

Master 1

Connections: Who Am I?

I was born on July 28, 1958.

I ran 5373 km across Canada in 143 days.

There are 14 schools and 15 roads in Canada named after me.

Marathons are held every year in my name in 52 countries.

I lost one of my legs to bone cancer when I was 18 years old.

Every year, people in close to 25 countries participate in
The National School Run Day.

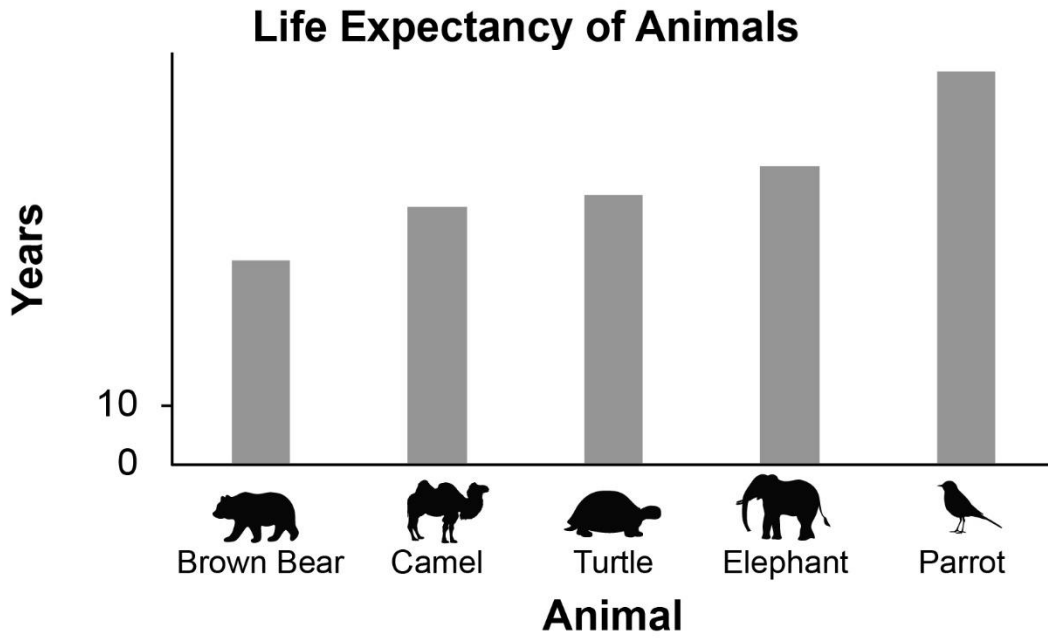
An 83-km section of the Trans-Canada Highway is named after
me to recognize my courage.

A 2639-m mountain in British Columbia is named in my honour.

Create your own *Who Am I?* poster.
Use as many numbers as you can.


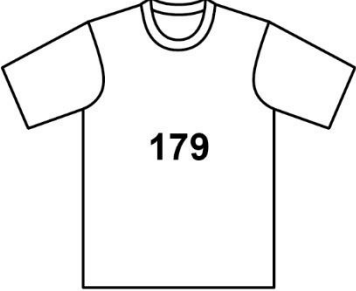
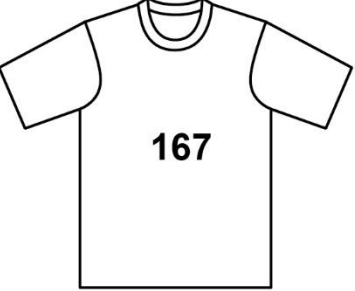






Master 2

Life Expectancy of Animals



Master 3a







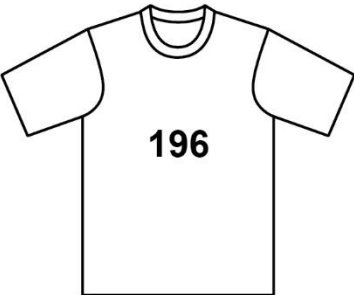


T-Shirt Cards

 <p>326</p>	 <p>179</p>	 <p>167</p>
 <p>234</p>	 <p>245</p>	 <p>267</p>
 <p>147</p>	 <p>314</p>	 <p>125</p>



Master 3b










T-Shirt Cards

 <p>379</p>	 <p>396</p>	 <p>411</p>
 <p>427</p>	 <p>479</p>	 <p>497</p>
 <p>196</p>	 <p>360</p>	 <p>407</p>



Master 3c









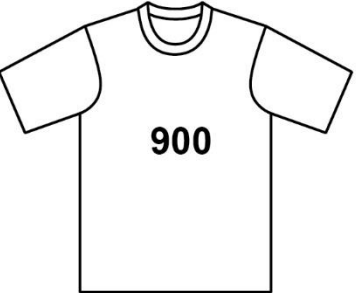
T-Shirt Cards

 <p>532</p>	 <p>523</p>	 <p>569</p>
 <p>598</p>	 <p>624</p>	 <p>656</p>
 <p>675</p>	 <p>699</p>	 <p>707</p>



Master 3d

T-Shirt Cards

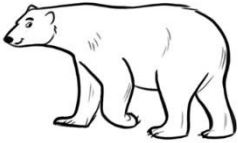
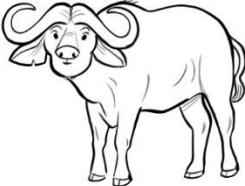
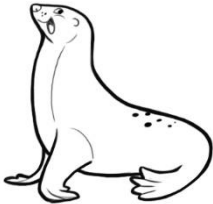
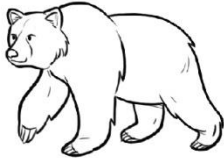
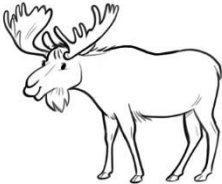

 <p>728</p>	 <p>758</p>	 <p>781</p>
 <p>811</p>	 <p>834</p>	 <p>849</p>
 <p>883</p>	 <p>501</p>	 <p>900</p>



Master 4

Connections: Animal Fun Facts

Order the animals from least to greatest mass.

<p style="text-align: center;">Polar bear</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="border: 1px solid black; border-radius: 10px; padding: 5px; font-weight: bold; font-size: 1.2em;">475 kg</div> </div> <p>Polar bears feed mostly on seals. They have a good sense of smell and can smell seals almost 2 km away.</p>	<p style="text-align: center;">Water buffalo</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="border: 1px solid black; border-radius: 10px; padding: 5px; font-weight: bold; font-size: 1.2em;">725 kg</div> </div> <p>Water buffalo are sensitive to heat. They are known to roll in mud to help cool themselves down.</p>
<p style="text-align: center;">Seal</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="border: 1px solid black; border-radius: 10px; padding: 5px; font-weight: bold; font-size: 1.2em;">425 kg</div> </div> <p>Seals have thick fur and blubber to protect them against freezing temperatures.</p>	<p style="text-align: center;">Brown bear</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="border: 1px solid black; border-radius: 10px; padding: 5px; font-weight: bold; font-size: 1.2em;">278 kg</div> </div> <p>Brown bears dig caves with their long claws. They sleep in the caves for most of the winter.</p>
<p style="text-align: center;">Moose</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="border: 1px solid black; border-radius: 10px; padding: 5px; font-weight: bold; font-size: 1.2em;">386 kg</div> </div> <p>Moose are excellent swimmers. They can swim 10 km per hour without a break for 2 hours.</p>	<p style="text-align: center;">Yak</p> <div style="display: flex; justify-content: space-around; align-items: center;">  <div style="border: 1px solid black; border-radius: 10px; padding: 5px; font-weight: bold; font-size: 1.2em;">667 kg</div> </div> <p>Yaks have very strong horns. They are used to break through snow to get plants that are buried below.</p>

Master 5

Place-Value Riddles

<p>I have 3 hundreds, 25 tens, and 15 ones. What number am I?</p>	<p>I have 1 hundred, 84 tens, and 23 ones. What number am I?</p>
<p>I have 5 hundreds, 0 tens, and 38 ones. What number am I?</p>	<p>I have 6 hundreds, 18 tens, and 41 ones. What number am I?</p>
<p>I have 2 hundreds, 7 tens, and 32 ones. What number am I?</p>	<p>I have 4 hundreds, 30 tens, and 10 ones. What number am I?</p>








Master 6



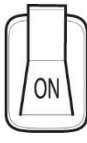


Connections: Crack the Code!

Computers talk using only two numbers: 0 and 1.
This is called **Binary Code**.

Think of a bunch of light switches being turned on and off.
We use 1 to show “On.”
We use 0 to show “Off.”

	16	8	4	2	1
Number 6					
	0	0	1	1	0

The switches for 4 and 2 are “On.”
So, 00110 represents the number 4 + 2, or 6.

	16	8	4	2	1
Number 15					
	0	1	1	1	1

The switches for 8, 4, 2, and 1 are “On.”
So, 01111 represents the number 8 + 4 + 2 + 1, or 15.

Crack the Code to find these numbers:

- a) 1 1 1 1 1 b) 1 0 0 0 1 c) 0 1 1 1 0

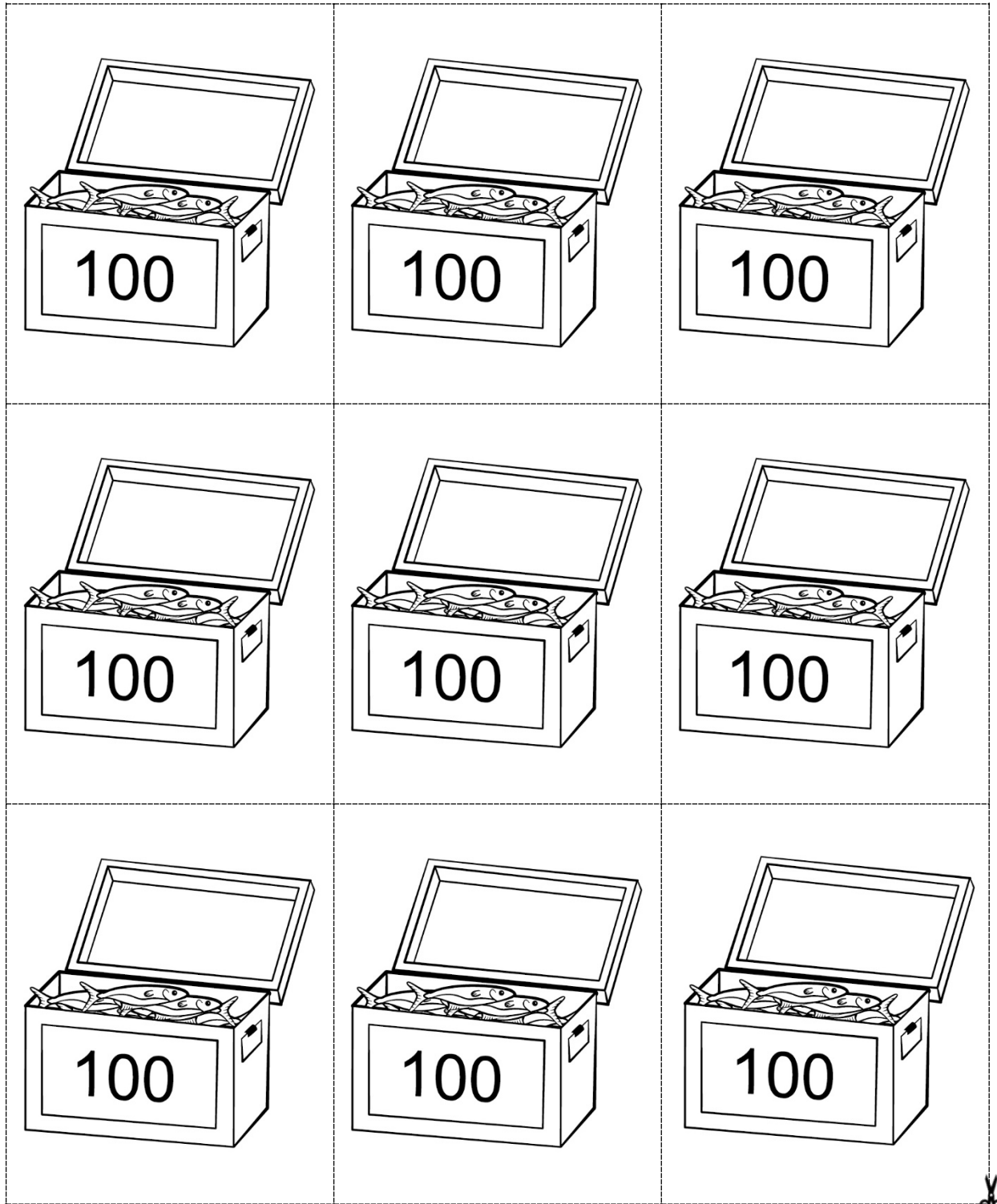
Use Binary Code to show 8, 9, and 10.

Name _____

Date _____

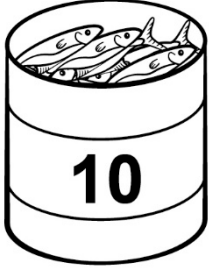
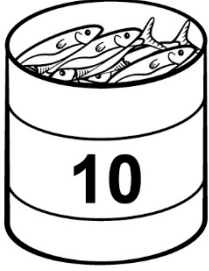
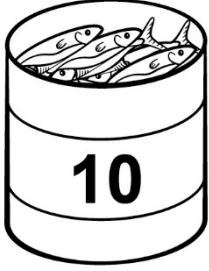
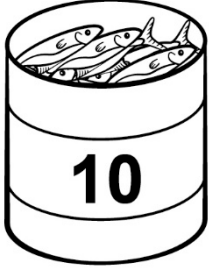
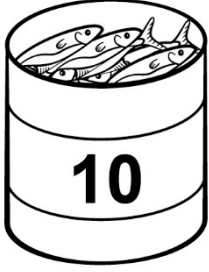
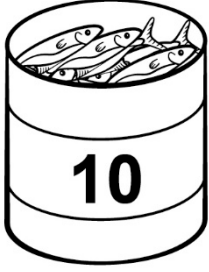
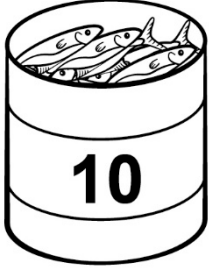
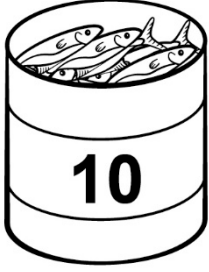
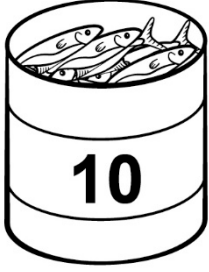
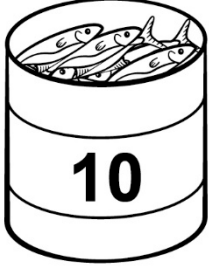
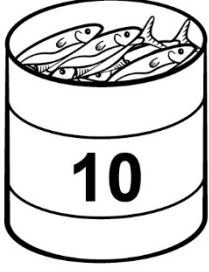
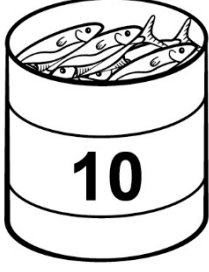
Master 5a

Base Ten Fish Cards



Master 5b

Base Ten Fish Cards

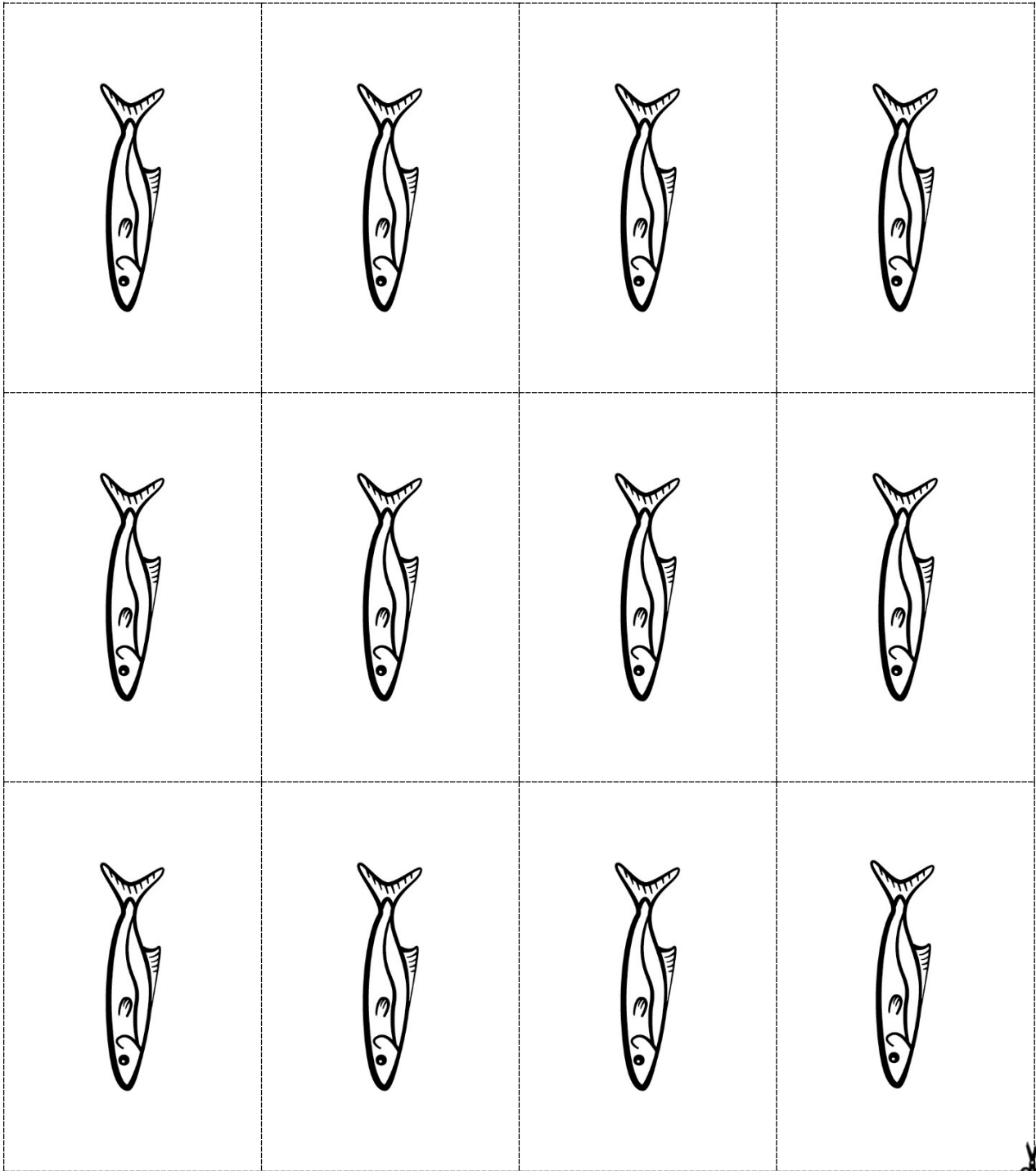
 <p>10</p>	 <p>10</p>	 <p>10</p>
 <p>10</p>	 <p>10</p>	 <p>10</p>
 <p>10</p>	 <p>10</p>	 <p>10</p>
 <p>10</p>	 <p>10</p>	 <p>10</p>



Name _____ Date _____

Master 5c

Base Ten Fish Cards



Name _____ Date _____

Master 7a

Paper Shapes

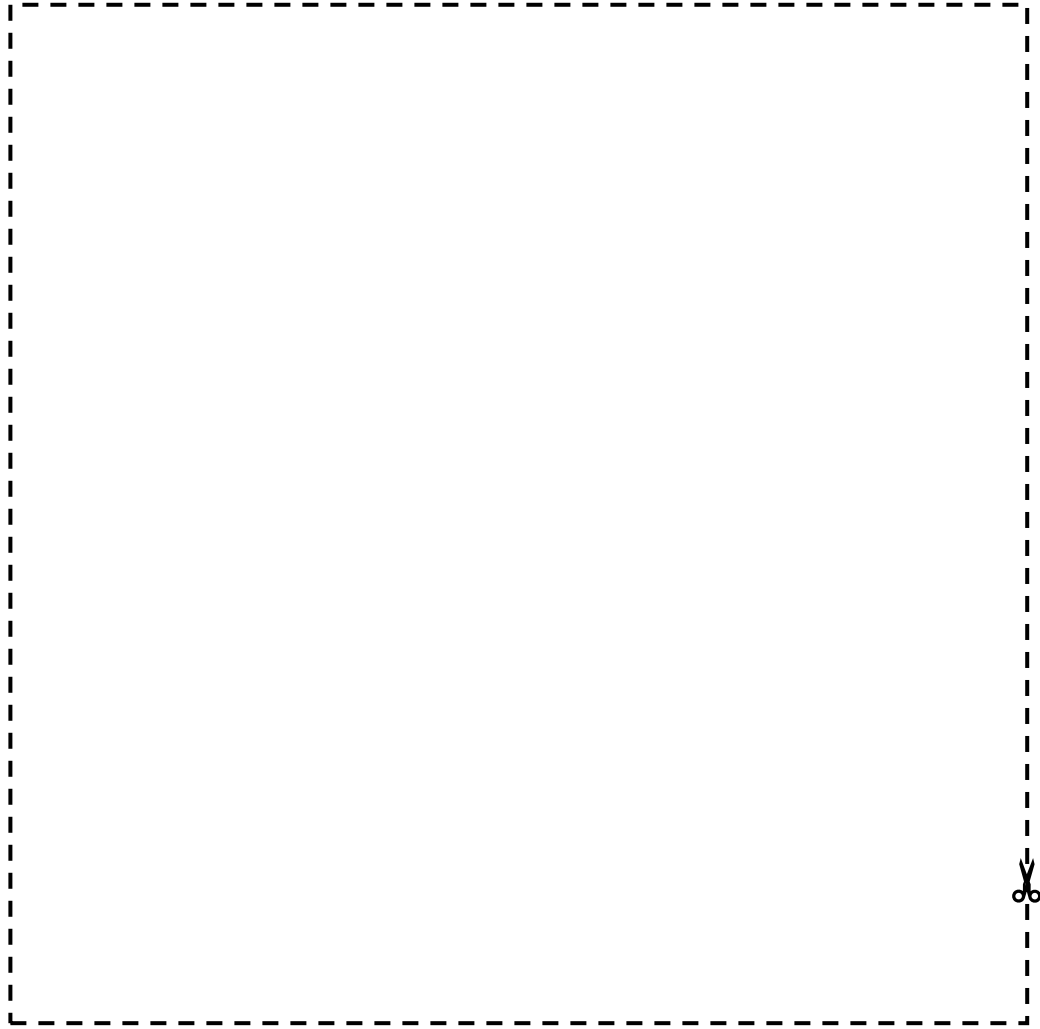
Paper Rectangles



Master 7b

Paper Shapes (cont'd)

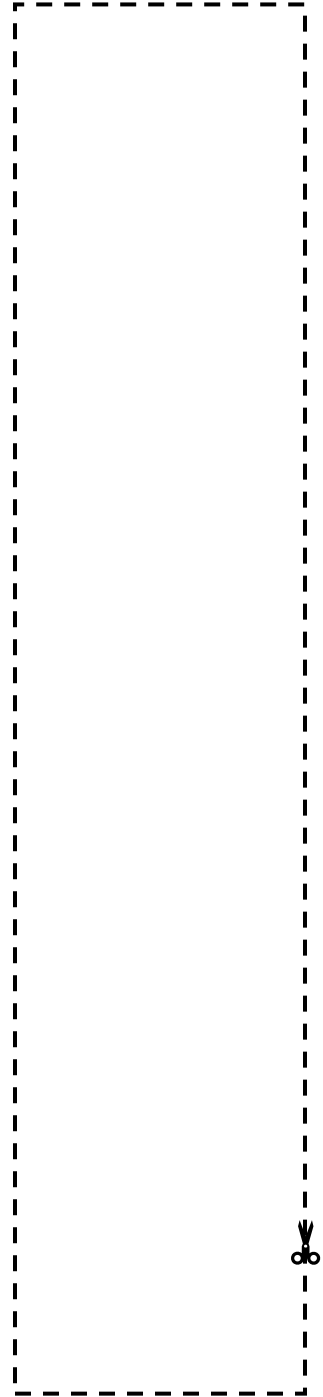
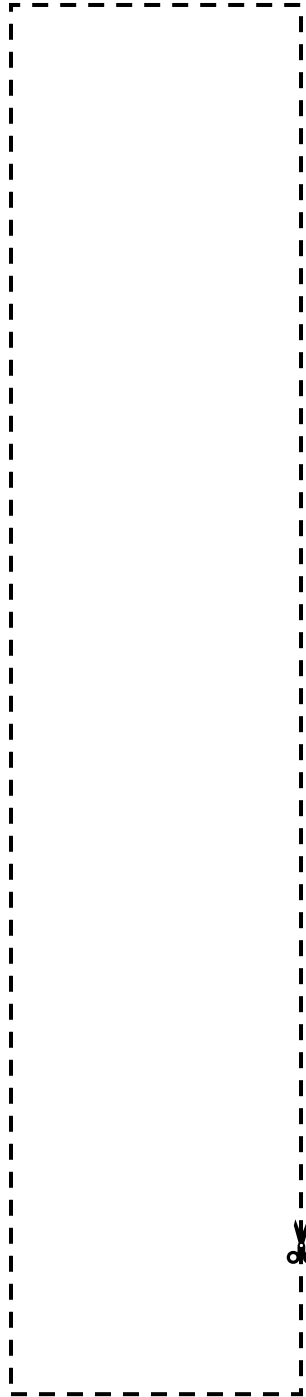
Paper Square



Master 7c

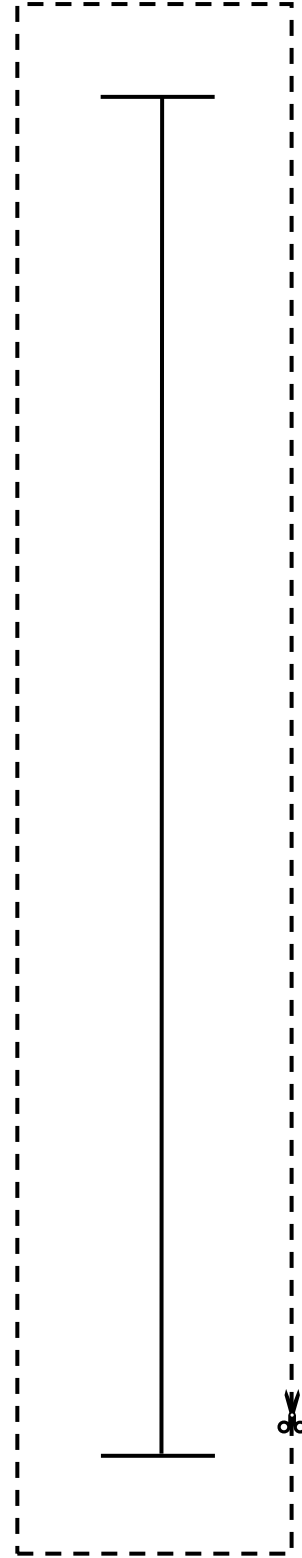
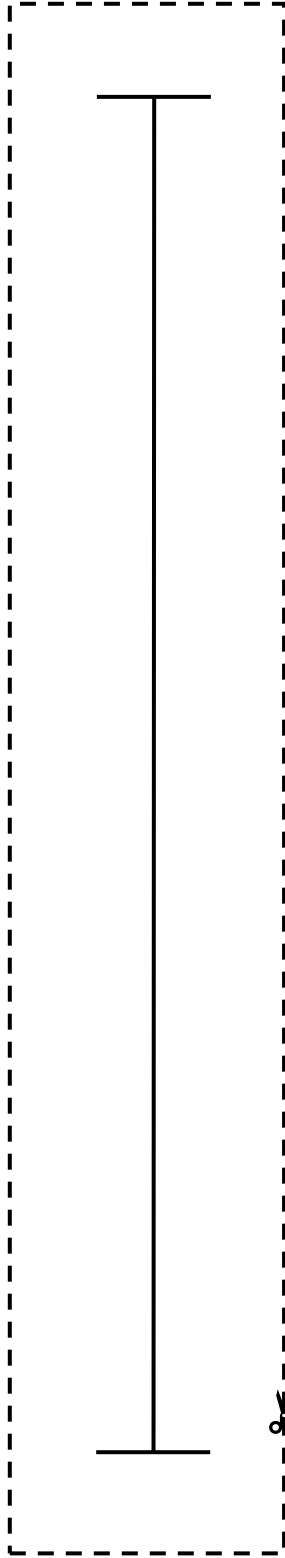
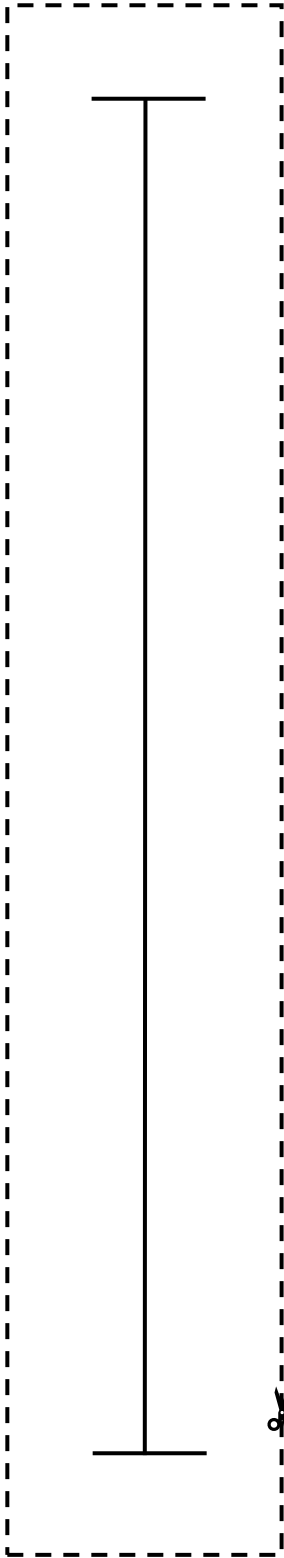
Paper Shapes (cont'd)

Paper Strips



Master 8

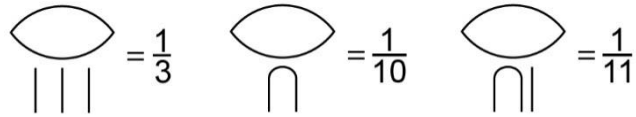
Number Lines



Master 9

Connections: Fraction Frenzy

Many, many years ago, Egyptian mathematicians wrote fractions like this:



How do you think Egyptians would have written $\frac{1}{7}$? $\frac{1}{14}$?

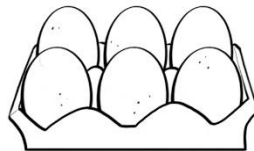
Have you ever wondered why we call 25¢ a quarter? The word *quarter* comes from a Latin word that means “four.” In French, the word for four is *quatre*! So, *quarter* means one-fourth of something. Since 25 cents is one-fourth of a dollar, we call this coin “a quarter.”



How many times do you hear fraction words in one day?



“It’s half past one!”



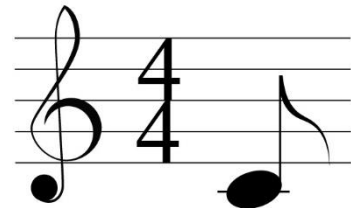
“I bought half a dozen eggs!”



“Please pass me the five-eighths wrench.”



“The store is having a half-price sale!”



“This is an eighth note C.”

Listen carefully for the rest of the day. What fraction words do you hear?

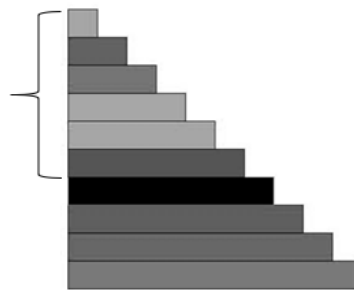
Filling Fractions! Instructions

Group size: 2

Materials:

- Student Card 10: 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)

1 of each of the
first 6 rods per bag



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.

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: $78 + 14 = ?$

Master 12a

Game Cards: Mental Math

<p>M</p> <p style="text-align: center;">$48 + 51$</p> <p>Points Roll 1 number cube.</p>	<p>M</p> <p style="text-align: center;">$65 + 17$</p> <p>Points Roll 2 number cubes. Make a 2-digit number.</p>	<p>M</p> <p style="text-align: center;">$23 + 21$</p> <p>Points Roll 2 number cubes. Make the smaller 2-digit number.</p>
<p>M</p> <p style="text-align: center;">$55 + 45$</p> <p>Points Roll 3 number cubes. Make the smallest 3-digit number.</p>	<p>M</p> <p style="text-align: center;">$74 - 39$</p> <p>Points Roll 2 number cubes. Make the smaller 2-digit number.</p>	<p>M</p> <p style="text-align: center;">$19 + 21$</p> <p>Points Roll 2 number cubes. Make the bigger 2-digit number.</p>
<p>M</p> <p style="text-align: center;">$72 + 17$</p> <p>Points Roll 1 number cube.</p>	<p>M</p> <p style="text-align: center;">$69 - 24$</p> <p>Points Roll 2 number cubes. Make a 2-digit number.</p>	<p>M</p> <p style="text-align: center;">$91 - 45$</p> <p>Points Roll 2 number cubes. Make the smaller 2-digit number.</p>
<p>M</p> <p style="text-align: center;">$34 + 56$</p> <p>Points Roll 2 number cubes. Make the smaller 2-digit number.</p>	<p>M</p> <p style="text-align: center;">$78 - 69$</p> <p>Points Roll 2 number cubes. Make the bigger 2-digit number.</p>	<p>M</p> <p style="text-align: center;">$35 + 19$</p> <p>Points Roll 3 number cubes. Make the smallest 3-digit number.</p>

Master 12b

Game Cards: Story Problems

<p>P</p> <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?</p> <p>Points Roll 1 number cube.</p>	<p>P</p> <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?</p> <p>Points Roll 2 number cubes. Make a 2-digit number.</p>	<p>P</p> <p>Billy burst 12 balloons at the Balloon Pop. Billy burst 5 fewer balloons than Betty. How many balloons did Betty burst?</p> <p>Points Roll 2 number cubes. Make the smaller 2-digit number.</p>
<p>P</p> <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?</p> <p>Points Roll 3 number cubes. Make the smallest 3-digit number.</p>	<p>P</p> <p>Team Blue has 121 more points than Team Red. Team Blue has 257 points. How many points does Team Red have?</p> <p>Points Roll 2 number cubes. Make the smaller 2-digit number.</p>	<p>P</p> <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?</p> <p>Points Roll 2 number cubes. Make the bigger 2-digit number.</p>



Master 12c

Game Cards: Story Problems

<p>P</p> <p>The Balloon Pop game used 571 balloons. There were 850 balloons to start. How many balloons are left?</p> <p>Points Roll 1 number cube.</p>	<p>P</p> <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?</p> <p>Points Roll 2 number cubes. Make a 2-digit number.</p>	<p>P</p> <p>276 students and 19 teachers participated in Fun Day. How many people participated altogether?</p> <p>Points Roll 2 number cubes. Make the smaller 2-digit number.</p>
<p>P</p> <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?</p> <p>Points Roll 2 number cubes. Make the smaller 2-digit number.</p>	<p>P</p> <p>This year, 295 people participated in Fun Day. Last year, 332 people participated. How many more people participated last year?</p> <p>Points Roll 1 number cube.</p>	<p>P</p> <p>276 ribbons were given out. There were 118 ribbons left. How many ribbons were there to start with?</p> <p>Points Roll 1 number cube.</p>



Master 13

Connections: How Many Minutes? Seconds?



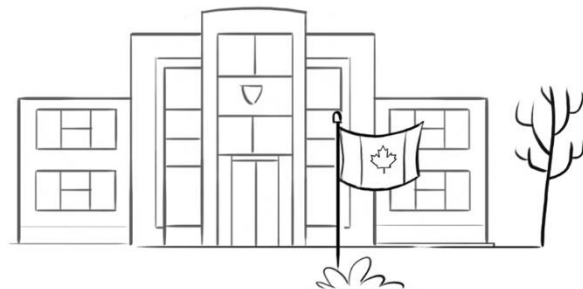
Grace brushes her teeth for 2 minutes every morning. That is 120 seconds.



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?

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

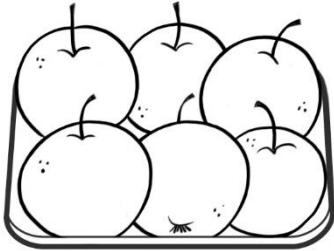
15 Toy Feathers

12 Dental Treats

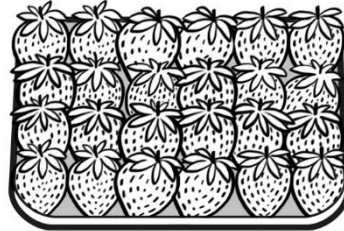
5 Play Balls

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?

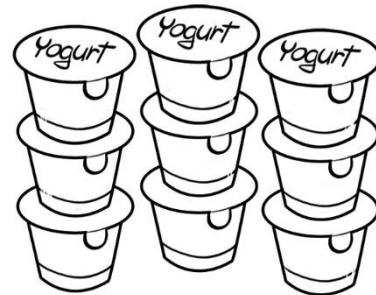
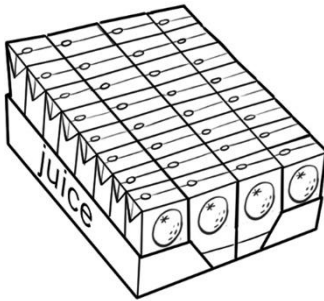


Apples

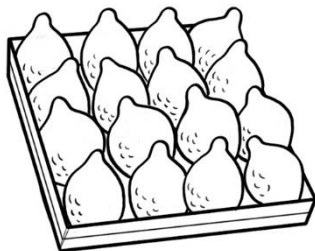


Strawberries

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?



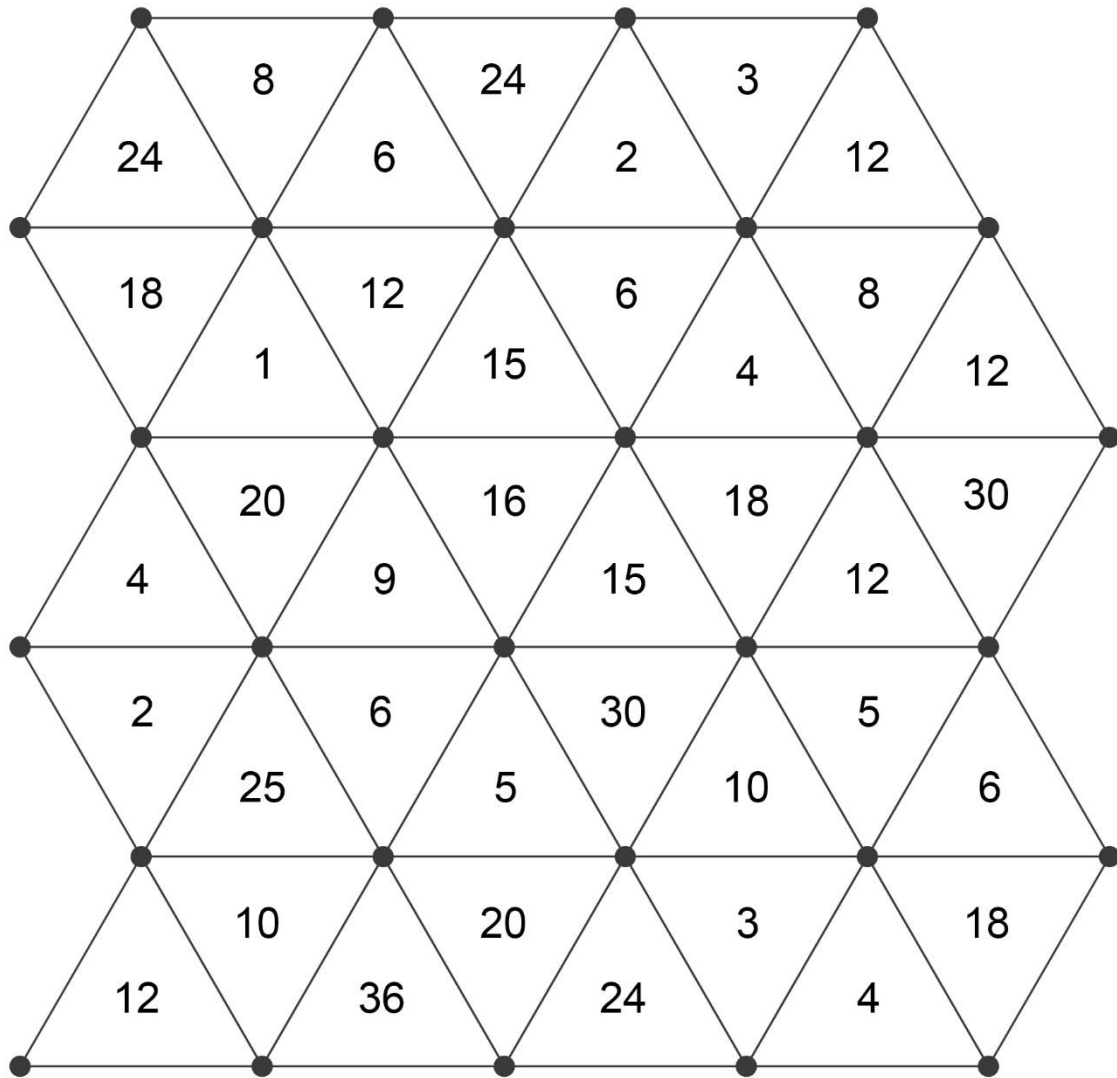
Lemons



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

Master 16

Multiplication Triangles Game Board



Master 17a

Divide Me! Game Cards

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



Master 17b

Divide Me! Game Cards

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



Multiplication Squares Instructions

Group size: 2

Materials:

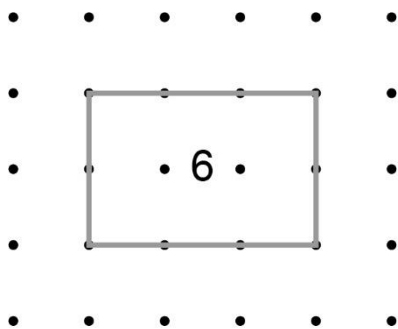
- Student Card 17A: Multiplication Squares
- 2 number cubes, labelled 1–6
- 2 dry-erase markers (different colours)

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.

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

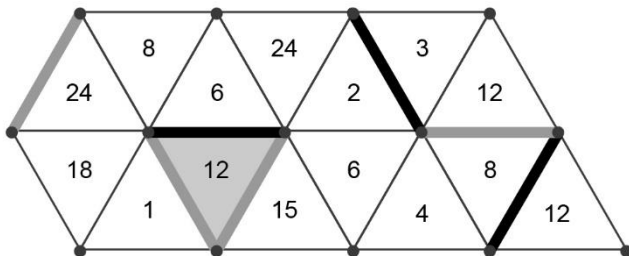
Instructions:

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.

***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:

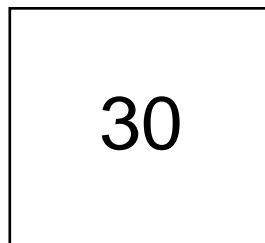
Deal 6 cards each.

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.



$$30 \div 5 = 6$$

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.

Name _____ Date _____

Master 21

My Savings Account

Savings Goal

I want to help (describe the project)

because (describe your reason)

My goal is to raise \$ _____ for this project (financial goal).

Earn (Add)	Pay (Subtract)	Amount
		\$25

Name _____ Date _____

Master 22a

My Financial Plan

I chose \$100 as my financial goal because

Show three jobs you could do to earn a total of about \$100.
Write the amount earned for each job.

\$ _____	\$ _____	\$ _____

Show the amount earned for each job in two different ways.

--	--	--

Name _____ Date _____

Master 22b

My Financial Plan

How could you deposit the money into your account?

Add the amounts earned in two different ways to prove that you reached your financial goal.

After reaching your goal, you make a \$27 purchase.

How much money is left in your account now?

Show two ways you could use coins and bills to pay for the purchase.

Master 23


Connections: Canadian Coins—Did You Know?

<p style="text-align: center;">Toonie (2 dollars)</p>  <ul style="list-style-type: none"> - replaced paper \$2 bill in 1996 - a two-colour coin - picture of polar bear - issued special toonie in 2008 to recognize the 400th anniversary of Quebec City 	<p style="text-align: center;">Loonie (1 dollar)</p>  <ul style="list-style-type: none"> - replaced paper \$1 bill in 1987 - picture of a loon, the national bird of Canada - issued special loonie in 2005 to honour Terry Fox 	<p style="text-align: center;">Quarter (25 cents)</p>  <ul style="list-style-type: none"> - worth one quarter of a dollar - picture of a caribou, one of Canada's most recognizable animals - issued poppy quarter in 2004 in honour of Remembrance Day
<p style="text-align: center;">Dime (10 cents)</p>  <ul style="list-style-type: none"> - smallest coin by size - has picture of a famous Canadian sailboat, the Bluenose - issued special dime in 2001 to honour the millions of Canadians who volunteer to help others 	<p style="text-align: center;">Nickel (5 cents)</p>  <ul style="list-style-type: none"> - was originally made from nickel - has picture of a beaver, an official symbol of Canada - issued Victory nickel in 2005 to remember 60 years since end of World War II 	<p style="text-align: center;">Penny (1 cent)</p>  <ul style="list-style-type: none"> - stopped being used in 2013 - cost more than 1 cent to make - picture of maple leaves - until 1996, the penny had 12 sides so it was easier for people with vision problems to identify it


Look for examples of some of these coins in your piggy bank.
 Did you find any of the special coins?
 Design a coin of your choice to honour or celebrate a special event.
 Explain why you chose the design you did.

What's My Pattern?

Representation Cards

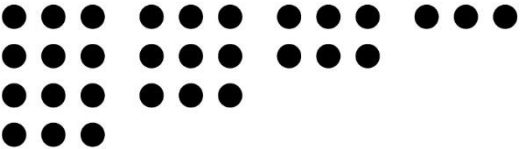
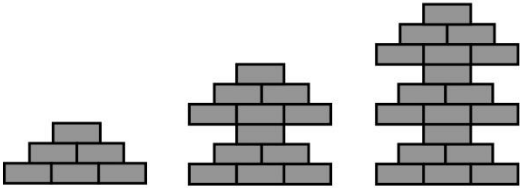
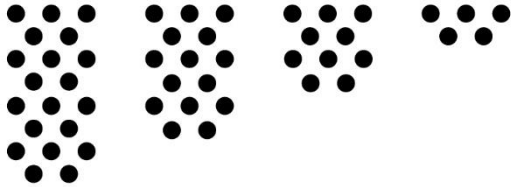

Use a number line.	Use a hundred chart.
Draw a picture.	Use linking cubes or Base Ten Blocks. 

Number Pattern Cards

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


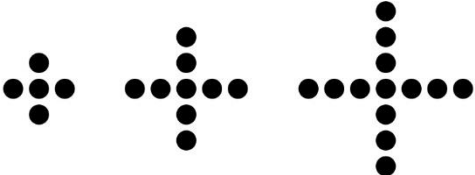
Master 25a

Fun Day! Patterning Cards (M)

<p>M</p> <p>What is the pattern rule?</p> 	<p>M</p> <p>What is the pattern rule?</p> 
<p>M</p> <p>What is the pattern rule?</p> 	<p>M</p> <p>What is the pattern rule?</p> <p>100, 98, 96, 94, ...</p>
<p>M</p> <p>Use this rule to create a pattern.</p> <p>Start at 27 and add 5 each time.</p>	<p>M</p> <p>Use this rule to create a pattern.</p> <p>Start at 31 and take away 3 each time.</p> 

Master 25b

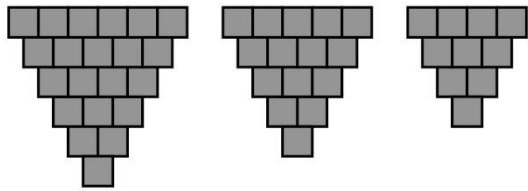
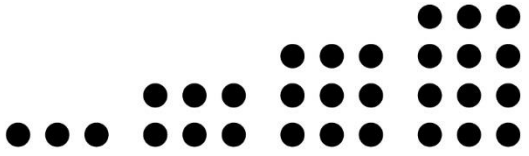
Fun Day! Patterning Cards (M)

<p>M</p> <p>Use this rule to create a pattern.</p> <p>Start at 1 and add 6 each time.</p>	<p>M</p> <p>Use this rule to create a pattern.</p> <p>Start at 335 and take away 9 each time.</p>
<p>M</p> <p>Show this pattern another way.</p> 	<p>M</p> <p>Show this pattern another way.</p> 
<p>M</p> <p>Show this pattern another way.</p> <p>545, 547, 549, 551, ...</p>	<p>M</p> <p>Show this pattern another way.</p> <p>87, 83, 79, 75, ...</p>



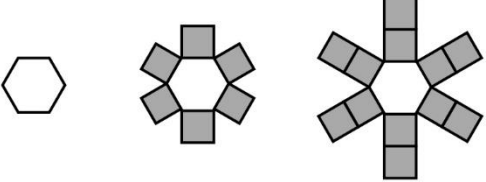
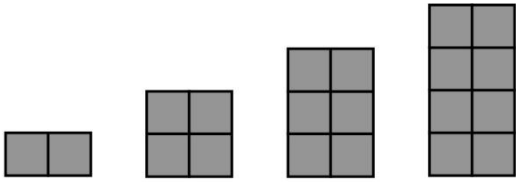
Master 25c

Fun Day! Patterning Cards (P)

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

Master 25d

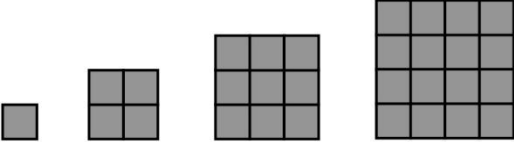
Fun Day! Patterning Cards (P)

<p>P</p> <p>Extend the pattern by 2 more terms.</p> 	<p>P</p> <p>Extend the pattern by 2 more terms.</p> 
<p>P</p> <p>Find the missing term.</p> <p>6, 11, 16, 21, 31, 36, ...</p>	<p>P</p> <p>Find the missing term.</p> <p>303, 300, 297, 291, 288, ...</p>
<p>P</p> <p>Find and correct the error.</p> <p>120, 129, 138, 146, 156, ...</p>	<p>P</p> <p>Find and correct the error.</p> <p>48, 40, 32, 25, 16, 8, ...</p>



Master 25e

Fun Day! Patterning Cards (P) (ON only)

<p>P</p> <p style="text-align: center;">Extend the pattern by 2 more terms.</p> <p style="text-align: center; margin-top: 20px;">6, 12, 18, 24, ...</p>	<p>P</p> <p style="text-align: center;">Extend the pattern by 2 more terms.</p> <p style="text-align: center; margin-top: 20px;">1, 2, 4, 8, ...</p>																						
<p>P</p> <p style="text-align: center;">Extend the pattern by 2 more terms</p> <div style="text-align: center; margin-top: 10px;">  </div>	<p>P</p> <p style="text-align: center;">Find the missing term.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Input</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;">6</td> </tr> <tr> <td style="padding: 5px;">Output</td> <td style="padding: 5px;">6</td> <td style="padding: 5px;">9</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;"></td> <td style="padding: 5px;">18</td> </tr> </table>	Input	2	3	4	5	6	Output	6	9	12		18										
Input	2	3	4	5	6																		
Output	6	9	12		18																		
<p>P</p> <p style="text-align: center;">Find the missing term.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Input</td> <td style="padding: 5px;">1</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">5</td> </tr> <tr> <td style="padding: 5px;">Output</td> <td style="padding: 5px;">5</td> <td style="padding: 5px;"></td> <td style="padding: 5px;">15</td> <td style="padding: 5px;">20</td> <td style="padding: 5px;">25</td> </tr> </table>	Input	1	2	3	4	5	Output	5		15	20	25	<p>P</p> <p style="text-align: center;">What is the pattern rule?</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Input</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">5</td> </tr> <tr> <td style="padding: 5px;">Output</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">5</td> </tr> </table>	Input	2	3	4	5	Output	2	3	4	5
Input	1	2	3	4	5																		
Output	5		15	20	25																		
Input	2	3	4	5																			
Output	2	3	4	5																			
<p>P</p> <p style="text-align: center;">What is the pattern rule?</p> <p style="text-align: center; margin-top: 20px;">1, 3, 9, 27, ...</p>	<p>P</p> <p style="text-align: center;">What is the pattern rule?</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Input</td> <td style="padding: 5px;">1</td> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3</td> <td style="padding: 5px;">4</td> </tr> <tr> <td style="padding: 5px;">Output</td> <td style="padding: 5px;">4</td> <td style="padding: 5px;">8</td> <td style="padding: 5px;">12</td> <td style="padding: 5px;">16</td> </tr> </table> <div style="text-align: right; margin-top: 10px;">✂</div>	Input	1	2	3	4	Output	4	8	12	16												
Input	1	2	3	4																			
Output	4	8	12	16																			

Master 26

Connections: Vyshyvanka

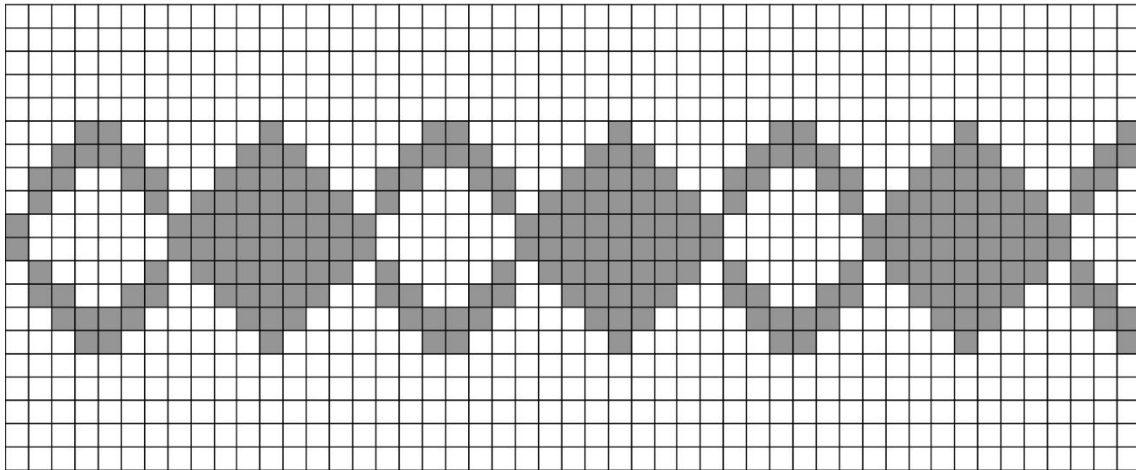
Vyshyvanka is the Ukrainian name for embroidered shirt.



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?



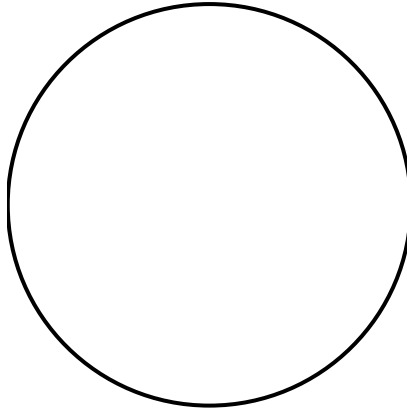
Copy the pattern on a grid.
What is the pattern rule?

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

Master 27a

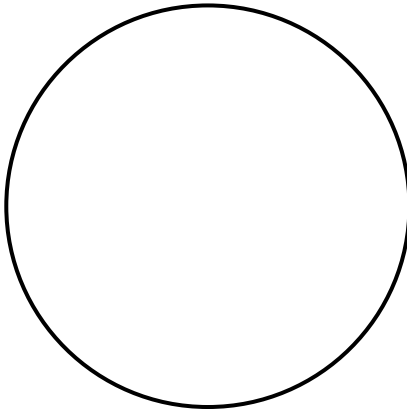
Sneaky Swap

Result

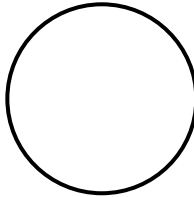


||

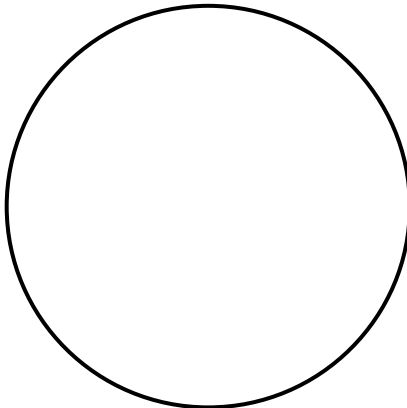
Change



+ or -



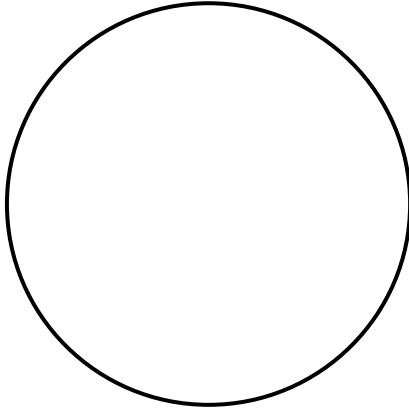
Start



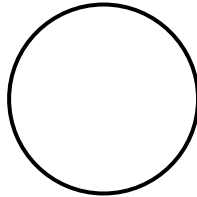
Master 27b

Sneaky Swap

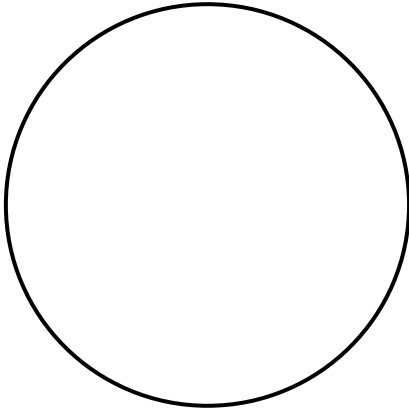
Change



+ or -

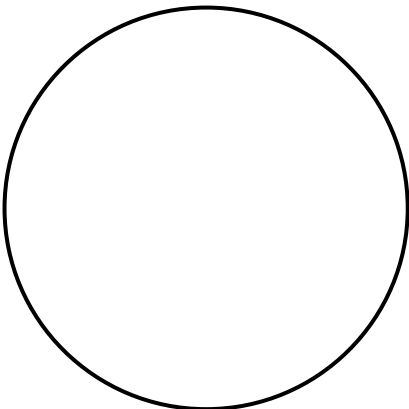


Start



=

Result



Master 28a

Adding Lengths

Part 1

Length from tip of middle finger to wrist	_____ cm
Length from wrist to shoulder	_____ cm

Write an equation to find the total length of your arm.

