles with a classmate and solve each other's puzzles.