	+		=	
--	---	--	---	--

Show two ways you could break down a number to make addition easier.

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Master 28b

Adding Lengths

Part 2

Object: _____	
Measure 1	_____ cm
Measure 2	_____ cm

Write an equation to find the total length of the object.

	+		=	
--	---	--	---	--

Show two ways you could break down a number to make addition easier.

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Master 29a

Equation Cards

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



Master 29b

Equation Cards

$$32 - 11 = \heartsuit$$

$$\heartsuit - 29 = 17$$

$$\blacktriangle - 16 = 13$$

$$24 + 5 = \blacktriangle - 5$$

$$\square - 23 = 17$$

$$\star + 21 = 36$$

$$\heartsuit - 5 = 18 - 2$$

$$24 - \blacksquare = 8$$

$$14 + 15 = \triangle$$



Equation Cards (Accommodations)

$8 + \blacksquare = 9$	$15 - \square = 6$	$5 + 3 = \heartsuit$	$12 - 9 = \blacktriangle$
$\triangle + 6 = 13$	$\star - 8 = 2$	$\blacksquare = 14 - 8$	$\square = 2 + 4$
$15 - \heartsuit = 10$	$\blacktriangle = 13 - 9$	$14 - \triangle = 11$	$16 = \star + 9$
$9 = \blacktriangle - 1$	$10 - \square = 7$	$7 = 12 - \heartsuit$	$8 + \blacksquare = 8$



Name _____ Date _____

Master 30a

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 30b

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

Master 31a

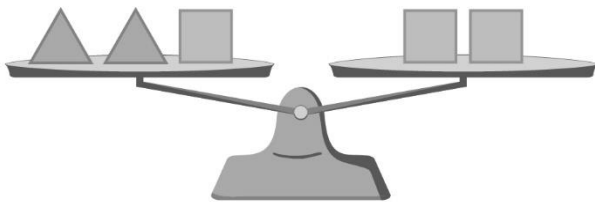
Connections: Balance Puzzles

Do you like to do puzzles?

Have you ever tried a balance puzzle?

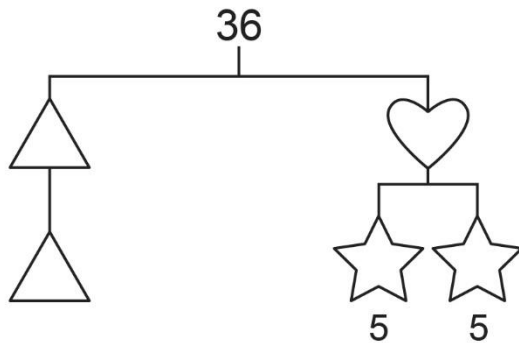
When things are balanced, the quantities on both sides are equal.

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.

Master 31b

Connections: Balance Puzzles

Solve this puzzle.

$$\text{soccer ball} + \text{soccer ball} + \text{soccer ball} = 15$$

$$\text{soccer ball} + \text{basketball} + \text{basketball} = 21$$

$$\text{basketball} + \text{football} = 20$$

$$\text{soccer ball} + \text{basketball} + \text{football} = ?$$

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

Master 32

Connections: Patterns in Nature

We often think of a pattern as something that repeats again and again in the same way.



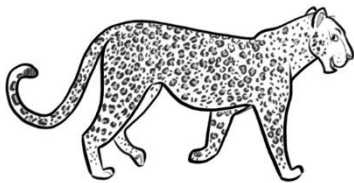
In nature, patterns can be found everywhere, including on animals, plants, and in the sky.

A zebra's stripes form a pattern, although no two stripes are exactly the same.

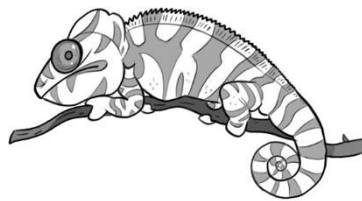


Zebra

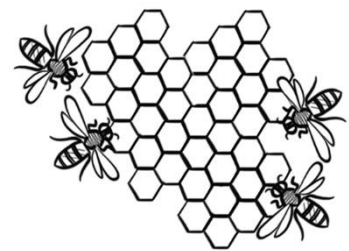
What patterns do you see?



Leopard



Chameleon



Honeycomb

Look around you. What patterns do you see?

Name _____ Date _____

Master 33

Our Pattern Recording Sheet

Circle two attributes to change.

Shape Size Colour Thickness Orientation

Pattern for first attribute: _____

Pattern for second attribute: _____

Pattern core: _____

Core with letters: _____

Our pattern:

Master 34

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 _____		

Master 35

How Long Is It?

Part A: How Long Is the String?

Rod or Cube Used	Length of Rod or Cube (cm)	Length of String (cm)

Is the string 1 m long? _____

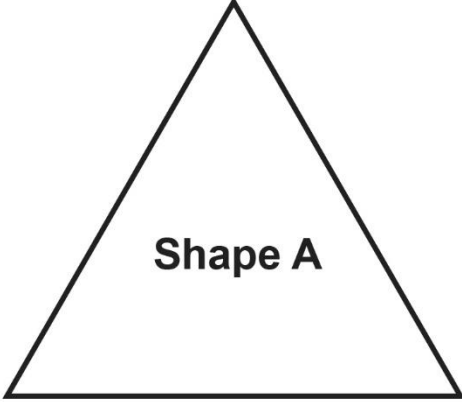

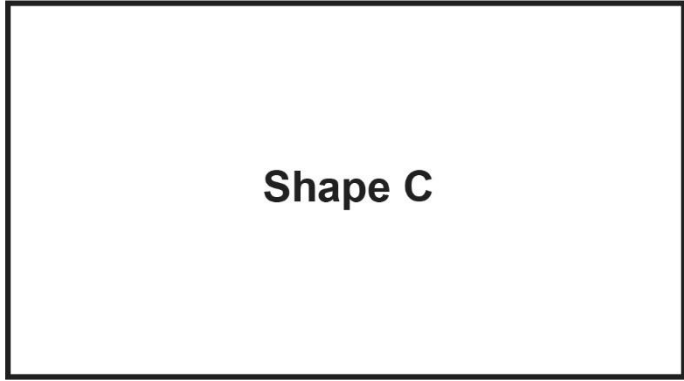
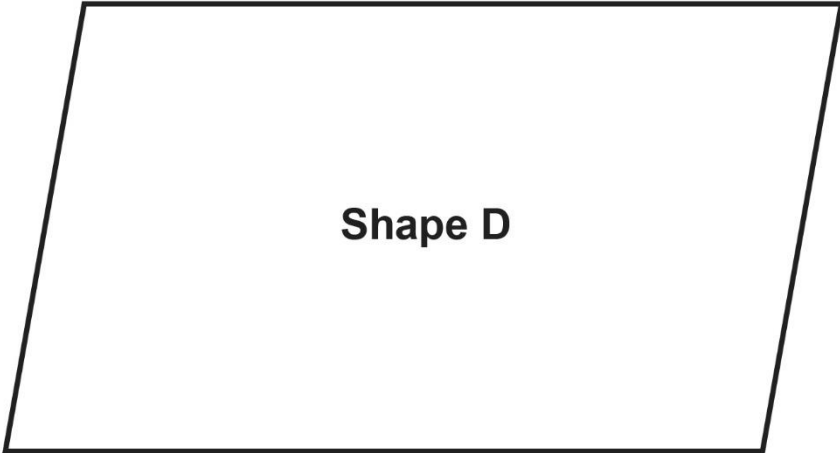
How do you know? _____

Part B: How Long Is It?

Object	Estimate	Measure
Width of the door		
Height of the window		
Width of the classroom		
Length of the table		
Length of the whiteboard		
Length of the carpet		
Your choice _____		

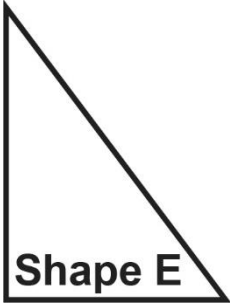
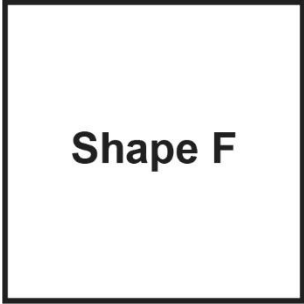
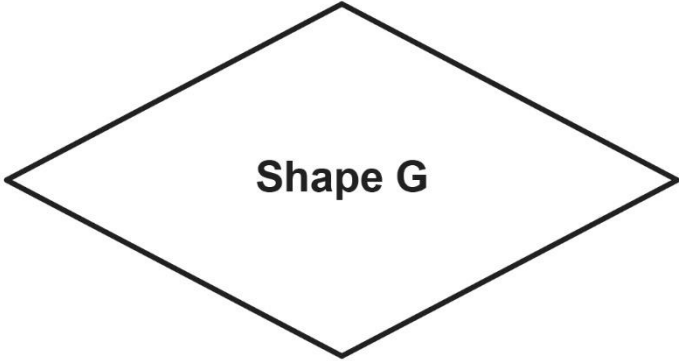
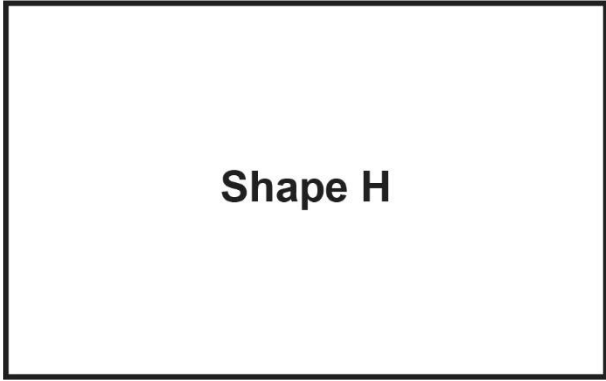
Master 36a

2-D Shapes

 <p>Shape A</p>	 <p>Shape B</p>
 <p>Shape C</p>	
 <p>Shape D</p>	

Master 36b

2-D Shapes

 <p>Shape E</p>	 <p>Shape F</p>
 <p>Shape G</p>	
 <p>Shape H</p>	

Name _____ Date _____

Master 37

3-D Objects Recording Sheet

Height			
Width			
Length			
Object			

Name _____ Date _____

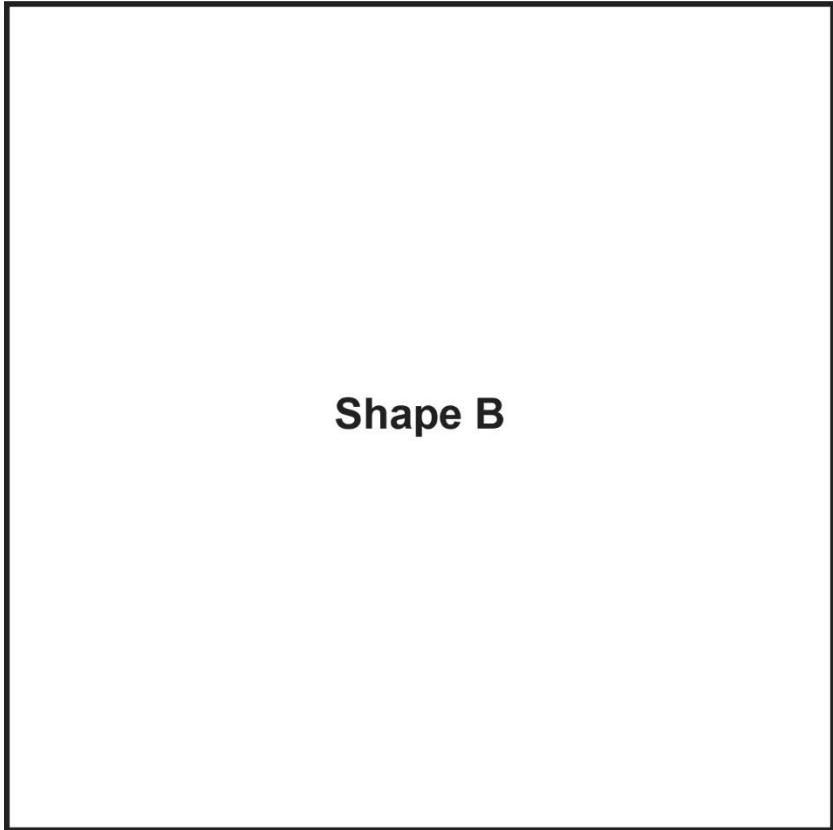
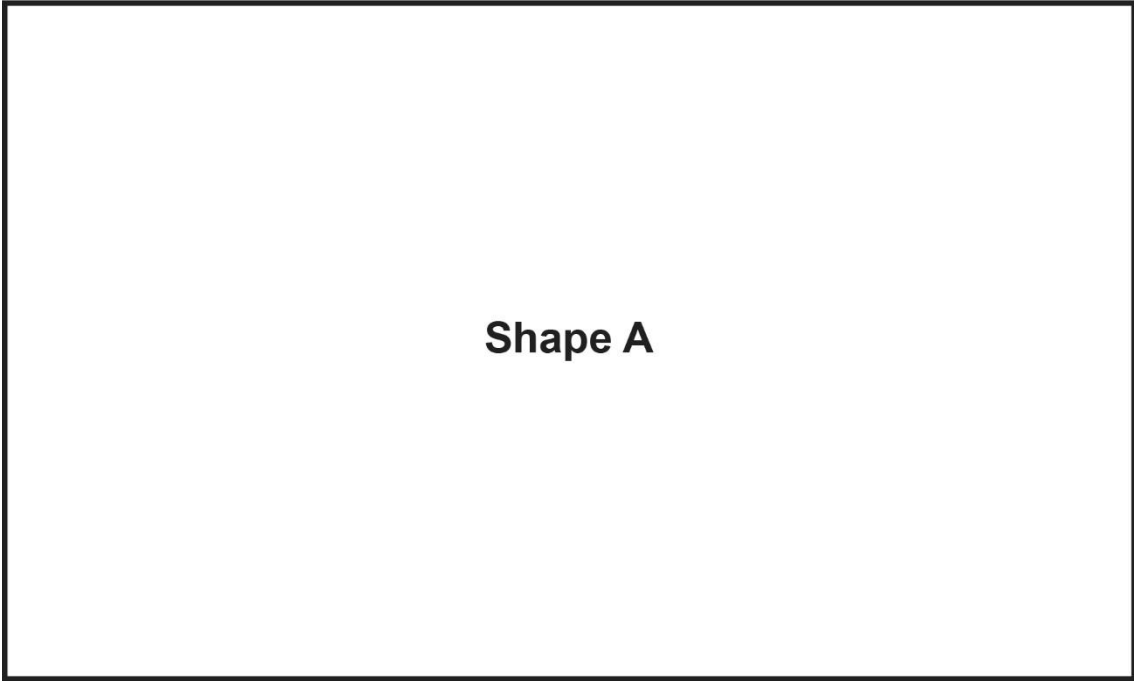
Master 38

Distance Around

Measure				
Estimate				
Measuring Unit				
Item				

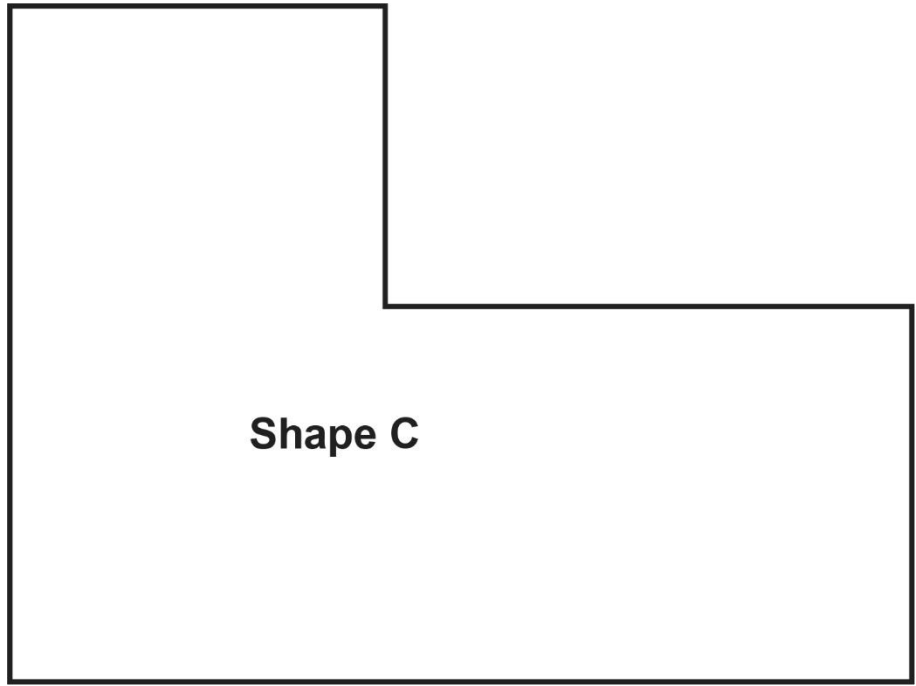
Master 39a

Perimeter Shapes



Master 39b

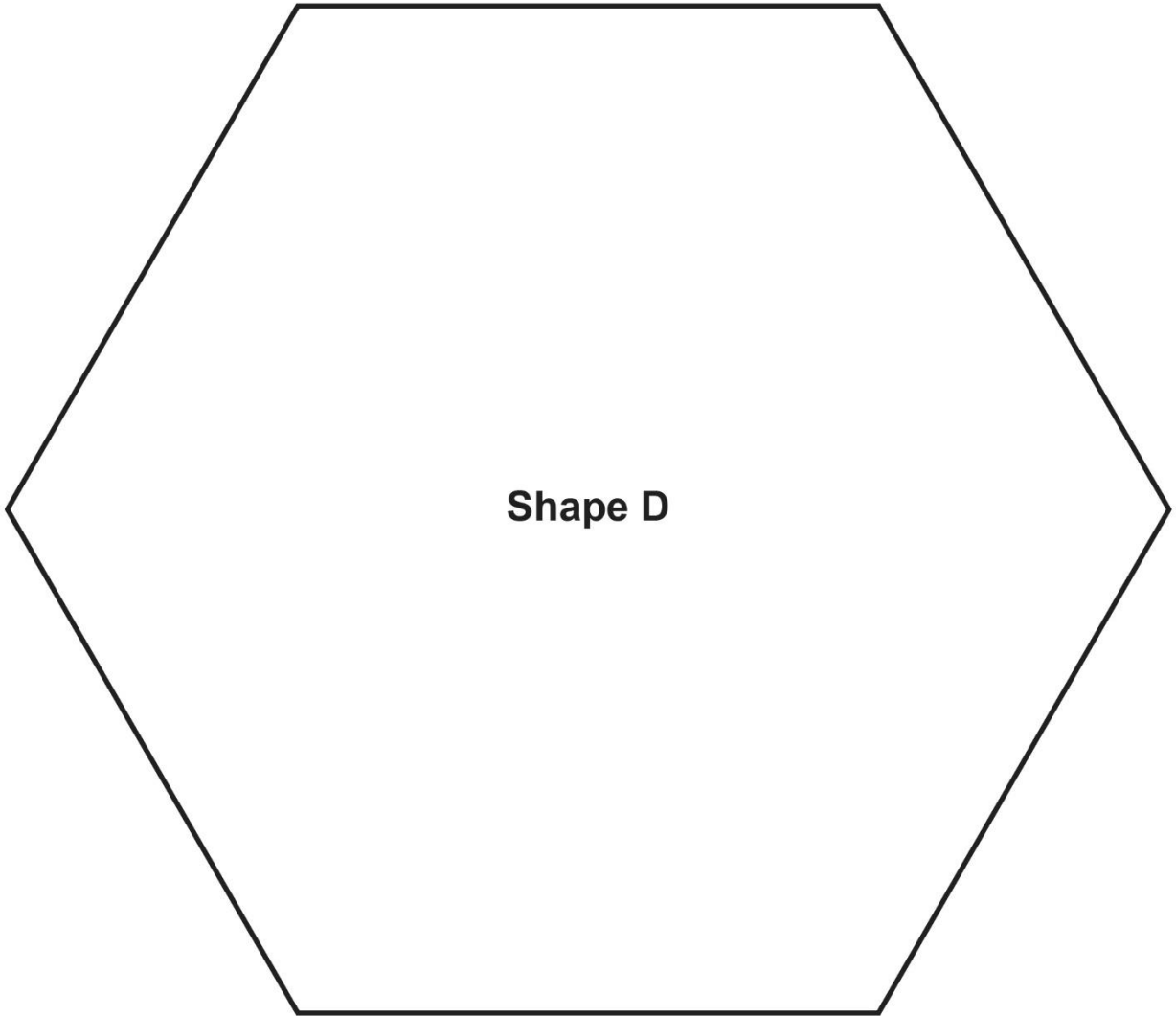
Perimeter Shapes



Name _____ Date _____

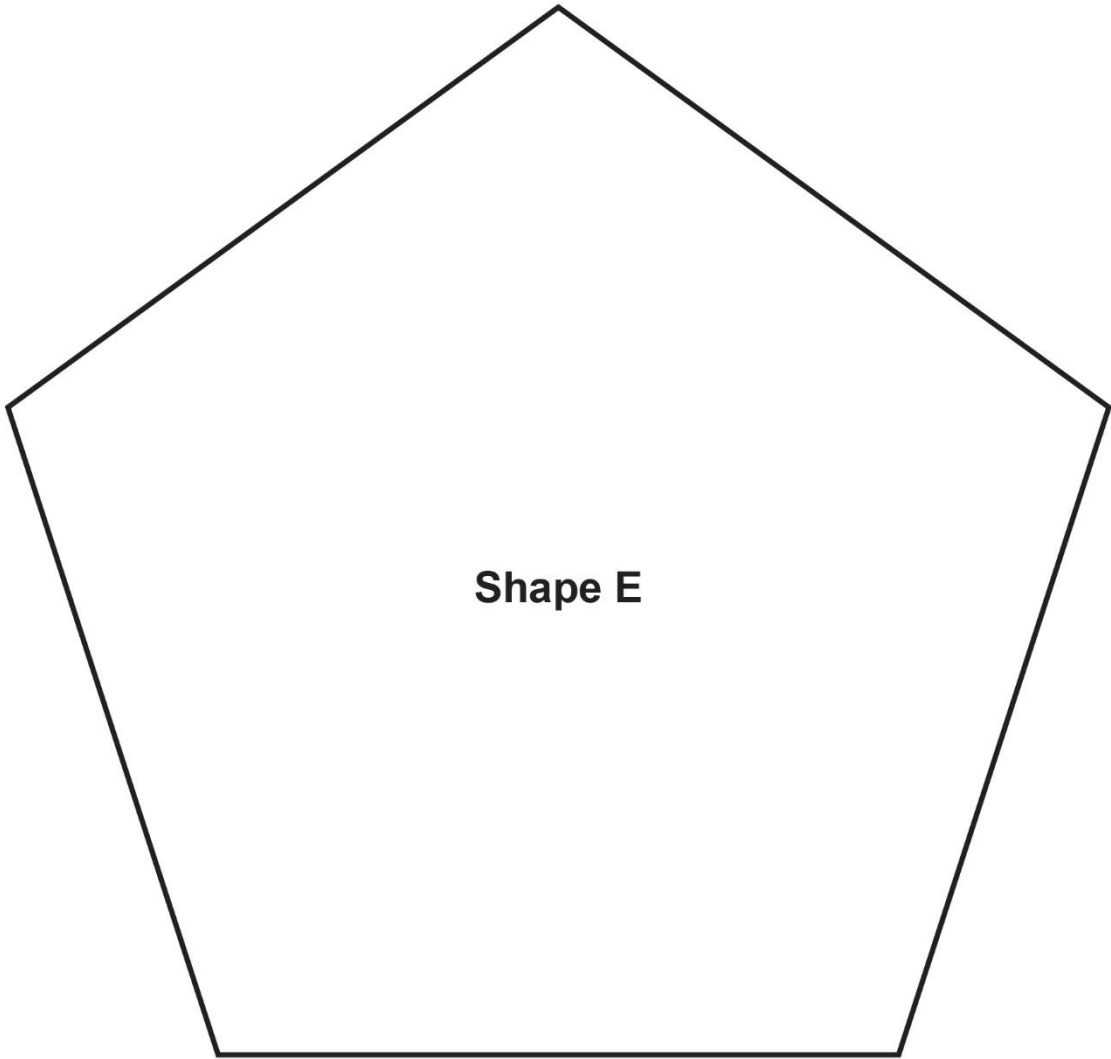
Master 39c

Perimeter Shapes



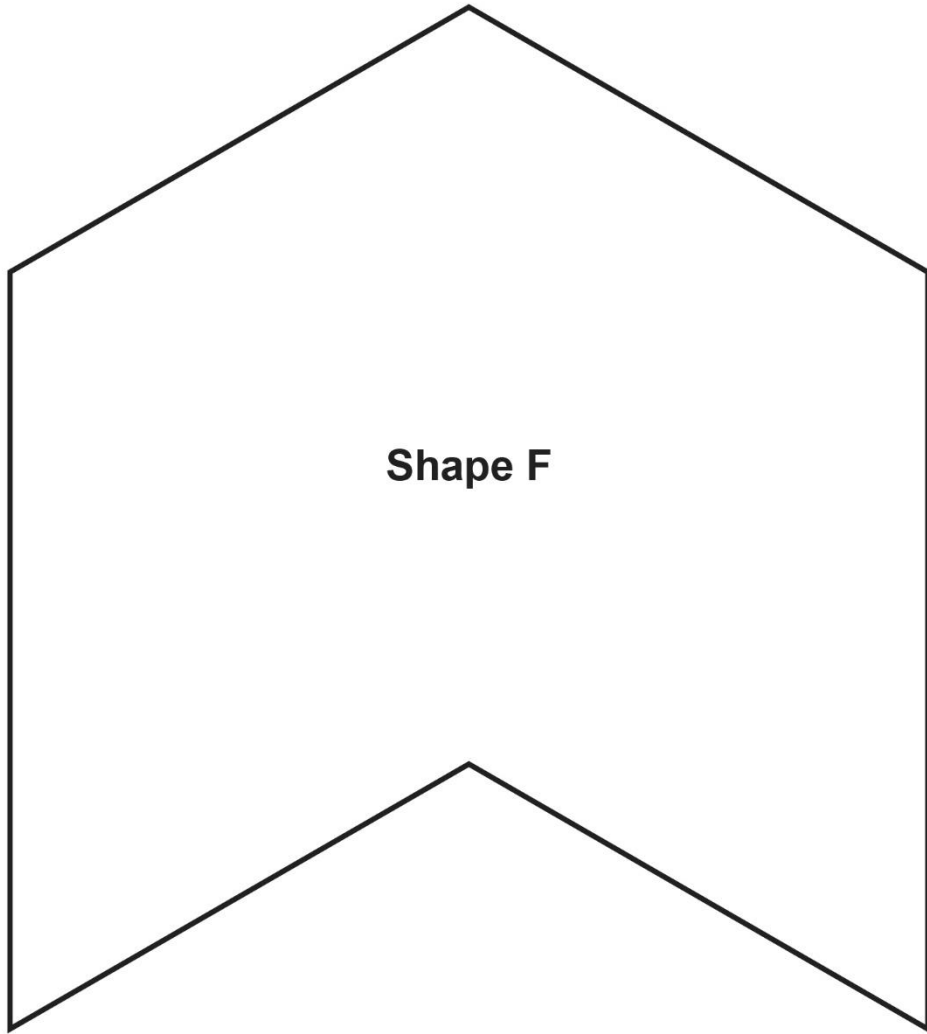
Master 39d

Perimeter Shapes



Master 39e

Perimeter Shapes



Instructions for Centres

Length Centre

Task A: Estimating and Measuring Length

- 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 either object more than 100 cm long? Explain.

Task B: Drawing Line Segments

- Roll the number cubes, then add the numbers rolled.
- Without using a ruler, each of you draw a line segment that you think is that many centimetres long.
- Measure each other's line segment to check.
How close were your estimates?
- Use a ruler to draw a line segment of that length.

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.

Master 41

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.

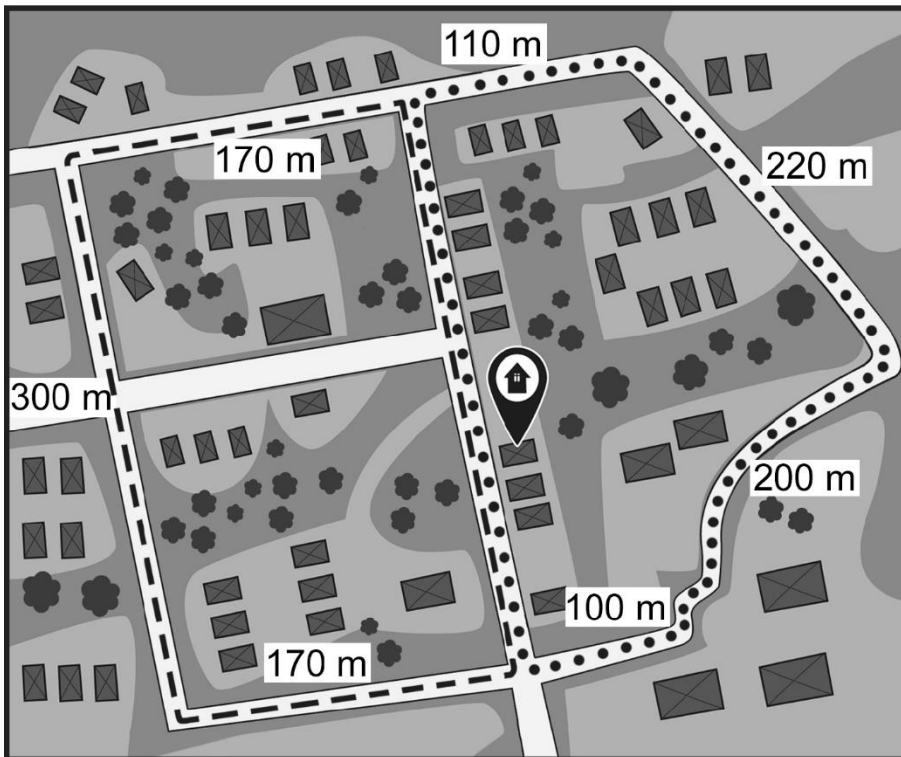
Sometimes, they turn right.

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?



Master 42a

Go Fish! Cards

1 day	24 hours
1 minute	60 seconds
1 year	12 months
2 days	48 hours
2 years	24 months



Master 42b

Go Fish! Cards

1 hour	60 minutes
1 week	7 days
2 weeks	14 days
2 hours	120 minutes
3 days	72 hours



Master 42c

Go Fish! Cards (For Extension)

5 minutes	300 seconds
3 hours	180 minutes
5 hours	300 minutes
3 minutes	180 seconds
1 year	52 weeks



Name _____ Date _____

Master 42d

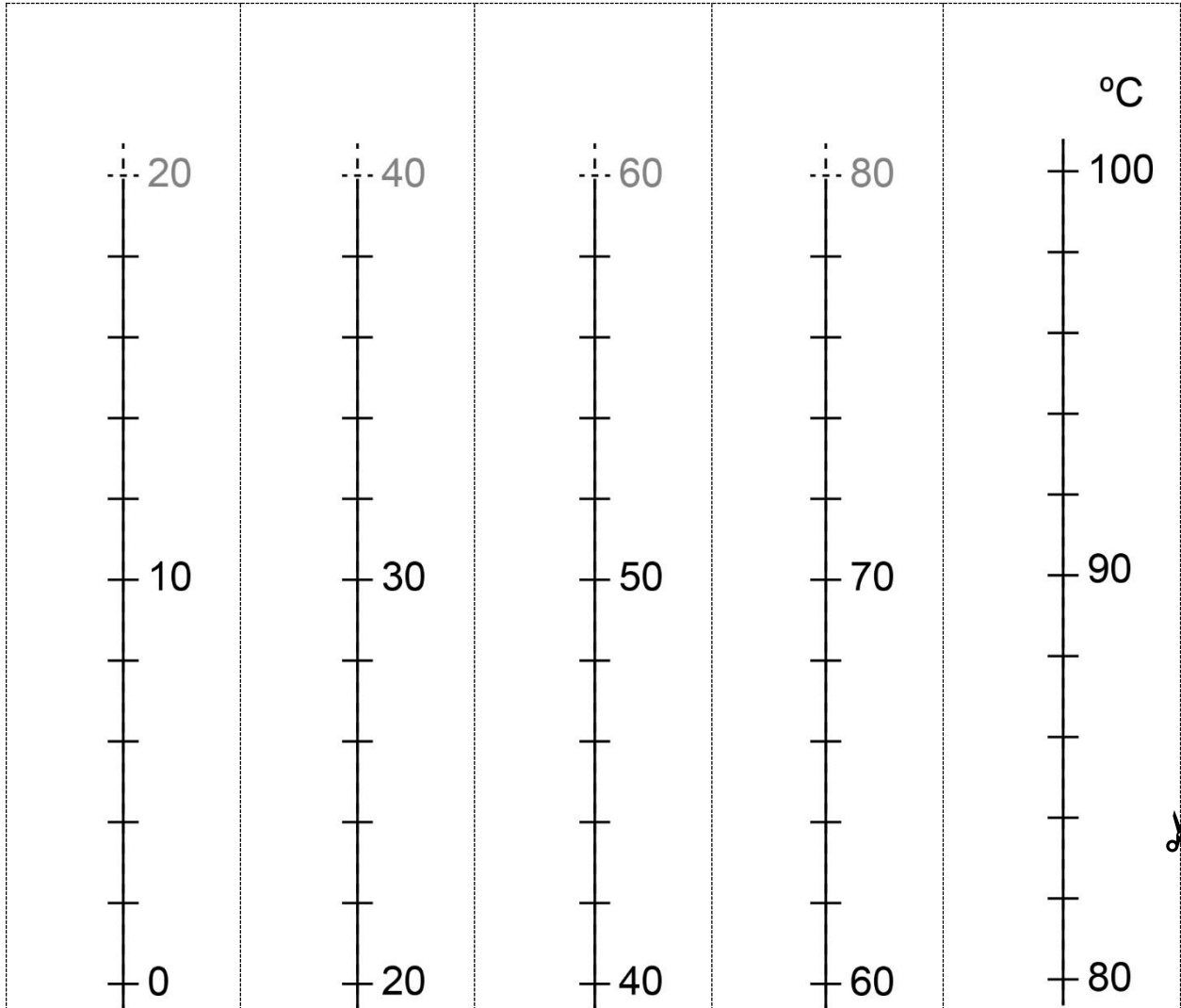
Go Fish! Cards (For Extension)

2 years	24 months
8 weeks	56 days

















Master 44

Number Line Thermometer



Master 45

Temperature Benchmark Cards

	BOILING Boiling water 100°C		HOT Hot drink 65°C
	COOL Lake water for swimming 20°C		WARM Swimming pool water 28°C
	COLD Cold lake water 10°C		FREEZING Ice 0°C
	HOT Summer day 25°C		VERY HOT Heat wave 35°C
	WARM Spring day 20°C		WARM Room temperature 20°C
	COOL Fall day 10°C		COLD Cold day 0°C
	Healthy body temperature 37°C		Fever 39°C

Master 46

Connections: Life as a Tree!

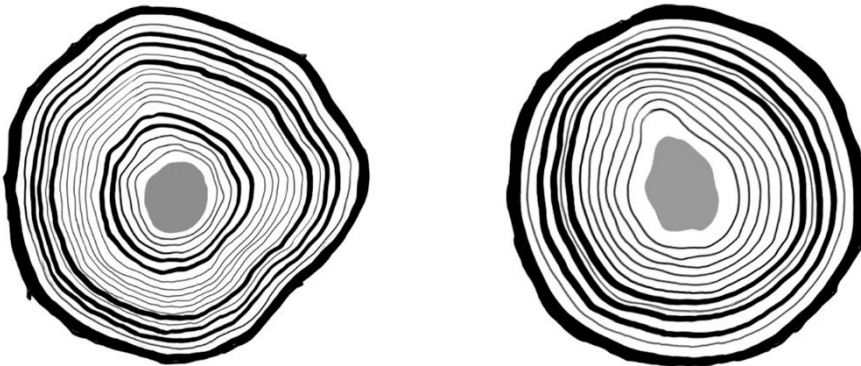
As a tree grows, it adds one growth ring each year.
Some trees live to be hundreds of years old.



The older rings are at the centre of the tree.
The newer rings are at the outside, near the bark.

Thicker rings tell us growing conditions were good.
Thinner rings tell us growing conditions were poor.

Look at these tree trunks.

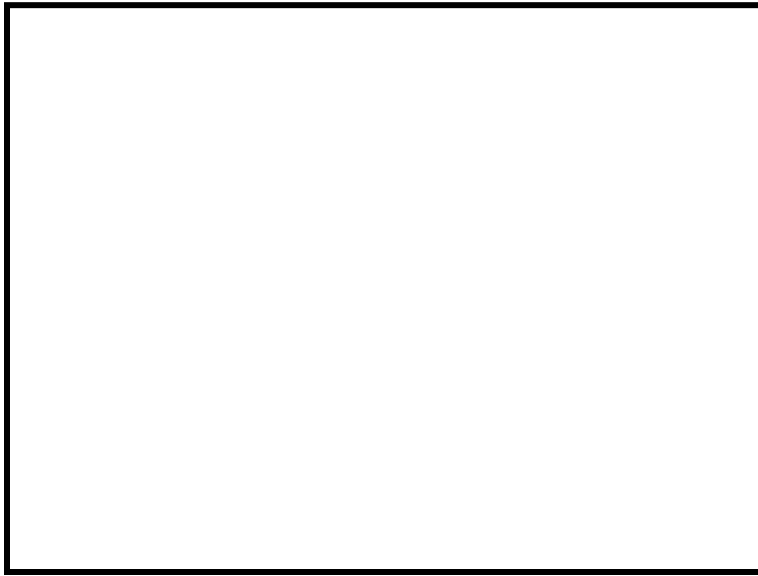


- Which tree is older?
How much older?
- Which rings show good growing years?
Which rings show years that were not so good?
- Do you think these trees grew in the same area? Explain.

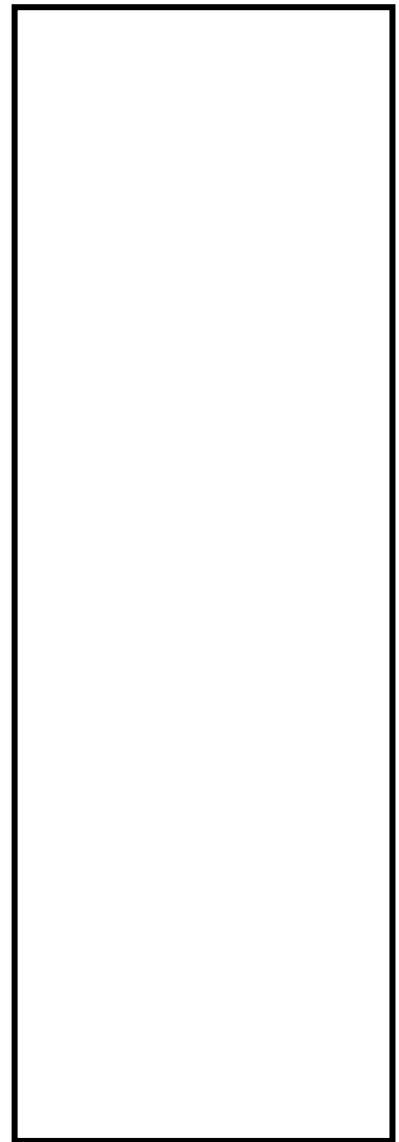
Master 47

Paper Rectangles

A



B



C



Name _____ Date _____

Master 48

Let's Measure It!

Measuring: Mass Capacity <circle one>

Item	Estimate	Actual Measure

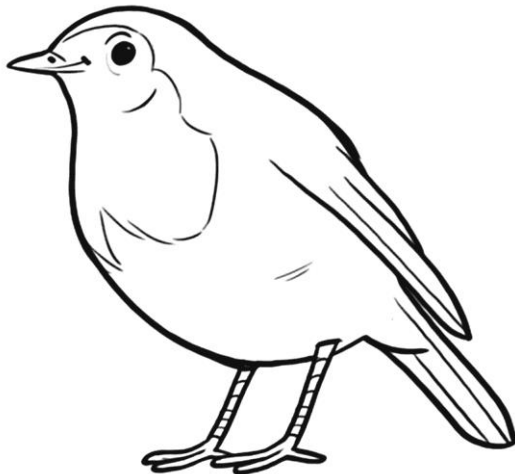
Order from least to greatest:

Connections: Park News

A hummingbird and robin are spotted.
The hummingbird has a mass of 4 g.



What might the mass of the robin be?



Lost and Found

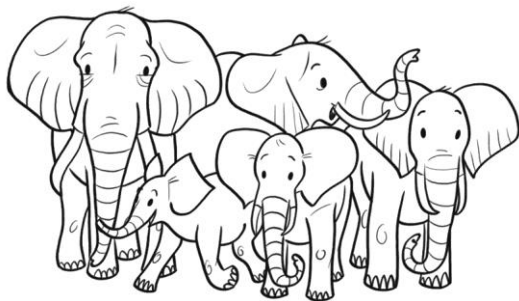
Water bottles are left behind
in a picnic area.



The black bottle has a
capacity of 2 L.

How much might each of
the other bottles hold?

Annie returns from an African safari and
shares this image.



The largest elephant has a mass of 6000 kg.
What might the mass of each of the other
elephants be?

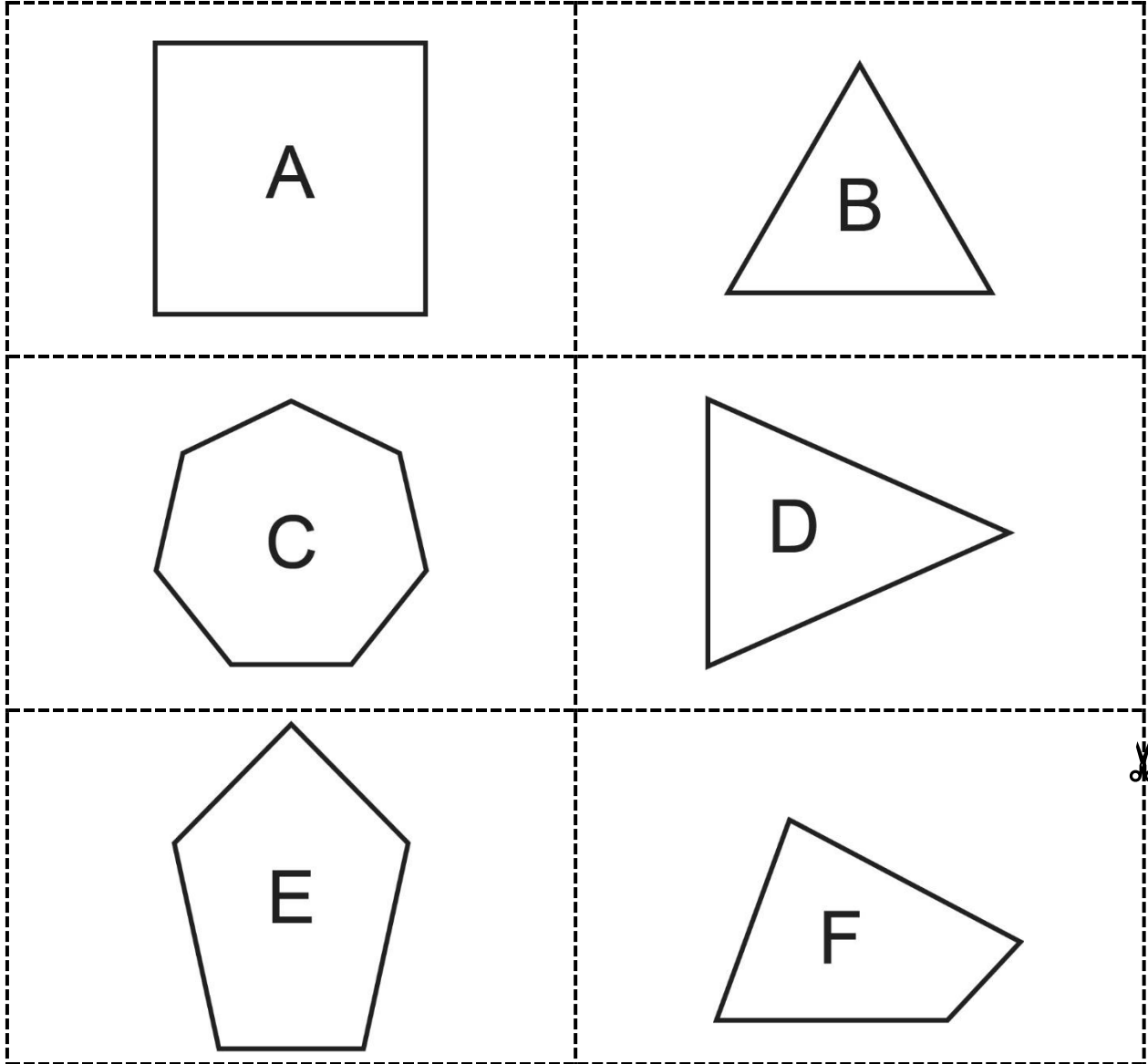
Fun Fact

An African elephant has
about 450 L of blood.

Research how much
blood other animals have,
including you!

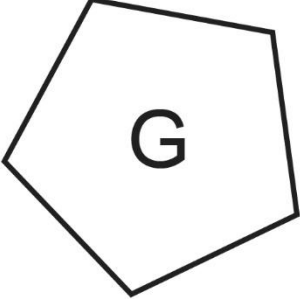
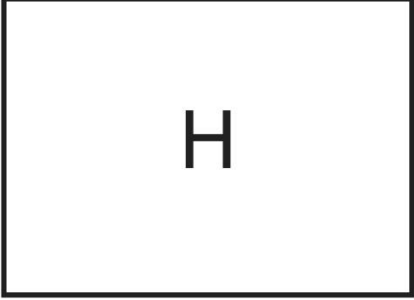
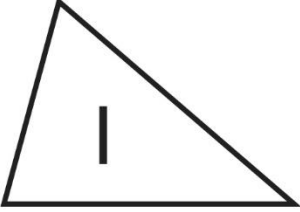
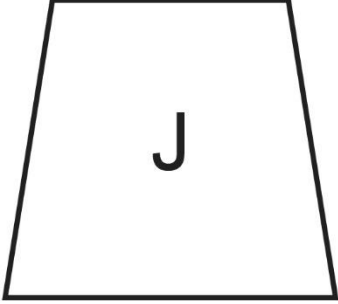
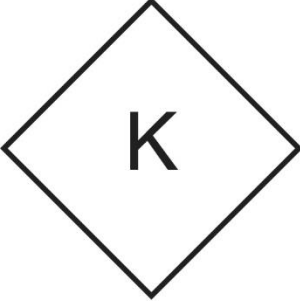
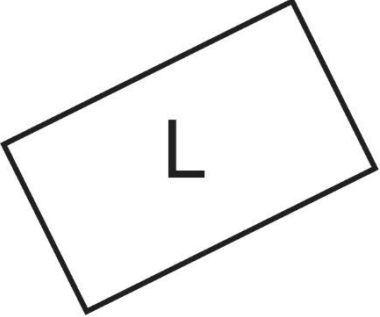
Master 50a

Polygons



Master 50b

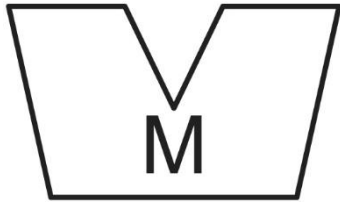
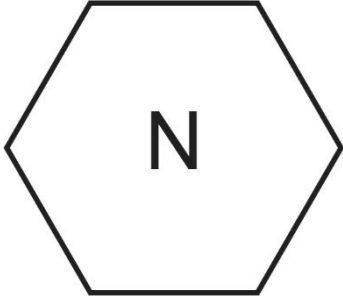
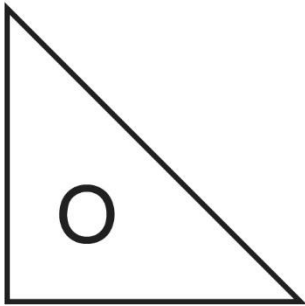
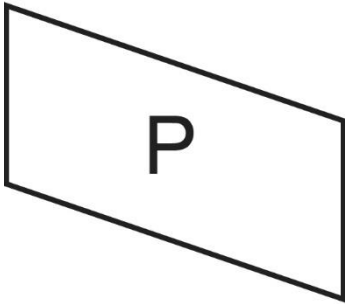


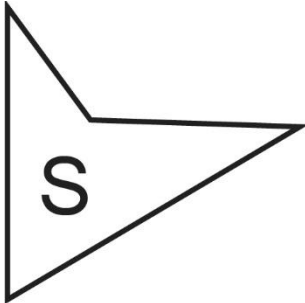
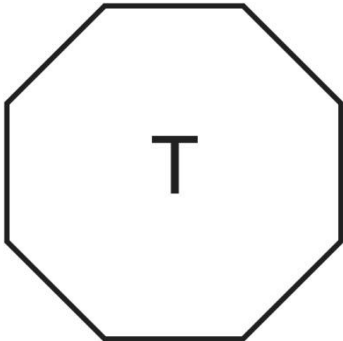
Polygons

 <p>G</p>	 <p>H</p>
 <p>I</p>	 <p>J</p>
 <p>K</p>	 <p>L</p>



Master 50c

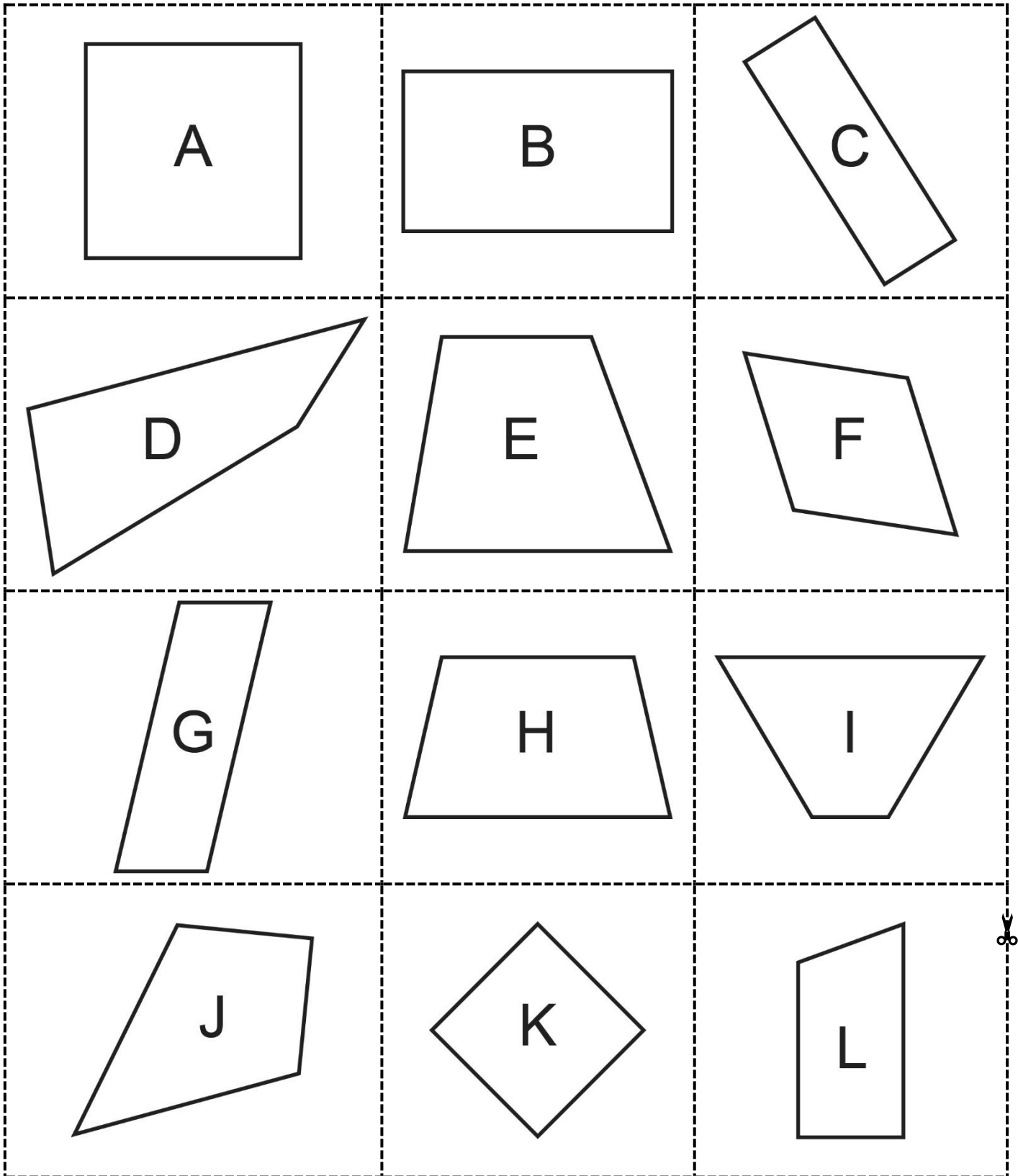
Polygons

 <p>M</p>	 <p>N</p>
 <p>O</p>	 <p>P</p>
 <p>Q</p>	 <p>R</p>
 <p>S</p>	 <p>T</p>



Master 51

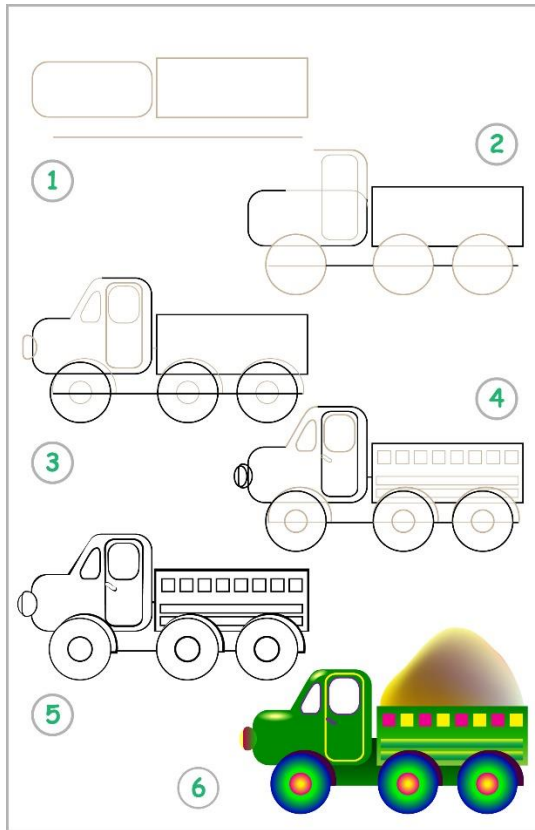
Quadrilaterals



Master 52

Connections: Drawing from Shapes

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

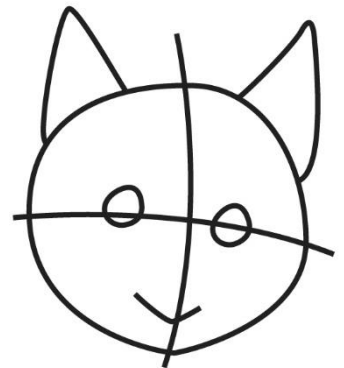


To draw this truck, the artist started with a line, a rectangle, and a rectangle with rounded corners.

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.

Attributes of Shapes Instructions

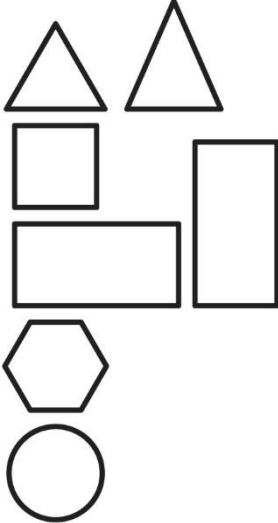
Number rolled	Team who rolled	Other team
1	Point to a shape.	Name the shape in two ways.
2	Point to two shapes.	Explain how the shapes are alike and how they are different.
3	Name an attribute to sort by.	Point to all shapes with that attribute.
4	Point to a shape that would be in the overlap of a Venn 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.

Name _____ Date _____

Master 54

Our Solid Recording Sheet

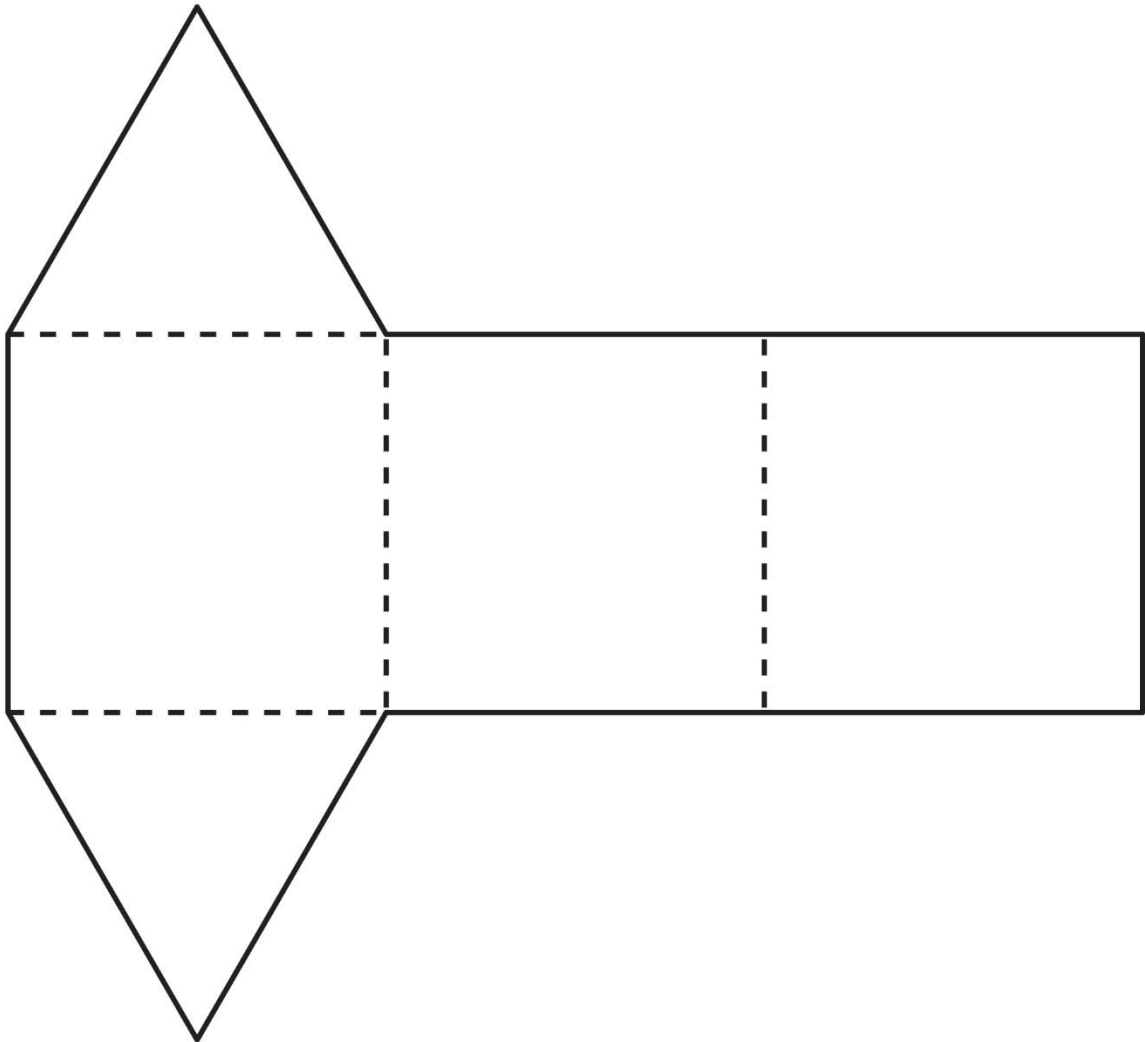
Our Solid: _____

Attributes	Number of...
<p data-bbox="203 556 324 598">Faces</p>  <p data-bbox="613 1140 901 1182">Shape of Base:</p> <hr data-bbox="613 1224 1414 1228"/>	
<p data-bbox="203 1291 324 1333">Edges</p>	
<p data-bbox="203 1402 357 1444">Vertices</p>	
<p data-bbox="203 1497 519 1539">Curved Surfaces</p>	

Name _____ Date _____

Master 55a

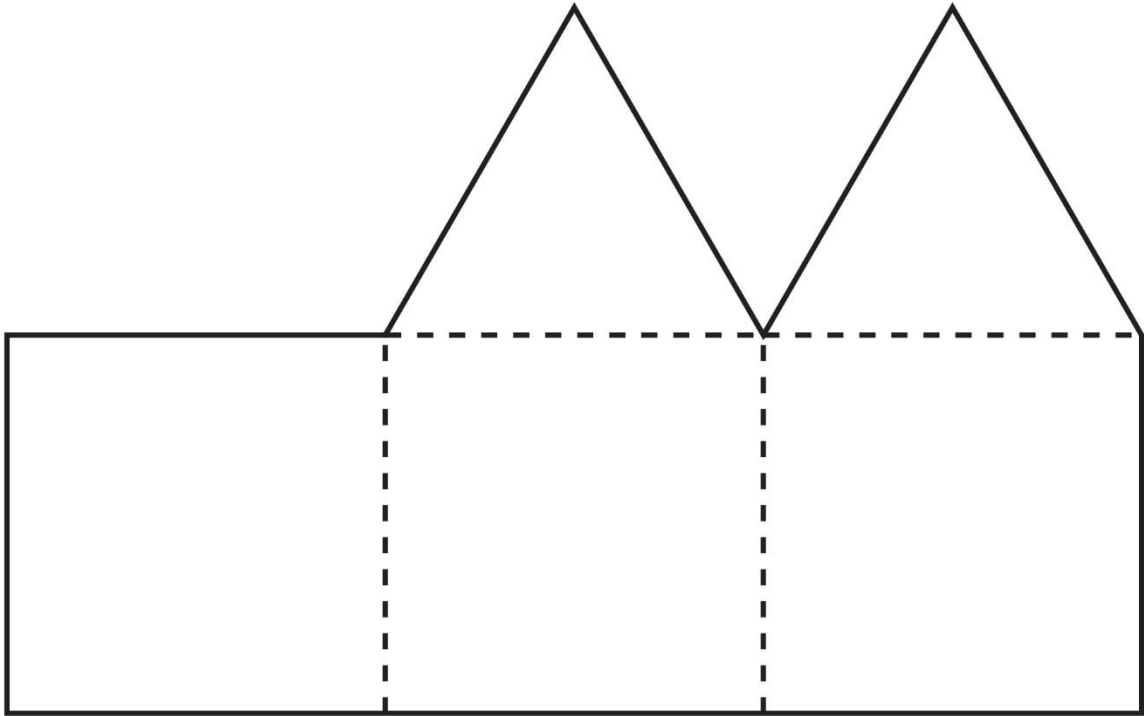
Is It a Net?



Name _____ Date _____

Master 55b

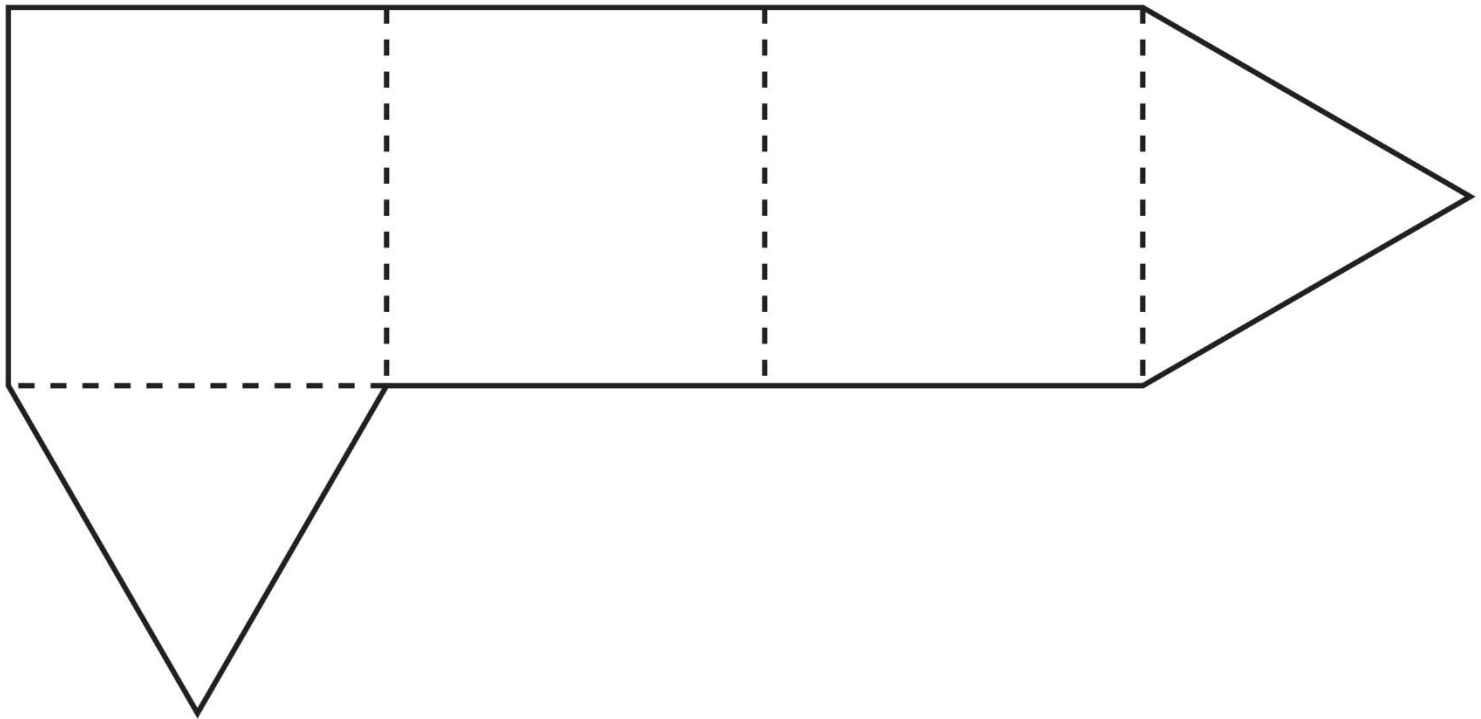
Is It a Net?



Name _____ Date _____

Master 55c

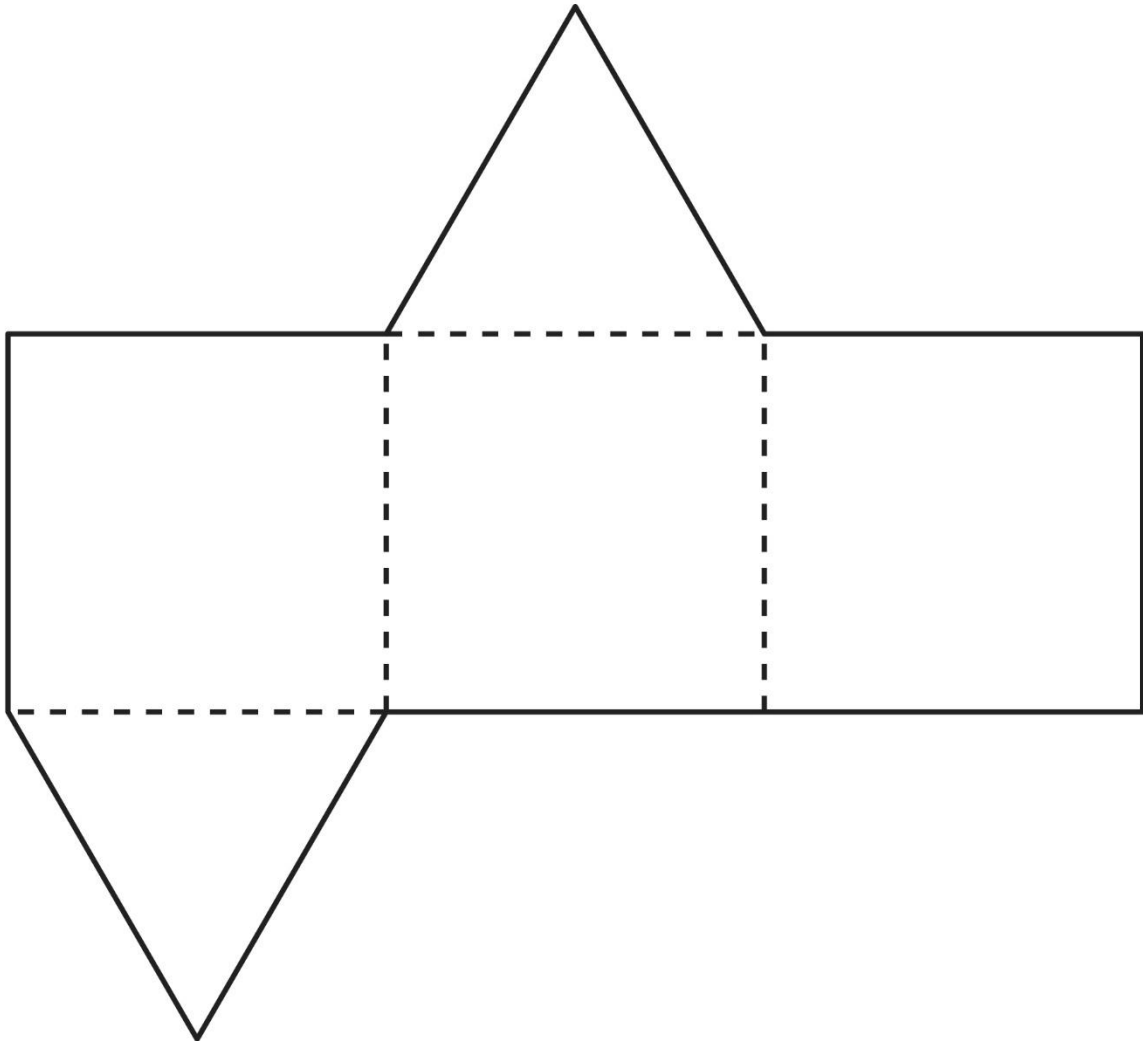
Is It a Net?



Name _____ Date _____

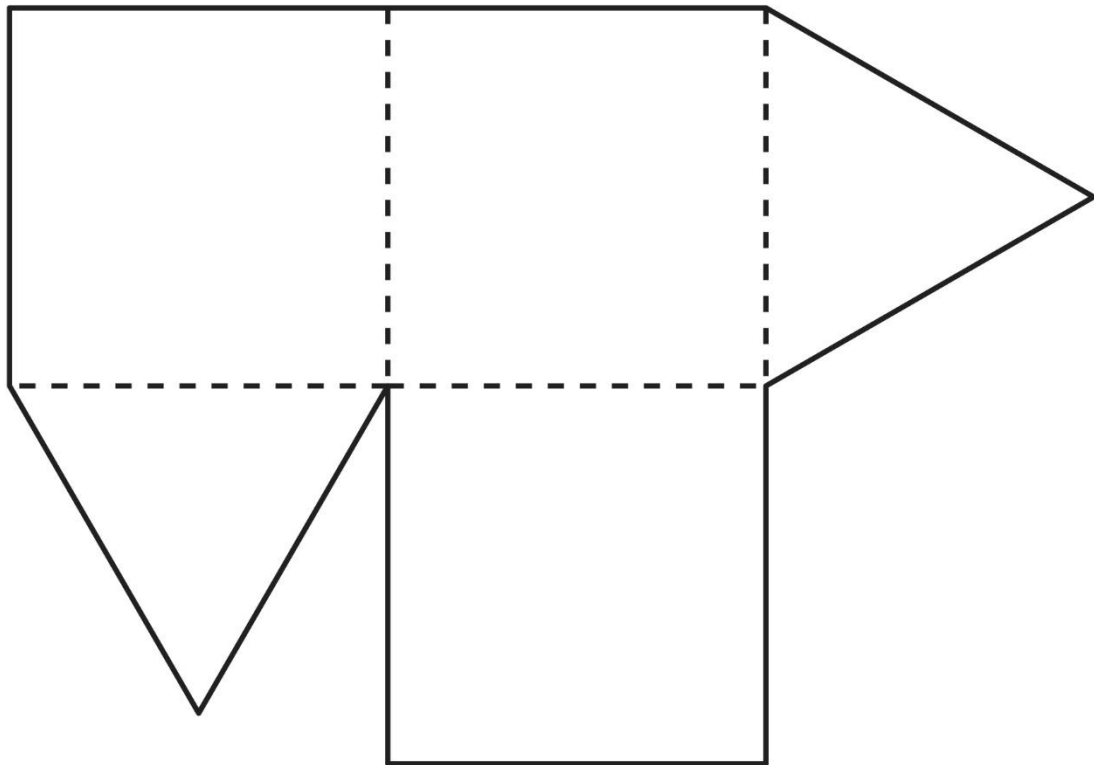
Master 55d

Is It a Net?



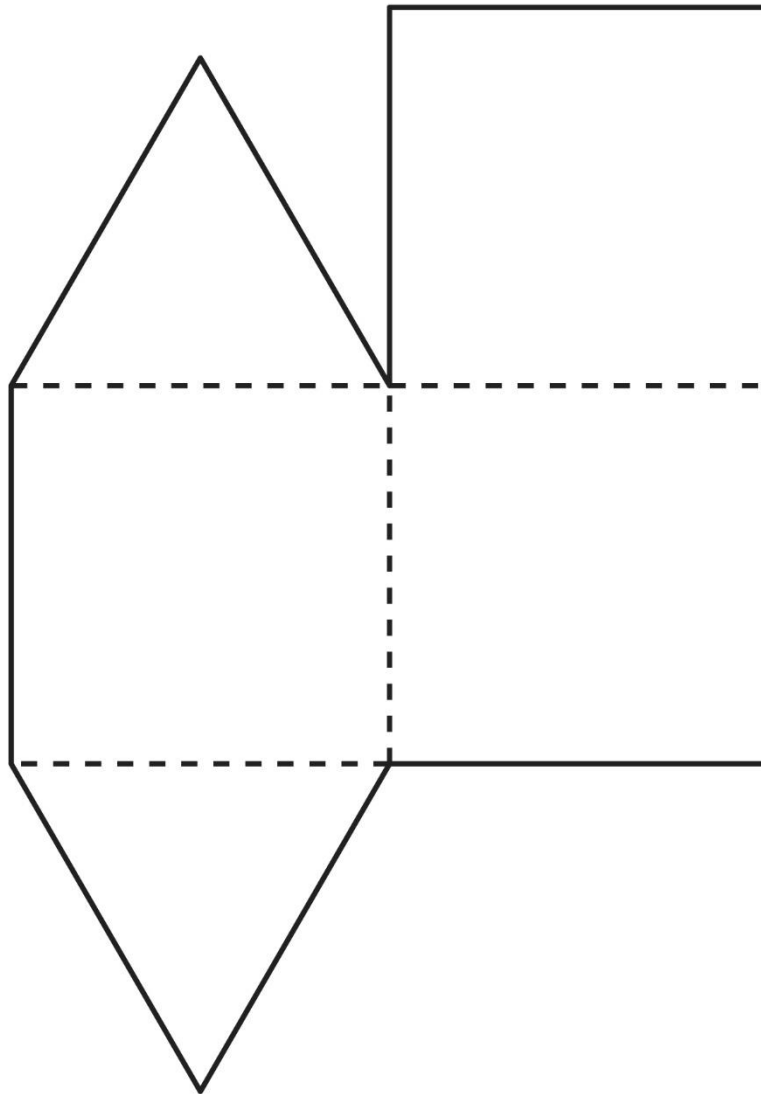
Master 55e

Is It a Net?



Master 55f

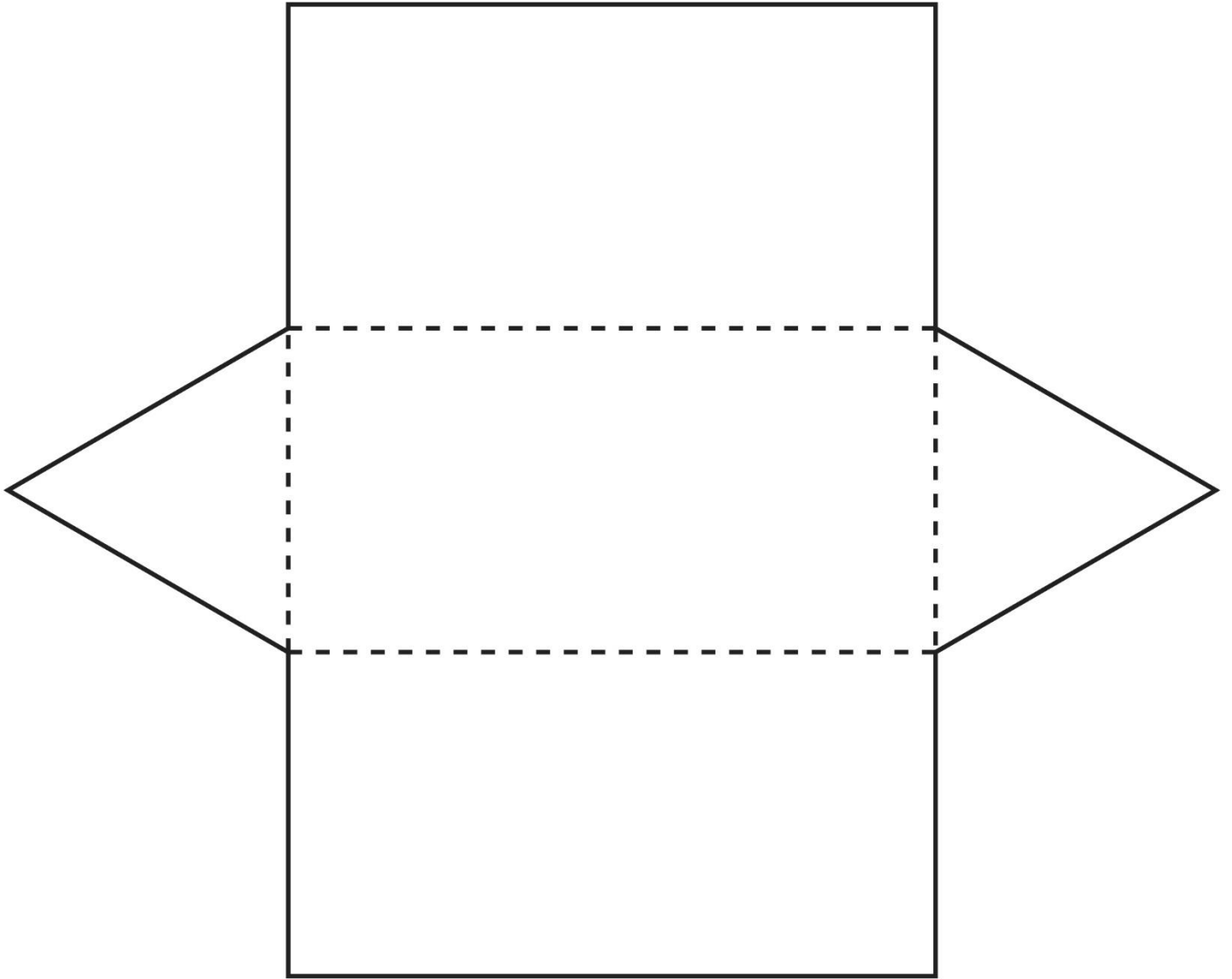
Is It a Net?



Name _____ Date _____

Master 56a

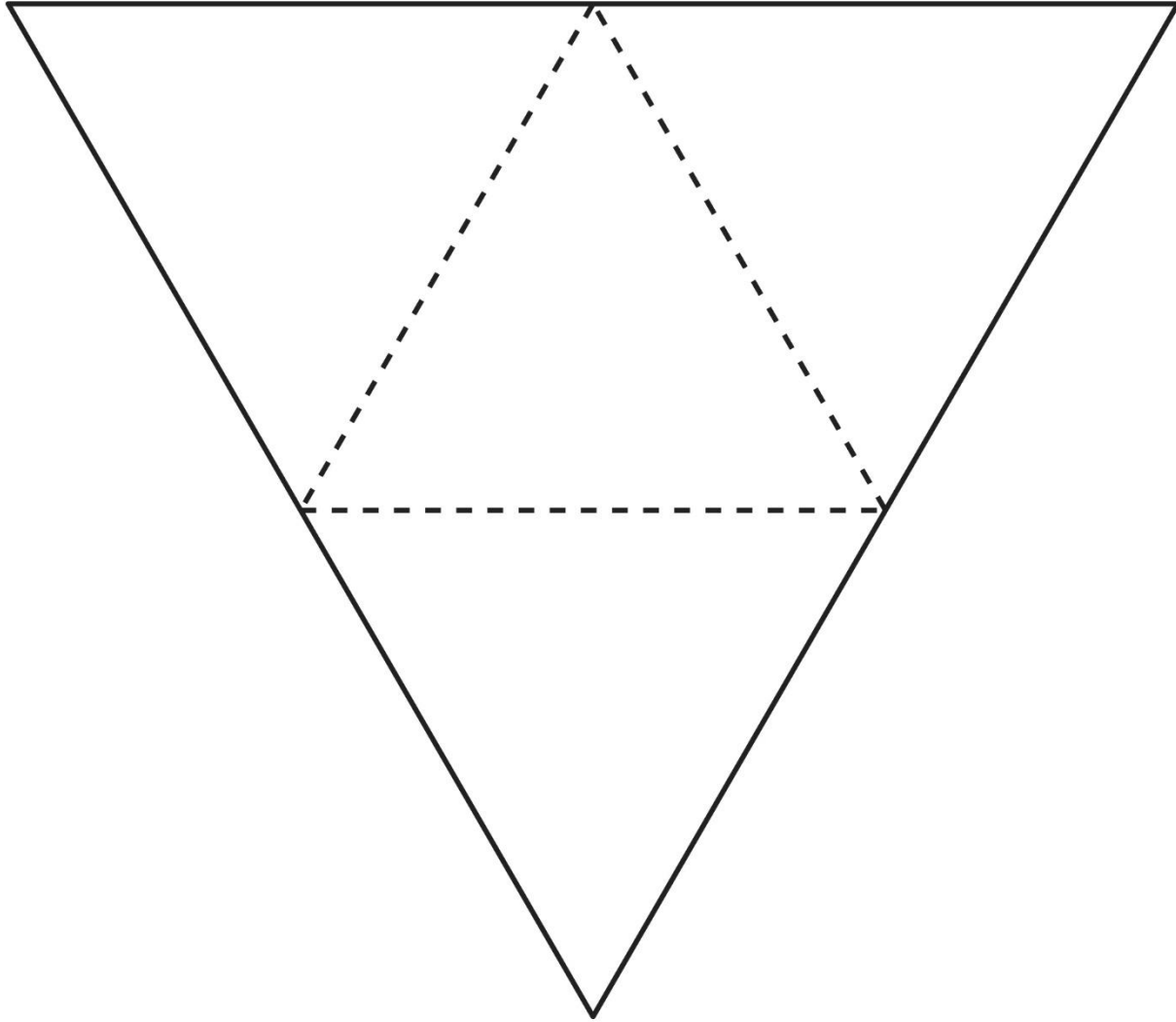
Nets of Solids



Name _____ Date _____

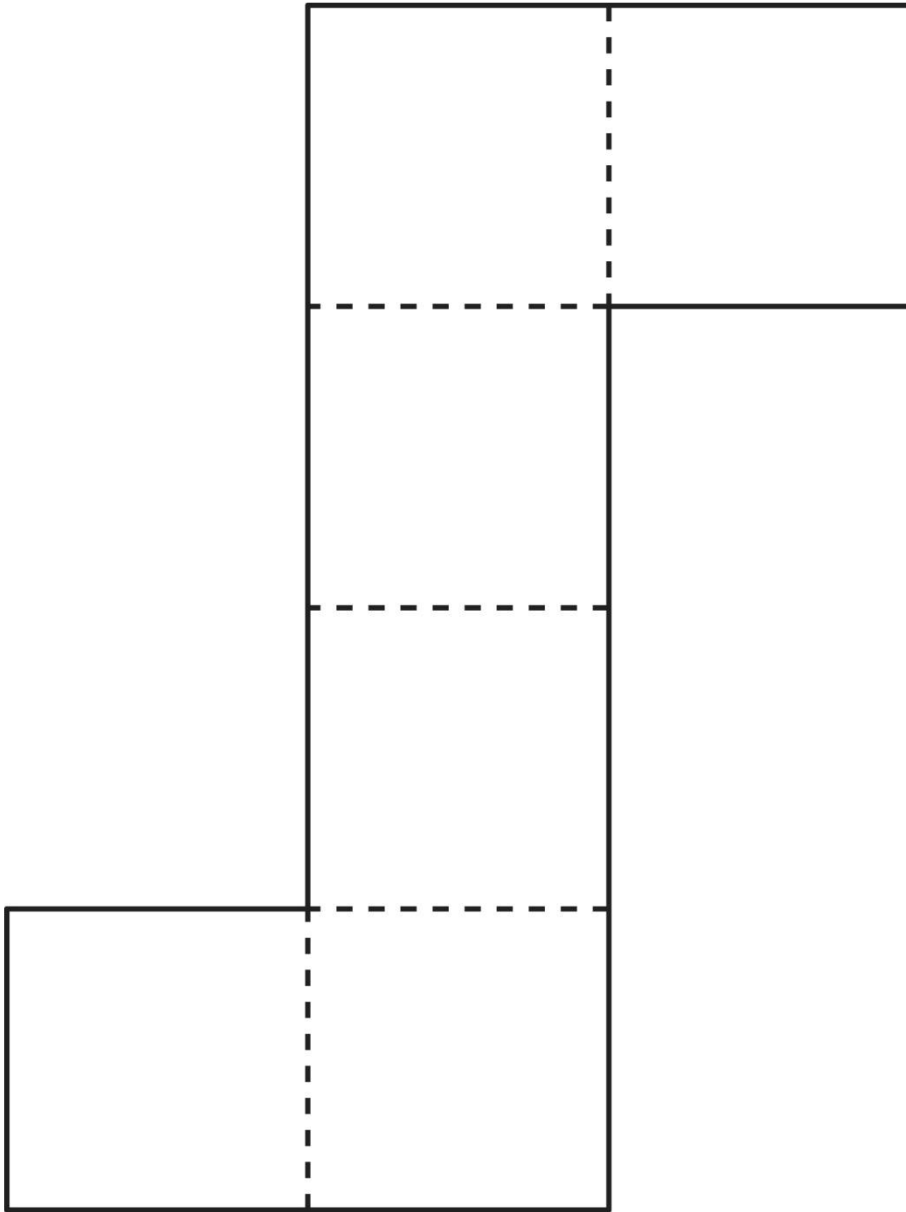
Master 56b

Nets of Solids



Master 56c

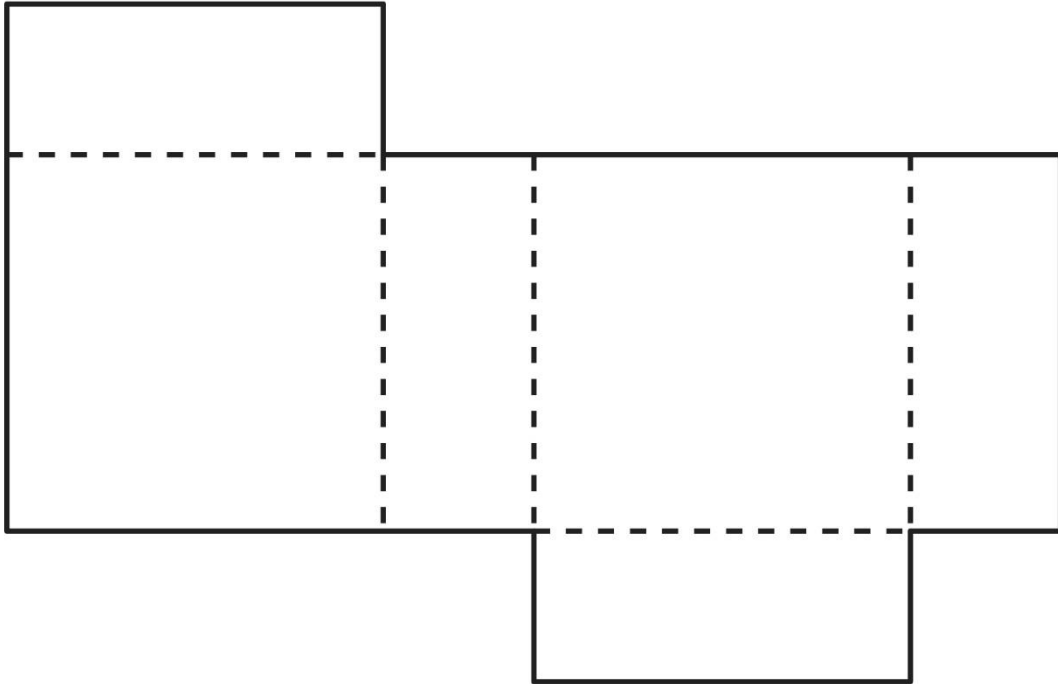
Nets of Solids



Name _____ Date _____

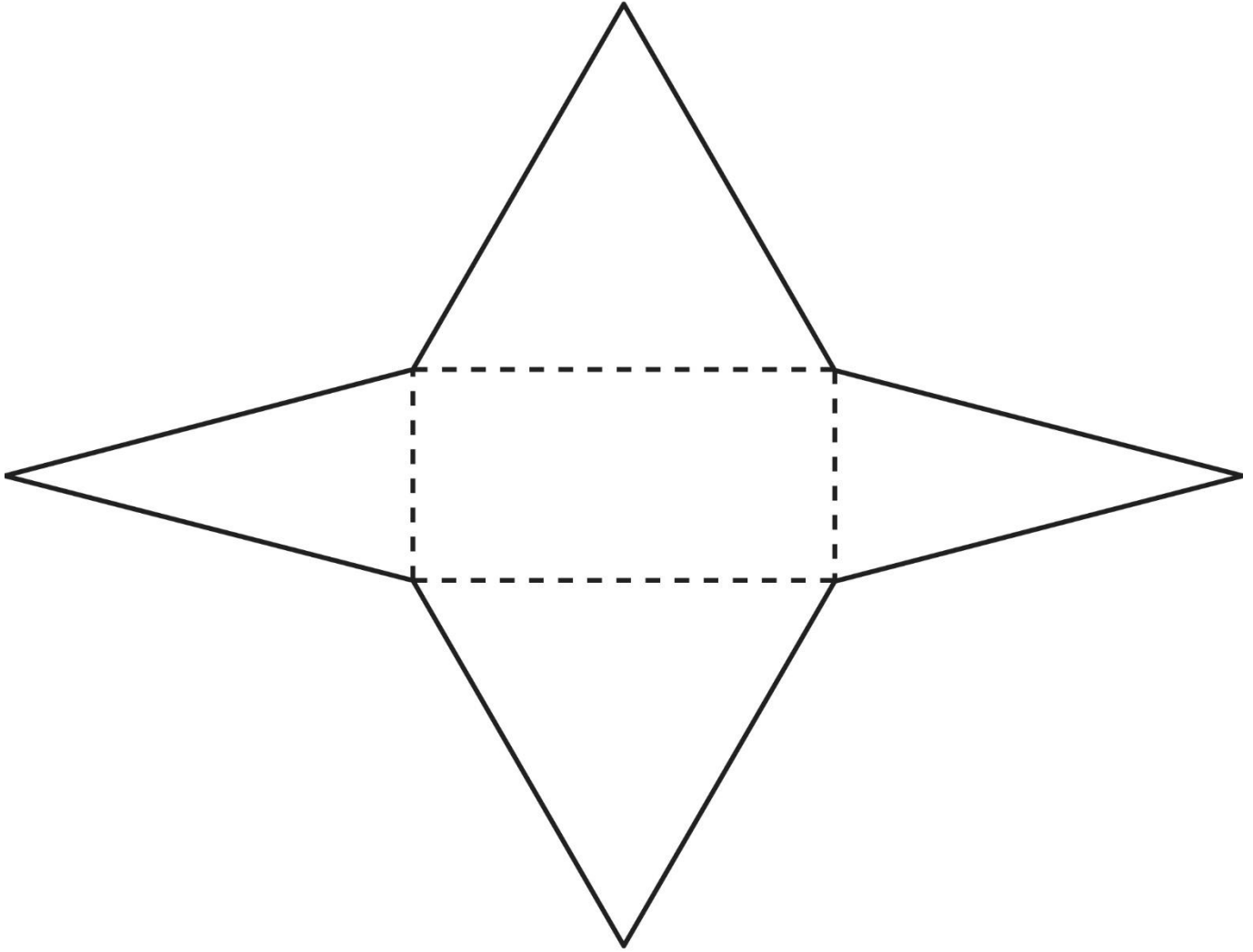
Master 56d

Nets of Solids



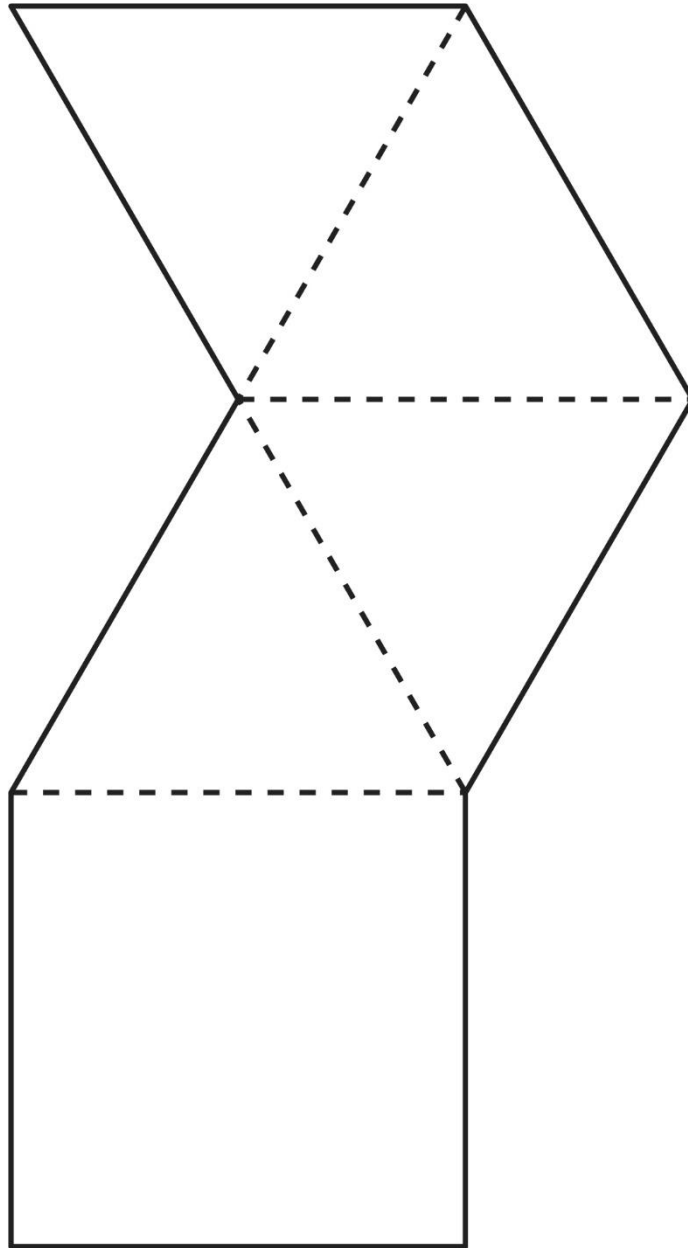
Master 56e

Nets of Solids



Master 56f

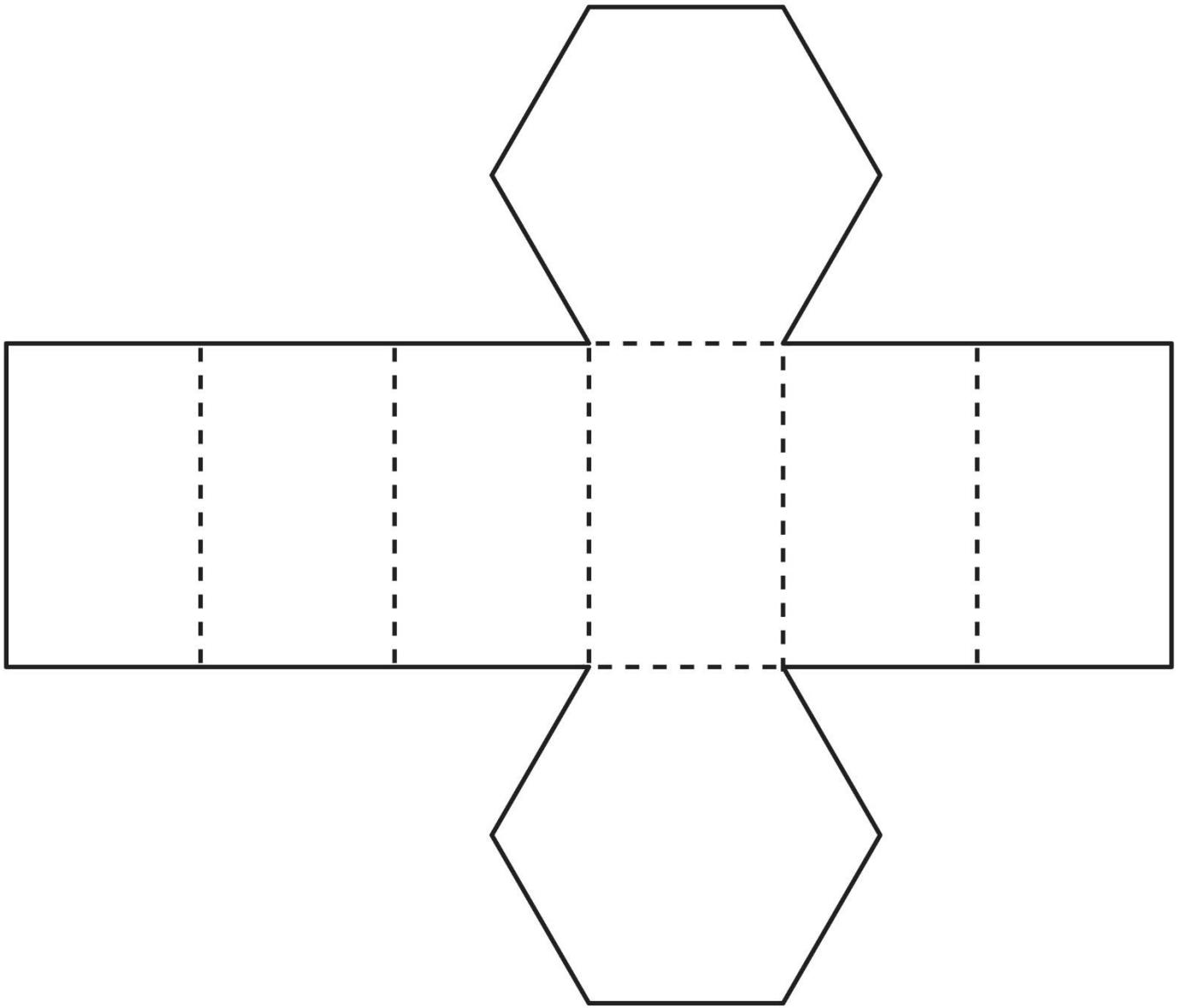
Nets of Solids



Name _____ Date _____

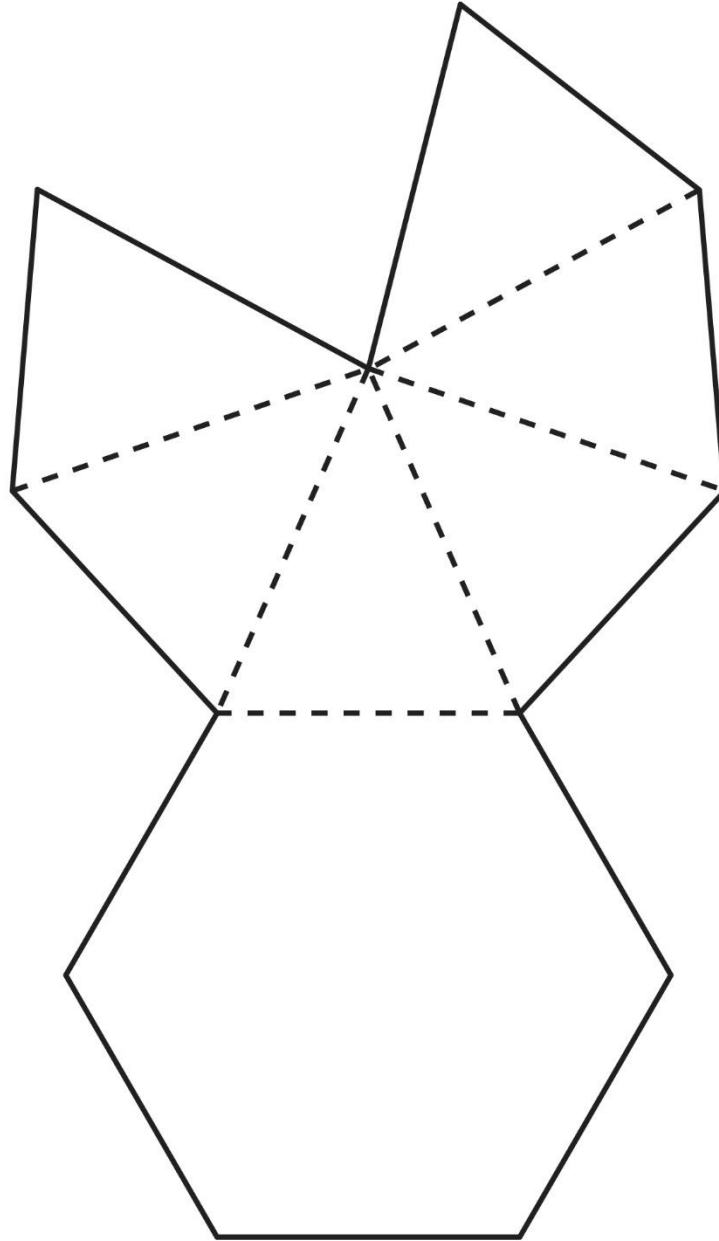
Master 56g

Nets of Solids



Master 56h

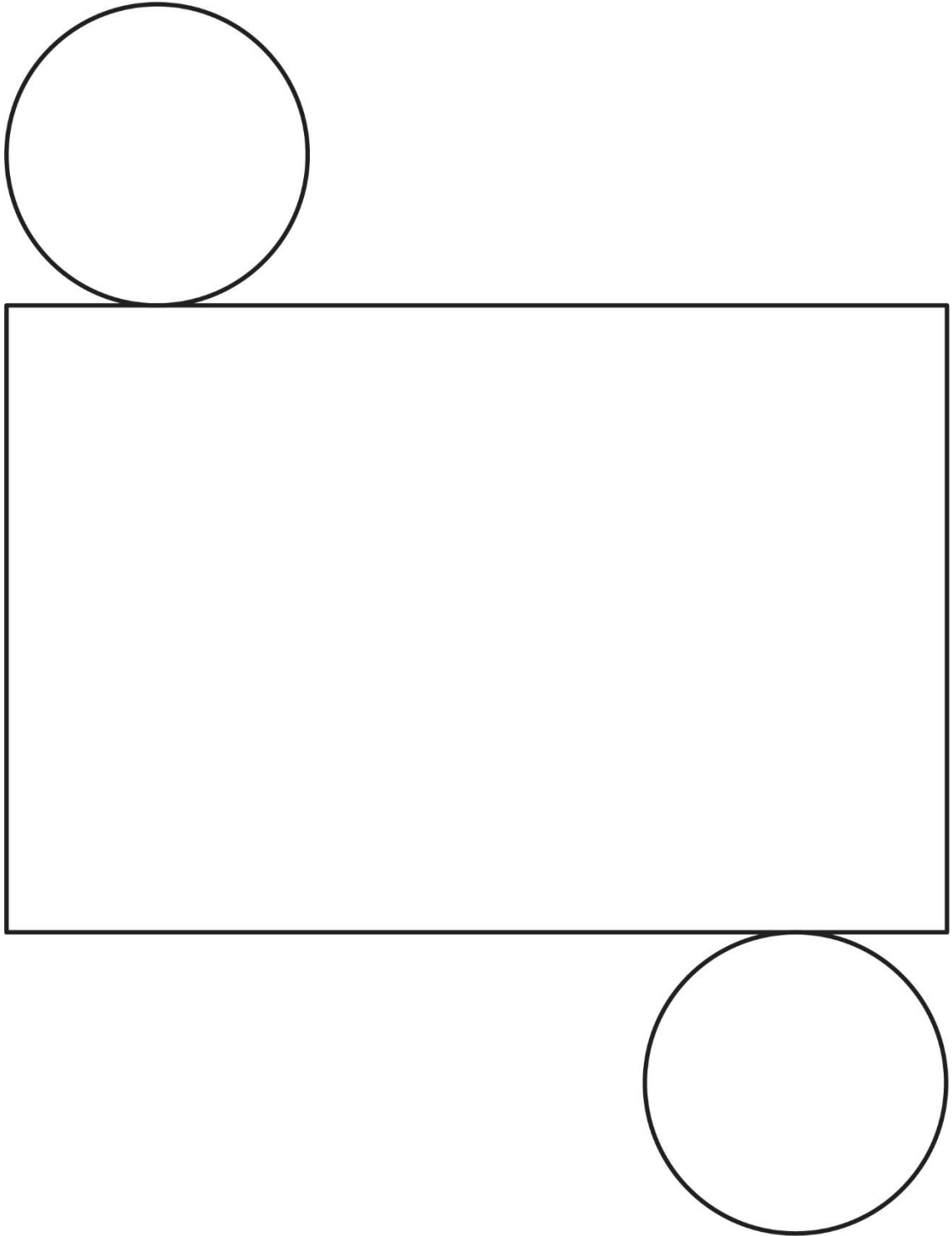
Nets of Solids



Name _____ Date _____

Master 56i

Nets of Solids

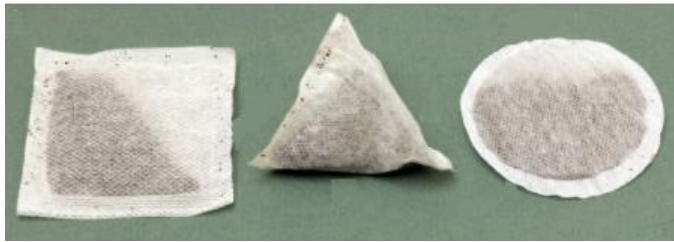


Connections: Teatime

Tea comes in many interesting flavours.
Have you ever heard of Gummy Bear Tea or Vanilla Berry Cupcake Tea?

Tea leaves can be packaged in tea bags.
Hot water goes through the tiny holes in the bags,
causing the tea leaves to expand and release their flavour.

The bags may look like triangular pyramids or be circular or square.



Tea leaves can also be used loose.
For example, they can be put in a glass teapot
with a tea infuser shaped like a cylinder.

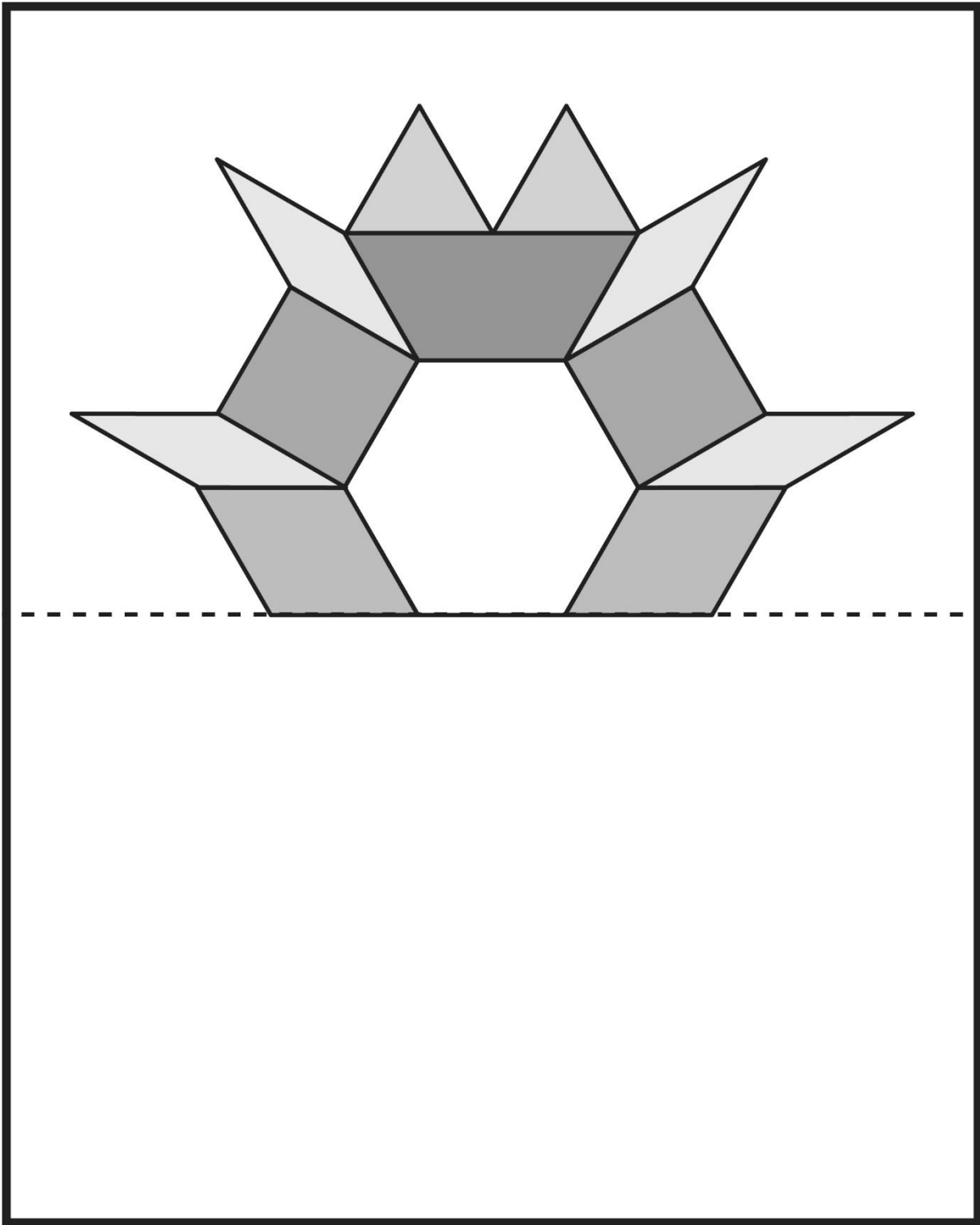
Create your own flavour of tea.
How would you package it?
Describe the 2-D shape or 3-D solid you would use.
What are the advantages and disadvantages of the “package shape”
you chose?

Checklist

- environmentally friendly
- room for tea leaves to expand
- material allows water to enter easily
- fits in a cup or mug

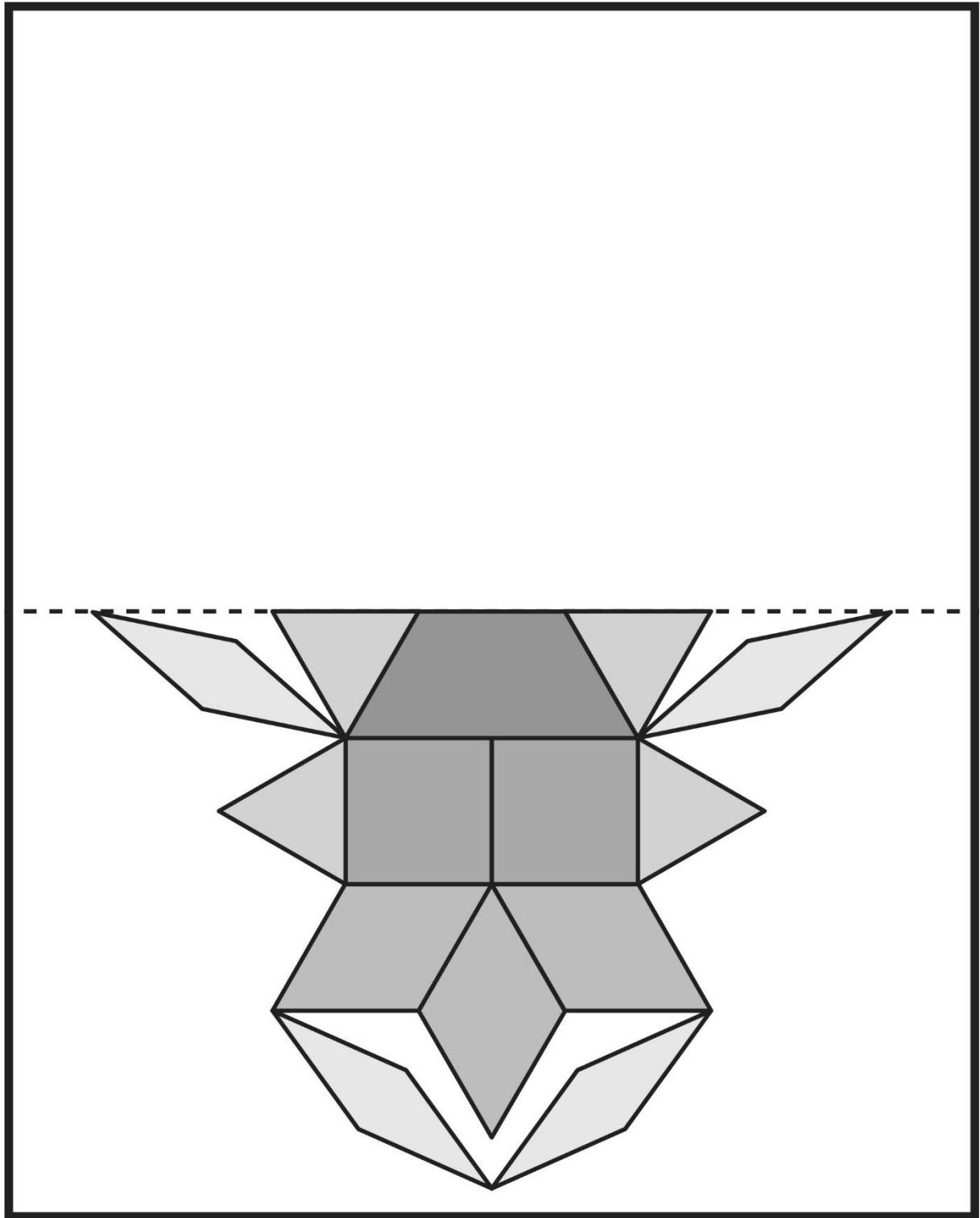
Master 58a

Pattern Block Symmetry



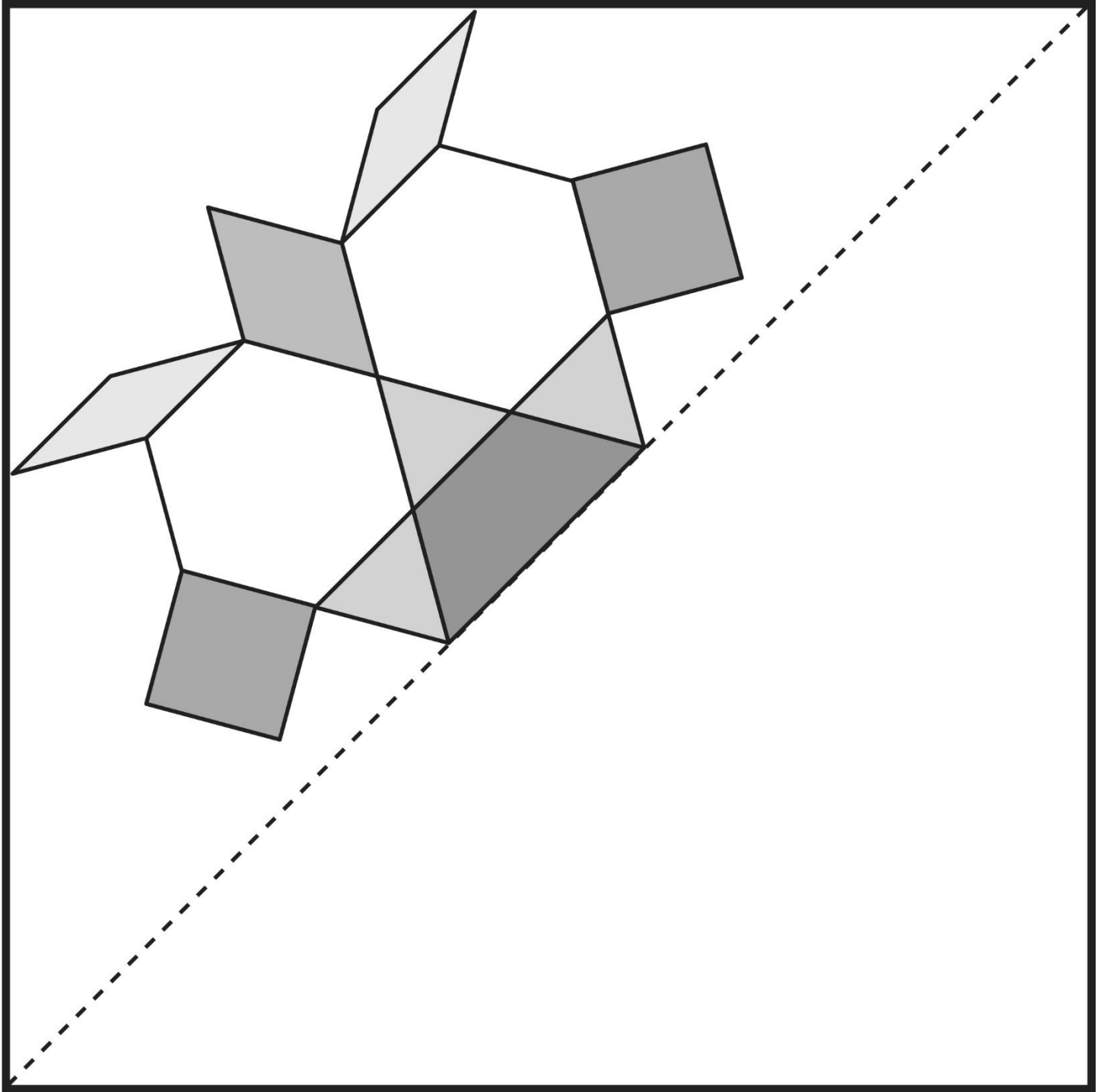
Master 58b

Pattern Block Symmetry



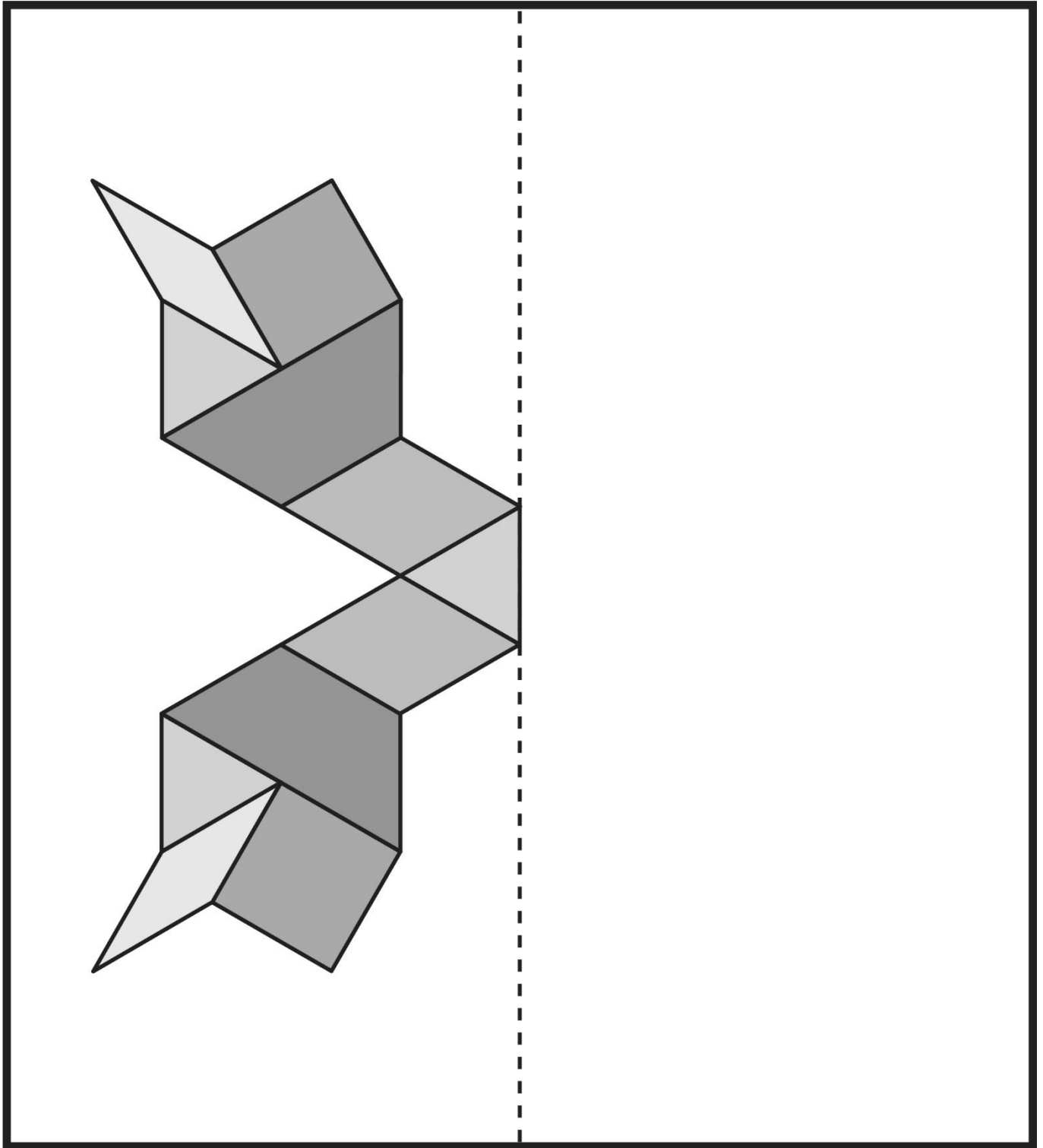
Master 58c

Pattern Block Symmetry



Master 58d

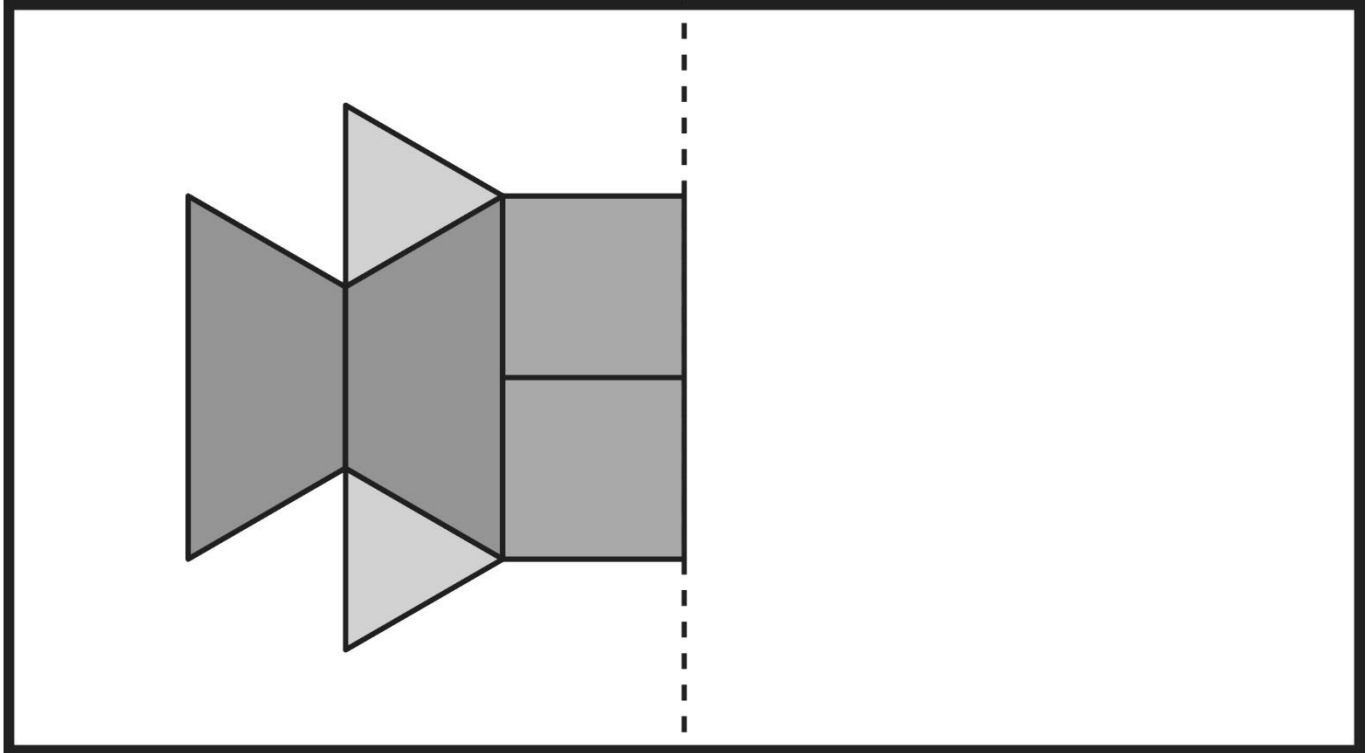
Pattern Block Symmetry



Name _____ Date _____

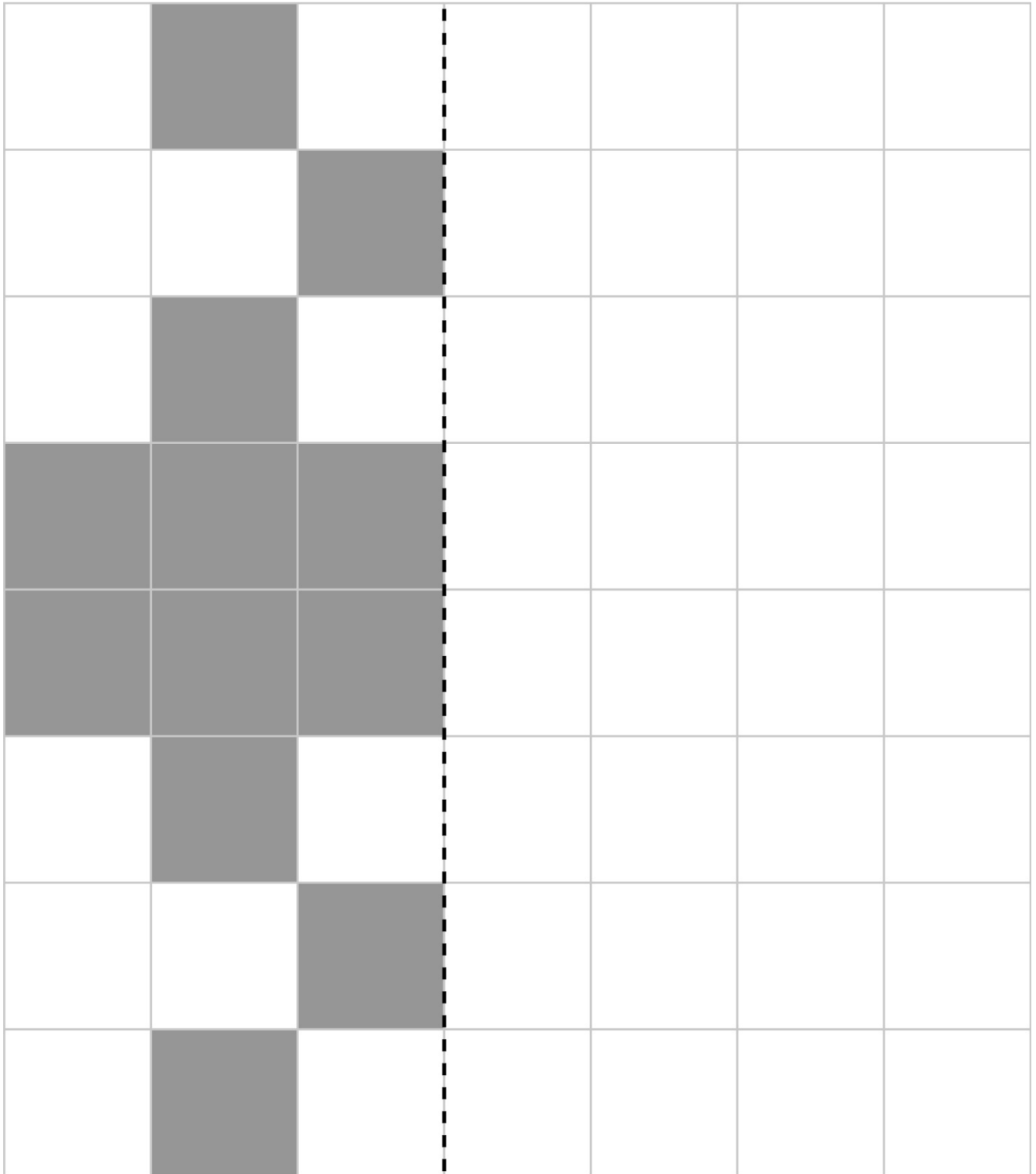
Master 58e

Pattern Block Symmetry (Accommodation)



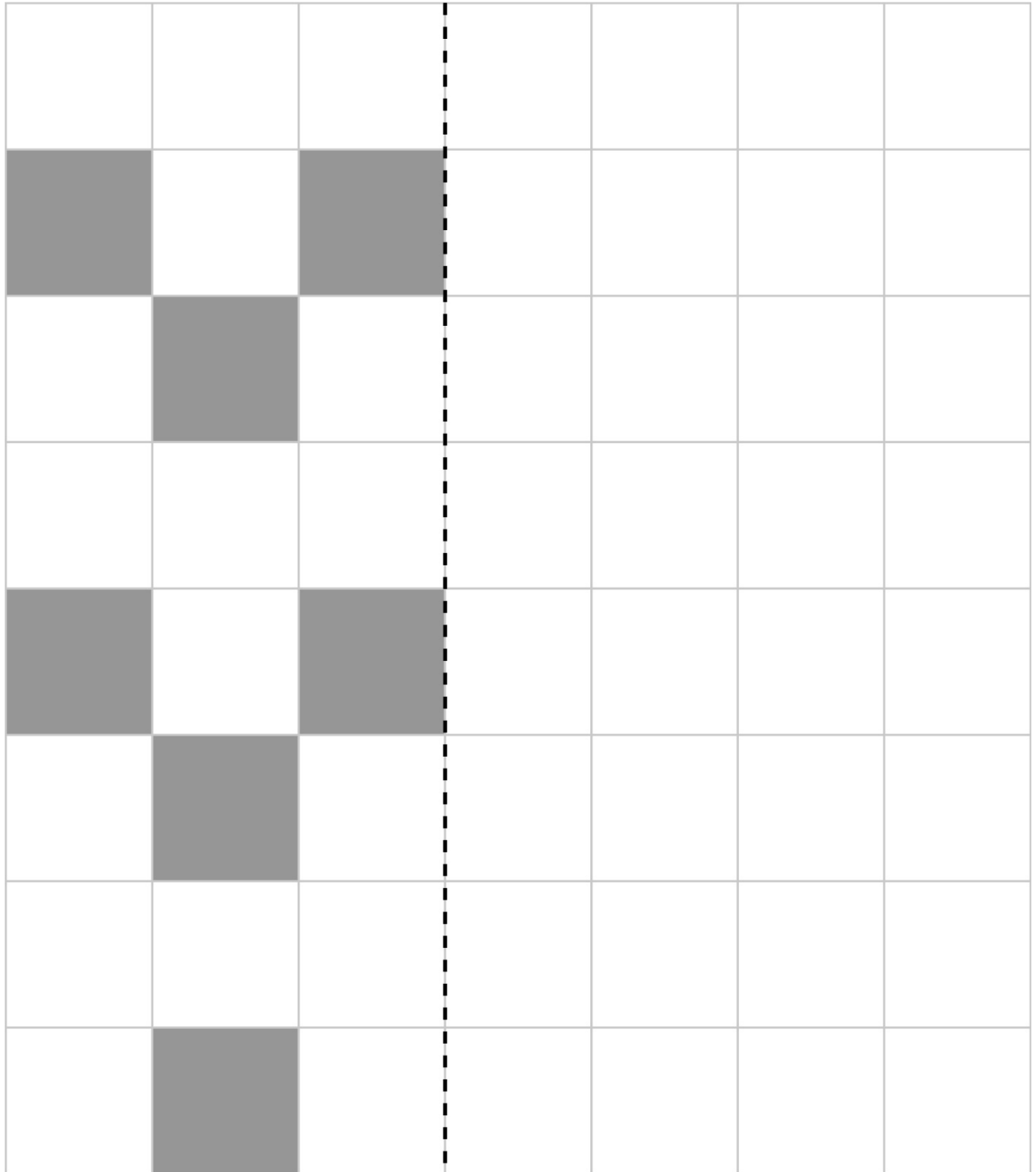
Master 59a

Tile Symmetry



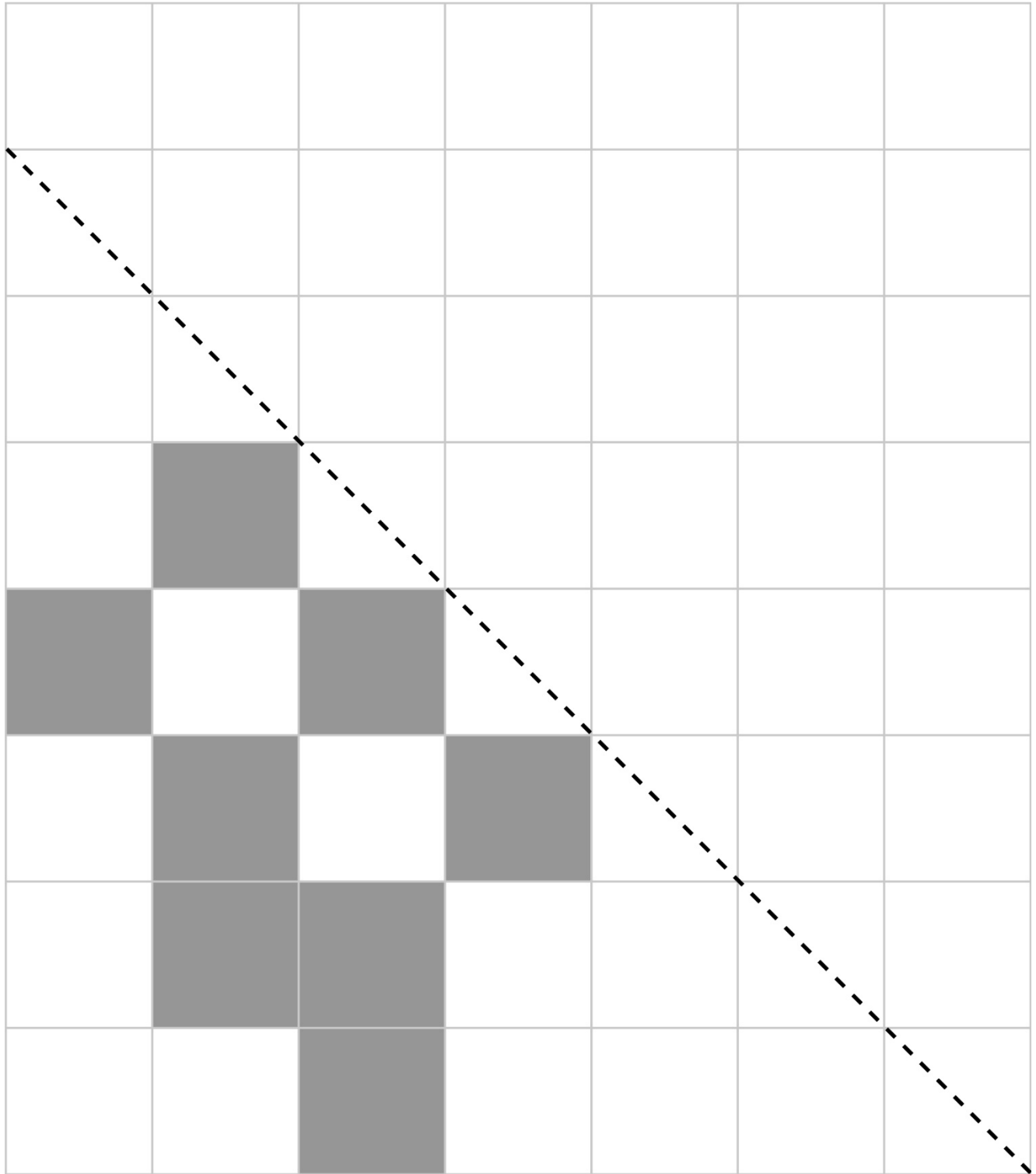
Master 59b

Tile Symmetry



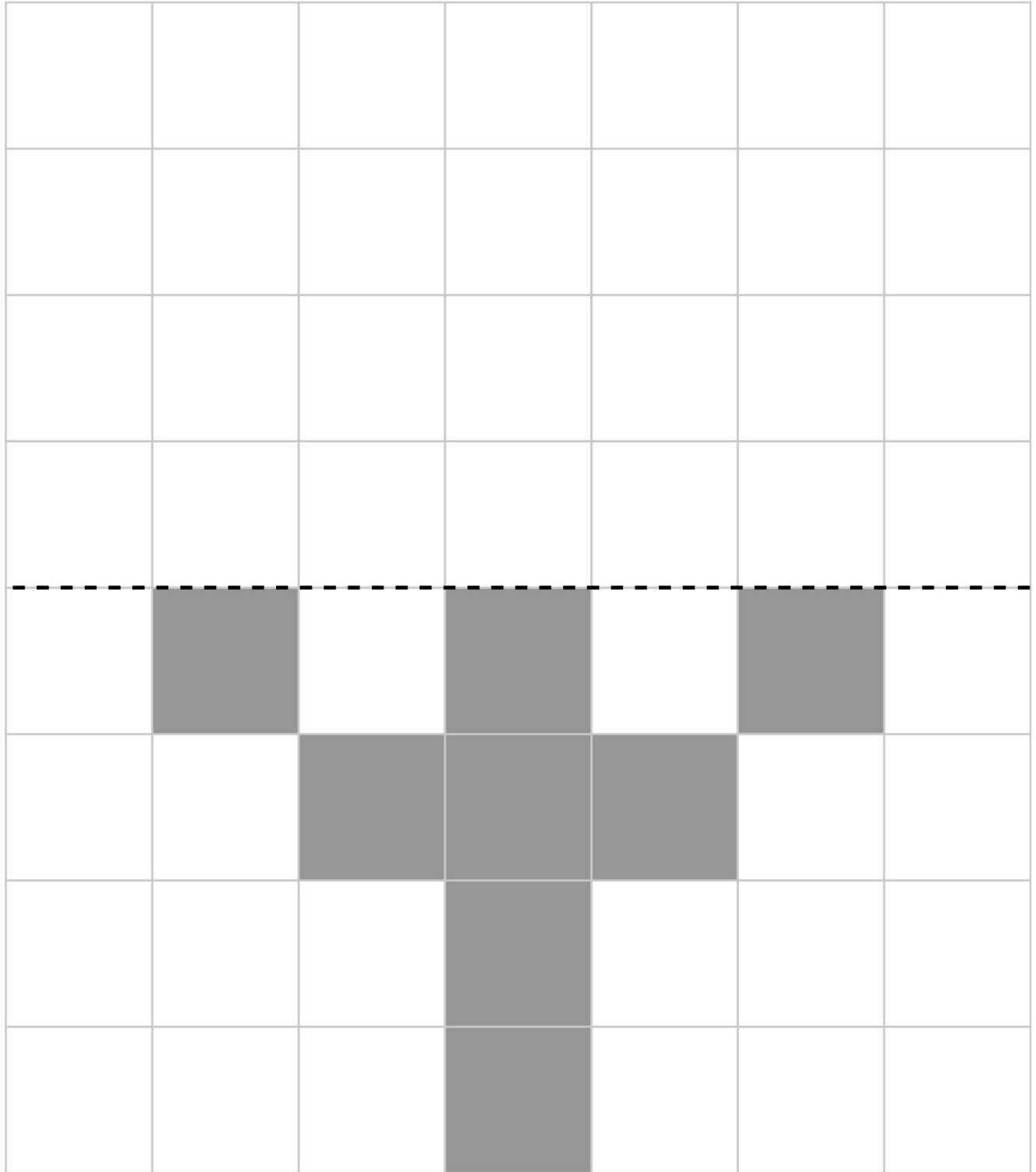
Master 59c

Tile Symmetry



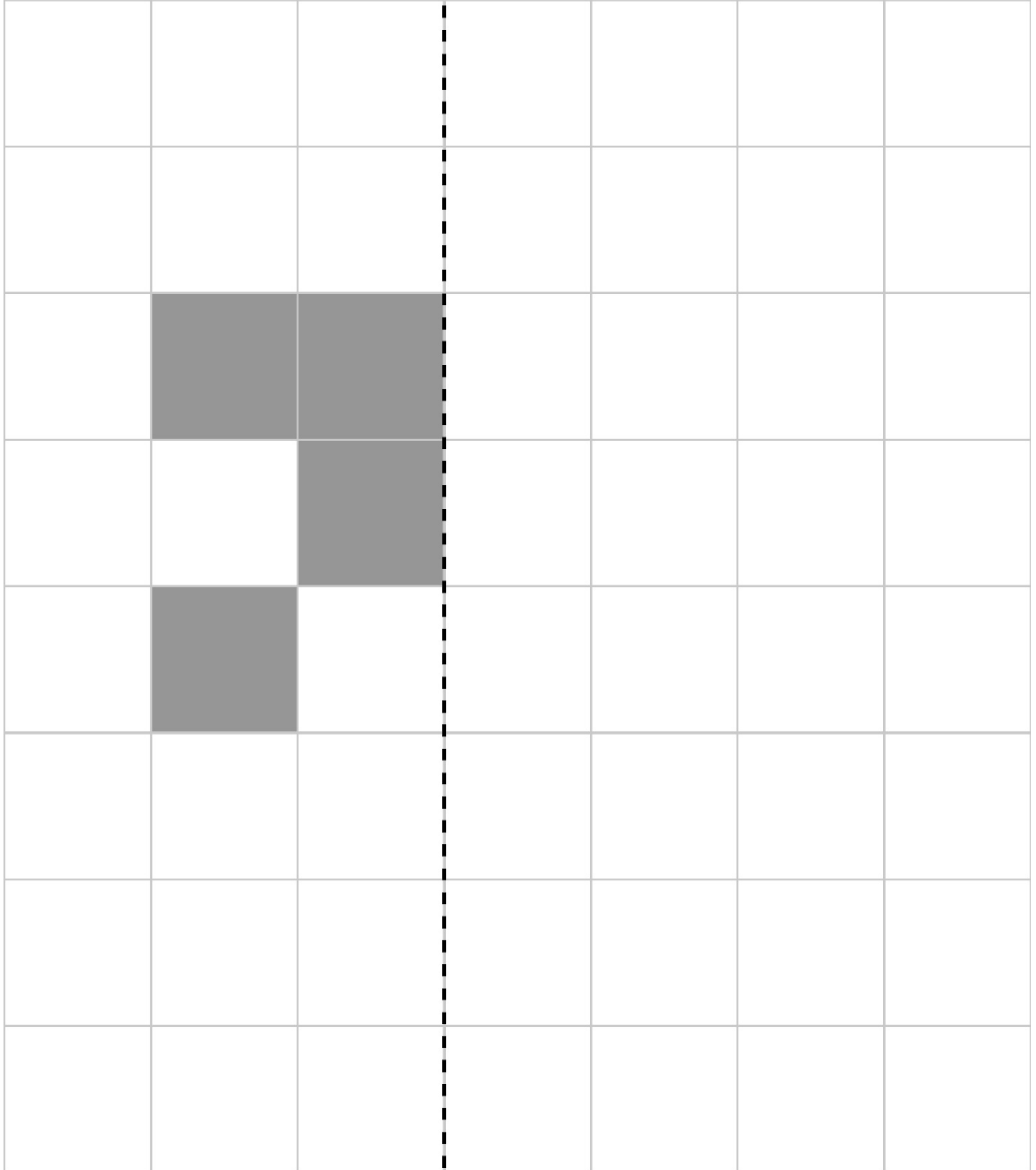
Master 59d

Tile Symmetry



Master 59e

Tile Symmetry (Accommodation)



Master 60

Connections: Take a Closer Look at Nature

Can you find symmetry in these objects from nature?
Where else might you find symmetry in nature?

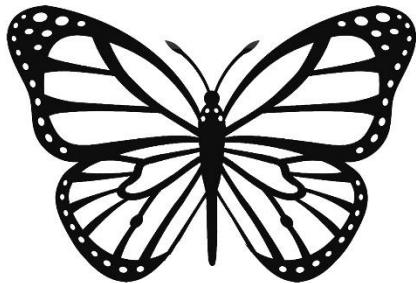
This is a leaf of the Sugar Maple.
It is on the Canadian flag.



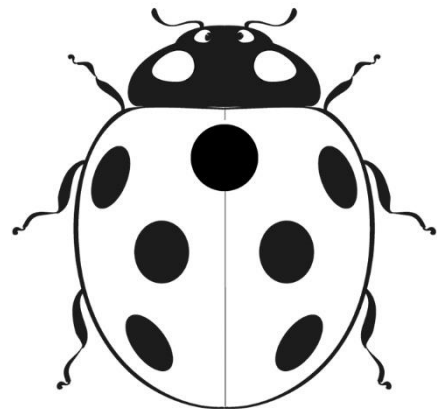
Have you ever looked closely at
a snowflake?
No two snowflakes are alike.



Many Monarch butterflies migrate
5000 km to Mexico for the winter.



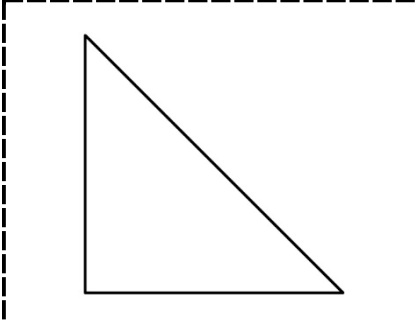
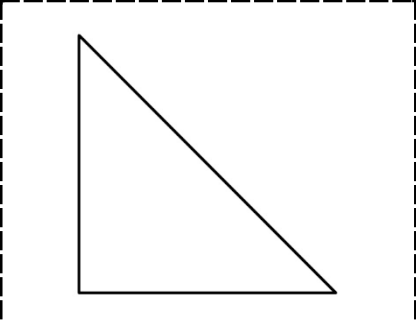
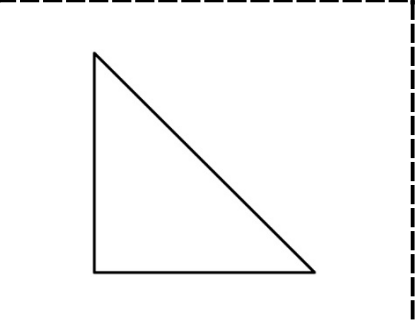
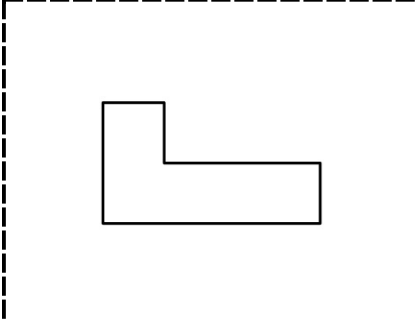
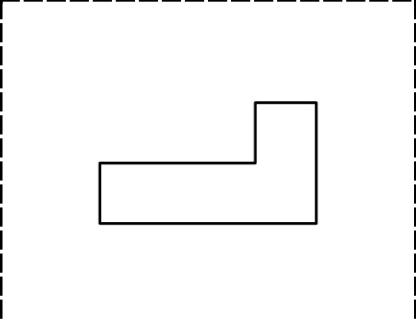
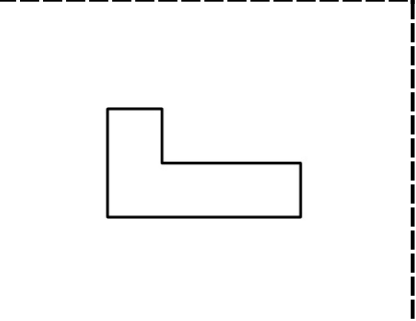
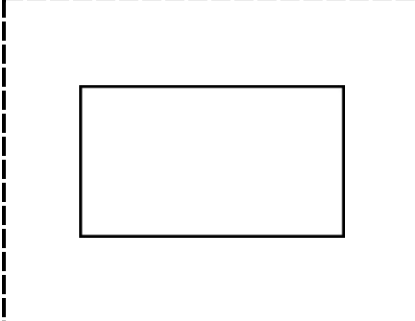
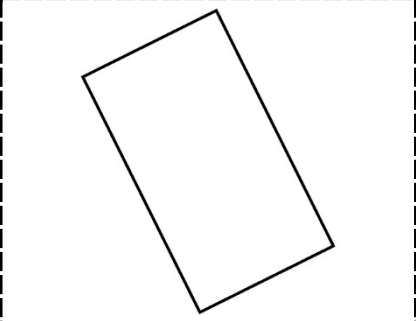
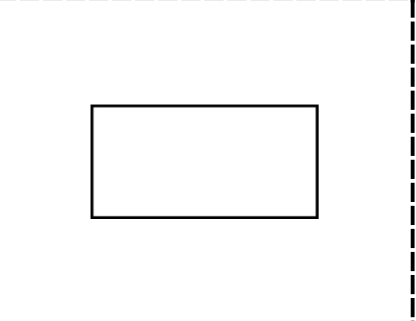
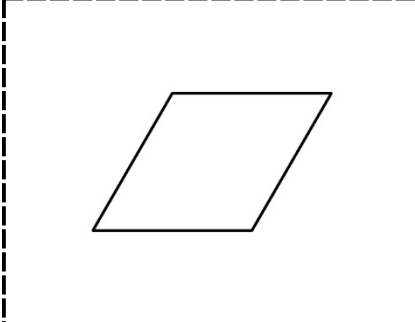
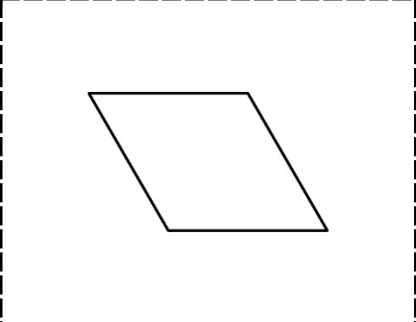
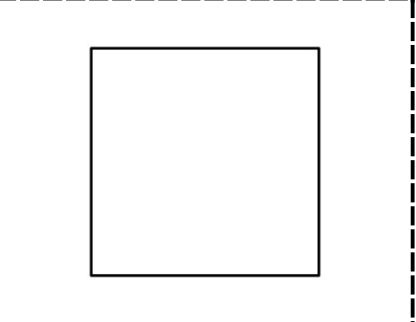
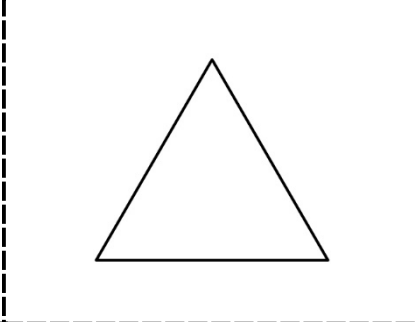
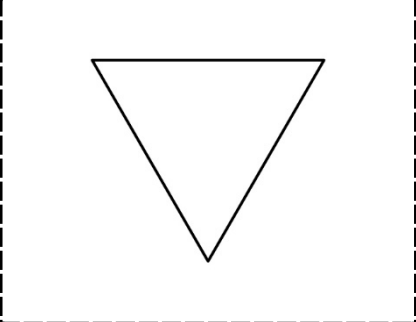
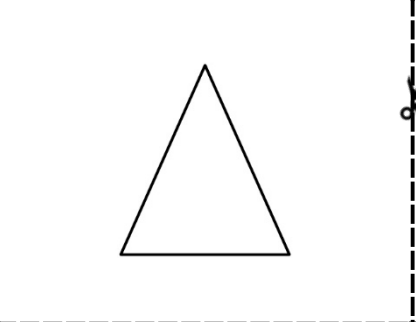
The spots on a ladybug, along
with its colourful body, are meant
to warn predators to stay away.



Name _____ Date _____

Master 61

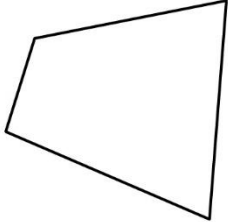
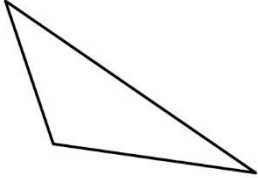
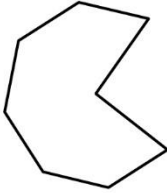
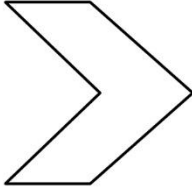
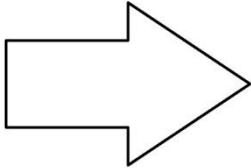
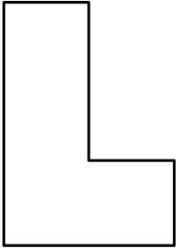
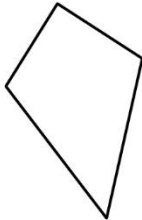
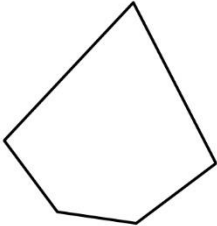
Congruent Shapes

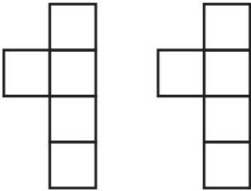
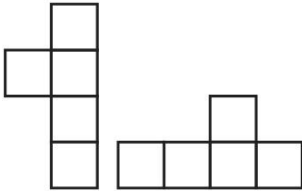
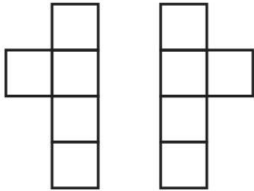
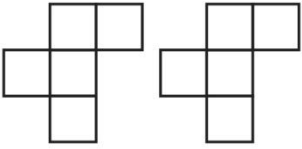
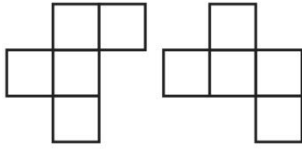
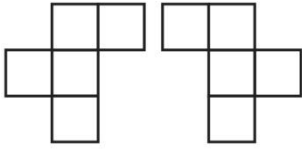
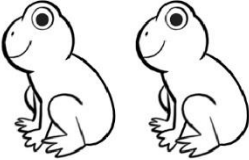




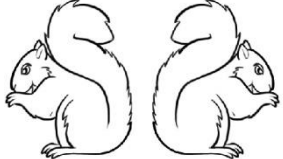
Name _____ Date _____

Master 62

Amusement Park Shapes

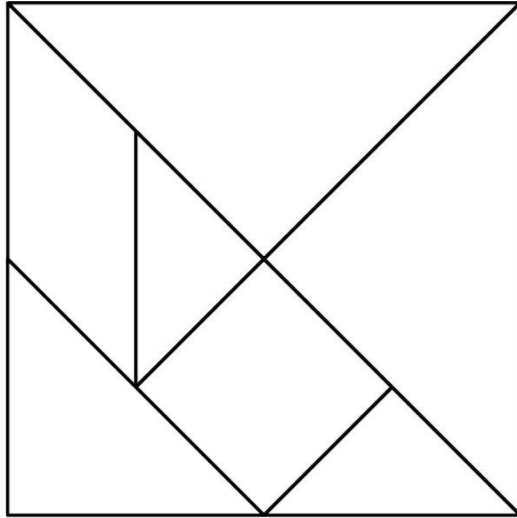
	
	
	
	

Transformation Matching Cards

<p>Translation (slide)</p>	<p>Rotation (turn)</p>	<p>Reflection (flip)</p>
		
		
		
		

Master 64

Tangram Cutouts



Name _____ Date _____

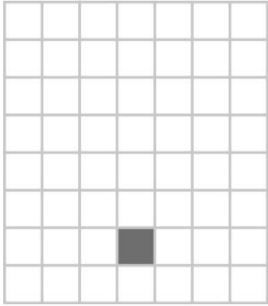
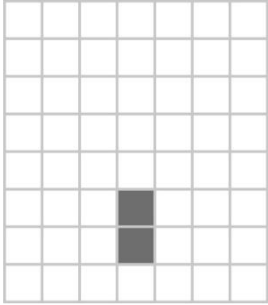
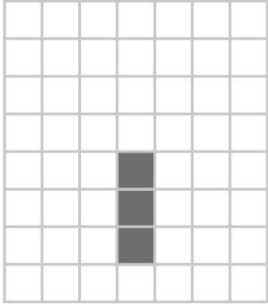
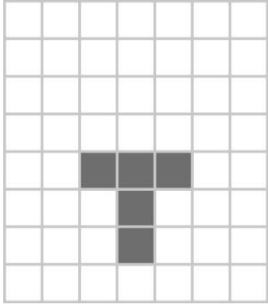
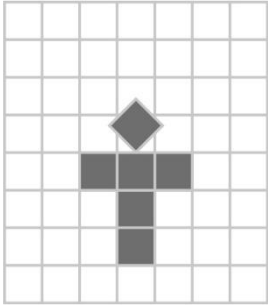
Master 65

Tangram Grid



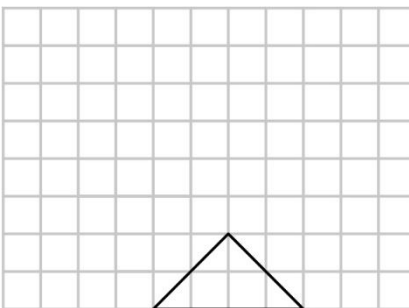
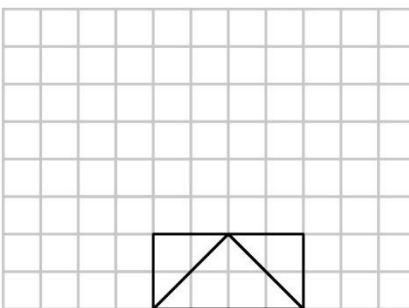

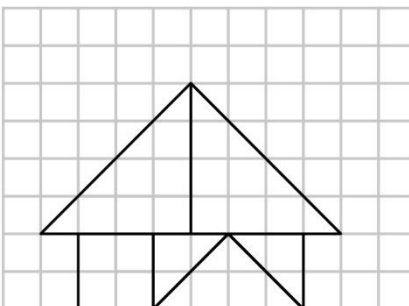
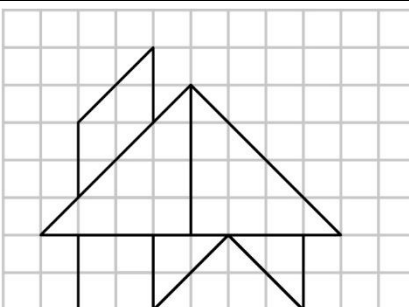
Master 66a

Picture Instructions: Tiles

<p>Place a tile in the second row from the bottom, in the middle square.</p>	
<p>Place a tile in the square directly above the first tile so sides are touching.</p>	
<p>Place a tile in the square directly above the second tile so sides are touching.</p>	
<p>Place one square to the right and left of the top tile so sides are touching.</p>	
<p>Turn a tile so it is sitting on a vertex. Place it in the square above the middle tile in the row of three tiles. Its vertex should touch the middle of the other tile's side.</p>	

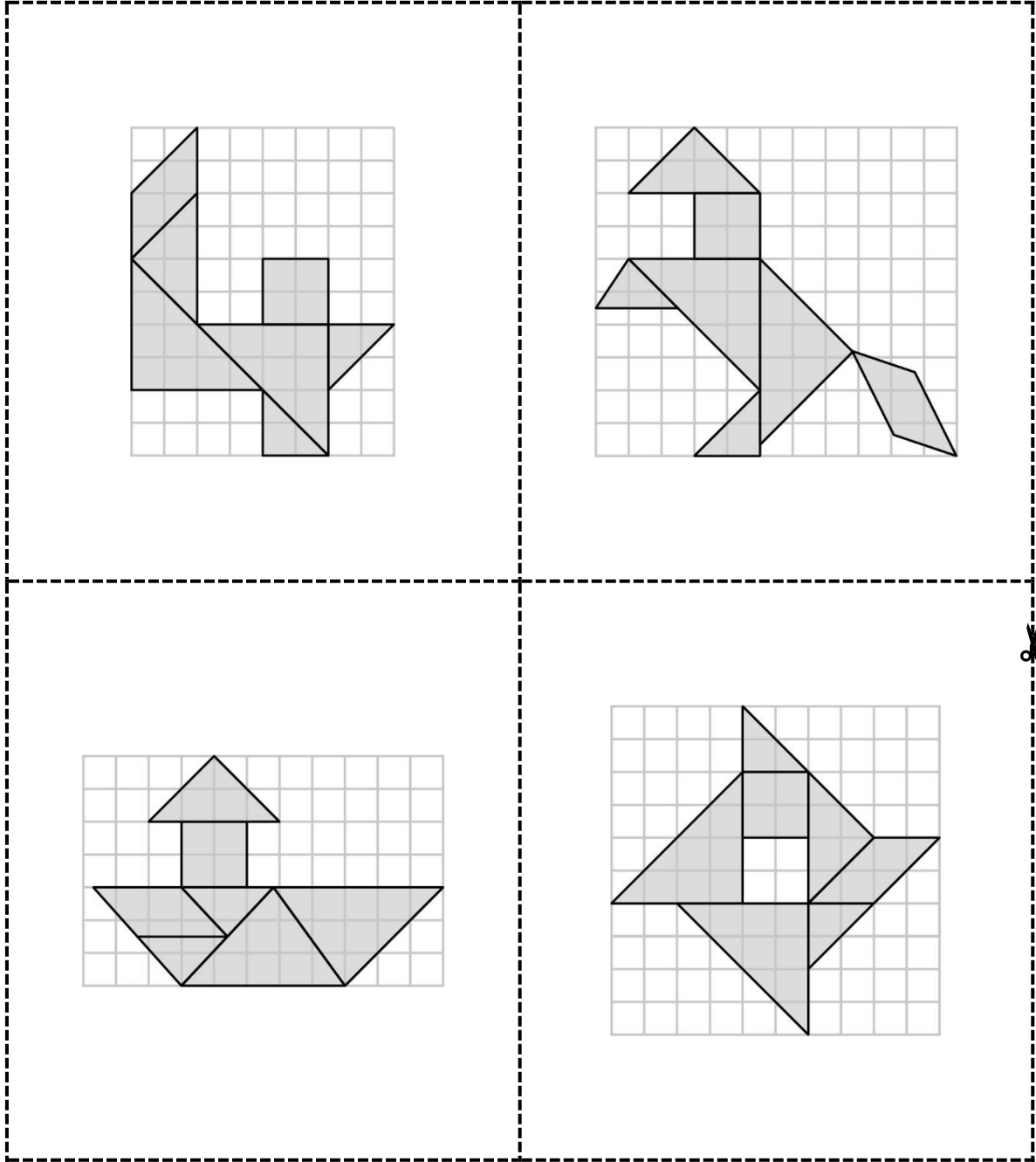
Master 66b

Picture Instructions: Tangram

<p>Place the medium triangle so its long side lines up with the bottom of the grid.</p> <p>Its left vertex touches the 4th vertical grid line from the left.</p>	
<p>Place a small triangle on each side of the medium triangle.</p> <p>The long side of each matches a side of the medium triangle to make a rectangle.</p>	
<p>Place the square on the left side of the rectangle to make a longer rectangle.</p>	
<p>Place the two large triangles together with square corners touching at the bottom to make a larger triangle.</p> <p>Place this triangle on top of the long rectangle to make a house.</p>	
<p>Place the parallelogram to the left of the large triangle to make a chimney.</p> <p>The short sides of the parallelogram should lie along the 2nd and 4th vertical grid lines from the left.</p>	

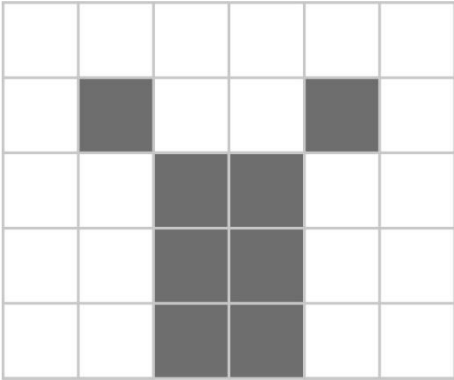
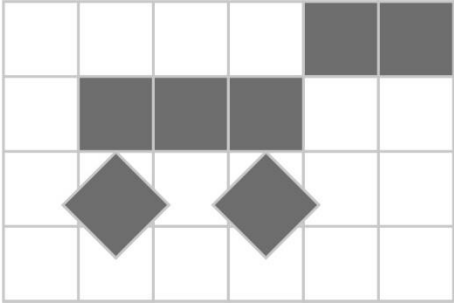
Master 67a

Tangram Pictures



Master 67b

Colour Tile Pictures

	
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Master 68a

Dance Move Cards

Hop on 2 Feet	Step Touch Left
Step Touch Right	Slide Left
Slide Right	Grapevine Left
Grapevine Right	Clap Hands



Master 68b

Dance Move Cards

Spin Around	Touch Right Knee to Elbow
Touch Left Knee to Elbow	Dig Left Heel
Dig Right Heel	Cross Over Left
Cross Over Right	Snap Fingers



Name _____ Date _____

Master 68c

Dance Move Cards

Turn Right	Turn Left



Master 69

Connections: Code the Vacuum

Coding is what makes lots of things work, like computers, phones, video games, and even a robot vacuum cleaner.

A robot vacuum is coded so that when it senses an obstacle, such as the leg of a table, it gently touches it, then turns.

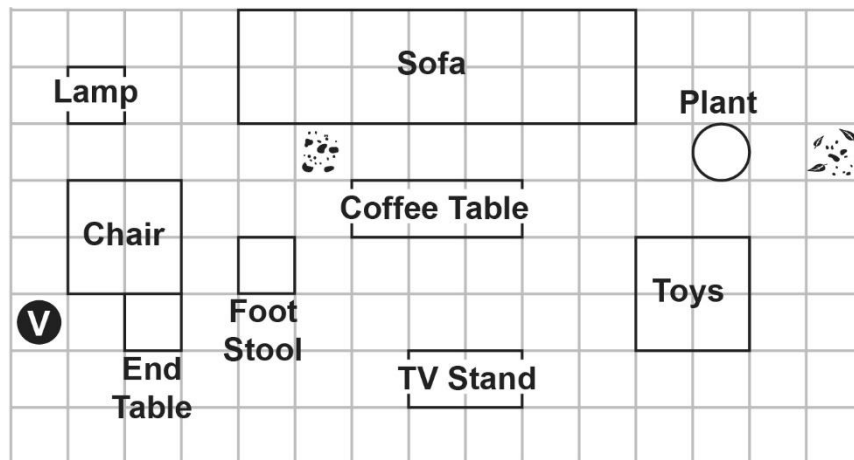
Some vacuums have cameras so they can take pictures of the walls, ceiling, doorways, and furniture to build a map of a room.

This way, they can plan an efficient route.



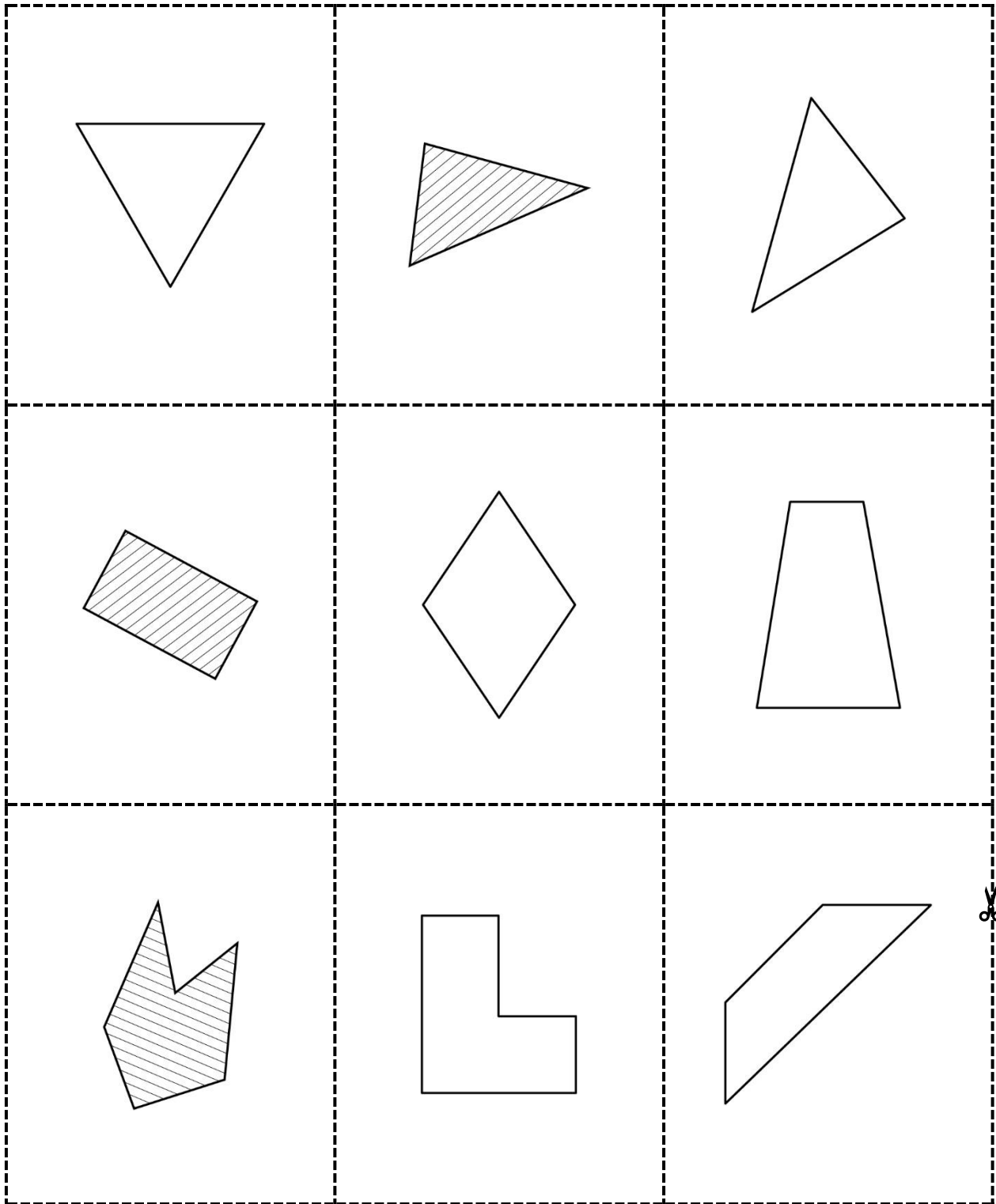
Look at the living room!
Someone spilled cookie crumbs and the dog knocked over the plant.

Code the vacuum to clean up the two messes, avoiding all obstacles.



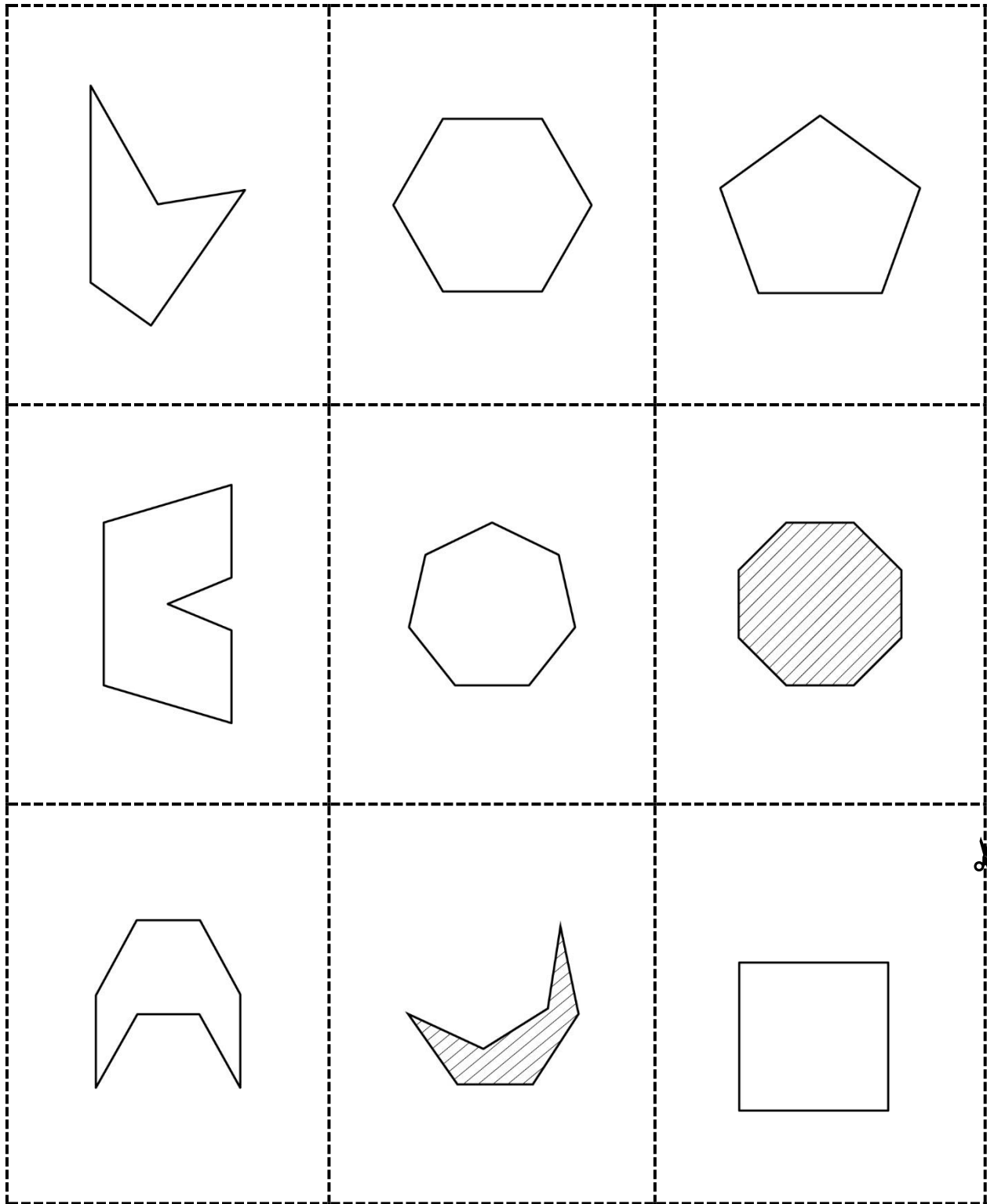
Master 70a

2-D Shapes



Master 70b

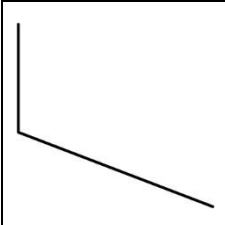
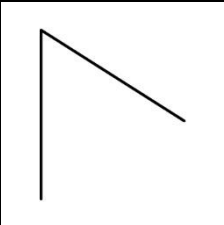
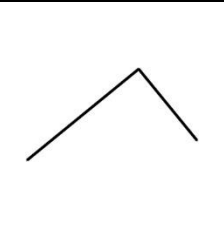
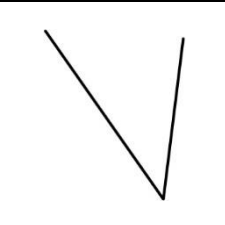
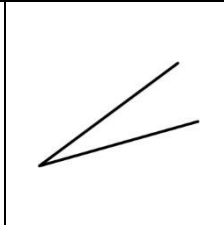
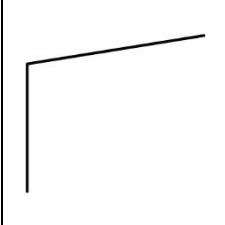
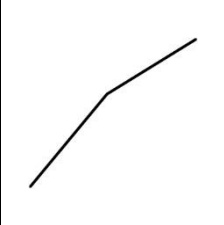
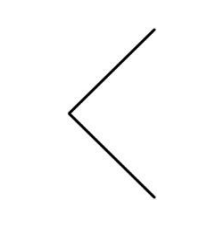

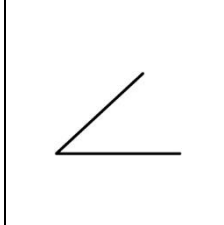
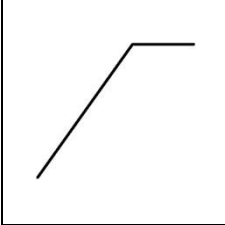
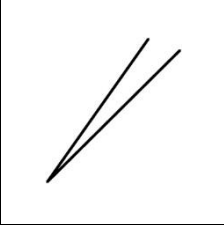

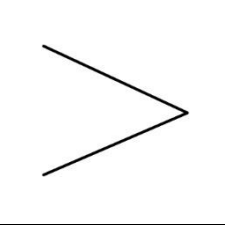
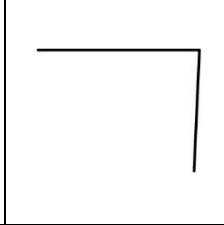
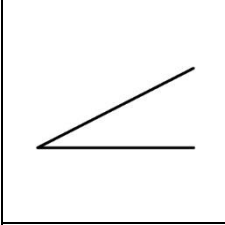
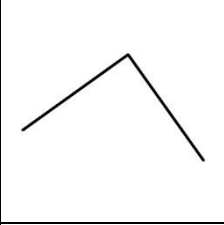
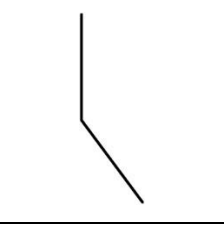
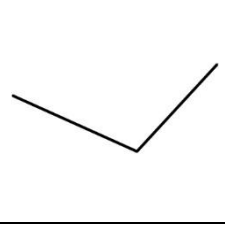
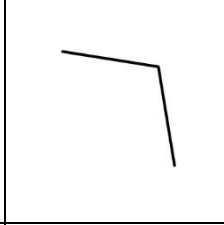
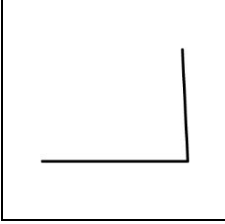
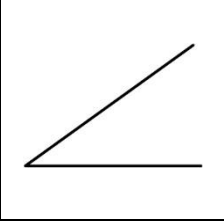
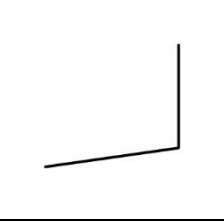
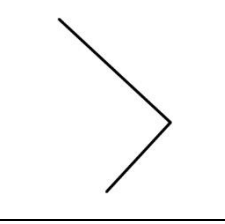
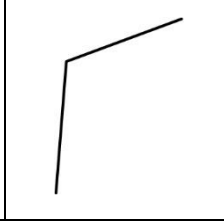
2-D Shapes



Master 71a

Angle Search

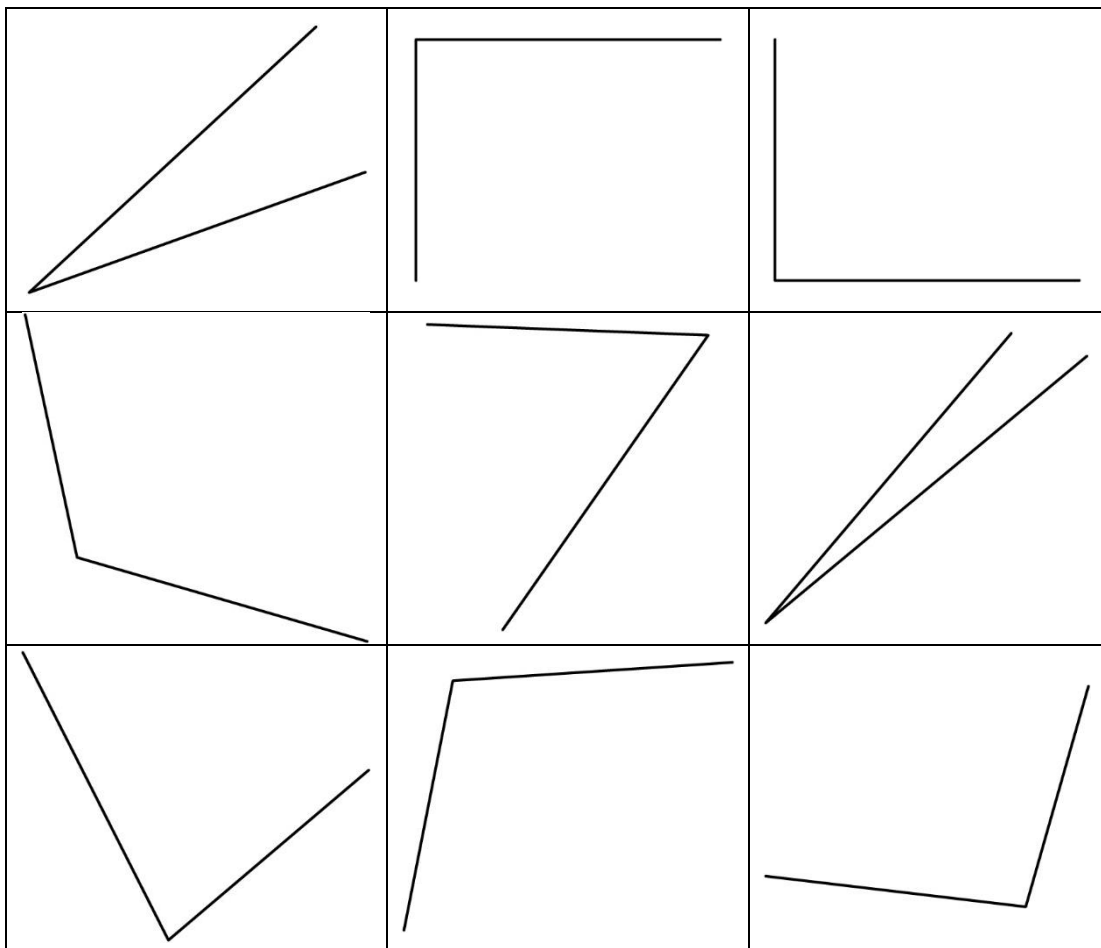
- Angle is less than a right angle.
- Angle is a right angle.
- Angle is greater than a right angle.

Master 71b

Angle Search (Accommodation)

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



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?

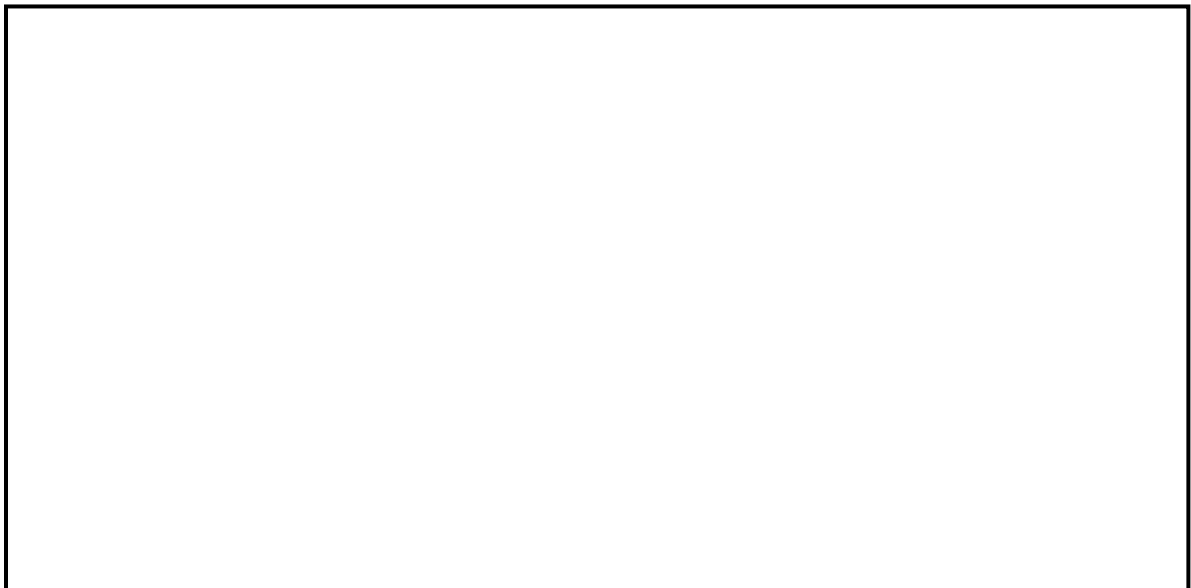


If you want to see more artwork by Isla, check out:
https://www.instagram.com/creations_by_isla.

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.



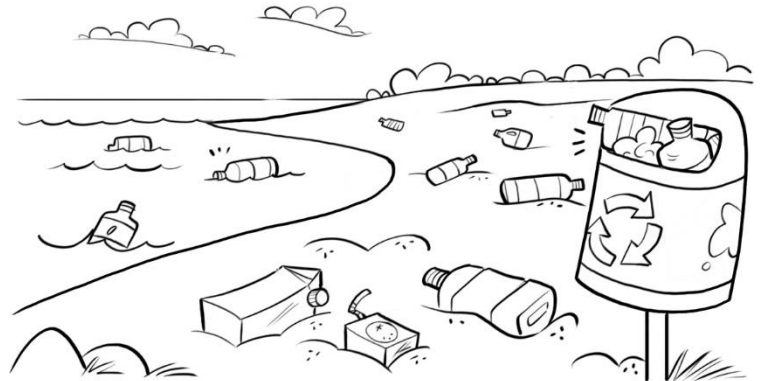
Connections: Protecting Our Environment

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.

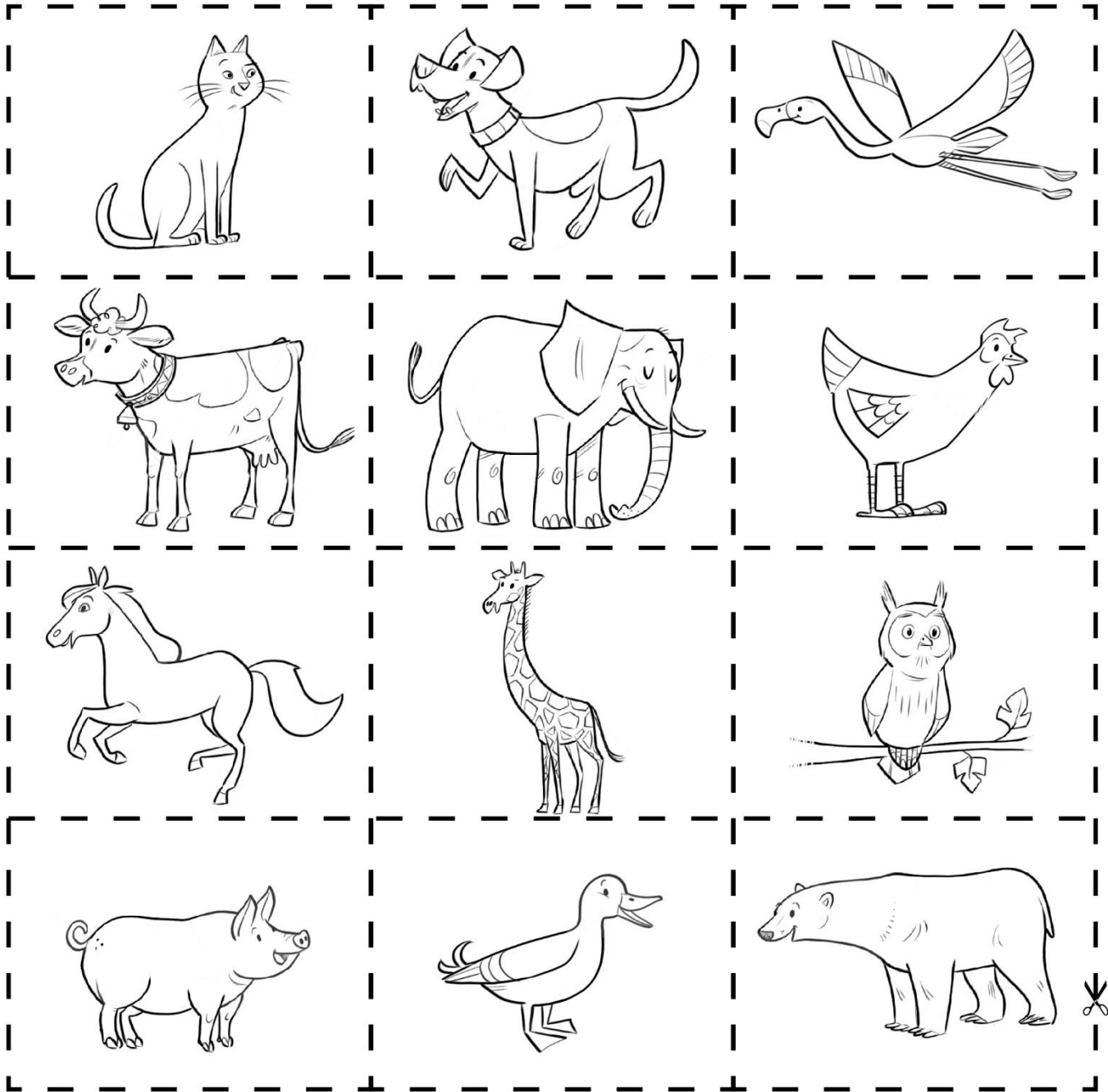
Record how many of each type you use (for example, bottles, bags, straws, and cutlery).

Display the data and present them to the class.

You may choose to use more than one graph.

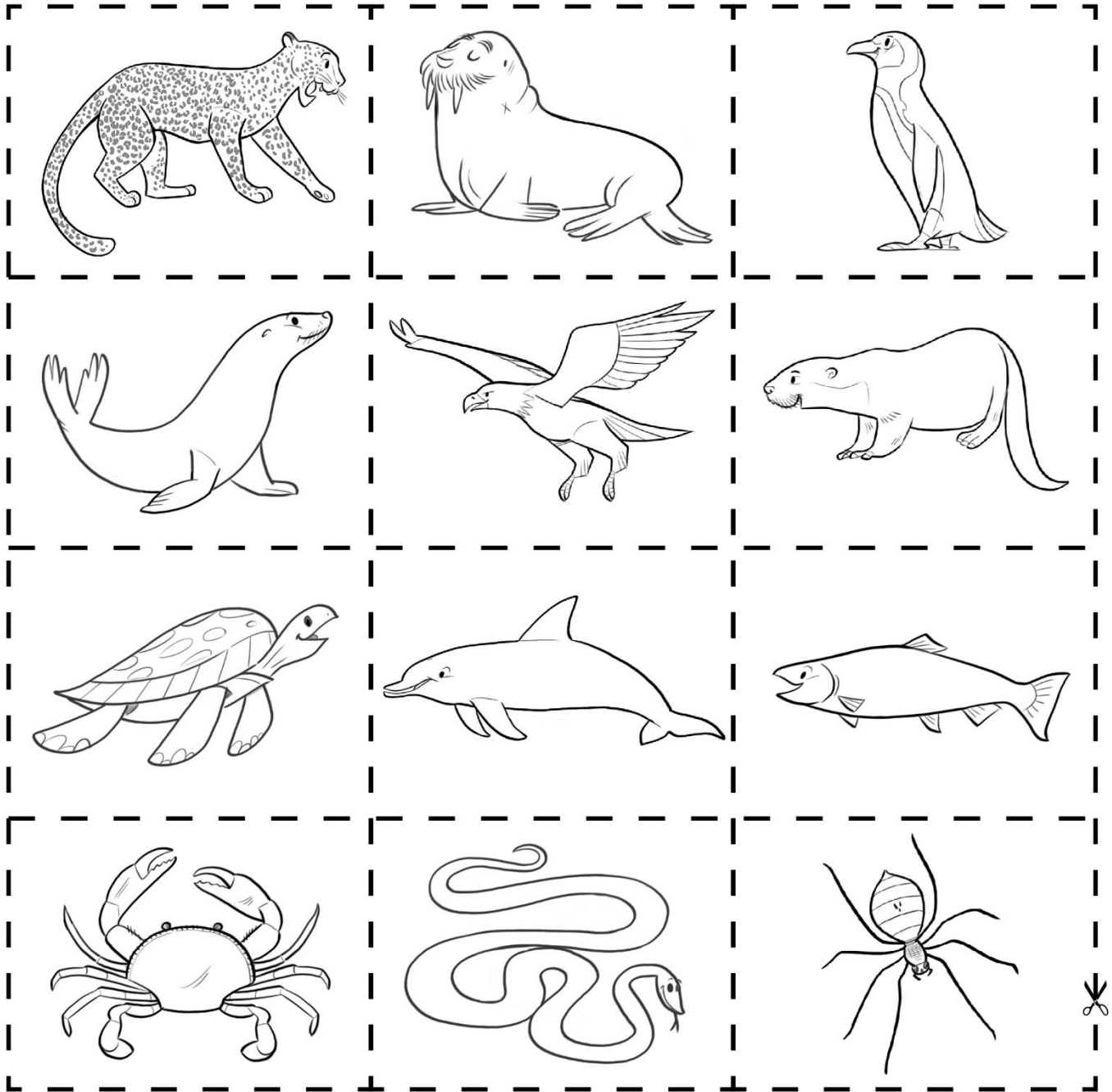
Master 74a

Animal Sort



Master 74b

Animal Sort (cont'd)



Master 75

Items in a Store's Return Bin

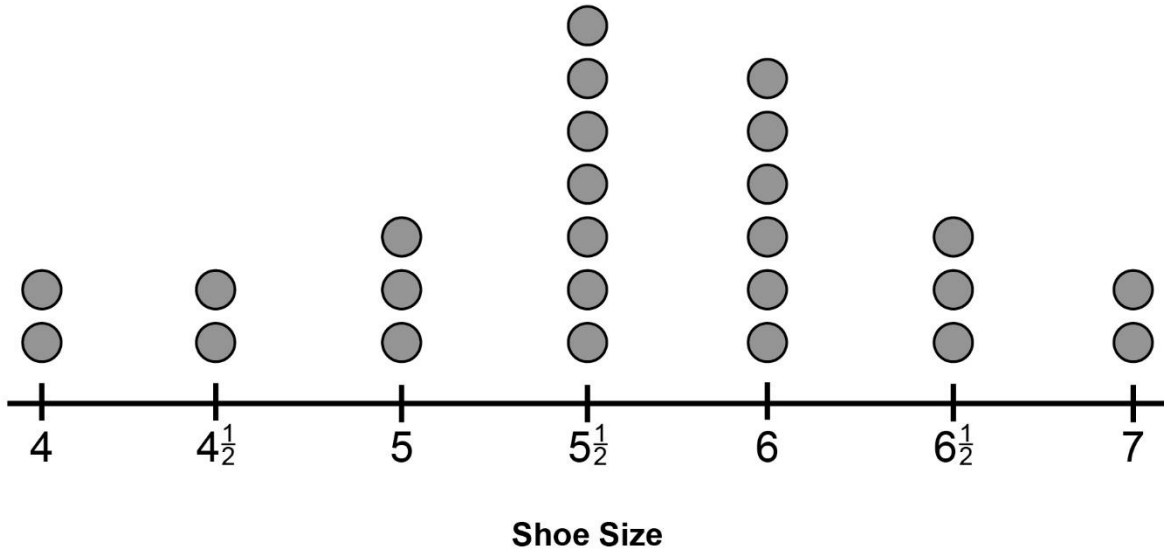
Toaster	Frying pan	Building blocks
Stuffed animal bear	Mugs	Scooter
Running shoes	Light bulbs	Sweater
Car snow brush	Jigsaw puzzle	Jeans
Rain boots	Board game	Socks
T-shirt	Snowsuit	Soccer ball



Master 76

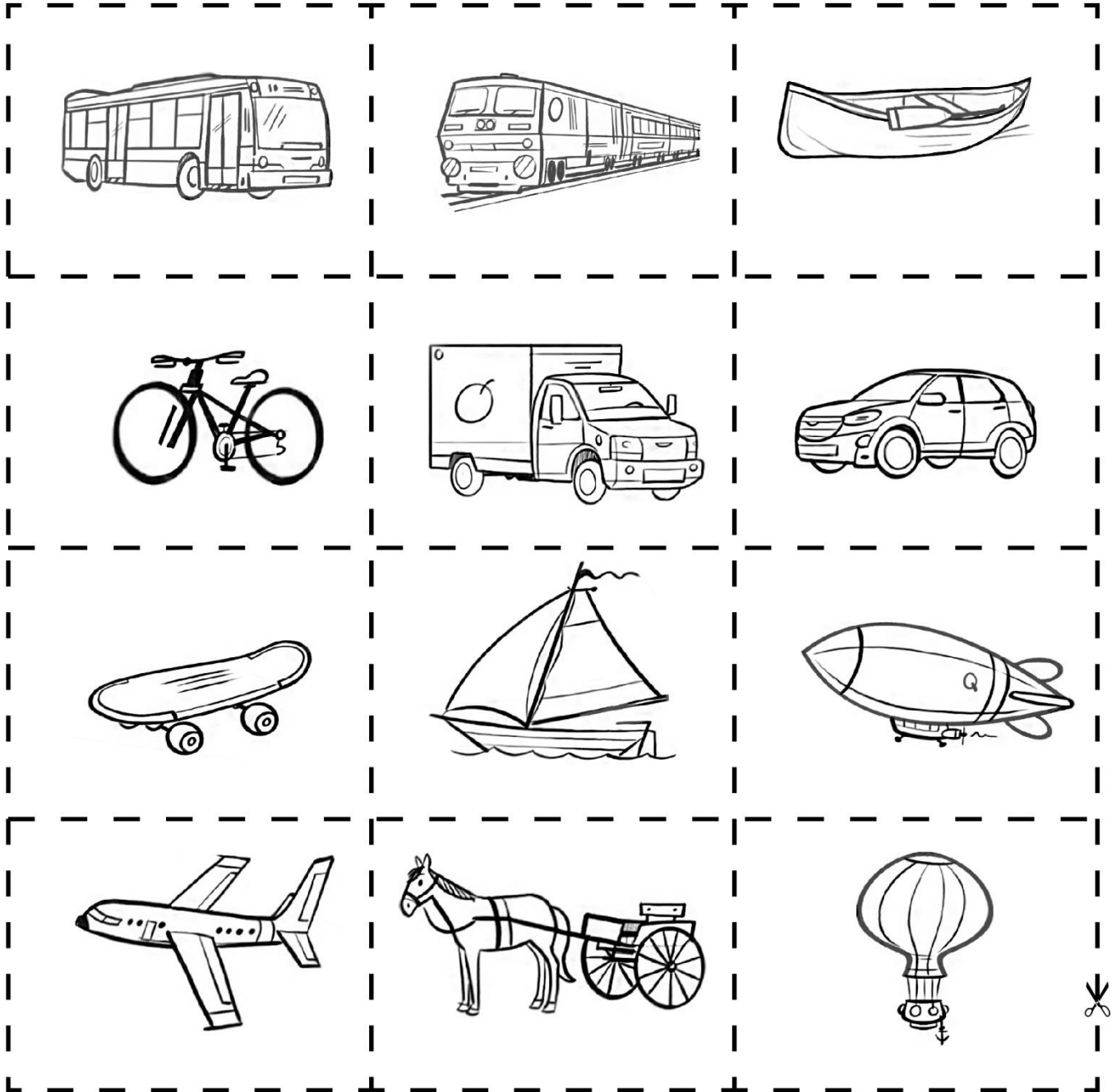
Shoe-Size Line Plot

Shoe Size of Students



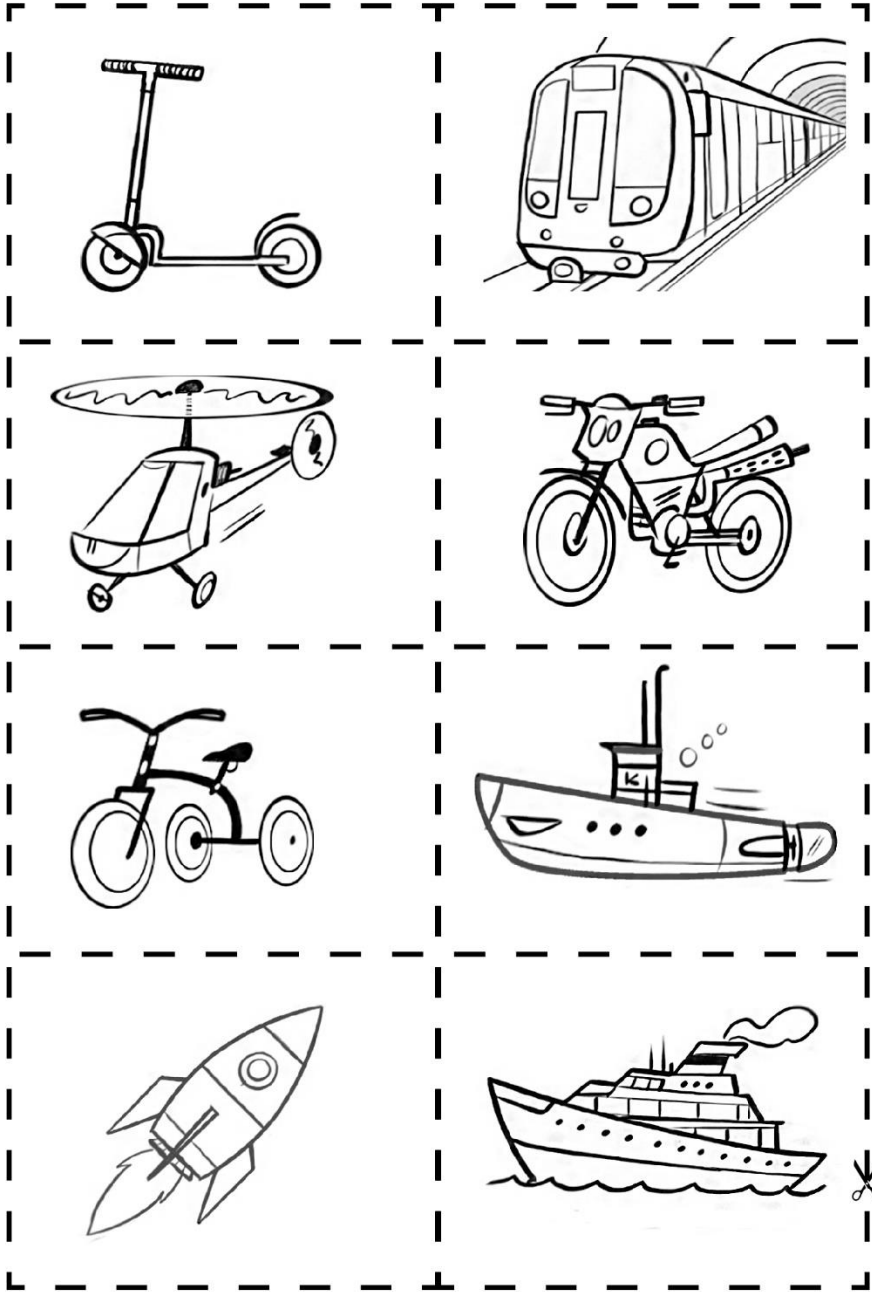
Master 77a

Types of Transportation



Master 77b

Types of Transportation



Master 78

Connections: What's the Chance?

Chance is the likelihood that something will happen.
Chance is all around us.

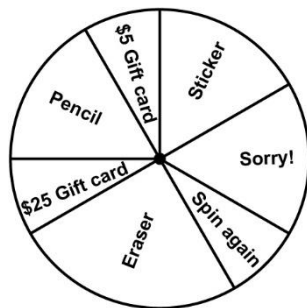
We hear chance when we listen to the weather forecast.
"It is very likely to rain tomorrow."



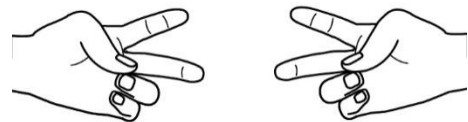
We see chance when watching a football game.
A coin is tossed to see who gets the ball first.



Have you ever spun to win a prize?
What is the chance of winning a good prize?
Why do you think this is?



Think about games you play.
What is the chance of both players showing scissors when playing Rock, Paper, Scissors?



What is the chance of finding a four-leaf clover?









What is the chance of getting an egg with two yolks?



Activity 1 Assessment

Numbers All Around Us

Recognizing and Writing Numerals							
<p>Reads and writes numbers to 100</p> <p>“25, twenty-five”</p>	<p>Matches numerals to 100 to quantities</p> <div style="text-align: center;"> <table border="1"> <tr> <td style="text-align: center;">Tens</td> <td style="text-align: center;">Ones</td> </tr> <tr> <td style="text-align: center;">  </td> <td style="text-align: center;">  </td> </tr> </table> </div> <p>“25 is 2 tens and 5 ones.”</p>	Tens	Ones			<p>Reads and writes numbers to 1000</p> <p>“250; two hundred fifty”</p>	<p>Matches numerals to 1000 to quantities</p> <p>“It says this box contains 250 envelopes.”</p>
Tens	Ones						
							
Observations/Documentation							

Activity 2 Assessment

Counting to 1000

Counting to 1000 (by 1s)			
Counts on to 20 "13, 14, 15, 16, 17, 18, 19"	Counts on and back within 100, bridging tens "48, 49, 50, 51, 52"	Counts on and back within 1000, bridging hundreds "498, 499, 500, 501, 502"	Flexibly counts on and back within 1000, bridging tens and hundreds "603, 602, 601, 600, 599"
Observations/Documentation			

Activity 3 Assessment

Skip-Counting Forward and Backward

Counting to 1000 (Skip-Counting)			
<p>Skip-counts forward and backward by factors of 10</p> <p>By 2s: "42, 44, 46, 48, 50, ..." By 5s: "95, 100, 105, 110, 115, ..." By 10s: "120, 130, 140, 150, 160, ..."</p>	<p>Flexibly skip-counts forward and backward by factors of 10</p> <p>By 2s: "43, 45, 47, 49, 51, ..." By 5s: "96, 101, 106, 111, 116, ..."</p>	<p>Skip-counts forward and backward by factors of 1000</p> <p>By 4s: "104, 108, 112, 116, ..." By 25s: "325, 350, 375, 400, ..."</p>	<p>Flexibly skip-counts forward and backward.</p> <p>By 3s: "153, 156, 159, 162, ..." By 4s: "105, 109, 113, 117, ..." By 25s: "326, 351, 376, 401, ..." By 100s: "401, 501, 601, 701, ..."</p>
Observations/Documentation			

Activity 4 Assessment

Consolidation

Counting to 1000 (by 1's)			
Counts on to 20 "13, 14, 15, 16, 17, 18, 19"	Counts on and back within 100, bridging tens "48, 49, 50, 51, 52"	Counts on and back within 1000, bridging hundreds "498, 499, 500, 501, 502"	Flexibly counts on and back within 1000, bridging tens and hundreds "603, 602, 601, 600, 599"
Observations/Documentation			
Counting to 1000 (Skip-Counting)			
Skip-counts forward and backward by factors of 10 By 2s: "42, 44, 46, 48, 50, ..." By 5s: "95, 100, 105, 110, 115, ..." By 10s: "120, 130, 140, 150, 160, ..."	Flexibly skip-counts forward and backward by factors of 10 By 2s: "43, 45, 47, 49, 51, ..." By 5s: "96, 101, 106, 111, 116, ..."	Skip-counts forward and backward by factors of 1000 By 4s: "104, 108, 112, 116, ..." By 25s: "325, 350, 375, 400, ..."	Flexibly skip-counts forward and backward. By 3s: "153, 156, 159, 162, ..." By 4s: "105, 109, 113, 117, ..." By 25s: "326, 351, 376, 401, ..." By 100s: "401, 501, 601, 701, ..."
Observations/Documentation			

Activity 5 Assessment

Estimating Quantities

Estimating Quantities

Guesses or counts



"About 500!"

Creates a referent of 10



"There are lots of groups of 10."

Creates a referent of 100



"I counted out 100."

Observations/Documentation

Activity 5 Assessment

Estimating Quantities

Estimating Quantities (con't)

Compares to a referent (more or less)



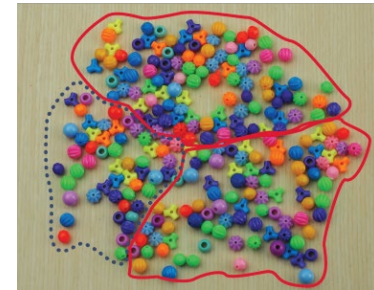
"More than 200."

Gives estimate as a range (physically groups)



"Between 200 and 300."

Estimates using visual strategies



"About 250: 2 groups of 100 and half of another 100."

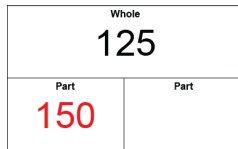
Observations/Documentation

Activity 6 Assessment

Composing and Decomposing Quantities

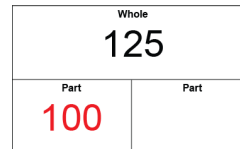
Decomposing and Composing Quantities

Randomly chooses a number as a part



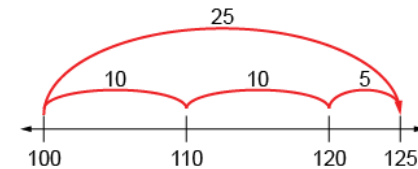
"I like the number 150."

Finds one part of a whole



"I thought of a number less than 125: 100."

Counts on or back to find the other part



"I counted on: 100, 110, 120, 125; the other part is 25."

Observations/Documentation

Composes the whole in different ways using known pairs

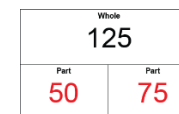
100 and 25
50 and 75

Uses patterns systematically to compose the whole, considering 0

Part	Part
125	0
124	1
123	2
122	3

"I kept taking 1 from a part and giving it to the other."

Uses number relationships and mental strategies to compose the whole


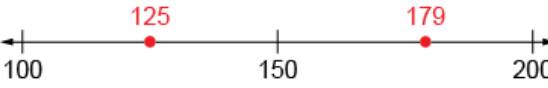
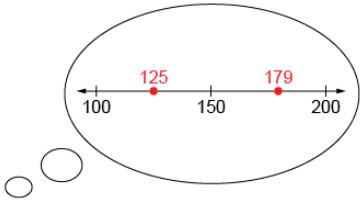



"75: I know 50 and 50 make 100, and 25 more makes 125."

Observations/Documentation

Activity 7 Assessment

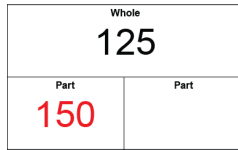
Comparing and Ordering Quantities

Comparing and Ordering Quantities		
<p>Orders numbers randomly</p> <p>125 245 179</p> <p>"I just put down any card."</p>	<p>Models with manipulatives</p>  <p>125 245</p>	<p>Uses benchmark on hundred chart or number line</p>  <p>"I compared the numbers to 150."</p>
Observations/Documentation		
<p>Visualizes hundred chart or number line</p>  <p>"I picture 179 farther to the right than 125."</p>	<p>Compares numbers, digit by digit (with the same place value)</p>  <p>"Both start with 1, 2 is less than 7, and 5 is less than 9. So, 125 is less than 179."</p>	<p>Orders three or more quantities (e.g., using early place-value, mental strategies)</p> <p>179 245 326</p> <p>"326 is greatest because 3 hundreds is more than both 2 hundreds and 1 hundred."</p>
Observations/Documentation		

Activity 8 Assessment Consolidation

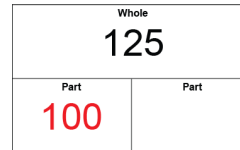
Decomposing and Composing Quantities

Randomly chooses a number as a part



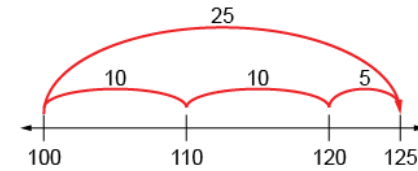
"I like the number 150."

Finds one part of a whole



"I thought of a number less than 125: 100."

Counts on or back to find the other part



"I counted on: 100, 110, 120, 125; the other part is 25."

Observations/Documentation

Composes the whole in different ways using known pairs

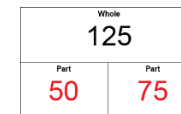
100 and 25
50 and 75

Uses patterns systematically to compose the whole, considering 0

Part	Part
125	0
124	1
123	2
122	3

"I kept taking 1 from a part and giving it to the other."

Uses number relationships and mental strategies to compose the whole



"75: I know 50 and 50 make 100, and 25 more makes 125."

Observations/Documentation

Activity 8 Assessment Consolidation

Comparing and Ordering Quantities

Orders numbers randomly

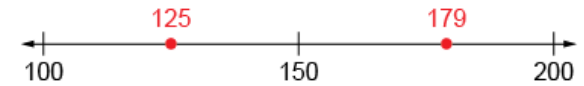
125 245 179

"I just put down any card."

Models with manipulatives



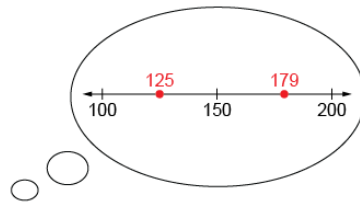
Uses benchmark on hundred chart or number line



"I compared the numbers to 150."

Observations/Documentation

Visualizes hundred chart or number line



"I picture 179 farther to the right than 125."

Compares numbers, digit by digit (with the same place value)



"Both start with 1, 2 is less than 7, and 5 is less than 9. So, 125 is less than 179."

Orders three or more quantities (e.g., using early place-value, mental strategies)

179 245 326

"326 is greatest because 3 hundreds is more than both 2 hundreds and 1 hundred."

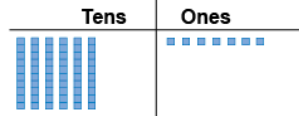
Observations/Documentation

Activity 9 Assessment

Building Numbers

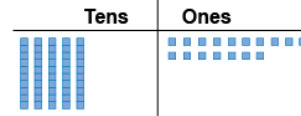
Composing and Decomposing 3-Digit Numbers

Composes and decomposes using tens and ones (one way)



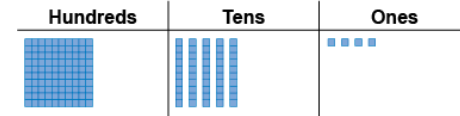
"I modelled 67."

Composes and decomposes using tens and ones (more than one way)



"I traded a ten for 10 ones."

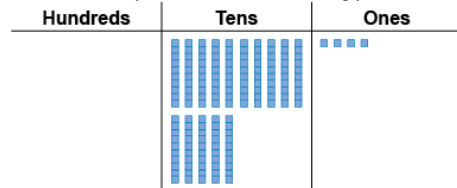
Composes and decomposes using hundreds, tens, and ones (one way)



"I modelled 154."

Observations/Documentation

Composes and decomposes using hundreds, tens, and ones (more than one way)



"I traded the hundred for 10 tens."

Uses place value to write a number in different ways

"One hundred fifty-four
 $154 = 100 + 50 + 4$;
 1 hundred, 5 tens, 4 ones;
 1 hundred, 4 tens, 14 ones
 □|||||♦♦♦♦"

Understands relationships among digits

"The digit 4 in 429 represents
 4 hundreds, 40 tens, or 400 ones."

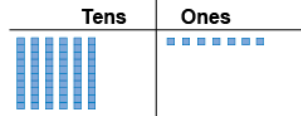
Observations/Documentation

Activity 10 Assessment

Representing Numbers in Different Ways

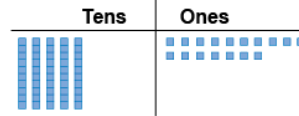
Composing and Decomposing 3-Digit Numbers

Composes and decomposes using tens and ones (one way)



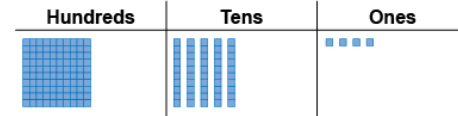
"I modelled 67."

Composes and decomposes using tens and ones (more than one way)



"I traded a ten for 10 ones."

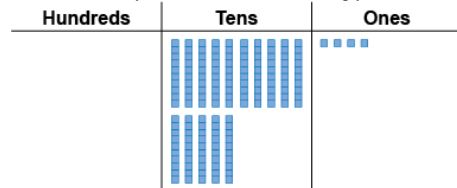
Composes and decomposes using hundreds, tens, and ones (one way)



"I modelled 154."

Observations/Documentation

Composes and decomposes using hundreds, tens, and ones (more than one way)



"I traded the hundred for 10 tens."

Uses place value to write a number in different ways

"One hundred fifty-four
 $154 = 100 + 50 + 4$;
 1 hundred, 5 tens, 4 ones;
 1 hundred, 4 tens, 14 ones
 □|||||♦♦♦♦"

Understands relationships among digits

"The digit 4 in 429 represents
 4 hundreds, 40 tens, or 400 ones."

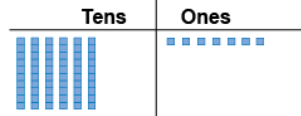
Observations/Documentation

Activity 11 Assessment

What's the Number?

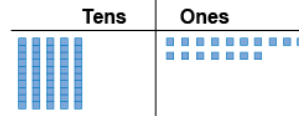
Composing and Decomposing 3-Digit Numbers

Composes and decomposes using tens and ones (one way)



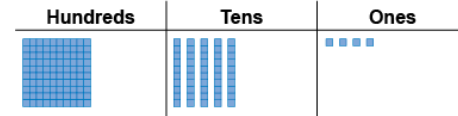
"I modelled 67."

Composes and decomposes using tens and ones (more than one way)



"I traded a ten for 10 ones."

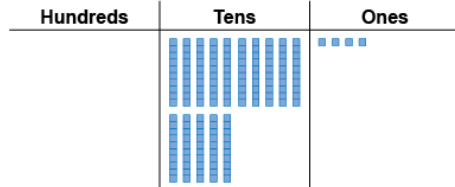
Composes and decomposes using hundreds, tens, and ones (one way)



"I modelled 154."

Observations/Documentation

Composes and decomposes using hundreds, tens, and ones (more than one way)



"I traded the hundred for 10 tens."

Uses place value to write a number in different ways

"One hundred fifty-four
 $154 = 100 + 50 + 4$;
 1 hundred, 5 tens, 4 ones;
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 □|||||♦♦♦♦"

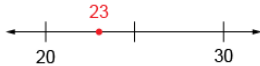
Understands relationships among digits

"The digit 4 in 429 represents
 4 hundreds, 40 tens, or 400 ones."

Observations/Documentation

Activity 12 Assessment

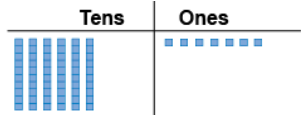
Rounding Numbers

Estimating Numbers			
<p>Compares to benchmark of 10</p> <p>“23 is greater than 10.”</p>	<p>Identifies benchmark numbers (multiples of 10)</p> <p>“23 lies between 20 and 30.”</p>	<p>Compares to benchmark numbers (multiples of 10)</p>  <p>“23 is closer to 20 than to 30.”</p>	<p>Uses benchmark numbers to round to nearest 10</p> <p>“Since 23 is closer to 20 than to 30, 23 rounds to 20.”</p>
Observations/Documentation			

Activity 13 Assessment Consolidation

Composing and Decomposing 3-Digit Numbers

Composes and decomposes using tens and ones (one way)



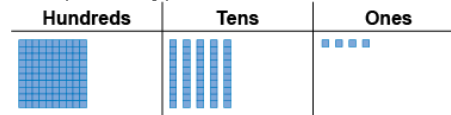
"I modelled 67."

Composes and decomposes using tens and ones (more than one way)



"I traded a ten for 10 ones."

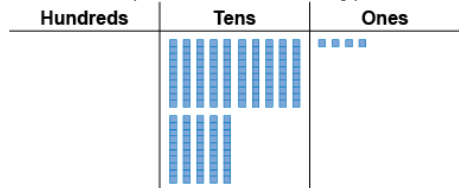
Composes and decomposes using hundreds, tens, and ones (one way)



"I modelled 154."

Observations/Documentation

Composes and decomposes using hundreds, tens, and ones (more than one way)



"I traded the hundred for 10 tens."

Uses place value to write a number in different ways

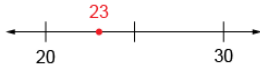
"One hundred fifty-four
 $154 = 100 + 50 + 4$;
 1 hundred, 5 tens, 4 ones;
 1 hundred, 4 tens, 14 ones
 □|||||♦♦♦♦"

Understands relationships among digits

"The digit 4 in 429 represents
 4 hundreds, 40 tens, or 400 ones."




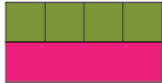
Observations/Documentation

Activity 13 Assessment Consolidation

Estimating Numbers			
<p>Compares to benchmark of 10</p> <p>“23 is greater than 10.”</p>	<p>Identifies benchmark numbers (multiples of 10)</p> <p>“23 lies between 20 and 30.”</p>	<p>Compares to benchmark numbers (multiples of 10)</p>  <p>“23 is closer to 20 than to 30.”</p>	<p>Uses benchmark numbers to round to nearest 10</p> <p>“Since 23 is closer to 20 than to 30, 23 rounds to 20.”</p>
Observations/Documentation			

Activity 14 Assessment

Exploring Equal Parts

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

Activity 14 Assessment

Exploring Equal Parts

Partitioning Quantities to Form Fractions (con't)

Compares unit fractions



“One-half is bigger than one-third of the same whole.”

Understands relationship between number of parts and size of parts

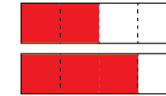
“When I divide the whole into more parts, the parts get smaller.”

Uses fraction symbol to represent fractional quantities of whole



$\frac{4}{6}$ of the apples are green.”

Compares fractions with the same denominator




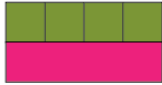


“ $\frac{3}{4}$ is bigger than $\frac{2}{4}$ because one more part is shaded.”

Observations/Documentation

Activity 15 Assessment

Comparing Fractions 1

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

Activity 15 Assessment

Comparing Fractions 1

Partitioning Quantities to Form Fractions (con't)

Compares unit fractions



“One-half is bigger than one-third of the same whole.”

Understands relationship between number of parts and size of parts

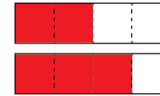
“When I divide the whole into more parts, the parts get smaller.”

Uses fraction symbol to represent fractional quantities of whole



$\frac{4}{6}$ of the apples are green.”

Compares fractions with the same denominator




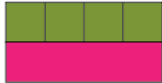


“ $\frac{3}{4}$ is bigger than $\frac{2}{4}$ because one more part is shaded.”

Observations/Documentation

Activity 16 Assessment

Comparing Fractions 2

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

Activity 16 Assessment

Comparing Fractions 2

Partitioning Quantities to Form Fractions (con't)

Compares unit fractions



“One-half is bigger than one-third of the same whole.”

Understands relationship between number of parts and size of parts

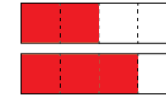
“When I divide the whole into more parts, the parts get smaller.”

Uses fraction symbol to represent fractional quantities of whole



$\frac{4}{6}$ of the apples are green.”

Compares fractions with the same denominator




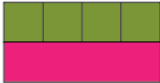


“ $\frac{3}{4}$ is bigger than $\frac{2}{4}$ because one more part is shaded.”

Observations/Documentation

Activity 18 Assessment

Partitioning Sets

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

Activity 18 Assessment

Partitioning Sets

Partitioning Quantities to Form Fractions (con't)

Compares unit fractions



“One-half is bigger than one-third of the same whole.”

Understands relationship between number of parts and size of parts

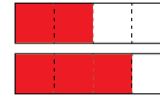
“When I divide the whole into more parts, the parts get smaller.”

Uses fraction symbol to represent fractional quantities of whole



$\frac{4}{6}$ of the apples are green.”




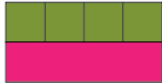
Compares fractions with the same denominator



“ $\frac{3}{4}$ is bigger than $\frac{2}{4}$ because one more part is shaded.”

Observations/Documentation

Activity 19 Assessment Consolidation

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

Activity 19 Assessment Consolidation

Partitioning Quantities to Form Fractions (con't)

Compares unit fractions



“One-half is bigger than one-third of the same whole.”

Understands relationship between number of parts and size of parts

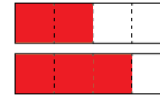
“When I divide the whole into more parts, the parts get smaller.”

Uses fraction symbol to represent fractional quantities of whole



$\frac{4}{6}$ of the apples are green.”

Compares fractions with the same denominator



“ $\frac{3}{4}$ is bigger than $\frac{2}{4}$ because one more part is shaded.”

Observations/Documentation

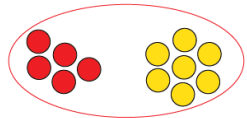
Activity 19 Assessment

Modelling Addition and Subtraction

Developing Meaning of Addition and Subtraction

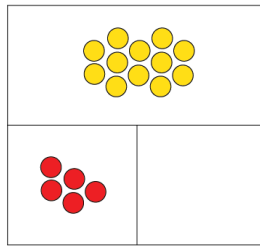
Recognizes addition and subtraction situations

Join



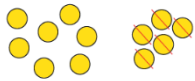
$$5 + 7 = \underline{\quad}$$

Part-part-whole



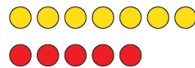
$$5 + \underline{\quad} = 12$$

Separate



$$12 - 5 = \underline{\quad}$$

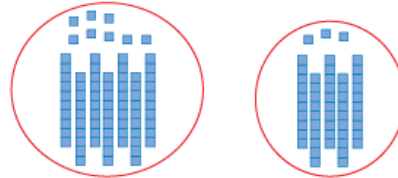
Compare



$$7 = 5 + \underline{\quad}$$

Models concretely to add and subtract

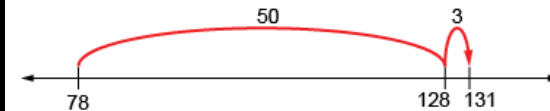
$$78 + 53 = \underline{\quad}$$



"78" "88, 98, 108, 118, 128, 129, 130, 131"

Models and symbolizes addition and subtraction

$$78 + 53 = \underline{\quad}$$



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

Observations/Documentation

Activity 19 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?"

$131 - \square = 42$
 89 birds flew away.

Uses properties and inverse operations of addition and subtraction to solve problems

$131 - \square = 42$
 "I can think addition to help me solve the problem:
 $42 + \square = 131$ "

Observations/Documentation

Activity 19 Assessment

Modelling Addition and Subtraction

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 “ $25 + 37 = \square$ I know $25 + 30 = 55$, and 55 plus 5 is 60, and 2 more makes 62.” (decomposing, known facts)	Develops mental strategies and algorithms $29 + 32 = \square$ 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 $49 + 38 = \square$ “49 is close to 50. 38 is close to 40. $50 + 40 = 90$ ” (using benchmarks)
Observations/Documentation		

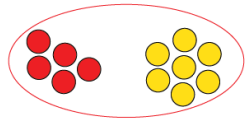
Activity 20 Assessment

Estimating Sums and Differences

Developing Meaning of Addition and Subtraction

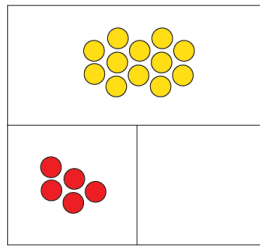
Recognizes addition and subtraction situations

Join



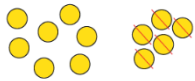
$$5 + 7 = \underline{\quad}$$

Part-part-whole



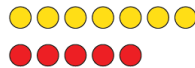
$$5 + \underline{\quad} = 12$$

Separate



$$12 - 5 = \underline{\quad}$$

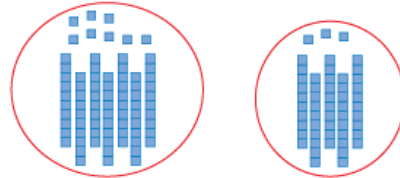
Compare



$$7 = 5 + \underline{\quad}$$

Models concretely to add and subtract

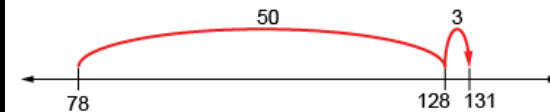
$$78 + 53 = \underline{\quad}$$



"78" "88, 98, 108, 118, 128, 129, 130, 131"

Models and symbolizes addition and subtraction

$$78 + 53 = \underline{\quad}$$



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

Observations/Documentation

Activity 20 Assessment

Estimating Sums and Differences

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?"

$131 - \square = 42$
 89 birds flew away.

Uses properties and inverse operations of addition and subtraction to solve problems

$131 - \square = 42$
 "I can think addition to help me solve the problem:
 $42 + \square = 131$ "

Observations/Documentation

Activity 20 Assessment

Estimating Sums and Differences

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 “ $25 + 37 = \square$ I know $25 + 30 = 55$, and 55 plus 5 is 60, and 2 more makes 62.” (decomposing, known facts)	Develops mental strategies and algorithms $29 + 32 = \square$ 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 $49 + 38 = \square$ “49 is close to 50. 38 is close to 40. $50 + 40 = 90$ ” (using benchmarks)
Observations/Documentation		

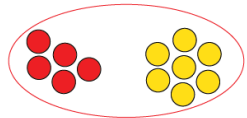
Activity 21 Assessment

Adding and Subtracting Money Amounts

Developing Meaning of Addition and Subtraction

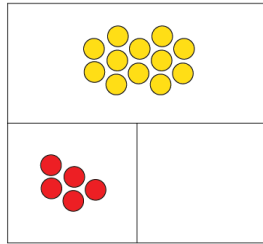
Recognizes addition and subtraction situations

Join



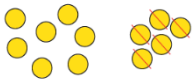
$$5 + 7 = \underline{\quad}$$

Part-part-whole



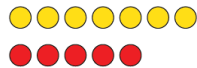
$$5 + \underline{\quad} = 12$$

Separate



$$12 - 5 = \underline{\quad}$$

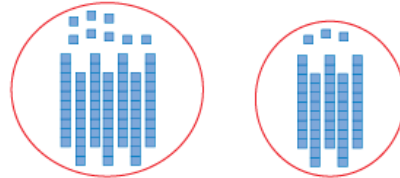
Compare



$$7 = 5 + \underline{\quad}$$

Models concretely to add and subtract

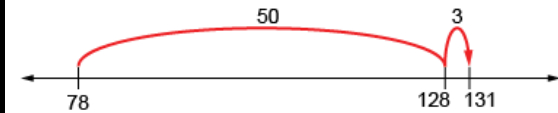
$$78 + 53 = \underline{\quad}$$



"78" "88, 98, 108, 118, 128, 129, 130, 131"

Models and symbolizes addition and subtraction

$$78 + 53 = \underline{\quad}$$



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

Observations/Documentation

Activity 21 Assessment

Adding and Subtracting Money Amounts

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?"

$131 - \square = 42$
 89 birds flew away.

Uses properties and inverse operations of addition and subtraction to solve problems

$131 - \square = 42$
 "I can think addition to help me solve the problem:
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Observations/Documentation

Activity 21 Assessment

Adding and Subtracting Money Amounts

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 $18 - 9 = 9$.”
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Observations/Documentation		

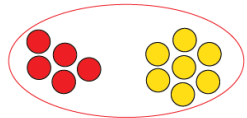
Activity 22 Assessment

Using Mental Math to Add and Subtract

Developing Meaning of Addition and Subtraction

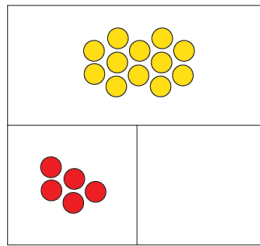
Recognizes addition and subtraction situations

Join



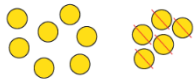
$$5 + 7 = \underline{\quad}$$

Part-part-whole



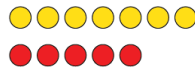
$$5 + \underline{\quad} = 12$$

Separate



$$12 - 5 = \underline{\quad}$$

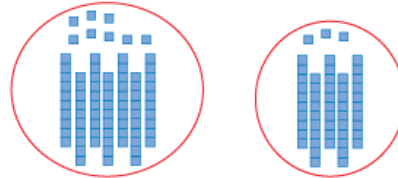
Compare



$$7 = 5 + \underline{\quad}$$

Models concretely to add and subtract

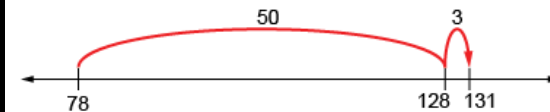
$$78 + 53 = \underline{\quad}$$



"78" "88, 98, 108, 118, 128, 129, 130, 131"

Models and symbolizes addition and subtraction

$$78 + 53 = \underline{\quad}$$



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

Observations/Documentation

Activity 22 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?"

$131 - \square = 42$
 89 birds flew away.

Uses properties and inverse operations of addition and subtraction to solve problems

$131 - \square = 42$
 "I can think addition to help me solve the problem:
 $42 + \square = 131$ "

Observations/Documentation

Activity 22 Assessment

Using Mental Math to Add and Subtract

Developing Fluency for Addition and Subtraction		
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Observations/Documentation		

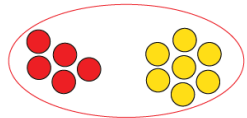
Activity 23 Assessment

Mastering Addition and Subtraction Facts

Developing Meaning of Addition and Subtraction

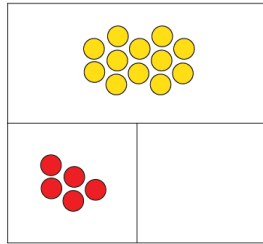
Recognizes addition and subtraction situations

Join



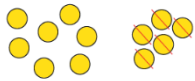
$$5 + 7 = \underline{\quad}$$

Part-part-whole



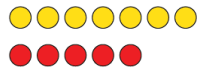
$$5 + \underline{\quad} = 12$$

Separate



$$12 - 5 = \underline{\quad}$$

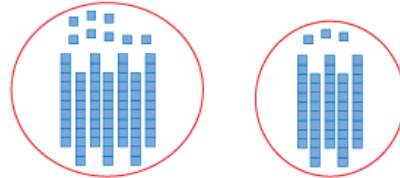
Compare



$$7 = 5 + \underline{\quad}$$

Models concretely to add and subtract

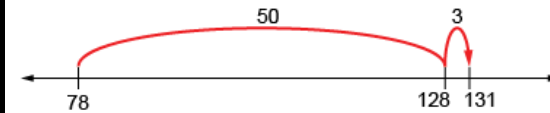
$$78 + 53 = \underline{\quad}$$



"78" "88, 98, 108, 118, 128, 129, 130, 131"

Models and symbolizes addition and subtraction

$$78 + 53 = \underline{\quad}$$



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

Observations/Documentation

Activity 23 Assessment

Mastering Addition and Subtraction Facts

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?"

$131 - \square = 42$
 89 birds flew away.

Uses properties and inverse operations of addition and subtraction to solve problems

$131 - \square = 42$
 "I can think addition to help me solve the problem:
 $42 + \square = 131$ "

Observations/Documentation

Activity 23 Assessment

Mastering Addition and Subtraction Facts

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		
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Observations/Documentation		

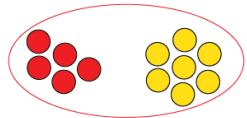
Activity 24 Assessment

Creating and Solving Problems

Developing Meaning of Addition and Subtraction

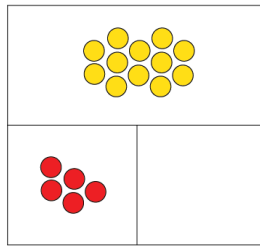
Recognizes addition and subtraction situations

Join



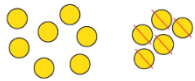
$$5 + 7 = \underline{\quad}$$

Part-part-whole



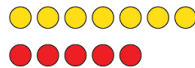
$$5 + \underline{\quad} = 12$$

Separate



$$12 - 5 = \underline{\quad}$$

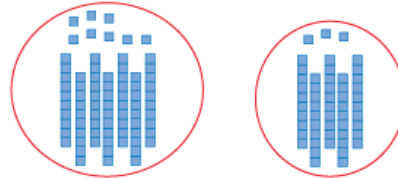
Compare



$$7 = 5 + \underline{\quad}$$

Models concretely to add and subtract

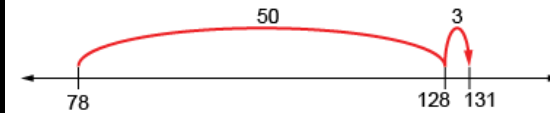
$$78 + 53 = \underline{\quad}$$



"78" "88, 98, 108, 118, 128, 129, 130, 131"

Models and symbolizes addition and subtraction

$$78 + 53 = \underline{\quad}$$



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

Observations/Documentation

Activity 24 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?"

$131 - \square = 42$
 89 birds flew away.

Uses properties and inverse operations of addition and subtraction to solve problems

$131 - \square = 42$
 "I can think addition to help me solve the problem:
 $42 + \square = 131$ "

Observations/Documentation

Activity 24 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

" $25 + 37 = \square$
I know $25 + 30 = 55$, and 55 plus 5 is 60,
and 2 more makes 62."
(decomposing, known facts)

Develops mental strategies and algorithms

$29 + 32 = \square$
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

$49 + 38 = \square$
"49 is close to 50.
38 is close to 40.
 $50 + 40 = 90$ "
(using benchmarks)

Observations/Documentation

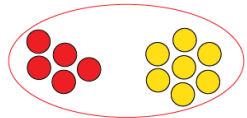
Activity 25 Assessment

Creating and Solving Problems with Larger Numbers

Developing Meaning of Addition and Subtraction

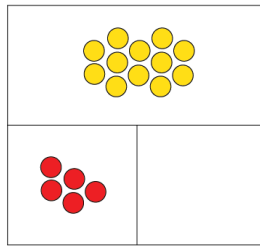
Recognizes addition and subtraction situations

Join



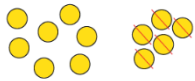
$$5 + 7 = \underline{\quad}$$

Part-part-whole



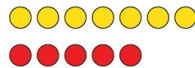
$$5 + \underline{\quad} = 12$$

Separate



$$12 - 5 = \underline{\quad}$$

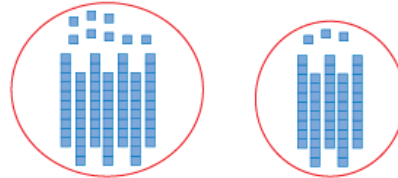
Compare



$$7 = 5 + \underline{\quad}$$

Models concretely to add and subtract

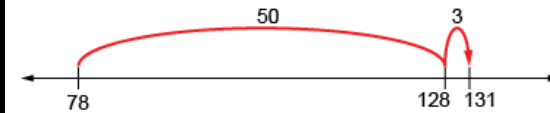
$$78 + 53 = \underline{\quad}$$



"78" "88, 98, 108, 118, 128, 129, 130, 131"

Models and symbolizes addition and subtraction

$$78 + 53 = \underline{\quad}$$



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

Observations/Documentation

Activity 25 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?"

$131 - \square = 42$
 89 birds flew away.

Uses properties and inverse operations of addition and subtraction to solve problems

$131 - \square = 42$
 "I can think addition to help me solve the problem:
 $42 + \square = 131$ "

Observations/Documentation

Activity 25 Assessment

Creating and Solving Problems with Larger Numbers

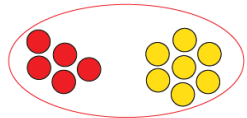
Developing Fluency for Addition and Subtraction		
Fluently adds and subtracts within 5 “I know $4 + 1 = 5$ and $5 - 1 = 4$.”	Fluently adds and subtracts to 10 “I know $8 + 2 = 10$ and $10 - 2 = 8$.” (complements to 10)	Fluently adds and subtracts to 20 “I can use doubles. I know $9 + 9 = 18$ and $18 - 9 = 9$.”
Observations/Documentation		
Uses known sums and differences to solve addition and subtraction equations “ $25 + 37 = \square$ I know $25 + 30 = 55$, and 55 plus 5 is 60, and 2 more makes 62.” (decomposing, known facts)	Develops mental strategies and algorithms $29 + 32 = \square$ 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 $49 + 38 = \square$ “49 is close to 50. 38 is close to 40. $50 + 40 = 90$ ” (using benchmarks)
Observations/Documentation		

Activity 26 Assessment Consolidation

Developing Meaning of Addition and Subtraction

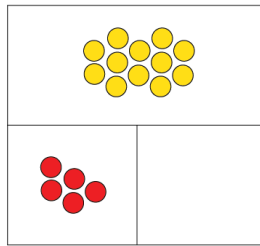
Recognizes addition and subtraction situations

Join



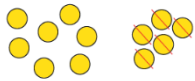
$$5 + 7 = \underline{\quad}$$

Part-part-whole



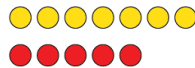
$$5 + \underline{\quad} = 12$$

Separate



$$12 - 5 = \underline{\quad}$$

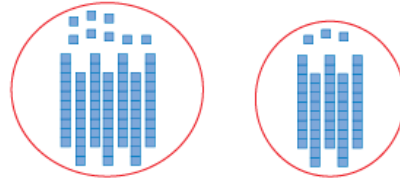
Compare



$$7 = 5 + \underline{\quad}$$

Models concretely to add and subtract

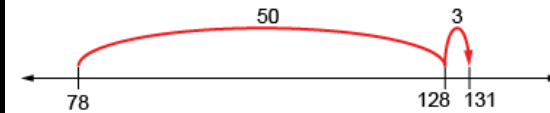
$$78 + 53 = \underline{\quad}$$



"78" "88, 98, 108, 118, 128, 129, 130, 131"

Models and symbolizes addition and subtraction

$$78 + 53 = \underline{\quad}$$



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

Observations/Documentation

Activity 26 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?"

$131 - \square = 42$
 89 birds flew away.

Uses properties and inverse operations of addition and subtraction to solve problems

$131 - \square = 42$
 "I can think addition to help me solve the problem:
 $42 + \square = 131$ "

Observations/Documentation

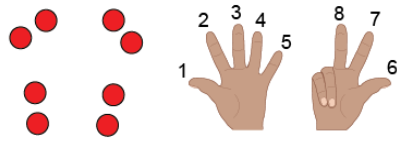
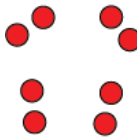
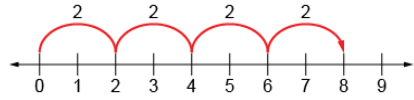
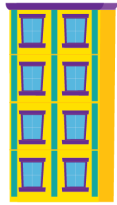
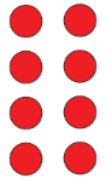
Activity 26 Assessment

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 “ $25 + 37 = \square$ I know $25 + 30 = 55$, and 55 plus 5 is 60, and 2 more makes 62.” (decomposing, known facts)	Develops mental strategies and algorithms $29 + 32 = \square$ 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 $49 + 38 = \square$ “49 is close to 50. 38 is close to 40. $50 + 40 = 90$ ” (using benchmarks)
Observations/Documentation		

Activity 27 Assessment

Exploring Multiplication

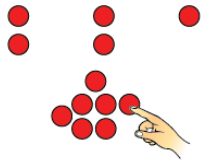
Multiplying 1-Digit Numbers			
<p>Groups objects and counts by 1s</p> 	<p>Groups objects and skip-counts</p>  <p>"2, 4, 6, 8"</p>	<p>Uses repeated addition</p>  <p>"2 + 2 + 2 + 2 = 8."</p>	<p>Models using multiplicative thinking</p>  <p>"4 rows of 2 is 8."</p>
Observations/Documentation			
<p>Understands relationship between operations</p> <p>"I can think of $2 + 2 + 2 + 2 = 8$ as 4 groups of 2."</p>	<p>Uses multiplication symbol</p> <p>"$4 \times 2 = 8$"</p> 	<p>Multiplies fluently (e.g., uses properties of multiplication)</p> <p>"$4 \times 2 = 8$ $2 \times 4 = 8$"</p>	<p>Creates and solves problems involving equal groups</p> <p>$4 \times 2 = 8$</p> <p>"There are 4 bicycles in the shed. How many wheels are there altogether?"</p>
Observations/Documentation			

Activity 28 Assessment

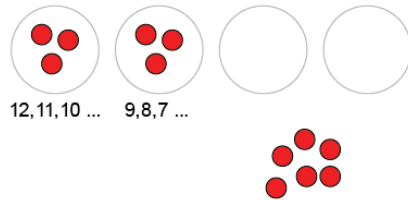
Exploring Division

Dividing 1-Digit Numbers

Models using equal sharing

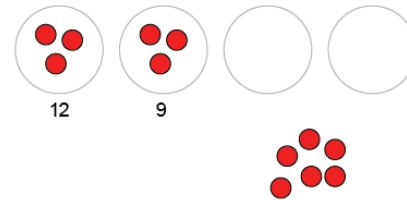


Models using equal grouping, counting by 1s

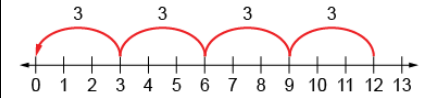


"I know 3 go in each group."

Models using equal grouping, skip-counting backward



Uses repeated subtraction



"4 jumps of 3 backward is the same as $12 - 3 - 3 - 3 - 3 = 0$."

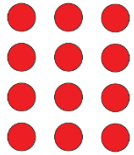
Observations/Documentation

Activity 28 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
 $12 \div 3 = 4$.”

Divides fluently

“I know $12 \div 4 = 3$,
so $12 \div 3 = 4$.”

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 $12 \div 3 = 4$.
I also know that $4 \times 3 = 12$ ”

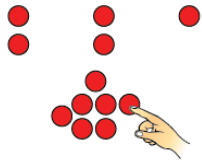
Observations/Documentation

Activity 29 Assessment

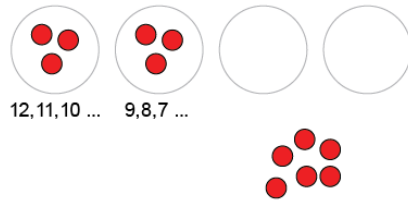
Relating Multiplication and Division

Dividing 1-Digit Numbers

Models using equal sharing



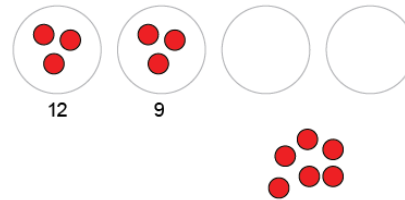
Models using equal grouping, counting by 1s



12, 11, 10 ... 9, 8, 7 ...

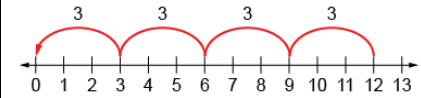
"I know 3 go in each group."

Models using equal grouping, skip-counting backward



12 9

Uses repeated subtraction

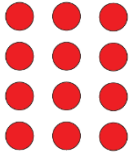
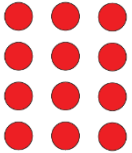


"4 jumps of 3 backward is the same as $12 - 3 - 3 - 3 - 3 = 0$."

Observations/Documentation

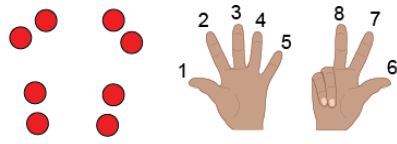
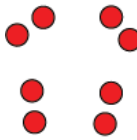
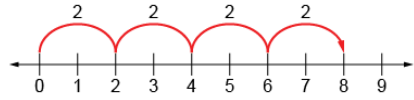
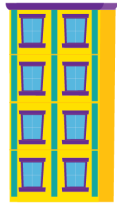
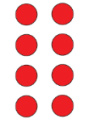
Activity 29 Assessment

Relating Multiplication and Division

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

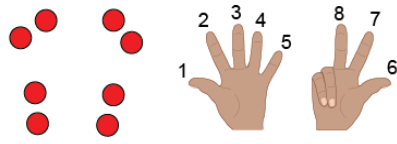
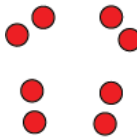
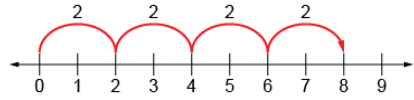
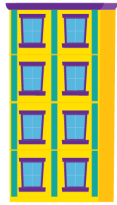
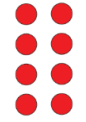
Activity 30 Assessment

Properties of Multiplication

Multiplying 1-Digit Numbers			
<p>Groups objects and counts by 1s</p> 	<p>Groups objects and skip-counts</p>  <p>"2, 4, 6, 8"</p>	<p>Uses repeated addition</p>  <p>"2 + 2 + 2 + 2 = 8."</p>	<p>Models using multiplicative thinking</p>  <p>"4 rows of 2 is 8."</p>
Observations/Documentation			
<p>Understands relationship between operations</p> <p>"I can think of $2 + 2 + 2 + 2 = 8$ as 4 groups of 2."</p> 	<p>Uses multiplication symbol</p> <p>"$4 \times 2 = 8$"</p>	<p>Multiplies fluently (e.g., uses properties of multiplication)</p> <p>"$4 \times 2 = 8$ $2 \times 4 = 8$"</p>	<p>Creates and solves problems involving equal groups</p> <p>$4 \times 2 = 8$</p> <p>"There are 4 bicycles in the shed. How many wheels are there altogether?"</p>
Observations/Documentation			

Activity 31 Assessment

Creating and Solving Problems

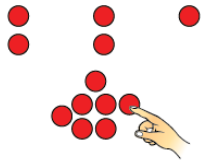
Multiplying 1-Digit Numbers			
<p>Groups objects and counts by 1s</p> 	<p>Groups objects and skip-counts</p>  <p>"2, 4, 6, 8"</p>	<p>Uses repeated addition</p>  <p>"2 + 2 + 2 + 2 = 8."</p>	<p>Models using multiplicative thinking</p>  <p>"4 rows of 2 is 8."</p>
Observations/Documentation			
<p>Understands relationship between operations</p> <p>"I can think of $2 + 2 + 2 + 2 = 8$ as 4 groups of 2."</p> 	<p>Uses multiplication symbol</p> <p>"$4 \times 2 = 8$"</p>	<p>Multiplies fluently (e.g., uses properties of multiplication)</p> <p>"$4 \times 2 = 8$ $2 \times 4 = 8$"</p>	<p>Creates and solves problems involving equal groups</p> <p>$4 \times 2 = 8$</p> <p>"There are 4 bicycles in the shed. How many wheels are there altogether?"</p>
Observations/Documentation			

Activity 31 Assessment

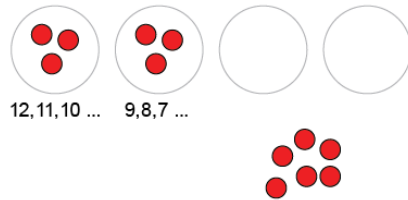
Creating and Solving Problems

Dividing 1-Digit Numbers

Models using equal sharing

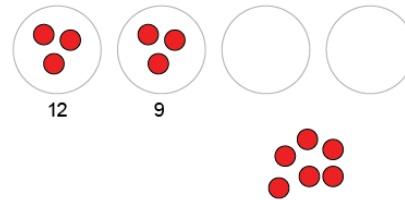


Models using equal grouping, counting by 1s

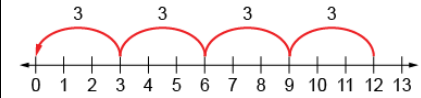


"I know 3 go in each group."

Models using equal grouping, skip-counting backward



Uses repeated subtraction



"4 jumps of 3 backward is the same as $12 - 3 - 3 - 3 - 3 = 0$."

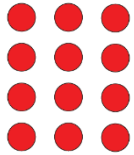
Observations/Documentation

Activity 31 Assessment

Creating and Solving Problems

Dividing 1-Digit Numbers (con't)

Models using multiplicative thinking, and uses division symbol

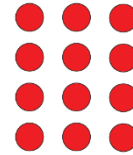


“12 divided into groups of 3 is
4 groups
 $12 \div 3 = 4$.”

Divides fluently

“I know $12 \div 4 = 3$,
so $12 \div 3 = 4$.”

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 $12 \div 3 = 4$.
I also know that $4 \times 3 = 12$ ”

Observations/Documentation

Activity 32 Assessment

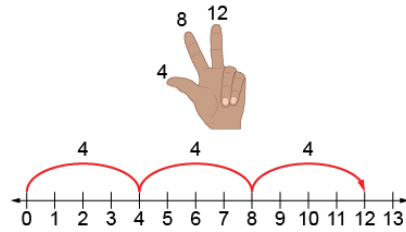
The Games Room

Developing Fluency with Multiplication and Division

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 $2 \times 4 = 8$ and one more group of 4 is 12, so $3 \times 4 = 12$.

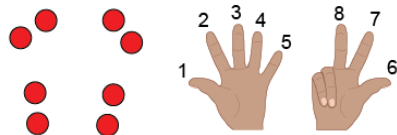
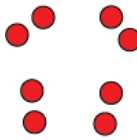
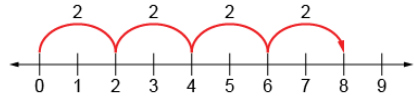
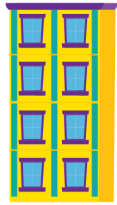
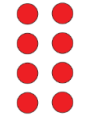
I know $4 \times 3 = 12$, so 3×4 also equals 12.

Fluently multiplies and divides

"I just know that $3 \times 4 = 12$."

Observations/Documentation

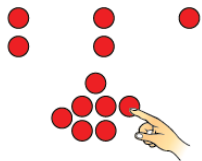
Activity 33 Assessment Consolidation

Multiplying 1-Digit Numbers			
<p>Groups objects and counts by 1s</p> 	<p>Groups objects and skip-counts</p>  <p>"2, 4, 6, 8"</p>	<p>Uses repeated addition</p>  <p>"2 + 2 + 2 + 2 = 8."</p>	<p>Models using multiplicative thinking</p>  <p>"4 rows of 2 is 8."</p>
Observations/Documentation			
<p>Understands relationship between operations</p> <p>"I can think of $2 + 2 + 2 + 2 = 8$ as 4 groups of 2."</p> 	<p>Uses multiplication symbol</p> <p>"$4 \times 2 = 8$"</p>	<p>Multiplies fluently (e.g., uses properties of multiplication)</p> <p>"$4 \times 2 = 8$ $2 \times 4 = 8$"</p>	<p>Creates and solves problems involving equal groups</p> <p>$4 \times 2 = 8$</p> <p>"There are 4 bicycles in the shed. How many wheels are there altogether?"</p>
Observations/Documentation			

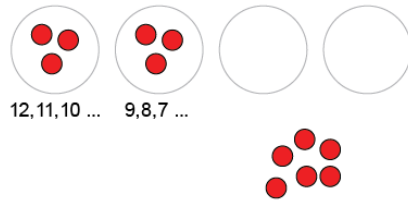
Activity 33 Assessment Consolidation

Dividing 1-Digit Numbers

Models using equal sharing

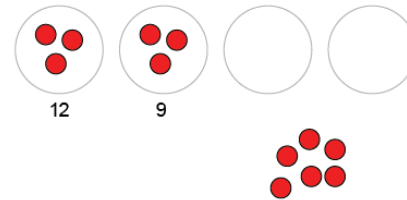


Models using equal grouping, counting by 1s

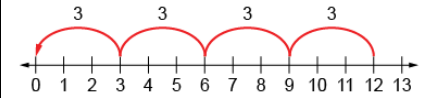


"I know 3 go in each group."

Models using equal grouping, skip-counting backward



Uses repeated subtraction



"4 jumps of 3 backward is the same as $12 - 3 - 3 - 3 - 3 = 0$."

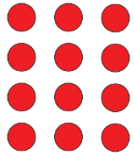
Observations/Documentation

Activity 33 Assessment

Consolidation

Dividing 1-Digit Numbers (con't)

Models using multiplicative thinking, and uses division symbol

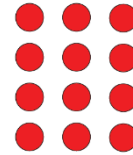


“12 divided into groups of 3 is
4 groups
 $12 \div 3 = 4$.”

Divides fluently

“I know $12 \div 4 = 3$,
so $12 \div 3 = 4$.”

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 $12 \div 3 = 4$.
I also know that $4 \times 3 = 12$ ”

Observations/Documentation

Activity 34 Assessment

Estimating and Counting Money

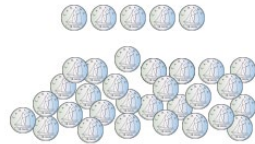
Estimating Money Amounts

Scans quantity of coins (disregards value of the coins)



"There's a lot of coins. I think it's about \$100."

Uses a referent to estimate the value of a collection of one denomination



"There's about 5 groups of 5 dimes, so about \$2.50."

Estimates the value of a mixed collection of coins to the nearest dollar



"I see about 10 loonies and 10 quarters, which is about \$12."

Makes reasonable estimates of mixed collections in dollars and cents



"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

Activity 35 Assessment

Investigating Equality with Money

Understanding Equality with Money

Uses like coins to show equivalent amounts



"I know 5 nickels make 1 quarter and 4 quarters make \$1."

Uses different denominations of coins to show equivalent amounts



"I can show 25 cents with 5 nickels, then trade 2 nickels for a dime."

Determines total cost of purchase and shows equivalent amounts in different ways



\$1.25 \$3.70

$$\$3.70 + \$1.25 = \$4.95$$



"I can pay \$4.95 using lots of different coins, but I could also pay with a \$5 bill, and get 5 cents change."

Determines total value of purchase and shows equivalent amount in most efficient way



$$\$6.25 + \$5.45 + \$4.50 = \$16.20$$



"I know that I can start with \$15 in bills, then add 1 dollar and twenty cents."

Observations/Documentation

Activity 36 Assessment

Purchasing and Making Change

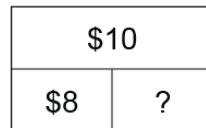
Comparing Money Amounts and Making Change

Compares money amounts using part-part-whole relationship



“The total cost is the whole. That’s \$10. The cost of each item is a part. The items cost \$6 and \$4.”

Uses part-part-whole relationship to find a missing part



“Part + Part = whole so, $8 + ? = 10$ or $10 - 8 = ?$ I model \$10 with coins, then take away \$8. I am left with \$2, the missing part.”

Makes change using skip-counting

I had a \$5 bill.
I bought:



Change:



“I skip-counted on from \$3.50 by 25s, adding a quarter each time. 6 quarters is the same as \$1.50.”

Uses different strategies to make change efficiently (e.g., counting on, counting back)

I had a \$10 bill.
I bought:



\$8.85

Change:



“I counted on from \$8.85 and needed only 3 coins to get to \$10.”

Observations/Documentation

Activity 36 Assessment

Purchasing and Making Change

Understanding Equality with Money

Uses like coins to show equivalent amounts



"I know 5 nickels make 1 quarter and 4 quarters make \$1."

Uses different denominations of coins to show equivalent amounts



"I can show 25 cents with 5 nickels, then trade 2 nickels for a dime."

Determines total cost of purchase and shows equivalent amounts in different ways



\$1.25 **\$3.70**

$$\$3.70 + \$1.25 = \$4.95$$



"I can pay \$4.95 using lots of different coins, but I could also pay with a \$5 bill, and get 5 cents change."

Determines total value of purchase and shows equivalent amount in most efficient way



$$\$6.25 + \$5.45 + \$4.50 = \$16.20$$






"I know that I can start with \$15 in bills, then add 1 dollar and twenty cents."

Observations/Documentation

Activity 37 Assessment

Setting a Financial Goal

Meeting a Financial Goal			
<p>Identifies ways to earn and spend money (thinks strictly in cash transactions)</p>  <p>"I can think of lots of ways to earn money to buy something I want."</p>	<p>Identifies ways to earn, spend, and receive money</p>  <p>"I can sell things that I don't use anymore to make extra money."</p>	<p>Identifies ways to earn money and make payments</p>  <p>"After I earn money, I can deposit it and make payments in lots of ways."</p>	<p>Creates a reasonable financial plan considering all components (earning, spending, and saving)</p> <p>"There are so many things to think about when you set a financial goal."</p>
Observations/Documentation			

Activity 37 Assessment

Setting a Financial Goal

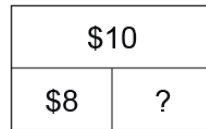
Comparing Money Amounts and Making Change

Compares money amounts using part-part-whole relationship



“The total cost is the whole. That’s \$10. The cost of each item is a part. The items cost \$6 and \$4.”

Uses part-part-whole relationship to find a missing part



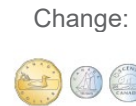
“Part + Part = whole so, $8 + ? = 10$ or $10 - 8 = ?$ I model \$10 with coins, then take away \$8. I am left with \$2, the missing part.”

Makes change using skip-counting



“I skip-counted on from \$3.50 by 25s, adding a quarter each time. 6 quarters is the same as \$1.50.”

Uses different strategies to make change efficiently (e.g., counting on, counting back)



“I counted on from \$8.85 and needed only 3 coins to get to \$10.”

Observations/Documentation

Activity 38 Assessment Consolidation

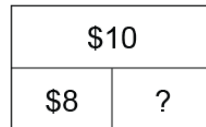
Comparing Money Amounts and Making Change

Compares money amounts using part-part-whole relationship



“The total cost is the whole. That’s \$10. The cost of each item is a part. The items cost \$6 and \$4.”

Uses part-part-whole relationship to find a missing part



“Part + Part = whole so, $8 + ? = 10$ or $10 - 8 = ?$ I model \$10 with coins, then take away \$8. I am left with \$2, the missing part.”

Makes change using skip-counting

I had a \$5 bill.
I bought:



Change:



“I skip-counted on from \$3.50 by 25s, adding a quarter each time. 6 quarters is the same as \$1.50.”

Uses different strategies to make change efficiently (e.g., counting on, counting back)

I had a \$10 bill.
I bought:



\$8.85

Change:



“I counted on from \$8.85 and needed only 3 coins to get to \$10.”

Observations/Documentation

Activity 38 Assessment Consolidation

Understanding Equality with Money

Uses like coins to show equivalent amounts



"I know 5 nickels make 1 quarter and 4 quarters make \$1."

Uses different denominations of coins to show equivalent amounts



$$25 = 10 + 5 + 5 + 5$$

"I can show 25 cents with 5 nickels, then trade 2 nickels for a dime."

Determines total cost of purchase and shows equivalent amounts in different ways



\$1.25 **\$3.70**

$$\$3.70 + \$1.25 = \$4.95$$



"I can pay \$4.95 using lots of different coins, but I could also pay with a \$5 bill, and get 5 cents change."

Determines total value of purchase and shows equivalent amount in most efficient way



$$\$6.25 + \$5.45 + \$4.50 = \$16.20$$



"I know that I can start with \$15 in bills, then add 1 dollar and twenty cents."

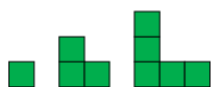
Observations/Documentation

Activity 1 Assessment

Describing and Extending Patterns

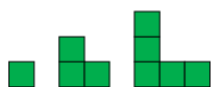
Generalizing and Representing Increasing and Decreasing Patterns

Recognizes that a pattern increases or decreases



"The terms are getting bigger."

Identifies how a pattern changes (describes rule)



"It 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

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 patterns and explains pattern rules

"85, 75, 65, 55,
I started with my house number and took away 10 each time."

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."

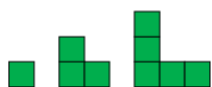
Observations/Documentation

Activity 2 Assessment

Representing Patterns

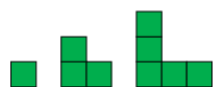
Generalizing and Representing Increasing and Decreasing Patterns

Recognizes that a pattern increases or decreases



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Identifies how a pattern changes (describes rule)



“It 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

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 patterns and explains pattern rules

“85, 75, 65, 55,
I started with my house number and took away 10 each time.”

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

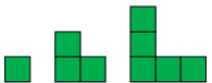
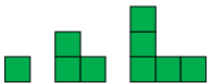
Input	1	2	3	4	5
Output	2	4	6	8	10

“Each input number is multiplied by 2.”

Observations/Documentation

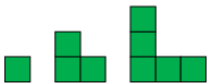
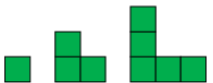
Activity 3 Assessment

Creating Patterns

Generalizing and Representing Increasing and Decreasing Patterns															
<p>Recognizes that a pattern increases or decreases</p>  <p>“The terms are getting bigger.”</p>	<p>Identifies how a pattern changes (describes rule)</p>  <p>“It grows by 2 tiles each time.”</p>	<p>Represents patterns symbolically and writes rules using addition or subtraction</p> <p>1, 3, 5, ... “Start at 1 and add 2 each time.”</p> <p>17, 14, 11, ... “Start at 17 and take away 3 each time.”</p>	<p>Extends patterns using repeated addition and subtraction</p> <p>1, 3, 5, 7, 9, 11, ... “I added 2 over and over.”</p> <p>17, 14, 11, 8, 5, 2 “I subtracted 3 over and over.”</p>												
Observations/Documentation															
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Input	1	2	3	4	5										
Output	2	4	6	8	10										
Observations/Documentation															

Activity 4 Assessment

Identifying Errors and Missing Terms

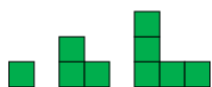
Generalizing and Representing Increasing and Decreasing Patterns															
<p>Recognizes that a pattern increases or decreases</p>  <p>“The terms are getting bigger.”</p>	<p>Identifies how a pattern changes (describes rule)</p>  <p>“It grows by 2 tiles each time.”</p>	<p>Represents patterns symbolically and writes rules using addition or subtraction</p> <p>1, 3, 5, ... “Start at 1 and add 2 each time.”</p> <p>17, 14, 11, ... “Start at 17 and take away 3 each time.”</p>	<p>Extends patterns using repeated addition and subtraction</p> <p>1, 3, 5, 7, 9, 11, ... “I added 2 over and over.”</p> <p>17, 14, 11, 8, 5, 2 “I subtracted 3 over and over.”</p>												
Observations/Documentation															
<p>Finds missing terms or errors in patterns</p> <p>3, 8, 13, 18, 22, 28, “Start at 3 and add 5 each time. 18 + 5 = 23, so 22 should be 23.”</p>	<p>Creates patterns and explains pattern rules</p> <p>“85, 75, 65, 55, I started with my house number and took away 10 each time.”</p>	<p>Uses patterns to solve problems</p> <p>“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.”</p>	<p>Identifies and extends patterns involving multiplication</p> <table border="1" data-bbox="1459 966 1869 1039"> <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> <p>“Each input number is multiplied by 2.”</p>	Input	1	2	3	4	5	Output	2	4	6	8	10
Input	1	2	3	4	5										
Output	2	4	6	8	10										
Observations/Documentation															

Activity 5 Assessment

Solving Problems

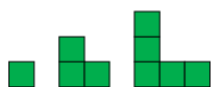
Generalizing and Representing Increasing and Decreasing Patterns

Recognizes that a pattern increases or decreases



“The terms are getting bigger.”

Identifies how a pattern changes (describes rule)



“It 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

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 patterns and explains pattern rules

“85, 75, 65, 55,
I started with my house number and took away 10 each time.”

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

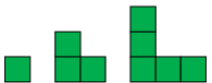
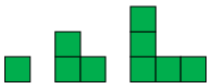
Input	1	2	3	4	5
Output	2	4	6	8	10

“Each input number is multiplied by 2.”

Observations/Documentation

Activity 6 Assessment

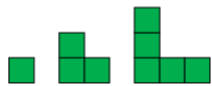
Exploring Multiplicative Patterns

Generalizing and Representing Increasing and Decreasing Patterns															
<p>Recognizes that a pattern increases or decreases</p>  <p>“The terms are getting bigger.”</p>	<p>Identifies how a pattern changes (describes rule)</p>  <p>“It grows by 2 tiles each time.”</p>	<p>Represents patterns symbolically and writes rules using addition or subtraction</p> <p>1, 3, 5, ... “Start at 1 and add 2 each time.”</p> <p>17, 14, 11, ... “Start at 17 and take away 3 each time.”</p>	<p>Extends patterns using repeated addition and subtraction</p> <p>1, 3, 5, 7, 9, 11, ... “I added 2 over and over.”</p> <p>17, 14, 11, 8, 5, 2 “I subtracted 3 over and over.”</p>												
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Input	1	2	3	4	5										
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Observations/Documentation															

Activity 7 Assessment Consolidation

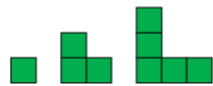
Generalizing and Representing Increasing and Decreasing Patterns

Recognizes that a pattern increases or decreases



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Represents patterns symbolically and writes rules using addition or subtraction

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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

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 patterns and explains pattern rules

"85, 75, 65, 55,
I started with my house number and took away 10 each time."

Uses patterns to solve problems

"If I save 2 quarters a day, when will I have 10 quarters?
2, 4, 6, 8, 10
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Identifies and extends patterns involving multiplication

Input	1	2	3	4	5
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"Each input number is multiplied by 2."

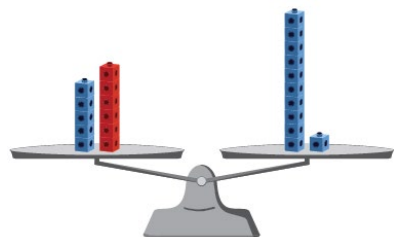
Observations/Documentation

Activity 8 Assessment

Solving Equations Concretely

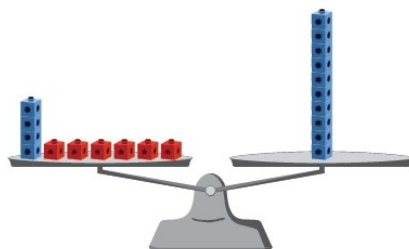
Solving One-Step Addition and Subtraction Equations

Understands balance as equality



"5 + 6 equals 11."

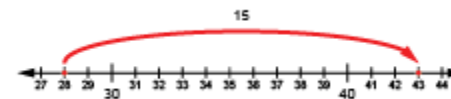
Uses concrete materials to solve for unknown



$$4 + \square = 10$$

"I added red cubes, one at a time, until the pans balanced; $\square = 6$."

Uses number relationships (inverse operations)



$$28 = \square - 15$$

"I rewrote the equation as an addition equation: $28 + 15 = \square$."

Observations/Documentation

Activity 8 Assessment

Solving Equations Concretely

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

Activity 8 Assessment

Solving Equations Concretely

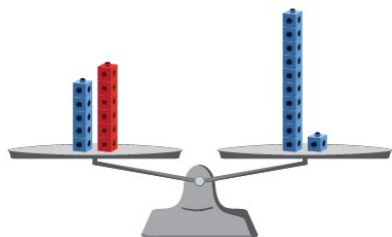
Variables and Symbols			
<p>Uses equal sign as balance (left side equals right side) and not equal sign as imbalance</p> $18 + 16 = 10 + 24$ $18 + 16 \neq 24 - 10$ <p>“The equal sign means that the numbers on both sides are worth the same amount.”</p>	<p>Uses symbols to represent unknown quantities</p> $18 + \square = 34$ <p>“I used a box to represent the unknown, but I could have used a different shape.”</p>	<p>Understands the unknown represents one quantity/value</p> $18 + \square = 34$ <p>“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.”</p>	<p>Solves equations flexibly</p> $18 + \square = 34$ $34 - \square = 18$ $34 - 18 = \square$ <p>“In all of these equations, the symbol represents the same number, 16.”</p>
Observations/Documentation			

Activity 9 Assessment

Strategies for Solving Equations

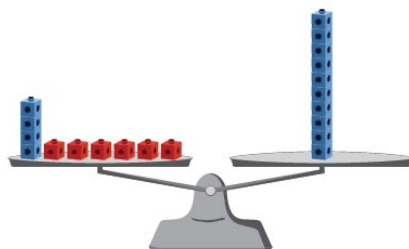
Solving One-Step Addition and Subtraction Equations

Understands balance as equality



"5 + 6 equals 11."

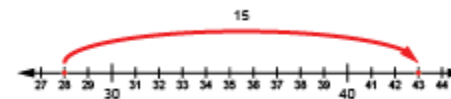
Uses concrete materials to solve for unknown



$$4 + \square = 10$$

"I added red cubes, one at a time, until the pans balanced; $\square = 6$."

Uses number relationships (inverse operations)



$$28 = \square - 15$$

"I rewrote the equation as an addition equation: $28 + 15 = \square$."

Observations/Documentation

Activity 9 Assessment

Strategies for Solving Equations

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

Activity 9 Assessment Strategies for Solving Equations

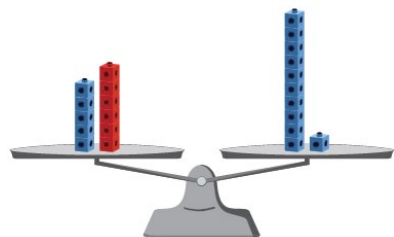
Variables and Symbols			
<p>Uses equal sign as balance (left side equals right side) and not equal sign as imbalance</p> $18 + 16 = 10 + 24$ $18 + 16 \neq 24 - 10$ <p>“The equal sign means that the numbers on both sides are worth the same amount.”</p>	<p>Uses symbols to represent unknown quantities</p> $18 + \square = 34$ <p>“I used a box to represent the unknown, but I could have used a different shape.”</p>	<p>Understands the unknown represents one quantity/value</p> $18 + \square = 34$ <p>“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.”</p>	<p>Solves equations flexibly</p> $18 + \square = 34$ $34 - \square = 18$ $34 - 18 = \square$ <p>“In all of these equations, the symbol represents the same number, 16.”</p>
Observations/Documentation			

Activity 10 Assessment

Exploring the Associative Property

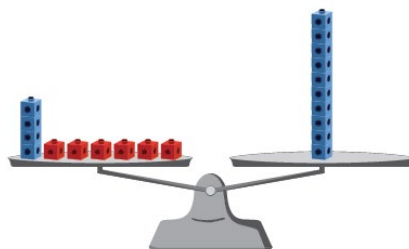
Solving One-Step Addition and Subtraction Equations

Understands balance as equality



"5 + 6 equals 11."

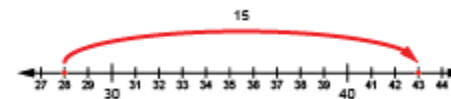
Uses concrete materials to solve for unknown



$$4 + \square = 10$$

"I added red cubes, one at a time, until the pans balanced; $\square = 6$."

Uses number relationships (inverse operations)



$$28 = \square - 15$$

"I rewrote the equation as an addition equation: $28 + 15 = \square$."

Observations/Documentation

Activity 10 Assessment

Exploring the Associative Property

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

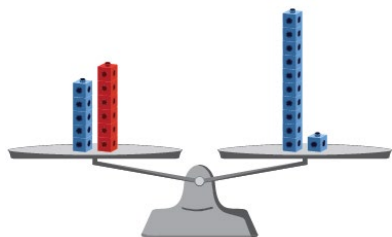
Activity 10 Assessment

Exploring the Associative Property

Variables and Symbols			
<p>Uses equal sign as balance (left side equals right side) and not equal sign as imbalance</p> $18 + 16 = 10 + 24$ $18 + 16 \neq 24 - 10$ <p>“The equal sign means that the numbers on both sides are worth the same amount.”</p>	<p>Uses symbols to represent unknown quantities</p> $18 + \square = 34$ <p>“I used a box to represent the unknown, but I could have used a different shape.”</p>	<p>Understands the unknown represents one quantity/value</p> $18 + \square = 34$ <p>“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.”</p>	<p>Solves equations flexibly</p> $18 + \square = 34$ $34 - \square = 18$ $34 - 18 = \square$ <p>“In all of these equations, the symbol represents the same number, 16.”</p>
Observations/Documentation			

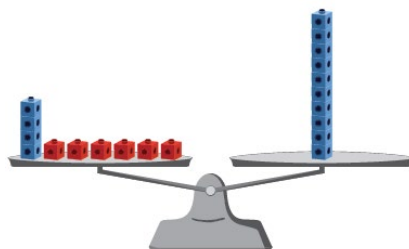
Solving One-Step Addition and Subtraction Equations

Understands balance as equality



"5 + 6 equals 11."

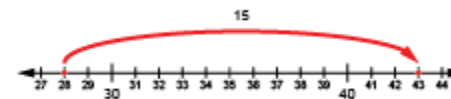
Uses concrete materials to solve for unknown



$$4 + \square = 10$$

"I added red cubes, one at a time, until the pans balanced; $\square = 6$."

Uses number relationships (inverse operations)



$$28 = \square - 15$$

"I rewrote the equation as an addition equation: $28 + 15 = \square$."

Observations/Documentation

Activity 11 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

$$20 - \square = 13$$

"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)

$$27 = \Delta - 18$$

"I rewrote using addition: $27 + 18 = \Delta$. Then, I used mental math: $27 + (18 + 2) = 47$, and $47 - 2 = 45$."

Observations/Documentation

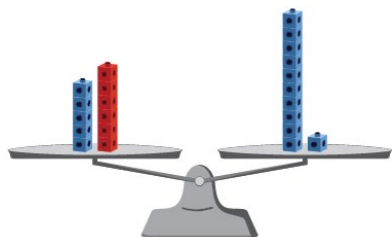
Activity 11 Assessment

Creating Equations

Variables and Symbols			
<p>Uses equal sign as balance (left side equals right side) and not equal sign as imbalance</p> $18 + 16 = 10 + 24$ $18 + 16 \neq 24 - 10$ <p>“The equal sign means that the numbers on both sides are worth the same amount.”</p>	<p>Uses symbols to represent unknown quantities</p> $18 + \square = 34$ <p>“I used a box to represent the unknown, but I could have used a different shape.”</p>	<p>Understands the unknown represents one quantity/value</p> $18 + \square = 34$ <p>“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.”</p>	<p>Solves equations flexibly</p> $18 + \square = 34$ $34 - \square = 18$ $34 - 18 = \square$ <p>“In all of these equations, the symbol represents the same number, 16.”</p>
Observations/Documentation			

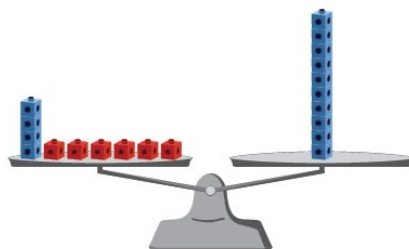
Solving One-Step Addition and Subtraction Equations

Understands balance as equality



"5 + 6 equals 11."

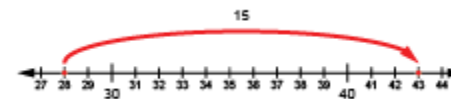
Uses concrete materials to solve for unknown



$$4 + \square = 10$$

"I added red cubes, one at a time, until the pans balanced; $\square = 6$."

Uses number relationships (inverse operations)



$$28 = \square - 15$$

"I rewrote the equation as an addition equation: $28 + 15 = \square$."

Observations/Documentation

Activity 12 Assessment Consolidation

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

Activity 12 Assessment Consolidation

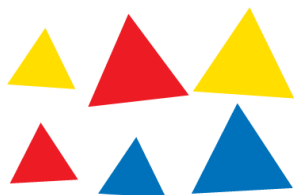
Variables and Symbols			
<p>Uses equal sign as balance (left side equals right side) and not equal sign as imbalance</p> $18 + 16 = 10 + 24$ $18 + 16 \neq 24 - 10$ <p>“The equal sign means that the numbers on both sides are worth the same amount.”</p>	<p>Uses symbols to represent unknown quantities</p> $18 + \square = 34$ <p>“I used a box to represent the unknown, but I could have used a different shape.”</p>	<p>Understands the unknown represents one quantity/value</p> $18 + \square = 34$ <p>“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.”</p>	<p>Solves equations flexibly</p> $18 + \square = 34$ $34 - \square = 18$ $34 - 18 = \square$ <p>“In all of these equations, the symbol represents the same number, 16.”</p>
Observations/Documentation			

Activity 13 Assessment

Sorting with Attributes

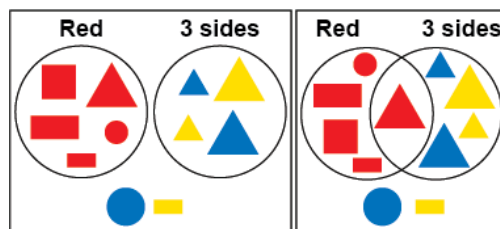
Identifying and Sorting Attributes

Uses one attribute to sort (size, colour, shape)

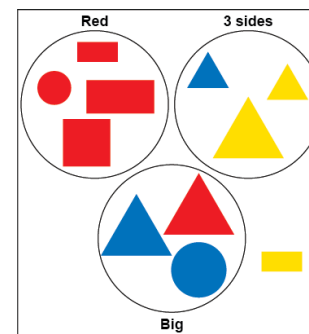


"I sorted the blocks by number of sides: 3."

Identifies 2 attributes and uses them to sort (with and without overlap)



Identifies 3 attributes and uses them to sort (without overlap)



"I used the attributes red, 3 sides, and big."

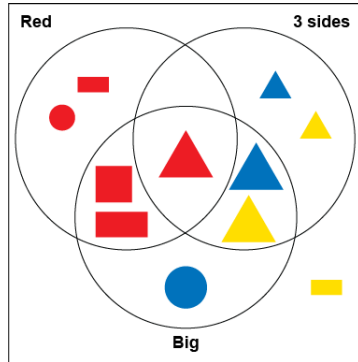
Observations/Documentation

Activity 13 Assessment

Sorting with Attributes

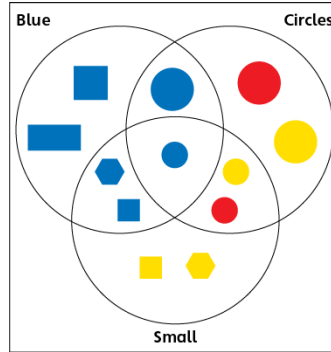
Identifying and Sorting Attributes

Identifies 3 attributes and uses them to sort (with overlap)



“One block has all three attributes: red, 3 sides, and big.”

Identifies the sorting rule



“The centre overlap has a small, blue circle. So, this category must be blue, this must be small, and this must be circles.”





Uses attributes flexibly to sort (concretely and mentally)

Attributes: small, blue, 6-sides
 Centre overlap: small blue hexagon
 Overlaps:
 Small, blue blocks
 Small hexagons
 Blue hexagons

Observations/Documentation

Activity 14 Assessment

Identifying and Extending Patterns

Identifying and Extending Repeating Patterns			
<p>Identifies repeating pattern (one of the changing attributes)</p>  <p>“Shape is changing. The pattern is: star, triangle, triangle.”</p>	<p>Identifies repeating pattern (two changing attributes)</p>  <p>“Colour and shape are changing.”</p>	<p>Identifies core of a repeating pattern</p>  <p>“The core is: blue star, blue triangle, red triangle.”</p>	<p>Uses core to extend the repeating pattern</p>  <p>“I drew the core on a piece of paper and moved it along the pattern to help me extend it.”</p>
Observations/Documentation			

Activity 15 Assessment

Creating Patterns

Creating Repeating Patterns

Builds core with one attribute (e.g., always colour)



"red, blue, blue, yellow"

Builds core with one attribute (shape, size, colour)



"I changed shape."

Creates patterns with one attribute in many ways (shape, size, colour)



"I copied the core two more times."

Observations/Documentation

Builds core with two attributes



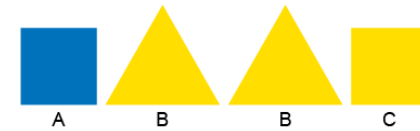
"I changed shape and colour."

Creates patterns with two attributes



"I copied the core two more times."

Represents the same pattern in many ways (e.g., letters, numbers, sounds)



"I represented the pattern core with letters: ABBC."

Observations/Documentation

Activity 16 Assessment Consolidation

Identifying and Extending Repeating Patterns

Identifies repeating pattern (one of the changing attributes)



"Shape is changing. The pattern is: star, triangle, triangle."

Identifies repeating pattern (two changing attributes)



"Colour and shape are changing."

Identifies core of a repeating pattern



"The core is: blue star, blue triangle, red triangle."

Uses core to extend the repeating pattern



"I drew the core on a piece of paper and moved it along the pattern to help me extend it."

Observations/Documentation

Activity 16 Assessment Consolidation

Creating Repeating Patterns

Builds core with one attribute (e.g., always colour)



"red, blue, blue, yellow"

Builds core with one attribute (shape, size, colour)



"I changed shape."

Creates patterns with one attribute in many ways (shape, size, colour)



"I copied the core two more times."

Observations/Documentation

Builds core with two attributes



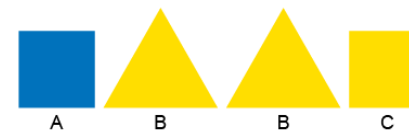
"I changed shape and colour."

Creates patterns with two attributes



"I copied the core two more times."

Represents the same pattern in many ways (e.g., letters, numbers, sounds)



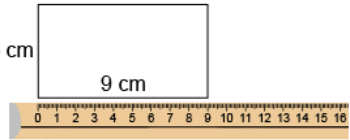


"I represented the pattern core with letters: ABBC."

Observations/Documentation

Activity 1 Assessment

Estimating Length

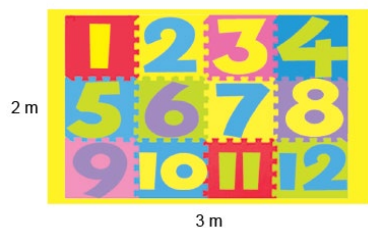
Measuring Length and Perimeter			
<p>Uses non-standard units to measure</p>  <p>“The rectangle is 5 paper clips long. Its perimeter is 16 paper clips.”</p>	<p>Uses standard-sized items to measure</p>  <p>“The rectangle is 17 centicubes long. Its perimeter is 54 centicubes.”</p>	<p>Uses benchmarks to estimate in standard units (m, cm)</p> <p>“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.”</p>	<p>Measures using standard units (m, cm)</p>  <p>“The perimeter is 28 cm.”</p>
Observations/Documentation			

Activity 1 Assessment

Estimating Length

Measuring Length and Perimeter (con't)

Selects and uses appropriate standard units



"I would use m because cm are too small. The perimeter is 10 m because $3 + 2 + 3 + 2 = 10$."

Relates standard units of length (1 m = 100 cm)

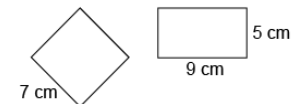


"The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm."

Uses smaller units to give more accurate measures

"The rug is between 2 m and 3 m long. If I use cm, I can be more accurate: 285 cm."

Compares using standard units



"Rectangle: $5 + 9 + 5 + 9 = 28$ cm
Square: $7 \times 4 = 28$ cm. The perimeters are the same."

Observations/Documentation

Activity 2 Assessment

Relating Centimetres and Metres

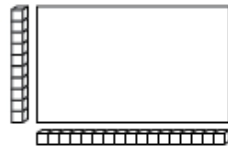
Measuring Length and Perimeter

Uses non-standard units to measure



“The rectangle is 5 paper clips long.
Its perimeter is 16 paper clips.”

Uses standard-sized items to measure

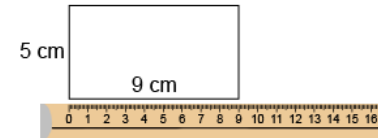


“The rectangle is 17 centicubes long.
Its perimeter is 54 centicubes.”

Uses benchmarks to estimate in standard units (m, cm)

“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)



“The perimeter is 28 cm.”

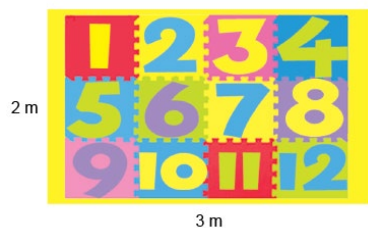
Observations/Documentation

Activity 2 Assessment

Relating Centimetres and Metres

Measuring Length and Perimeter (con't)

Selects and uses appropriate standard units



"I would use m because cm are too small. The perimeter is 10 m because $3 + 2 + 3 + 2 = 10$."

Relates standard units of length (1 m = 100 cm)

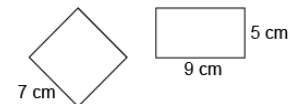


"The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm."

Uses smaller units to give more accurate measures

"The rug is between 2 m and 3 m long. If I use cm, I can be more accurate: 285 cm."

Compares using standard units



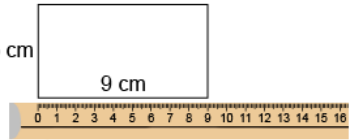


"Rectangle: $5 + 9 + 5 + 9 = 28$ cm
Square: $7 \times 4 = 28$ cm. The perimeters are the same."

Observations/Documentation

Activity 3 Assessment

Measuring Length

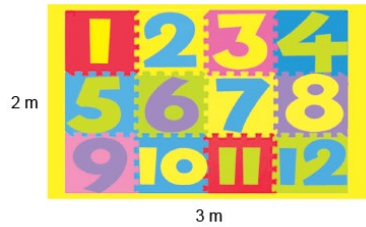
Measuring Length and Perimeter			
<p>Uses non-standard units to measure</p>  <p>“The rectangle is 5 paper clips long. Its perimeter is 16 paper clips.”</p>	<p>Uses standard-sized items to measure</p>  <p>“The rectangle is 17 centicubes long. Its perimeter is 54 centicubes.”</p>	<p>Uses benchmarks to estimate in standard units (m, cm)</p> <p>“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.”</p>	<p>Measures using standard units (m, cm)</p>  <p>“The perimeter is 28 cm.”</p>
Observations/Documentation			

Activity 3 Assessment

Measuring Length

Measuring Length and Perimeter (con't)

Selects and uses appropriate standard units



2 m

3 m

"I would use m because cm are too small. The perimeter is 10 m because $3 + 2 + 3 + 2 = 10$."

Relates standard units of length (1 m = 100 cm)

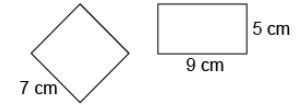


"The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm."

Uses smaller units to give more accurate measures

"The rug is between 2 m and 3 m long. If I use cm, I can be more accurate: 285 cm."

Compares using standard units



"Rectangle: $5 + 9 + 5 + 9 = 28$ cm
Square: $7 \times 4 = 28$ cm. The perimeters are the same."

Observations/Documentation

Activity 4 Assessment

Introducing Perimeter

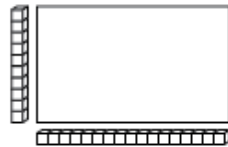
Measuring Length and Perimeter

Uses non-standard units to measure



"The rectangle is 5 paper clips long.
Its perimeter is 16 paper clips."

Uses standard-sized items to measure

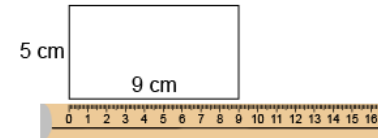


"The rectangle is 17 centicubes long.
Its perimeter is 54 centicubes."

Uses benchmarks to estimate in standard units (m, cm)

"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)



"The perimeter is 28 cm."

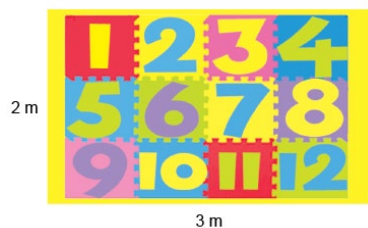
Observations/Documentation

Activity 4 Assessment

Introducing Perimeter

Measuring Length and Perimeter (con't)

Selects and uses appropriate standard units



2 m

3 m

"I would use m because cm are too small. The perimeter is 10 m because $3 + 2 + 3 + 2 = 10$."

Relates standard units of length (1 m = 100 cm)



3 m

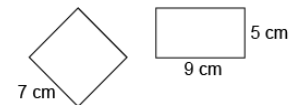
1 m

"The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm."

Uses smaller units to give more accurate measures

"The rug is between 2 m and 3 m long. If I use cm, I can be more accurate: 285 cm."

Compares using standard units



7 cm

9 cm



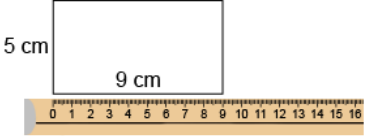
5 cm

"Rectangle: $5 + 9 + 5 + 9 = 28$ cm
Square: $7 \times 4 = 28$ cm. The perimeters are the same."

Observations/Documentation

Activity 5 Assessment

Measuring Perimeter

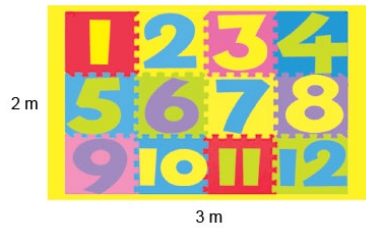
Measuring Length and Perimeter			
<p>Uses non-standard units to measure</p>  <p>“The rectangle is 5 paper clips long. Its perimeter is 16 paper clips.”</p>	<p>Uses standard-sized items to measure</p>  <p>“The rectangle is 17 centicubes long. Its perimeter is 54 centicubes.”</p>	<p>Uses benchmarks to estimate in standard units (m, cm)</p> <p>“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.”</p>	<p>Measures using standard units (m, cm)</p>  <p>“The perimeter is 28 cm.”</p>
Observations/Documentation			

Activity 5 Assessment

Measuring Perimeter

Measuring Length and Perimeter (con't)

Selects and uses appropriate standard units



"I would use m because cm are too small. The perimeter is 10 m because $3 + 2 + 3 + 2 = 10$."

Relates standard units of length (1 m = 100 cm)

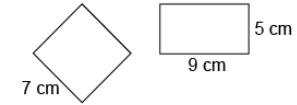


"The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm."

Uses smaller units to give more accurate measures

"The rug is between 2 m and 3 m long. If I use cm, I can be more accurate: 285 cm."

Compares using standard units



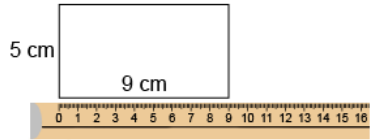


"Rectangle: $5 + 9 + 5 + 9 = 28$ cm
Square: $7 \times 4 = 28$ cm. The perimeters are the same."

Observations/Documentation

Activity 6 Assessment

How Many Can You Make?

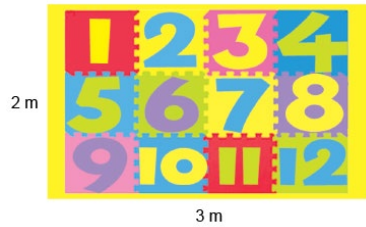
Measuring Length and Perimeter			
<p>Uses non-standard units to measure</p>  <p>“The rectangle is 5 paper clips long. Its perimeter is 16 paper clips.”</p>	<p>Uses standard-sized items to measure</p>  <p>“The rectangle is 17 centicubes long. Its perimeter is 54 centicubes.”</p>	<p>Uses benchmarks to estimate in standard units (m, cm)</p> <p>“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.”</p>	<p>Measures using standard units (m, cm)</p>  <p>“The perimeter is 28 cm.”</p>
Observations/Documentation			

Activity 6 Assessment

How Many Can You Make?

Measuring Length and Perimeter (con't)

Selects and uses appropriate standard units



"I would use m because cm are too small. The perimeter is 10 m because $3 + 2 + 3 + 2 = 10$."

Relates standard units of length (1 m = 100 cm)

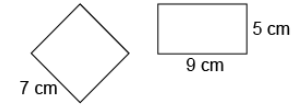


"The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm."

Uses smaller units to give more accurate measures

"The rug is between 2 m and 3 m long. If I use cm, I can be more accurate: 285 cm."

Compares using standard units



"Rectangle: $5 + 9 + 5 + 9 = 28$ cm
Square: $7 \times 4 = 28$ cm. The perimeters are the same."

Observations/Documentation

Activity 7 Assessment Consolidation

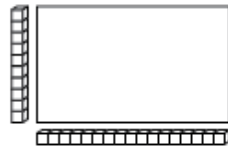
Measuring Length and Perimeter

Uses non-standard units to measure



"The rectangle is 5 paper clips long.
Its perimeter is 16 paper clips."

Uses standard-sized items to measure

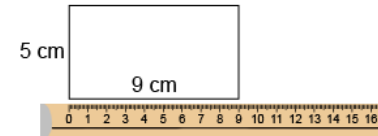


"The rectangle is 17 centicubes long.
Its perimeter is 54 centicubes."

Uses benchmarks to estimate in standard units (m, cm)

"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)



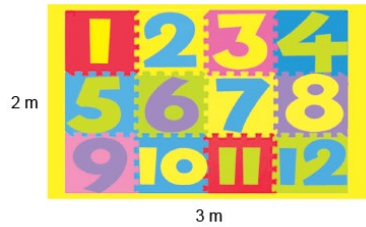
"The perimeter is 28 cm."

Observations/Documentation

Activity 7 Assessment Consolidation

Measuring Length and Perimeter (con't)

Selects and uses appropriate standard units



"I would use m because cm are too small. The perimeter is 10 m because $3 + 2 + 3 + 2 = 10$."

Relates standard units of length (1 m = 100 cm)

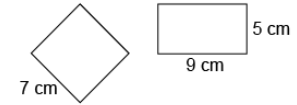


"The door has a perimeter of 8 m. Since 1 m = 100 cm, 8 m = 800 cm."

Uses smaller units to give more accurate measures

"The rug is between 2 m and 3 m long. If I use cm, I can be more accurate: 285 cm."

Compares using standard units




"Rectangle: $5 + 9 + 5 + 9 = 28$ cm
Square: $7 \times 4 = 28$ cm. The perimeters are the same."

Observations/Documentation


Activity 8 Assessment

Measuring the Passage of Time

Time and Measurement Relationships		
<p>Uses non-standard units to measure passage of time</p> <p>“I used a sand timer and in one flip, I did 30 jumping jacks.”</p>	<p>Uses benchmarks to estimate and measure time</p> <p>“Two episodes of my favourite TV show take 1 hour.”</p>	<p>Uses standard units to measure passage of time</p> <p>“I used a stopwatch. Recess lasts 20 minutes. I used a calendar. The school week lasts 5 days.”</p>
Observations/Documentation		
<p>Selects and uses appropriate unit to measure time</p> <p>“I would measure a school day in hours and the time it takes to walk to the library in minutes.”</p>	<p>Reads time on an analogue and digital clock</p>  <p>“It is 10 minutes after 9.”</p>	<p>Understands relationships among time units</p> <p>“1 hour is 60 minutes. So, 2 hours is 120 minutes. 1 year is 12 months. So, 2 years is 24 months</p>
Observations/Documentation		


Activity 9 Assessment

Relationships Among Units of Time

Time and Measurement Relationships		
<p>Uses non-standard units to measure passage of time</p> <p>“I used a sand timer and in one flip, I did 30 jumping jacks.”</p>	<p>Uses benchmarks to estimate and measure time</p> <p>“Two episodes of my favourite TV show take 1 hour.”</p>	<p>Uses standard units to measure passage of time</p> <p>“I used a stopwatch. Recess lasts 20 minutes. I used a calendar. The school week lasts 5 days.”</p>
Observations/Documentation		
<p>Selects and uses appropriate unit to measure time</p> <p>“I would measure a school day in hours and the time it takes to walk to the library in minutes.”</p>	<p>Reads time on an analogue and digital clock</p>  <p>“It is 10 minutes after 9.”</p>	<p>Understands relationships among time units</p> <p>“1 hour is 60 minutes. So, 2 hours is 120 minutes. 1 year is 12 months. So, 2 years is 24 months</p>
Observations/Documentation		


Activity 10 Assessment

Telling Time


Time and Measurement Relationships		
<p>Uses non-standard units to measure passage of time</p> <p>“I used a sand timer and in one flip, I did 30 jumping jacks.”</p>	<p>Uses benchmarks to estimate and measure time</p> <p>“Two episodes of my favourite TV show take 1 hour.”</p>	<p>Uses standard units to measure passage of time</p> <p>“I used a stopwatch. Recess lasts 20 minutes. I used a calendar. The school week lasts 5 days.”</p>
Observations/Documentation		
<p>Selects and uses appropriate unit to measure time</p> <p>“I would measure a school day in hours and the time it takes to walk to the library in minutes.”</p>	<p>Reads time on an analogue and digital clock</p>  <p>“It is 10 minutes after 9.”</p>	<p>Understands relationships among time units</p> <p>“1 hour is 60 minutes. So, 2 hours is 120 minutes. 1 year is 12 months. So, 2 years is 24 months</p>
Observations/Documentation		

Activity 11 Assessment

Reading a Thermometer

Understanding Temperature			
<p>Relates temperature to experiences</p> <p>“When it is hot outside, I don’t need to wear a jacket. I can wear shorts.”</p>	<p>Creates benchmark temperatures for air and water</p> <p>“Room temperature is a benchmark for 20°C.”</p>	<p>Uses benchmarks to estimate temperatures</p> <p>“It is a bit warmer outside than the temperature in the classroom. I think it is about 23°C.”</p>	<p>Uses a thermometer to measure temperature</p>  <p>“The outside temperature is 25°C.”</p>
Observations/Documentation			

Activity 12 Assessment Consolidation

Time and Measurement Relationships		
<p>Uses non-standard units to measure passage of time</p> <p>“I used a sand timer and in one flip, I did 30 jumping jacks.”</p>	<p>Uses benchmarks to estimate and measure time</p> <p>“Two episodes of my favourite TV show take 1 hour.”</p>	<p>Uses standard units to measure passage of time</p> <p>“I used a stopwatch. Recess lasts 20 minutes. I used a calendar. The school week lasts 5 days.”</p>
Observations/Documentation		
<p>Selects and uses appropriate unit to measure time</p> <p>“I would measure a school day in hours and the time it takes to walk to the library in minutes.”</p>	<p>Reads time on an analogue and digital clock</p>  <p>“It is 10 minutes after 9.”</p>	<p>Understands relationships among time units</p> <p>“1 hour is 60 minutes. So, 2 hours is 120 minutes. 1 year is 12 months. So, 2 years is 24 months</p>
Observations/Documentation		

Activity 13 Assessment

Measuring Area Using Non-Standard Units

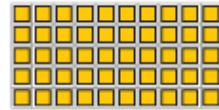
Using Standard Units to Estimate, Measure, and Compare Area

Uses non-standard units to measure



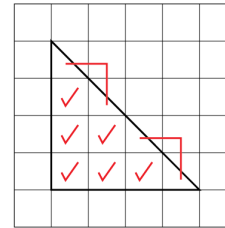
"Its area is 8 Colour Tiles."

Uses standard-sized items to measure



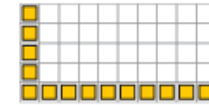
"Its area is 50 square centimetres."

Uses partial units to get more precise measure



"6 whole squares and
4 half squares.
Area is 8 square centimetres."

Measures using multiple copies of a unit



"I skip-counted by 10 five times:
10, 20, 30, 40, 50.
Area is 50 square centimetres."

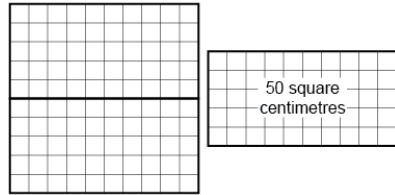
Observations/Documentation

Activity 13 Assessment

Measuring Area Using Non-Standard Units

Using Standard Units to Estimate, Measure, and Compare Area (con't)

Measures using intermediary shape (e.g., shape whose area is known)



"Each rectangle has area 50 square centimetres, so the area of the square is 100 square centimetres."

Uses benchmarks to estimate in standard units

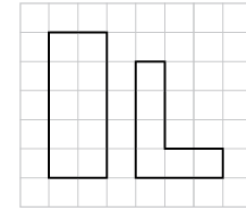


"Area of hand: about 100 square centimetres. The card is a bit bigger, so I estimate 125 square centimetres."

Selects and uses appropriate standard units

"I would use square metres to measure the area of the floor because it is much bigger than a square made from metre sticks."

Compares using standard units



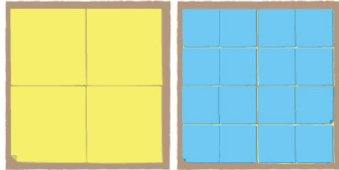
"The rectangle: 10 square centimetres is bigger than 6 square centimetres."

Activity 13 Assessment

Measuring Area Using Non-Standard Units

Relationships in Area, Mass, and Capacity

Measures using different non-standard units for area, mass, and capacity



"I covered the shape with big squares, then with small squares."

Uses the relationship between non-standard units to explain measures

"The bigger the cube, the fewer I needed to fill the milk carton.

The smaller the square, the more I needed to cover the shape."

Uses conservation of area and mass to predict measures



"I reshaped the modelling clay and its mass didn't change. It was 375 g both times."

Flexibly uses the relationships among measurement units

"375 g is less than 1 kg because 1 kg is 1000 g."

Observations/Documentation

Activity 14 Assessment

Measuring Area Using Standard Units

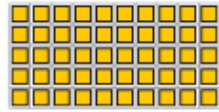
Using Standard Units to Estimate, Measure, and Compare Area

Uses non-standard units to measure



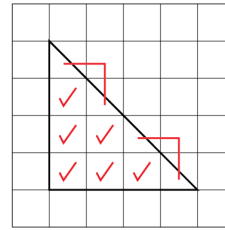
"Its area is 8 Colour Tiles."

Uses standard-sized items to measure



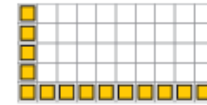
"Its area is 50 square centimetres."

Uses partial units to get more precise measure



"6 whole squares and
4 half squares.
Area is 8 square centimetres."

Measures using multiple copies of a unit



"I skip-counted by 10 five times:
10, 20, 30, 40, 50.
Area is 50 square centimetres."

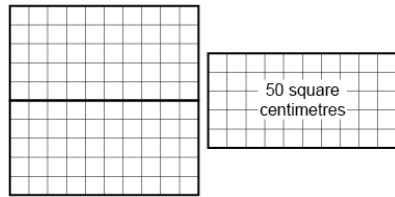
Observations/Documentation

Activity 14 Assessment

Measuring Area Using Standard Units

Using Standard Units to Estimate, Measure, and Compare Area (con't)

Measures using intermediary shape (e.g., shape whose area is known)



"Each rectangle has area 50 square centimetres, so the area of the square is 100 square centimetres."

Uses benchmarks to estimate in standard units

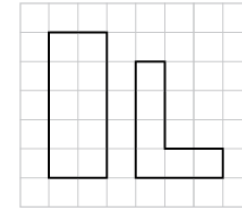


"Area of hand: about 100 square centimetres. The card is a bit bigger, so I estimate 125 square centimetres."

Selects and uses appropriate standard units

"I would use square metres to measure the area of the floor because it is much bigger than a square made from metre sticks."

Compares using standard units



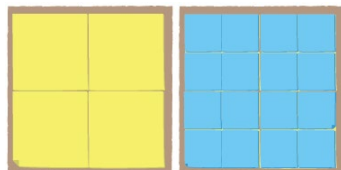
"The rectangle: 10 square centimetres is bigger than 6 square centimetres."

Activity 14 Assessment

Measuring Area Using Standard Units

Relationships in Area, Mass, and Capacity

Measures using different non-standard units for area, mass, and capacity



"I covered the shape with big squares, then with small squares."

Uses the relationship between non-standard units to explain measures

"The bigger the cube, the fewer I needed to fill the milk carton.

The smaller the square, the more I needed to cover the shape."

Uses conservation of area and mass to predict measures



"I reshaped the modelling clay and its mass didn't change. It was 375 g both times."

Flexibly uses the relationships among measurement units

"375 g is less than 1 kg because 1 kg is 1000 g."

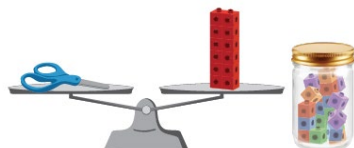
Observations/Documentation

Activity 15 Assessment

Measuring Mass

Using Standard Units to Estimate and Measure Mass and Capacity

Uses non-standard units to measure



“The scissors have a mass of about 12 linking cubes. The jar has a capacity of about 20 linking cubes.”

Uses multiple copies of standard-sized items to measure

“I added 1-g masses to the pan until the pans balanced. The eraser has a mass of 20 g.

I filled the 100-mL cylinder and poured it into the jug. I did this 6 times. The capacity of the jug is 600 mL.”

Measures using intermediary object (e.g., object whose mass/capacity is known)

“I know the soup can has a mass of about 300 g, so I started with that and added other masses.

I used the water bottle to fill the bowl. It didn't quite fill it, so I then used the 100-mL cylinder.”

Observations/Documentation

Activity 15 Assessment

Measuring Mass

Using Standard Units to Estimate and Measure Mass and Capacity (con't)

Uses benchmarks to estimate in standard units

“My pencil case is a bit heavier than a can of tuna, so I estimate 225 g.

The bottle is a bit smaller than a carton of milk, so I estimate 900 mL.”

Selects and uses appropriate standard units

“It’s lighter than a box of salt, so I will use grams.

It’s bigger than a milk carton, so I will use litres.”

Compares using standard units

“1 L is more than 750 mL, so the milk carton holds more than the yogurt tub.”

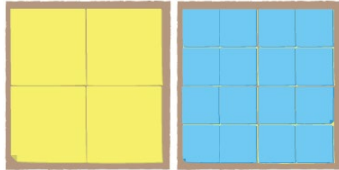
Observations/Documentation

Activity 15 Assessment

Measuring Mass

Relationships in Area, Mass, and Capacity

Measures using different non-standard units for area, mass, and capacity



"I covered the shape with big squares, then with small squares."

Uses the relationship between non-standard units to explain measures

"The bigger the cube, the fewer I needed to fill the milk carton."

The smaller the square, the more I needed to cover the shape."

Uses conservation of area and mass to predict measures



"I reshaped the modelling clay and its mass didn't change. It was 375 g both times."

Flexibly uses the relationships among measurement units

"375 g is less than 1 kg because 1 kg is 1000 g."

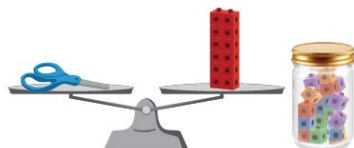
Observations/Documentation

Activity 16 Assessment

Measuring Capacity

Using Standard Units to Estimate and Measure Mass and Capacity

Uses non-standard units to measure



“The scissors have a mass of about 12 linking cubes. The jar has a capacity of about 20 linking cubes.”

Uses multiple copies of standard-sized items to measure

“I added 1-g masses to the pan until the pans balanced. The eraser has a mass of 20 g.

I filled the 100-mL cylinder and poured it into the jug. I did this 6 times. The capacity of the jug is 600 mL.”

Measures using intermediary object (e.g., object whose mass/capacity is known)

“I know the soup can has a mass of about 300 g, so I started with that and added other masses.

I used the water bottle to fill the bowl. It didn't quite fill it, so I then used the 100-mL cylinder.”

Observations/Documentation

Activity 16 Assessment

Measuring Capacity

Using Standard Units to Estimate and Measure Mass and Capacity (con't)

Uses benchmarks to estimate in standard units

“My pencil case is a bit heavier than a can of tuna, so I estimate 225 g.

The bottle is a bit smaller than a carton of milk, so I estimate 900 mL.”

Selects and uses appropriate standard units

“It’s lighter than a box of salt, so I will use grams.

It’s bigger than a milk carton, so I will use litres.”

Compares using standard units

“1 L is more than 750 mL, so the milk carton holds more than the yogurt tub.”

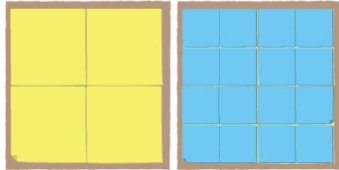
Observations/Documentation

Activity 16 Assessment

Measuring Capacity

Relationships in Area, Mass, and Capacity

Measures using different non-standard units for area, mass, and capacity



"I covered the shape with big squares, then with small squares."

Uses the relationship between non-standard units to explain measures

"The bigger the cube, the fewer I needed to fill the milk carton.

The smaller the square, the more I needed to cover the shape."

Uses conservation of area and mass to predict measures



"I reshaped the modelling clay and its mass didn't change. It was 375 g both times."

Flexibly uses the relationships among measurement units

"375 g is less than 1 kg because 1 kg is 1000 g."

Observations/Documentation

Activity 17 Assessment Consolidation

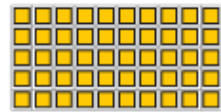
Using Standard Units to Estimate, Measure, and Compare Area

Uses non-standard units to measure



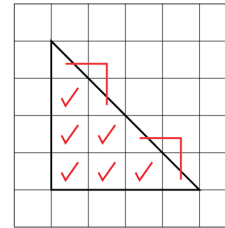
"Its area is 8 Colour Tiles."

Uses standard-sized items to measure



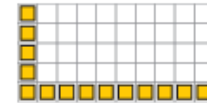
"Its area is 50 square centimetres."

Uses partial units to get more precise measure



"6 whole squares and
4 half squares.
Area is 8 square centimetres."

Measures using multiple copies of a unit



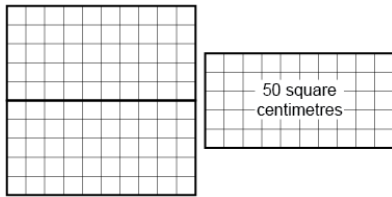
"I skip-counted by 10 five times:
10, 20, 30, 40, 50.
Area is 50 square centimetres."

Observations/Documentation

Activity 17 Assessment Consolidation

Using Standard Units to Estimate, Measure, and Compare Area (con't)

Measures using intermediary shape (e.g., shape whose area is known)



"Each rectangle has area 50 square centimetres, so the area of the square is 100 square centimetres."

Uses benchmarks to estimate in standard units

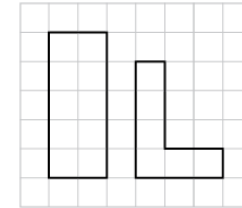


"Area of hand: about 100 square centimetres. The card is a bit bigger, so I estimate 125 square centimetres."

Selects and uses appropriate standard units

"I would use square metres to measure the area of the floor because it is much bigger than a square made from metre sticks."

Compares using standard units

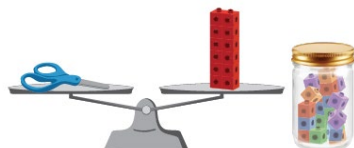


"The rectangle: 10 square centimetres is bigger than 6 square centimetres."

Activity 17 Assessment Consolidation

Using Standard Units to Estimate and Measure Mass and Capacity

Uses non-standard units to measure



“The scissors have a mass of about 12 linking cubes. The jar has a capacity of about 20 linking cubes.”

Uses multiple copies of standard-sized items to measure

“I added 1-g masses to the pan until the pans balanced. The eraser has a mass of 20 g.

I filled the 100-mL cylinder and poured it into the jug. I did this 6 times. The capacity of the jug is 600 mL.”

Measures using intermediary object (e.g., object whose mass/capacity is known)

“I know the soup can has a mass of about 300 g, so I started with that and added other masses.

I used the water bottle to fill the bowl. It didn't quite fill it, so I then used the 100-mL cylinder.”

Observations/Documentation

Activity 17 Assessment Consolidation

Using Standard Units to Estimate and Measure Mass and Capacity (con't)

Uses benchmarks to estimate in standard units

“My pencil case is a bit heavier than a can of tuna, so I estimate 225 g.

The bottle is a bit smaller than a carton of milk, so I estimate 900 mL.”

Selects and uses appropriate standard units

“It’s lighter than a box of salt, so I will use grams.

It’s bigger than a milk carton, so I will use litres.”

Compares using standard units

“1 L is more than 750 mL, so the milk carton holds more than the yogurt tub.”

Observations/Documentation

Activity 1 Assessment

Sorting Polygons

Investigating Geometric Attributes of 2-D Shapes

Recognizes and names familiar 2-D shapes

"The top of my desk has the shape of a rectangle."

Groups shapes that share the same geometric attributes



"The first three shapes all have 5 sides, so they are pentagons. The last shape doesn't belong. It has 6 sides."

Analyzes geometric attributes of 2-D shapes (e.g., number and length of sides, number of vertices)



"The first two are irregular pentagons as not all sides are equal. The third one is regular because all sides are equal."

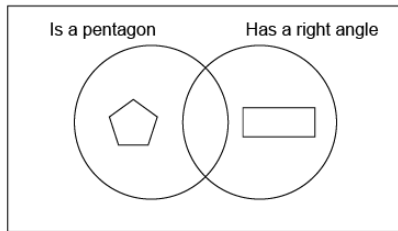
Observations/Documentation

Activity 1 Assessment

Sorting Polygons

Investigating Geometric Attributes of 2-D Shapes (con't)

Uses attributes to compare and sort shapes



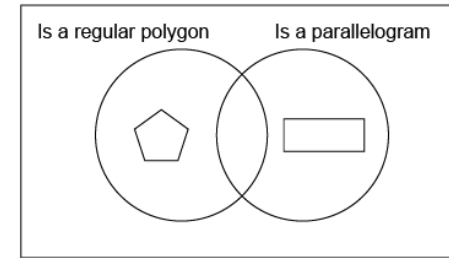
"I need a shape with 5 sides and at least one right angle to go in the overlap."

Uses attributes to name shapes in different ways



"A rectangle can also be called a parallelogram because it has 2 pairs of parallel sides."

Sorts, classifies, and names shapes flexibly using geometric attributes



"The sorting rule could be 'Is a regular polygon and is a parallelogram.'"

Observations/Documentation

Activity 2 Assessment

What's the Sorting Rule?

Investigating Geometric Attributes of 2-D Shapes

Recognizes and names familiar 2-D shapes

"The top of my desk has the shape of a rectangle."

Groups shapes that share the same geometric attributes



"The first three shapes all have 5 sides, so they are pentagons. The last shape doesn't belong. It has 6 sides."

Analyzes geometric attributes of 2-D shapes (e.g., number and length of sides, number of vertices)



"The first two are irregular pentagons as not all sides are equal. The third one is regular because all sides are equal."

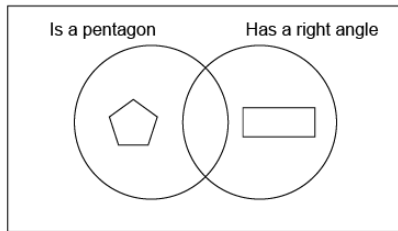
Observations/Documentation

Activity 2 Assessment

What's the Sorting Rule?

Investigating Geometric Attributes of 2-D Shapes (con't)

Uses attributes to compare and sort shapes



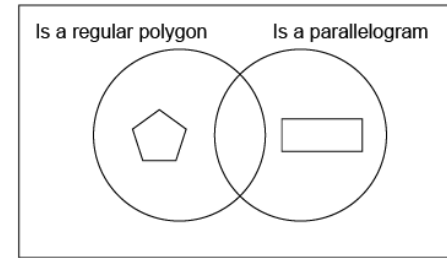
"I need a shape with 5 sides and at least one right angle to go in the overlap."

Uses attributes to name shapes in different ways



"A rectangle can also be called a parallelogram because it has 2 pairs of parallel sides."

Sorts, classifies, and names shapes flexibly using geometric attributes



"The sorting rule could be 'Is a regular polygon and is a parallelogram.'"

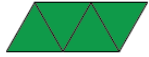
Observations/Documentation

Activity 3 Assessment

Composing Shapes

Composing and Decomposing 2-D Shapes

Constructs composite shape using copies of the same Pattern Block



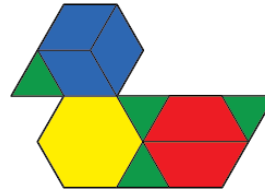
"I can use 4 triangles to make a parallelogram."

Constructs composite shape from Pattern Blocks in more than one way



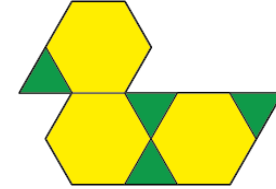
"I can also use 2 triangles and a rhombus to make a parallelogram."

Completes a picture outline with Pattern Blocks



"I used 10 blocks to cover the outline. I tried to use a variety of blocks."

Constructs composite shapes in many ways by decomposing shapes and rearranging parts



"I traded 3 blue blocks for a yellow block, and 2 red blocks for a yellow block. I was able to cover the outline using only 7 blocks. When I use only green blocks, it takes 22 blocks."

Observations/Documentation

Activity 4 Assessment

Exploring Quadrilaterals

Investigating Geometric Attributes of 2-D Shapes

Recognizes and names familiar 2-D shapes

"The top of my desk has the shape of a rectangle."

Groups shapes that share the same geometric attributes



"The first three shapes all have 5 sides, so they are pentagons. The last shape doesn't belong. It has 6 sides."

Analyzes geometric attributes of 2-D shapes (e.g., number and length of sides, number of vertices)



"The first two are irregular pentagons as not all sides are equal. The third one is regular because all sides are equal."

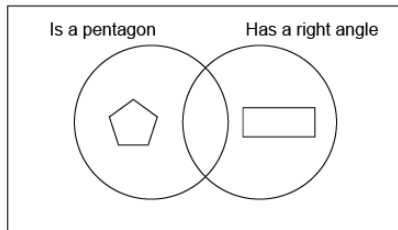
Observations/Documentation

Activity 4 Assessment

Exploring Quadrilaterals

Investigating Geometric Attributes of 2-D Shapes (con't)

Uses attributes to compare and sort shapes



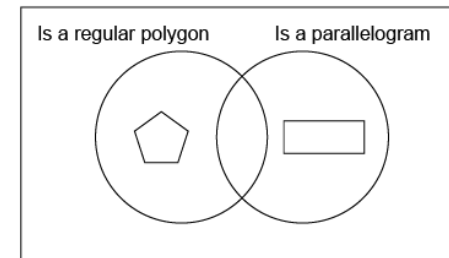
"I need a shape with 5 sides and at least one right angle to go in the overlap."

Uses attributes to name shapes in different ways



"A rectangle can also be called a parallelogram because it has 2 pairs of parallel sides."

Sorts, classifies, and names shapes flexibly using geometric attributes



"The sorting rule could be 'Is a regular polygon and is a parallelogram.'"

Observations/Documentation

Activity 5 Assessment Consolidation

Investigating Geometric Attributes of 2-D Shapes

Recognizes and names familiar 2-D shapes

"The top of my desk has the shape of a rectangle."

Groups shapes that share the same geometric attributes



"The first three shapes all have 5 sides, so they are pentagons. The last shape doesn't belong. It has 6 sides."

Analyzes geometric attributes of 2-D shapes (e.g., number and length of sides, number of vertices)



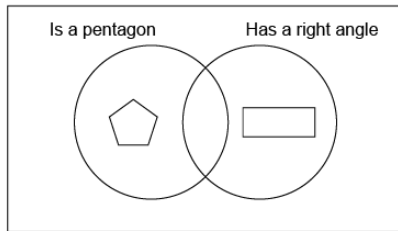
"The first two are irregular pentagons as not all sides are equal. The third one is regular because all sides are equal."

Observations/Documentation

Activity 5 Assessment Consolidation

Investigating Geometric Attributes of 2-D Shapes (con't)

Uses attributes to compare and sort shapes



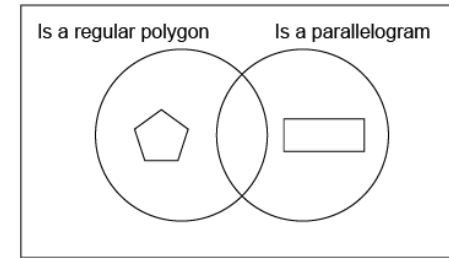
"I need a shape with 5 sides and at least one right angle to go in the overlap."

Uses attributes to name shapes in different ways



"A rectangle can also be called a parallelogram because it has 2 pairs of parallel sides."

Sorts, classifies, and names shapes flexibly using geometric attributes



"The sorting rule could be 'Is a regular polygon and is a parallelogram.'"

Observations/Documentation

Activity 5 Assessment Consolidation

Composing and Decomposing 2-D Shapes

Constructs composite shape using copies of the same Pattern Block



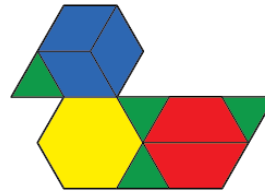
"I can use 4 triangles to make a parallelogram."

Constructs composite shape from Pattern Blocks in more than one way



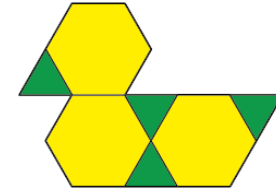
"I can also use 2 triangles and a rhombus to make a parallelogram."

Completes a picture outline with Pattern Blocks



"I used 10 blocks to cover the outline. I tried to use a variety of blocks."

Constructs composite shapes in many ways by decomposing shapes and rearranging parts

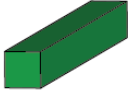





"I traded 3 blue blocks for a yellow block, and 2 red blocks for a yellow block. I was able to cover the outline using only 7 blocks. When I use only green blocks, it takes 22 blocks."

Observations/Documentation

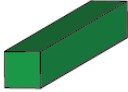



Activity 6 Assessment

Exploring Geometric Attributes of Solids

Investigating Geometric Attributes of 3-D Solids			
<p>Identifies and describes geometric attributes of individual solids</p>  <p>“This 3-D solid has 2 square bases, 4 rectangular faces, 12 edges, and 8 vertices.”</p> <p>Or “This 3-D solid has 2 rectangular bases, 2 square faces, 2 rectangular faces, 12 edges, and 8 vertices.”</p>	<p>Groups solids that share the same geometric attributes</p>  <p>“All these solids have the same geometric attributes, so they are all square-based prisms.”</p>	<p>Builds solids based on given geometric attributes</p>  <p>“I made a square pyramid. It has 4 triangle faces and 1 square base.”</p>	<p>Sorts, classifies and names solids using geometric attributes</p>  <p>“All pyramids have faces that are triangles.”</p>
Observations/Documentation			

Activity 7 Assessment

Building Solids

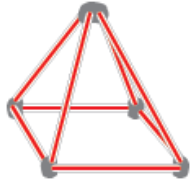
Investigating Geometric Attributes of 3-D Solids			
<p>Identifies and describes geometric attributes of individual solids</p>  <p>“This 3-D solid has 2 square bases, 4 rectangular faces, 12 edges, and 8 vertices.”</p> <p>Or “This 3-D solid has 2 rectangular bases, 2 square faces, 2 rectangular faces, 12 edges, and 8 vertices.”</p>	<p>Groups solids that share the same geometric attributes</p>  <p>“All these solids have the same geometric attributes, so they are all square-based prisms.”</p>	<p>Builds solids based on given geometric attributes</p>  <p>“I made a square pyramid. It has 4 triangle faces and 1 square base.”</p>	<p>Sorts, classifies and names solids using geometric attributes</p>  <p>“All pyramids have faces that are triangles.”</p>
Observations/Documentation			

Activity 8 Assessment

Constructing Skeletons

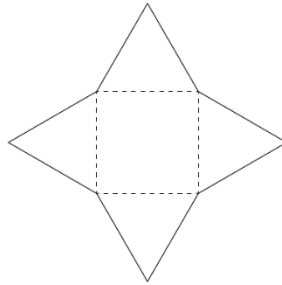
Composing and Decomposing 3-D Solids

Constructs skeletons of 3-D solids by decomposing solids into 2-D shapes and matching



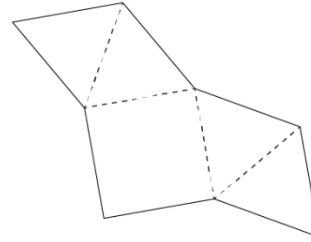
"I started by making a square as the base, then added the triangular faces."

Identifies nets of 3-D solids by folding



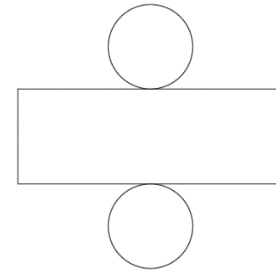
"I folded this net and made a square-based pyramid."

Recognizes nets of 3-D solids by decomposing and matching (visualization)



"When I imagine folding it in my mind, I see the triangles wrapping around the square to make a pyramid."

Constructs and deconstructs solids flexibly using skeletons and nets



"This net will make a cylinder, but I can't make a skeleton of a cylinder because it doesn't have vertices and edges."

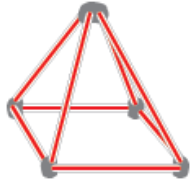
Observations/Documentation

Activity 9 Assessment

Working with Nets

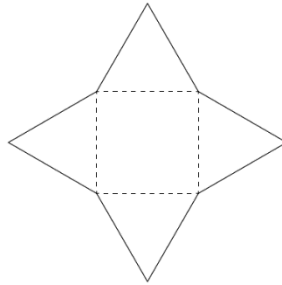
Composing and Decomposing 3-D Solids

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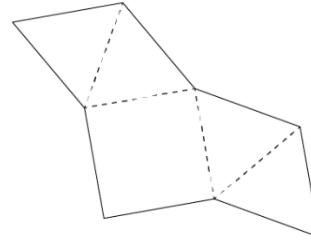
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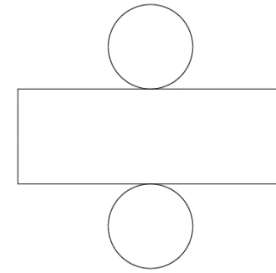
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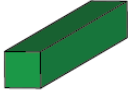
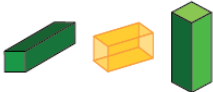


Constructs and deconstructs solids flexibly using skeletons and nets



"This net will make a cylinder, but I can't make a skeleton of a cylinder because it doesn't have vertices and edges."

Observations/Documentation

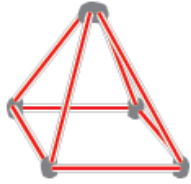
Activity 10 Assessment Consolidation

Investigating Geometric Attributes of 3-D Solids			
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Observations/Documentation			

Activity 10 Assessment Consolidation

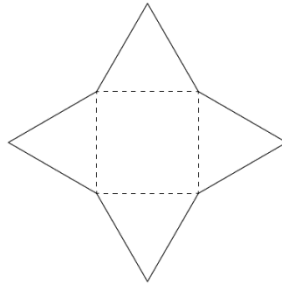
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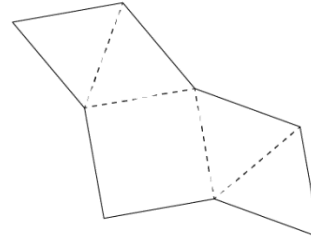
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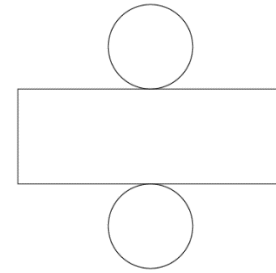
"I folded this net and made a square-based pyramid."

Recognizes nets of 3-D solids by decomposing and matching (visualization)



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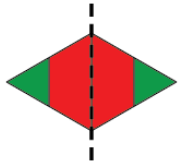
Observations/Documentation

Activity 11 Assessment

Identifying Symmetrical Designs

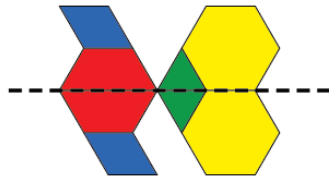
Exploring Symmetry with 2-D Shapes

Identifies a line of symmetry in a design



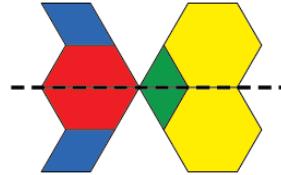
"I see one line of symmetry. If I fold the design on the line, the 2 sides match exactly."

Completes a symmetrical design, placing most shapes correctly



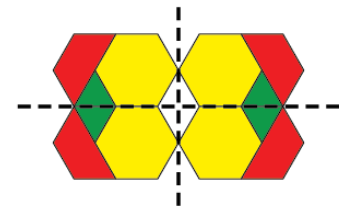
"I'm not sure about the blue block, but it looks right to me."

Successfully completes a symmetrical design and uses math language to describe it



"This design is symmetrical because all the blocks below the line are reflections of the blocks above the line. I used a Mira to check."

Constructs symmetrical designs and identifies all lines of symmetry






"I made my own design. It has 2 lines of symmetry."

Observations/Documentation

Activity 12 Assessment

Exploring Congruency

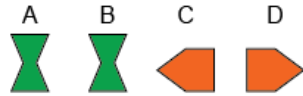
Applying Transformations to 2-D Shapes		
<p>Identifies congruent shapes with same orientation</p>  <p>“These shapes are congruent because they have the same shape and size and are facing the same way.”</p>	<p>Identifies congruent shapes with different orientations (uses physical movement)</p>  <p>“These shapes are congruent because when I turn one shape, it matches the other shape exactly.”</p>	<p>Identifies congruent shapes with different orientations (uses visualization)</p>  <p>“These shapes are congruent because I can picture turning one shape half a turn to match the other.”</p>
Observations/Documentation		

Activity 12 Assessment

Exploring Congruency

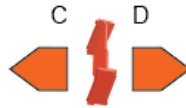
Applying Transformations to 2-D Shapes (con't)

Identifies translations but struggles to differentiate between reflections and rotations



"I would translate A to the right to get B.
I'm not sure whether I would reflect or rotate C to get D."

Performs the transformation needed to match two congruent shapes (i.e., rotation, reflection, or translation)



"I used a Mira and the two shapes matched exactly. So, Shape C was reflected."

Uses orientation to flexibly predict and describe transformation of congruent shapes






"From A to B: same orientation, so translation to the right; from C to D: opposite orientations, so a reflection in vertical line between C and D; from E to F: different orientations, so quarter-turn clockwise rotation."

Observations/Documentation

Activity 13 Assessment

Exploring Transformations

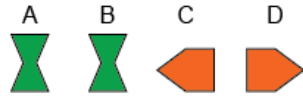
Applying Transformations to 2-D Shapes		
<p>Identifies congruent shapes with same orientation</p>  <p>“These shapes are congruent because they have the same shape and size and are facing the same way.”</p>	<p>Identifies congruent shapes with different orientations (uses physical movement)</p>  <p>“These shapes are congruent because when I turn one shape, it matches the other shape exactly.”</p>	<p>Identifies congruent shapes with different orientations (uses visualization)</p>  <p>“These shapes are congruent because I can picture turning one shape half a turn to match the other.”</p>
Observations/Documentation		

Activity 13 Assessment

Exploring Transformations

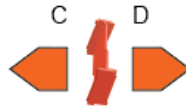
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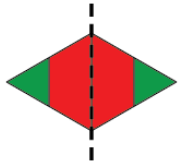
"From A to B: same orientation, so translation to the right; from C to D: opposite orientations, so a reflection in vertical line between C and D; from E to F: different orientations, so quarter-turn clockwise rotation."

Observations/Documentation

Activity 14 Assessment Consolidation

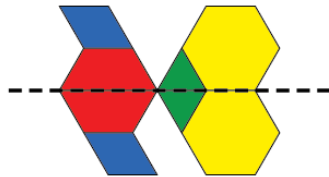
Exploring Symmetry with 2-D Shapes

Identifies a line of symmetry in a design



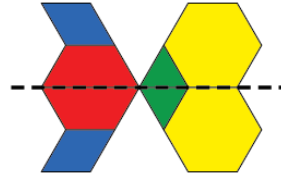
"I see one line of symmetry. If I fold the design on the line, the 2 sides match exactly."

Completes a symmetrical design, placing most shapes correctly



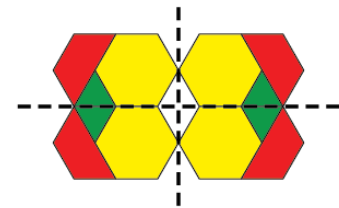
"I'm not sure about the blue block, but it looks right to me."

Successfully completes a symmetrical design and uses math language to describe it



"This design is symmetrical because all the blocks below the line are reflections of the blocks above the line. I used a Mira to check."




Constructs symmetrical designs and identifies all lines of symmetry



"I made my own design. It has 2 lines of symmetry."

Observations/Documentation

Activity 14 Assessment Consolidation

Applying Transformations to 2-D Shapes		
<p>Identifies congruent shapes with same orientation</p>  <p>“These shapes are congruent because they have the same shape and size and are facing the same way.”</p>	<p>Identifies congruent shapes with different orientations (uses physical movement)</p>  <p>“These shapes are congruent because when I turn one shape, it matches the other shape exactly.”</p>	<p>Identifies congruent shapes with different orientations (uses visualization)</p>  <p>“These shapes are congruent because I can picture turning one shape half a turn to match the other.”</p>
Observations/Documentation		

Activity 14 Assessment Consolidation

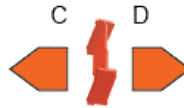
Applying Transformations to 2-D Shapes (con't)

Identifies translations but struggles to differentiate between reflections and rotations



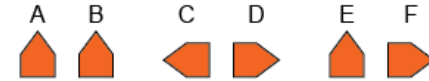
"I would translate A to the right to get B.
I'm not sure whether I would reflect or rotate C to get D."

Performs the transformation needed to match two congruent shapes (i.e., rotation, reflection, or translation)



"I used a Mira and the two shapes matched exactly. So, Shape C was reflected."

Uses orientation to flexibly predict and describe transformation of congruent shapes



"From A to B: same orientation, so translation to the right; from C to D: opposite orientations, so a reflection in vertical line between C and D; from E to F: different orientations, so quarter-turn clockwise rotation."

Observations/Documentation

Activity 15 Assessment

Describing Location

Locating and Mapping Objects

Uses positional language to describe location



“The green triangle is above the orange square.
The orange square is below the green triangle.”

Uses positional and directional language to locate objects on a grid map



“The Grocery Store is 1 square up from the Basketball Court. The Bank is 1 square to the left of the Grocery Store.”

Describes the movement of an object from one location to another on a grid map



“To get from the Hospital to the Bank, I walk forward 2 squares to the Vet, then turn left and walk forward 2 squares.”

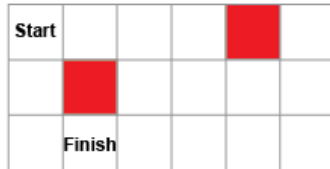
Observations/Documentation

Activity 15 Assessment

Describing Location

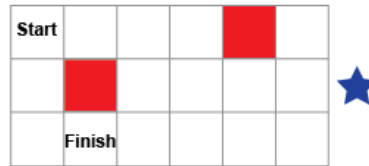
Locating and Mapping Objects (con't)

Writes code to move from Start to Finish on a grid



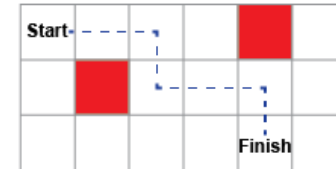
"From Start, move 2 squares right, 2 squares down, and 1 square left."

Considers perspective to give directions and code efficiently and flexibly



"My partner is looking at the grid from the right. So, from Start, move 2 squares down, 2 squares left, and 1 square up."

Uses loops to show repeated steps in a code



"Repeat 2 times: Move right 2 steps, then 1 step down."

Observations/Documentation

Activity 16 Assessment

Describing Movement on a Map

Locating and Mapping Objects

Uses positional language to describe location



“The green triangle is above the orange square.
The orange square is below the green triangle.”

Uses positional and directional language to locate objects on a grid map



“The Grocery Store is 1 square up from the Basketball Court. The Bank is 1 square to the left of the Grocery Store.”

Describes the movement of an object from one location to another on a grid map



“To get from the Hospital to the Bank, I walk forward 2 squares to the Vet, then turn left and walk forward 2 squares.”

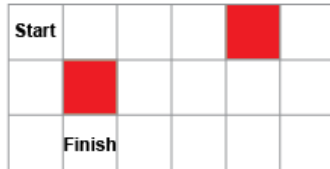
Observations/Documentation

Activity 16 Assessment

Describing Movement on a Map

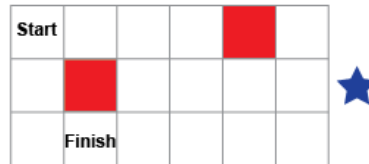
Locating and Mapping Objects (con't)

Writes code to move from Start to Finish on a grid



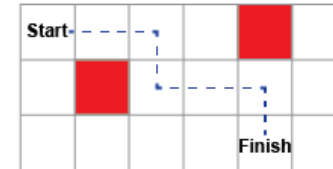
"From Start, move 2 squares right, 2 squares down, and 1 square left."

Considers perspective to give directions and code efficiently and flexibly



"My partner is looking at the grid from the right. So, from Start, move 2 squares down, 2 squares left, and 1 square up."

Uses loops to show repeated steps in a code



"Repeat 2 times: Move right 2 steps, then 1 step down."

Observations/Documentation

Activity 17 Assessment

Coding on a Grid

Locating and Mapping Objects

Uses positional language to describe location



“The green triangle is above the orange square.
The orange square is below the green triangle.”

Uses positional and directional language to locate objects on a grid map



“The Grocery Store is 1 square up from the Basketball Court. The Bank is 1 square to the left of the Grocery Store.”

Describes the movement of an object from one location to another on a grid map



“To get from the Hospital to the Bank, I walk forward 2 squares to the Vet, then turn left and walk forward 2 squares.”

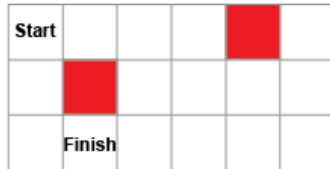
Observations/Documentation

Activity 17 Assessment

Coding on a Grid

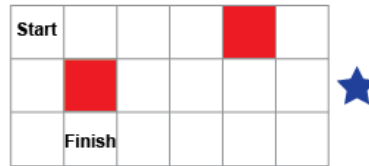
Locating and Mapping Objects (con't)

Writes code to move from Start to Finish on a grid



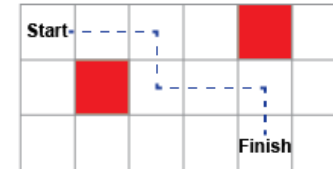
"From Start, move 2 squares right, 2 squares down, and 1 square left."

Considers perspective to give directions and code efficiently and flexibly



"My partner is looking at the grid from the right. So, from Start, move 2 squares down, 2 squares left, and 1 square up."

Uses loops to show repeated steps in a code



"Repeat 2 times: Move right 2 steps, then 1 step down."

Observations/Documentation

Activity 18 Assessment

Exploring Loops in Coding

Locating and Mapping Objects

Uses positional language to describe location



“The green triangle is above the orange square.
The orange square is below the green triangle.”

Uses positional and directional language to locate objects on a grid map



“The Grocery Store is 1 square up from the Basketball Court. The Bank is 1 square to the left of the Grocery Store.”

Describes the movement of an object from one location to another on a grid map



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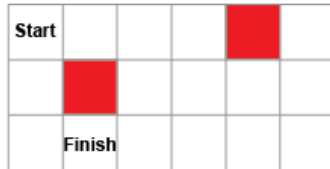
Observations/Documentation

Activity 18 Assessment

Exploring Loops in Coding

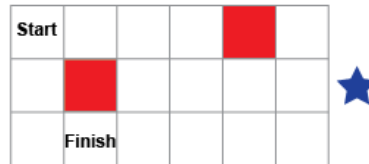
Locating and Mapping Objects (con't)

Writes code to move from Start to Finish on a grid



"From Start, move 2 squares right, 2 squares down, and 1 square left."

Considers perspective to give directions and code efficiently and flexibly



"My partner is looking at the grid from the right. So, from Start, move 2 squares down, 2 squares left, and 1 square up."

Uses loops to show repeated steps in a code



"Repeat 2 times: Move right 2 steps, then 1 step down."

Observations/Documentation

Activity 19 Assessment Consolidation

Locating and Mapping Objects

Uses positional language to describe location



“The green triangle is above the orange square.
The orange square is below the green triangle.”

Uses positional and directional language to locate objects on a grid map



“The Grocery Store is 1 square up from the Basketball Court. The Bank is 1 square to the left of the Grocery Store.”

Describes the movement of an object from one location to another on a grid map



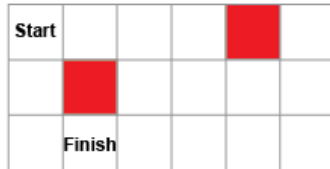
“To get from the Hospital to the Bank, I walk forward 2 squares to the Vet, then turn left and walk forward 2 squares.”

Observations/Documentation

Activity 19 Assessment Consolidation

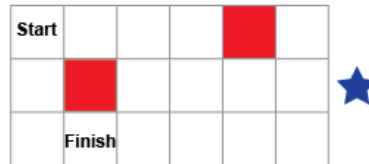
Locating and Mapping Objects (con't)

Writes code to move from Start to Finish on a grid



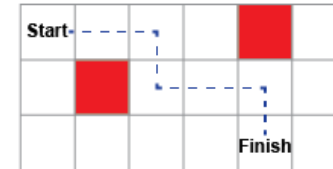
"From Start, move 2 squares right, 2 squares down, and 1 square left."

Considers perspective to give directions and code efficiently and flexibly



"My partner is looking at the grid from the right. So, from Start, move 2 squares down, 2 squares left, and 1 square up."

Uses loops to show repeated steps in a code



"Repeat 2 times: Move right 2 steps, then 1 step down."

Observations/Documentation

Activity 1 Assessment

Interpreting Bar Graphs

Reading and Interpreting Data Displays

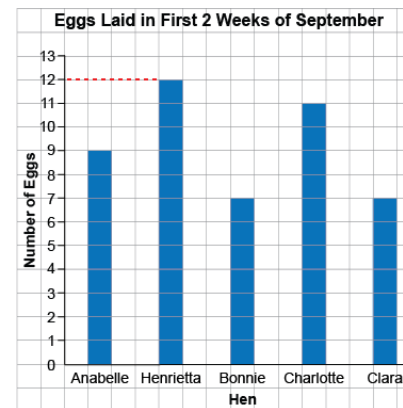
Notices the basic shape of graph

Counts symbols or squares to read data

Uses scale to read data

"1, 2, 3, ..., 10, 11, 12 squares are shaded.
Henrietta laid 12 eggs."

"The bar has height 12. Henrietta laid
12 eggs."



Observations/Documentation

Activity 1 Assessment

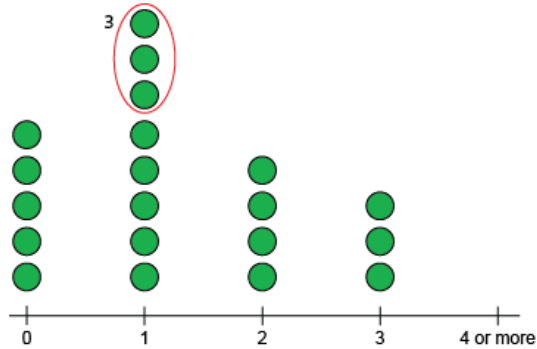
Interpreting Bar Graphs

Reading and Interpreting Data Displays (con't)

Makes direct comparisons between data

"1 squirrel was seen 3 more times than 0 squirrels."

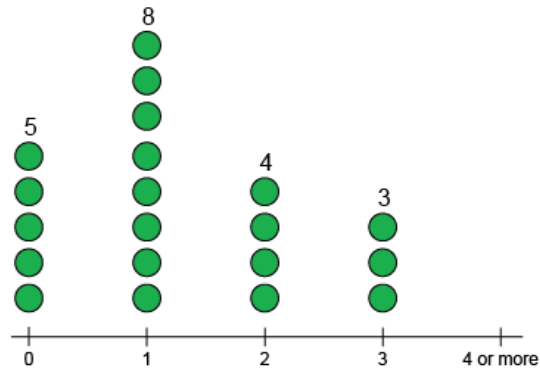
Squirrels Seen in One Hour (Winter)



Uses data to answer some questions

" $5 + 8 + 4 + 3 = 20$; 20 students were surveyed."

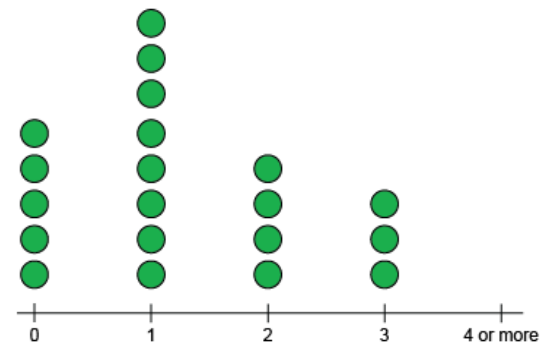
Squirrels Seen in One Hour (Winter)



Draws conclusions from data

"Most students saw 1 squirrel in one hour in the winter."

Squirrels Seen in One Hour (Winter)



Observations/Documentation

Activity 2 Assessment

Interpreting Line Plots

Reading and Interpreting Data Displays

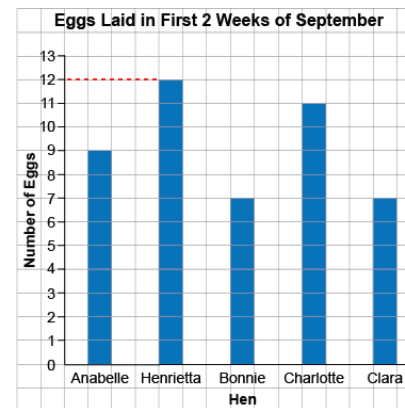
Notices the basic shape of graph

Counts symbols or squares to read data

Uses scale to read data

"1, 2, 3, ..., 10, 11, 12 squares are shaded.
Henrietta laid 12 eggs."

"The bar has height 12. Henrietta laid
12 eggs."



Observations/Documentation

Activity 2 Assessment

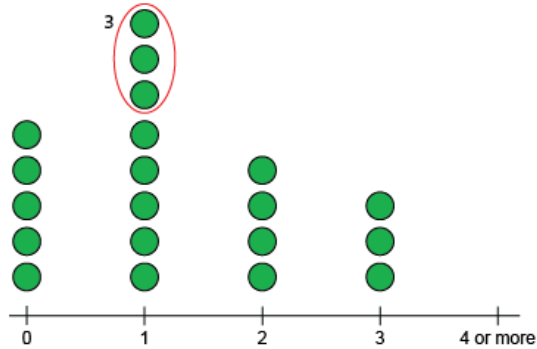
Interpreting Line Plots

Reading and Interpreting Data Displays (con't)

Makes direct comparisons between data

"1 squirrel was seen 3 more times than 0 squirrels."

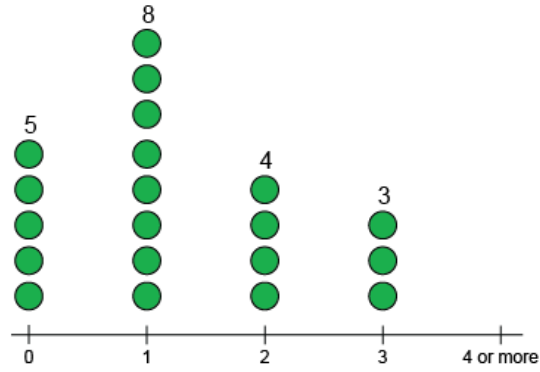
Squirrels Seen in One Hour (Winter)



Uses data to answer some questions

" $5 + 8 + 4 + 3 = 20$; 20 students were surveyed."

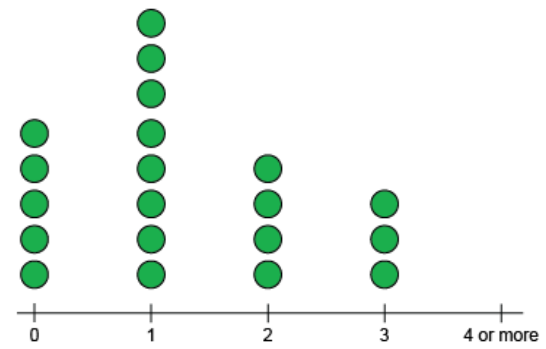
Squirrels Seen in One Hour (Winter)



Draws conclusions from data

"Most students saw 1 squirrel in one hour in the winter."

Squirrels Seen in One Hour (Winter)



Observations/Documentation

Activity 3 Assessment

Collecting Data

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

Activity 3 Assessment

Collecting Data

Interpreting Data and Making Informed Decisions

No organization of data

shade, water, AC, swim, water,
water, shade, swim, water, water

Uses class list; no interpretation

- ✓ Juin Find shade
- Tommy
- ✓ Tai Swim
- ✓ Ioana Find Shade
- ✓ Mark Drink water
- ✓ Alex Swim
- ✓ Kim Drink water
- Jon
- ✓ Sadia Turn up AC
- ✓ Lise Drink water
- ✓ Dimitri Drink water
- Vicky
- ✓ Ali Drink water

"I'm not sure which answer was
chosen most often."

Uses tally chart, table, or list

"I made a tally chart so I can easily
see how many chose each answer."

Swim	
Find shade	
Turn up AC	
Drink water	
Other	

Uses collected data to answer
question

"Most students drink water."

Swim	
Find shade	
Turn up AC	
Drink water	
Other	

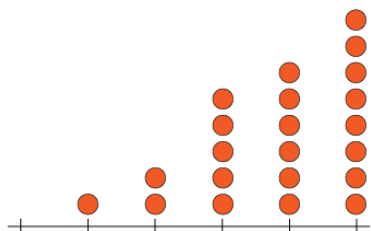
Observations/Documentation

Activity 4 Assessment

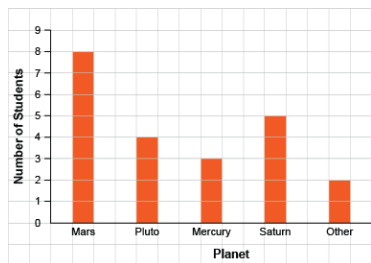
Drawing Bar Graphs

Creating Graphical Displays

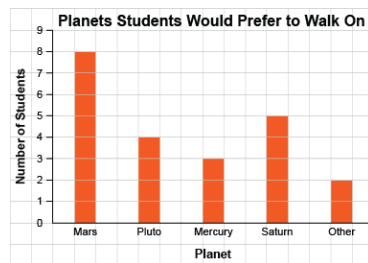
Creates graph but does not relate sample responses to labels



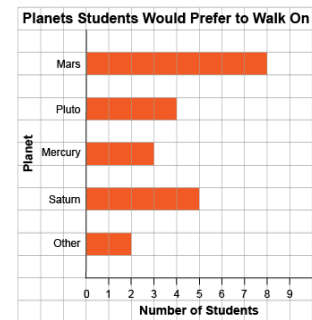
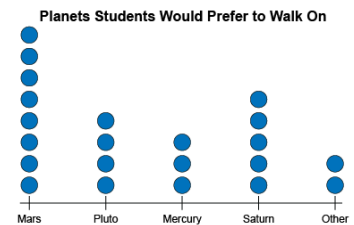
Creates graph with labels but omits title or scale



Successfully creates graphs (always of same type)



Creates graphs flexibly; shows same data on different graph types



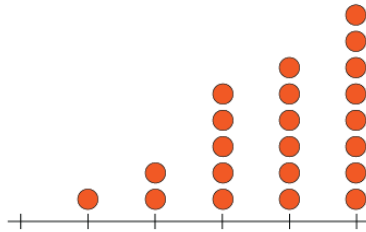
Observations/Documentation

Activity 5 Assessment

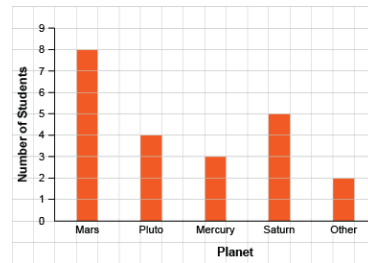
Drawing Line Plots

Creating Graphical Displays

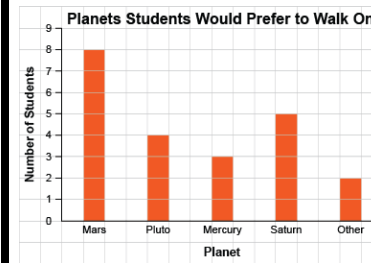
Creates graph but does not relate sample responses to labels



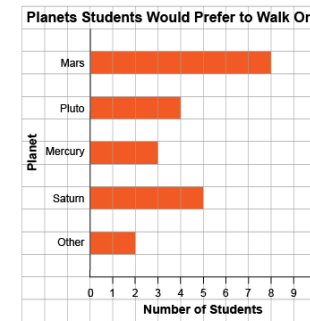
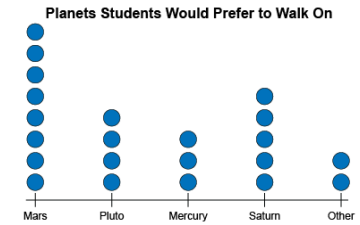
Creates graph with labels but omits title or scale



Successfully creates graphs (always of same type)



Creates graphs flexibly; shows same data on different graph types

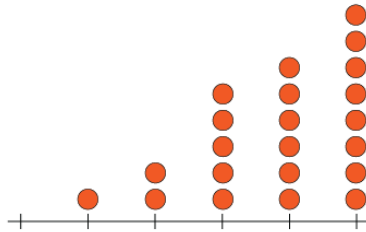


Observations/Documentation

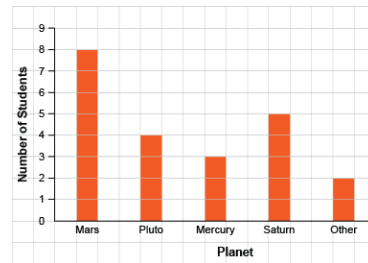
Activity 6 Assessment Consolidation

Creating Graphical Displays

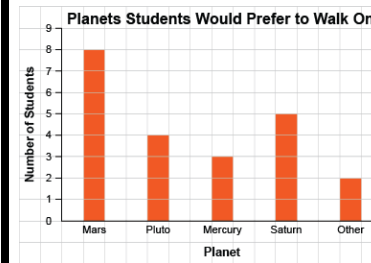
Creates graph but does not relate sample responses to labels



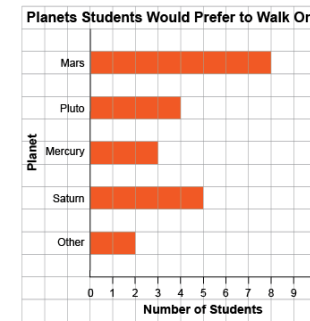
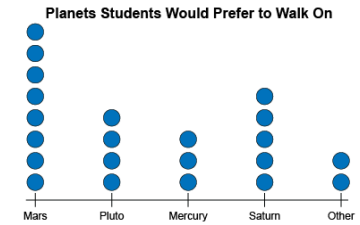
Creates graph with labels but omits title or scale



Successfully creates graphs (always of same type)



Creates graphs flexibly; shows same data on different graph types



Observations/Documentation

Reading and Interpreting Data Displays

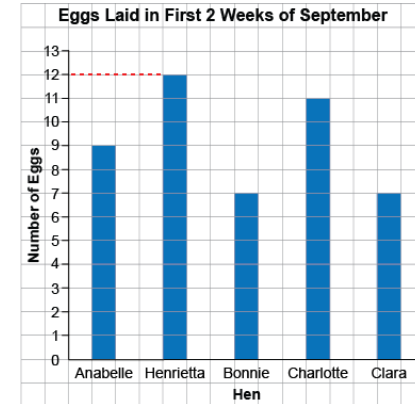
Notices the basic shape of graph

Counts symbols or squares to read data

Uses scale to read data

"1, 2, 3, ..., 10, 11, 12 squares are shaded.
Henrietta laid 12 eggs."

"The bar has height 12. Henrietta laid
12 eggs."



Observations/Documentation

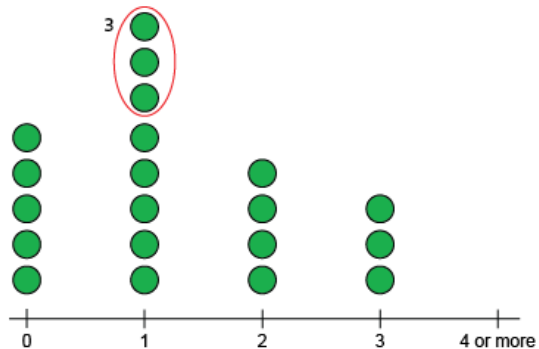
Activity 6 Assessment Consolidation

Reading and Interpreting Data Displays (con't)

Makes direct comparisons between data

"1 squirrel was seen 3 more times than 0 squirrels."

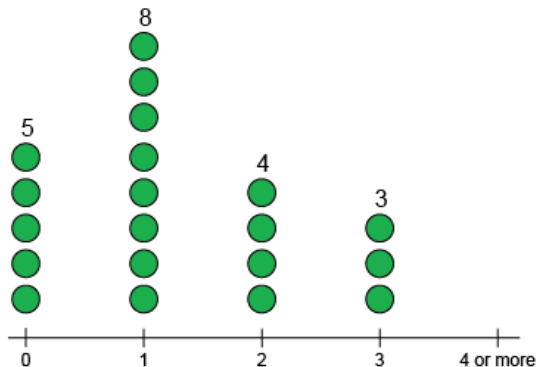
Squirrels Seen in One Hour (Winter)



Uses data to answer some questions

" $5 + 8 + 4 + 3 = 20$; 20 students were surveyed."

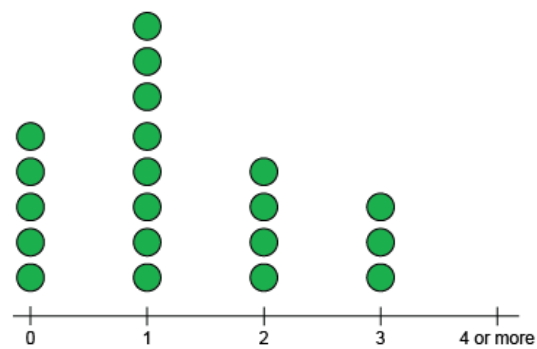
Squirrels Seen in One Hour (Winter)



Draws conclusions from data

"Most students saw 1 squirrel in one hour in the winter."

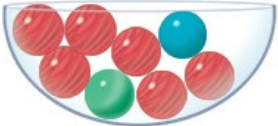
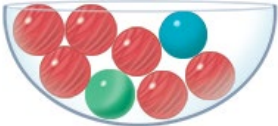
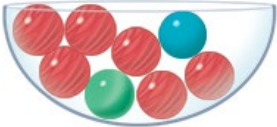
Squirrels Seen in One Hour (Winter)



Observations/Documentation

Activity 7 Assessment

Describing the Likelihood of Outcomes

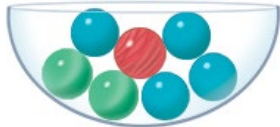
Describing Events Using the Language of Chance		
<p>Thinks outcomes of an experiment are always equally likely to happen</p>  <p>“I choose green. The chance of getting any colour is always the same.”</p>	<p>Describes the likelihood of an event or outcome (e.g., impossible, likely, certain)</p>  <p>“It is likely that I will get red.”</p>	<p>Makes predictions based on likelihoods</p>  <p>“If I draw a marble 8 times and put it back each time, I predict I will get red 6 times.”</p>
Observations/Documentation		

Activity 7 Assessment

Describing the Likelihood of Outcomes

Describing Events Using the Language of Chance (con't)

Lists all possible outcomes for an experiment



"I could get green, blue, or red,
but not yellow or purple."

Compares the likelihoods of two outcomes



"It is **more likely** that I will get blue than green."

Identifies flexibly the likelihoods of outcomes in a simple probability experiment



"Blue is most likely, red is least likely, green is unlikely, and yellow is impossible."

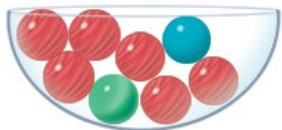
Observations/Documentation

Activity 8 Assessment

Understanding Chance

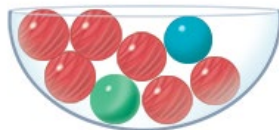
Describing Events Using the Language of Chance

Thinks outcomes of an experiment are always equally likely to happen



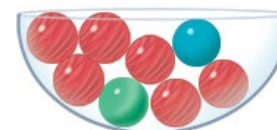
"I choose green. The chance of getting any colour is always the same."

Describes the likelihood of an event or outcome (e.g., impossible, likely, certain)



"It is **likely** that I will get red."

Makes predictions based on likelihoods



"If I draw a marble 8 times and put it back each time, I predict I will get red 6 times."

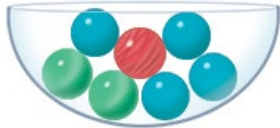
Observations/Documentation

Activity 8 Assessment

Understanding Chance

Describing Events Using the Language of Chance (con't)

Lists all possible outcomes for an experiment



"I could get green, blue, or red, but not yellow or purple."

Compares the likelihoods of two outcomes



"It is **more likely** that I will get blue than green."

Identifies flexibly the likelihoods of outcomes in a simple probability experiment



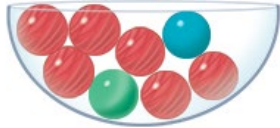
"Blue is most likely, red is least likely, green is unlikely, and yellow is impossible."

Observations/Documentation

Activity 9 Assessment Consolidation

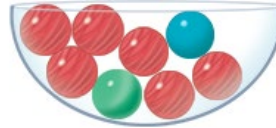
Describing Events Using the Language of Chance

Thinks outcomes of an experiment are always equally likely to happen



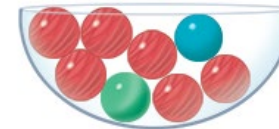
"I choose green. The chance of getting any colour is always the same."

Describes the likelihood of an event or outcome (e.g., impossible, likely, certain)



"It is **likely** that I will get red."

Makes predictions based on likelihoods



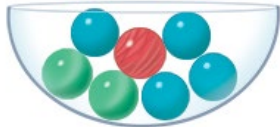
"If I draw a marble 8 times and put it back each time, I predict I will get red 6 times."

Observations/Documentation

Activity 9 Assessment Consolidation

Describing Events Using the Language of Chance (con't)

Lists all possible outcomes for an experiment



"I could get green, blue, or red,
but not yellow or purple."

Compares the likelihoods of two outcomes



"It is **more likely** that I will get blue than green."

Identifies flexibly the likelihoods of outcomes in a simple probability experiment



"Blue is most likely, red is least likely, green is unlikely, and yellow is impossible."

Observations/Documentation

Name _____ Date _____

**Math Mat
Master 1**

Thinking Space

My Math Learning

I feel good about:

I wonder:

I am learning about:

I need more time with:

Name _____ Date _____

**Math Mat
Master 3**

Ten-Frames

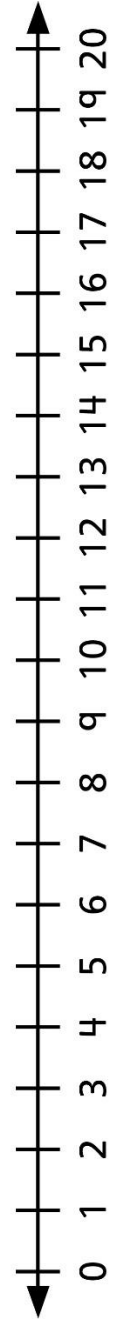
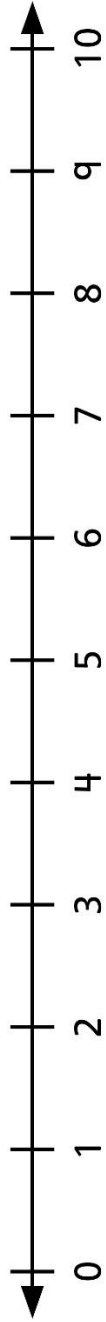
Name _____ Date _____

**Math Mat
Master 4**

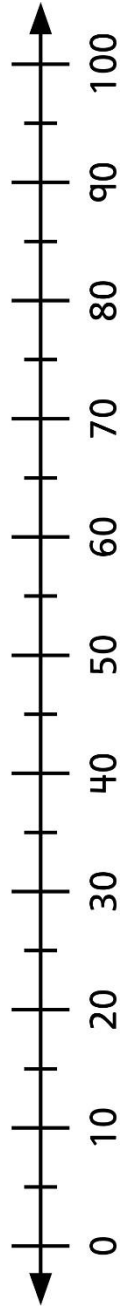
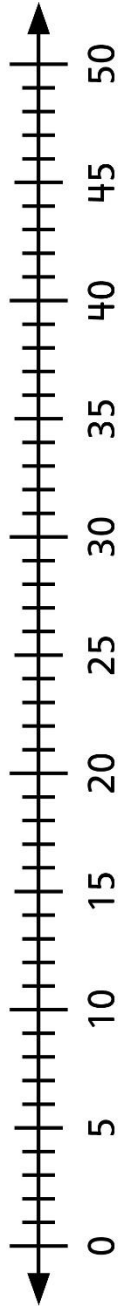
Hundred Chart

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

Number Lines



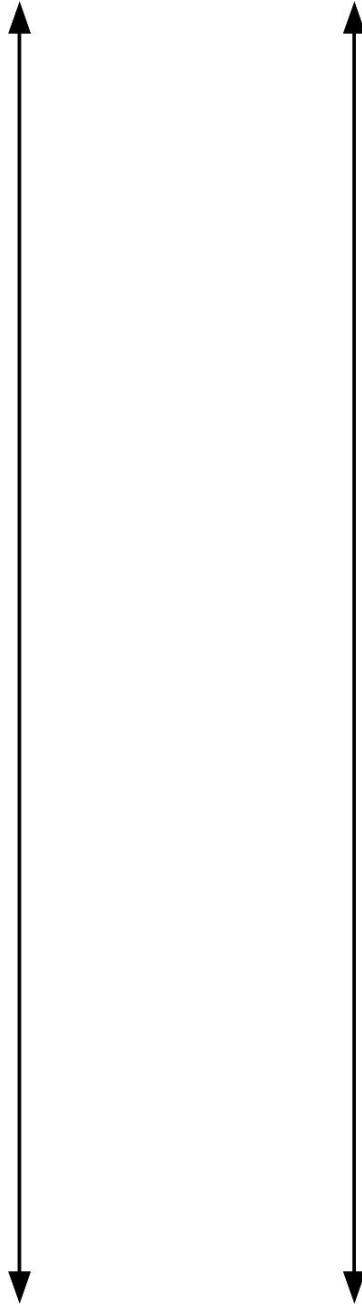
Number Lines



Name _____ Date _____

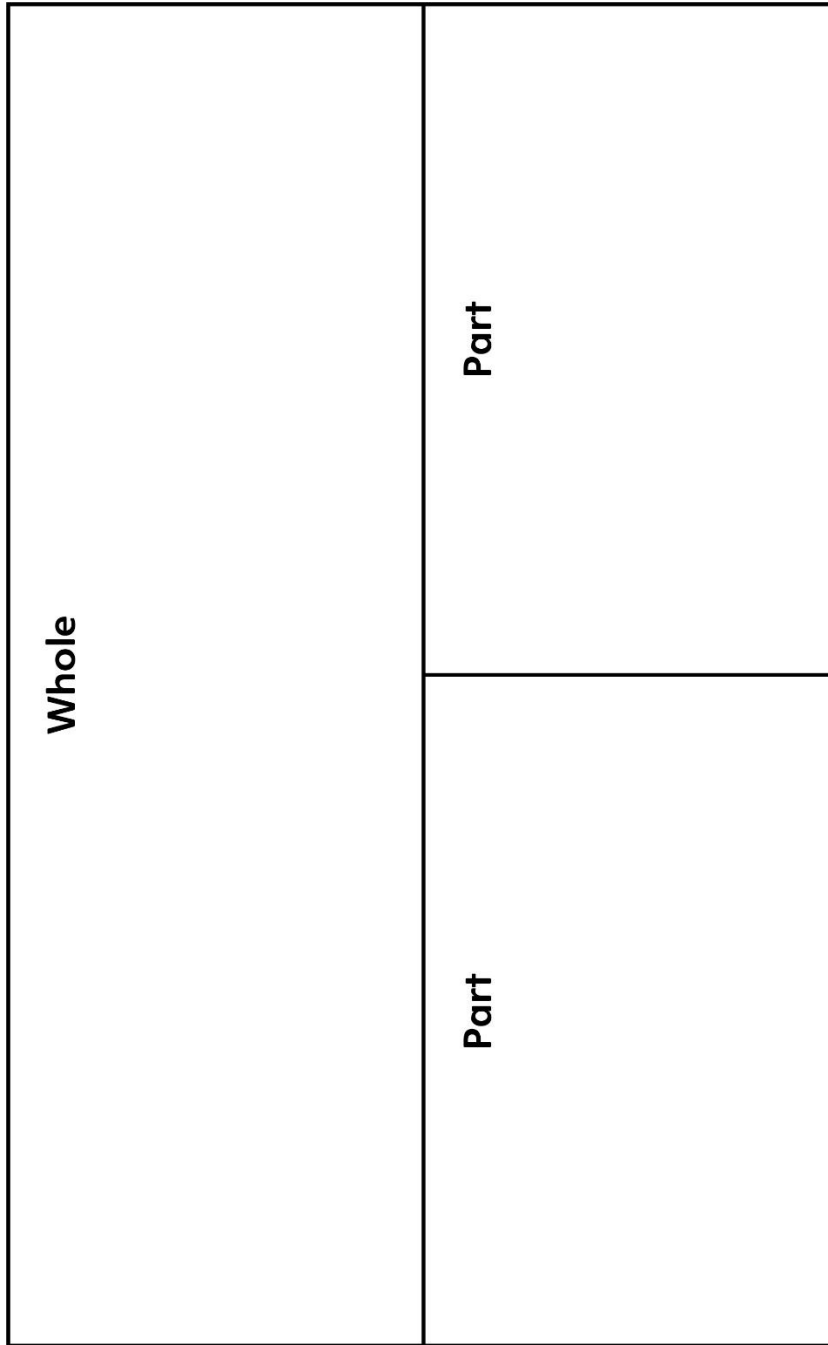
**Math Mat
Master 7**

Open Number Lines



**Math Mat
Master 8**

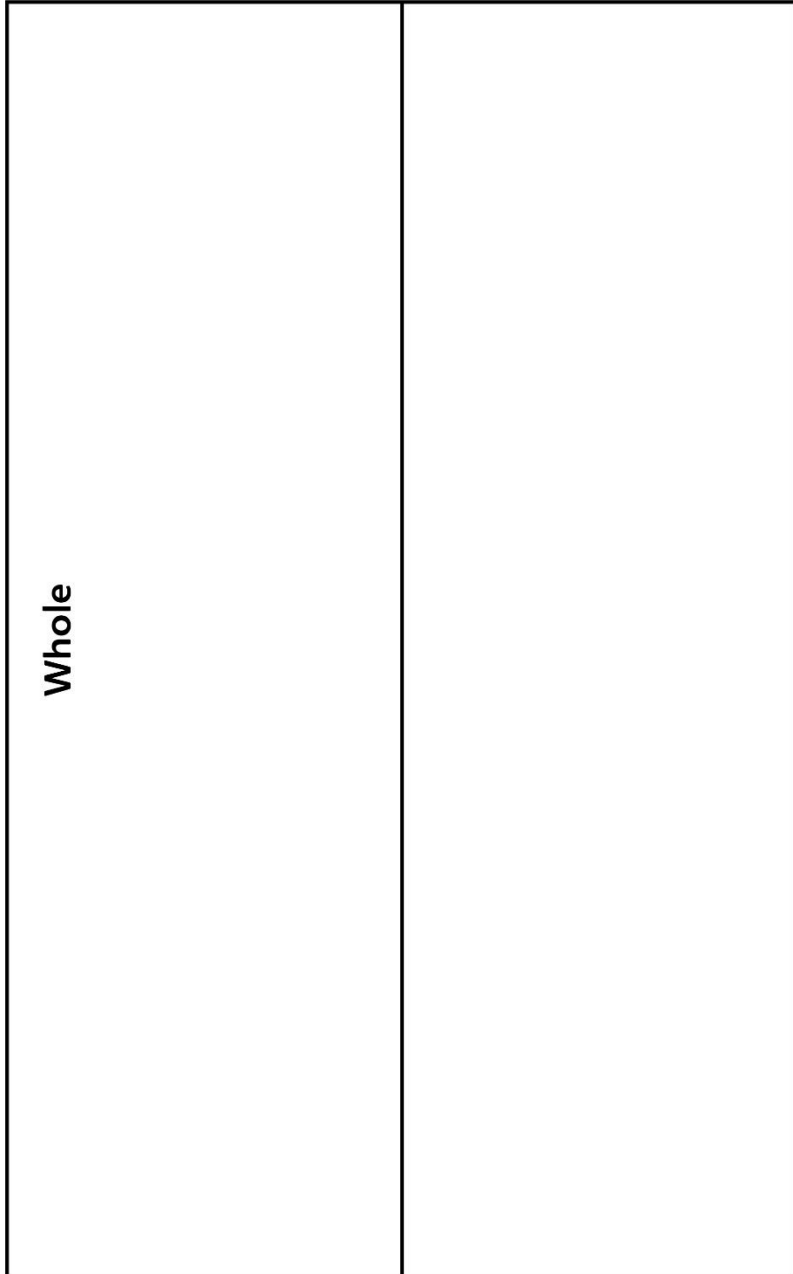
Part-Part-Whole Mat



Name _____ Date _____

**Math Mat
Master 9**

Parts-to-Whole Mat



**Math Mat
Master 10**

Place-Value Mat

Ones	My Number
Tens	
Hundreds	

Place-Value Mat

Tenths	
•	
Ones	
Tens	
Hundreds	
Thousands	

My Number

Name _____ Date _____

Math Mat
Master 12

10 + 10 Addition Chart

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

Name _____ Date _____

Math Mat
Master 13

5 x 5 Multiplication Chart

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

Name _____ Date _____

Math Mat
Master 14

10 x 10 Multiplication Chart

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

Name _____ Date _____

**Math Mat
Master 15**

10 by 10 Chart

Name _____ Date _____

Math Mat
Master 16

Estimation Mat

<p>My Estimate</p>

Name _____ Date _____

Math Mat
Master 17

Sorting Mat

Yes	No

Name _____ Date _____

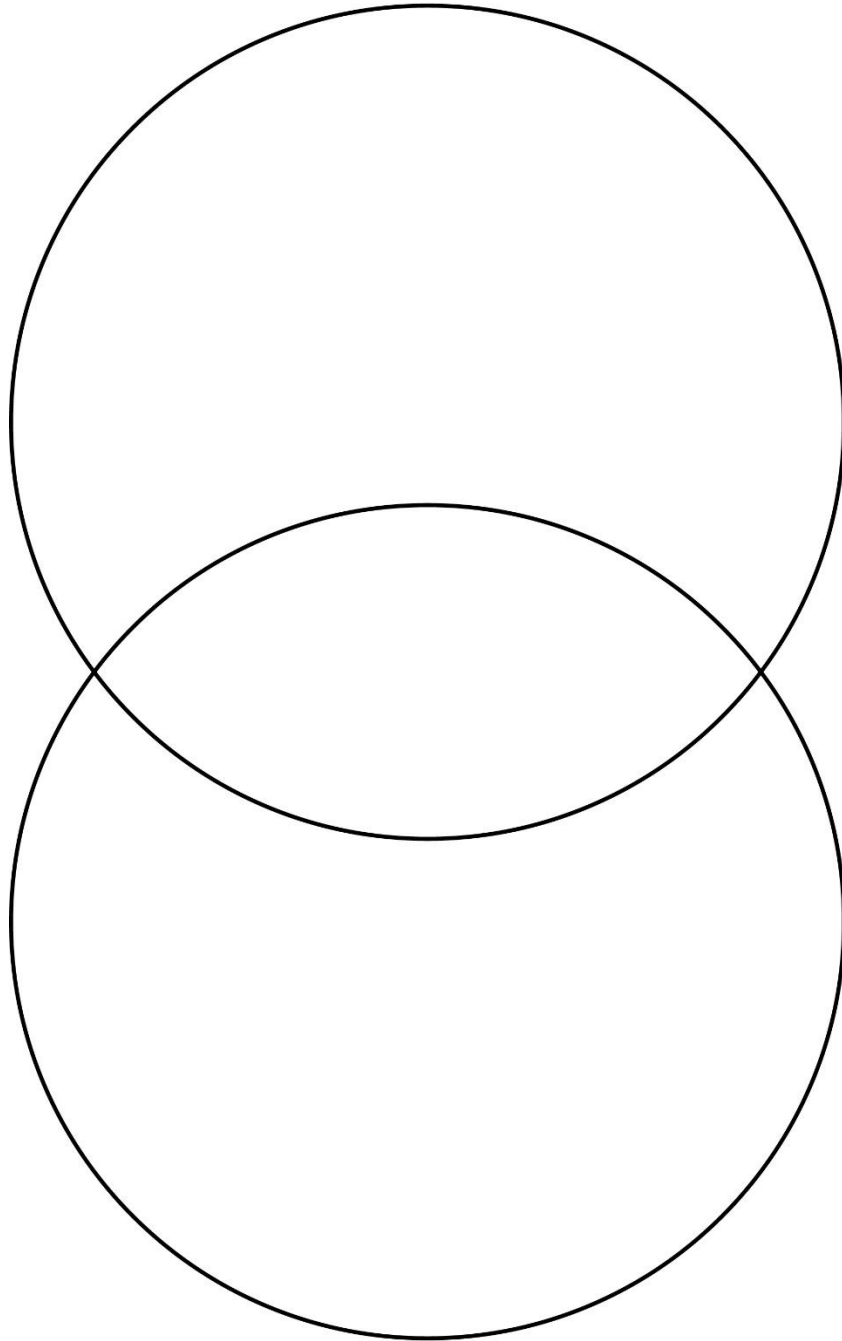
**Math Mat
Master 18**

3-Column Chart

Name _____ Date _____

**Math Mat
Master 19**

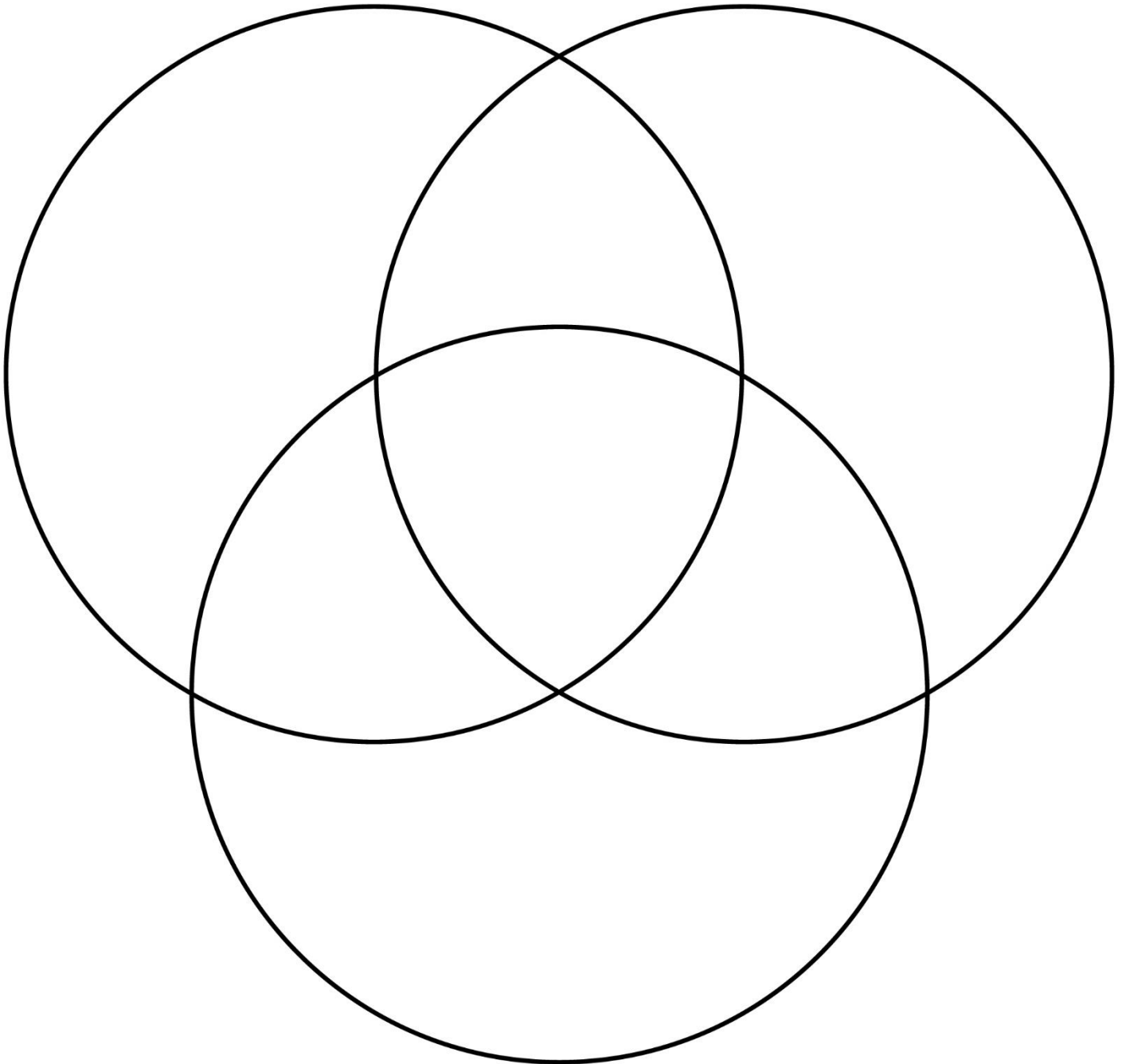
Venn Diagram



Name _____ Date _____

**Math Mat
Master 20**

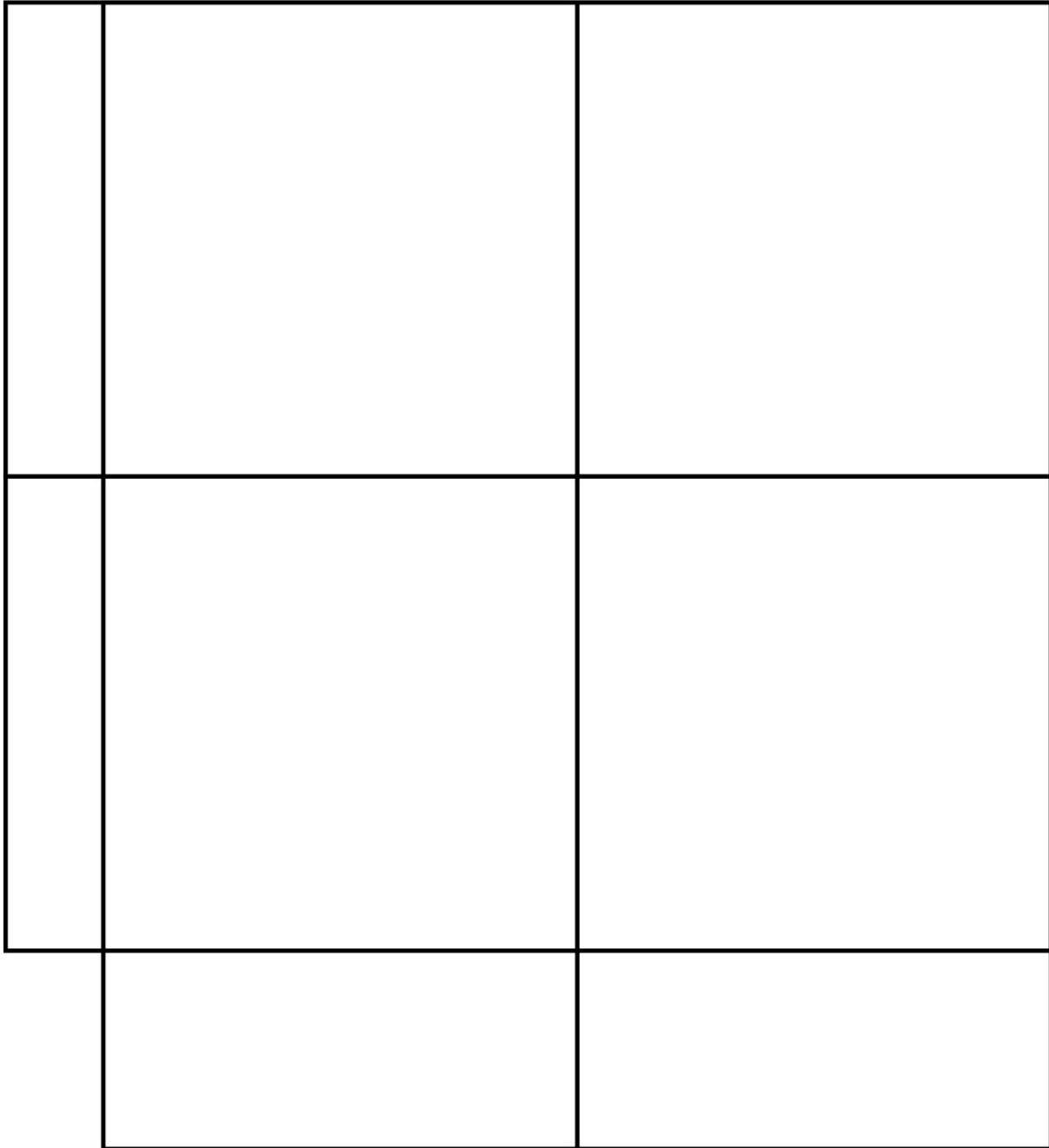
Venn Diagram



Name _____ Date _____

**Math Mat
Master 21**

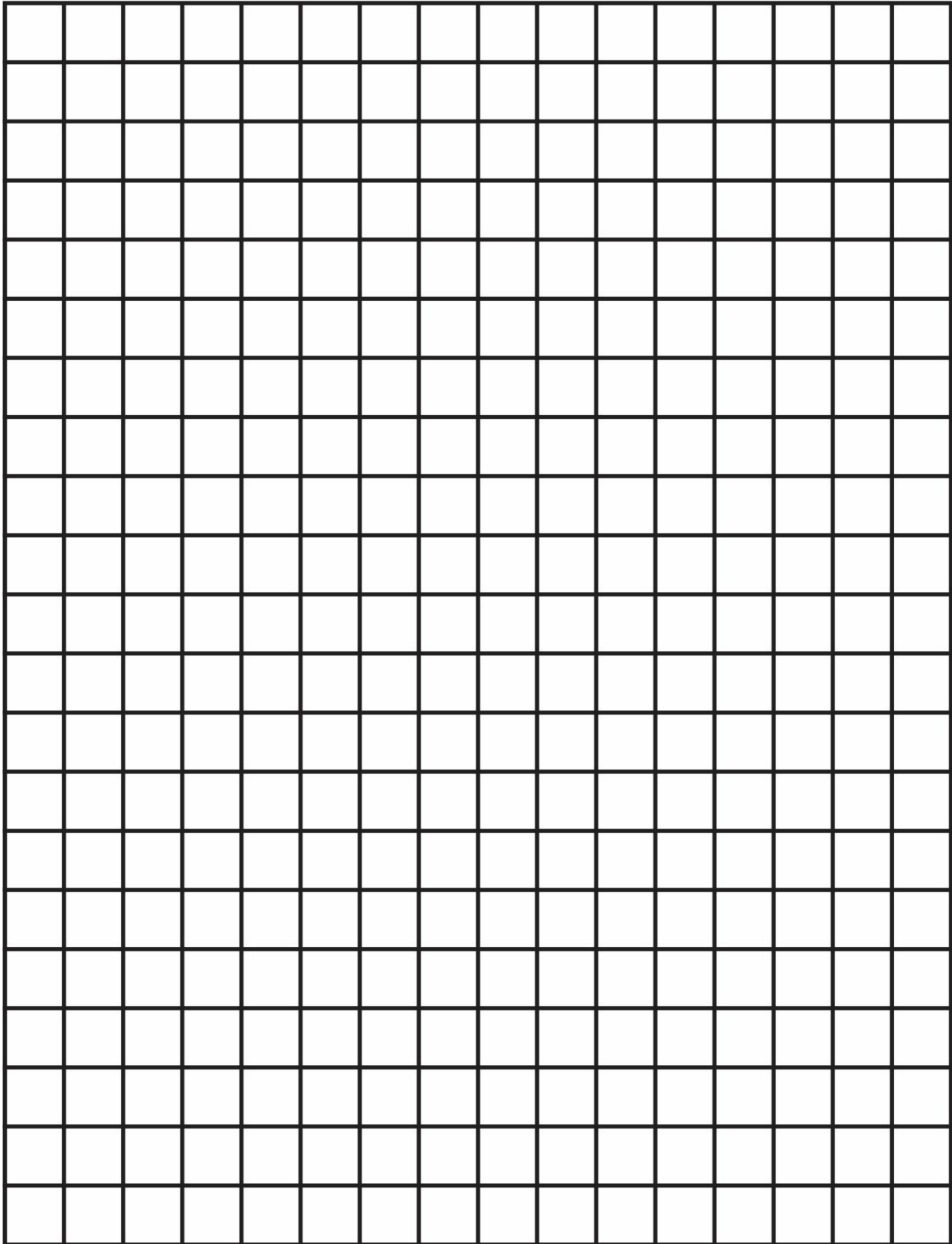
Carroll Diagram



Name _____ Date _____

**Math Mat
Master 22**

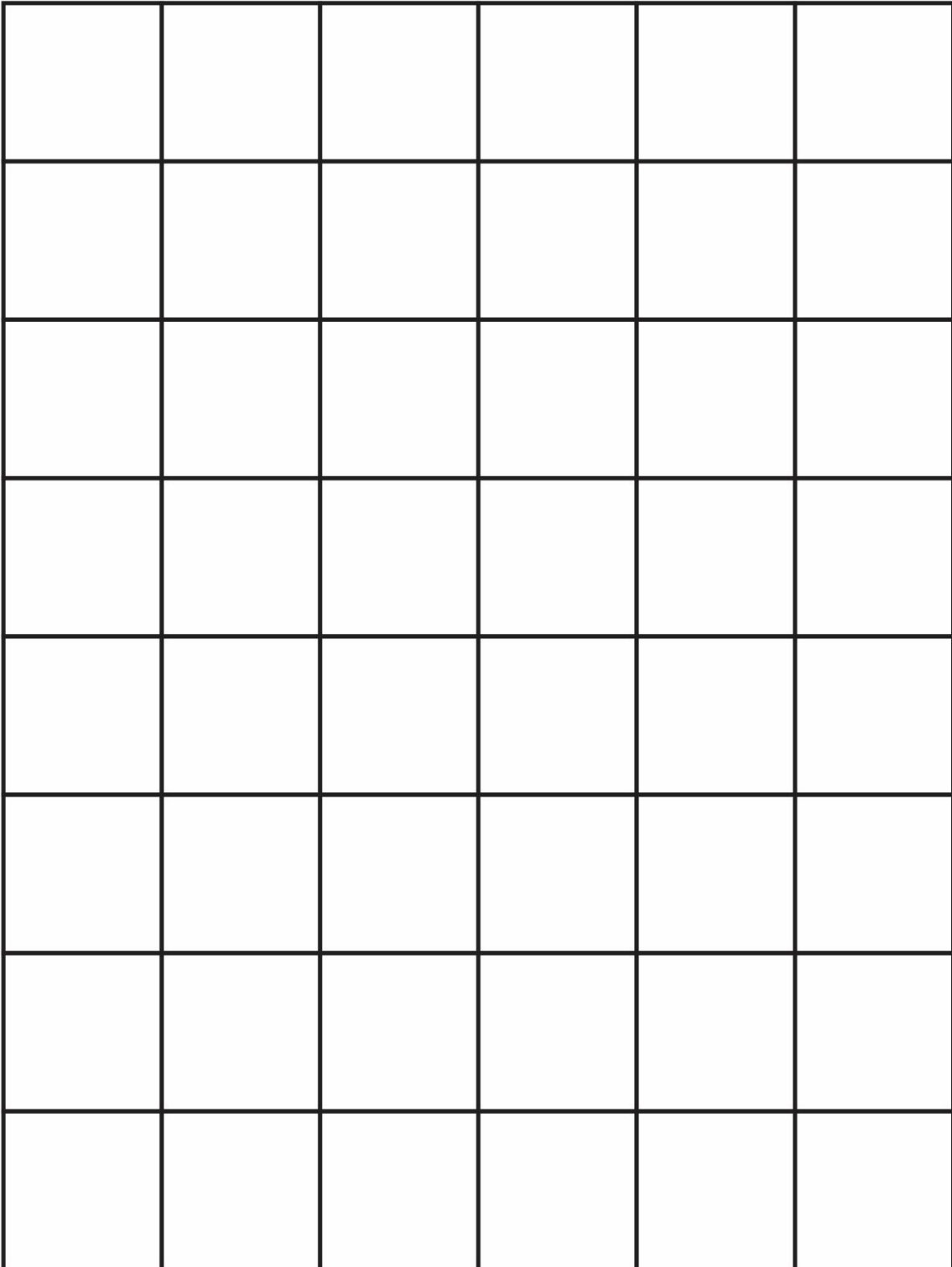
1-cm Grid Paper



Name _____ Date _____

**Math Mat
Master 23**

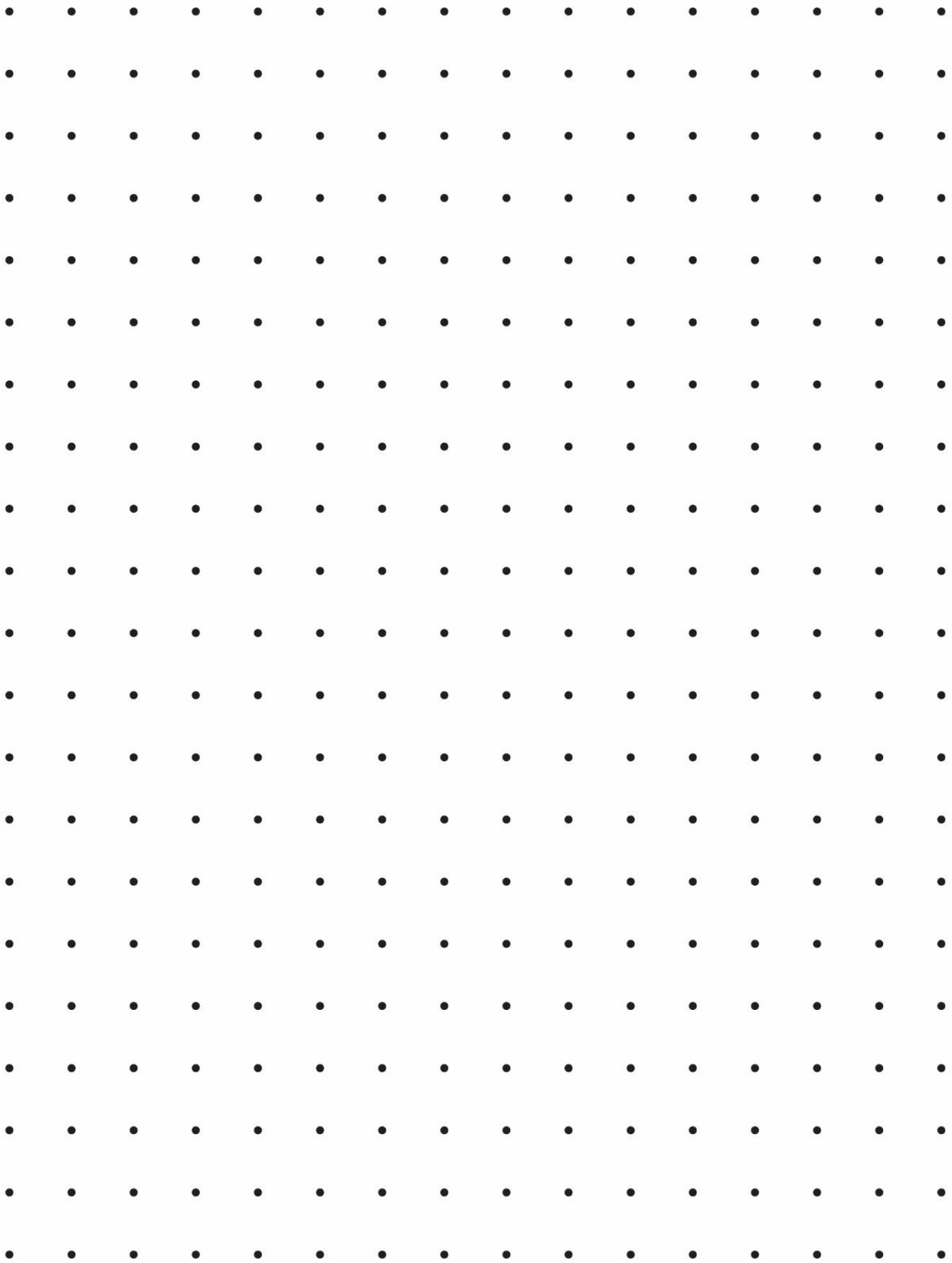
Colour Tile Grid



Name _____ Date _____

**Math Mat
Master 24**

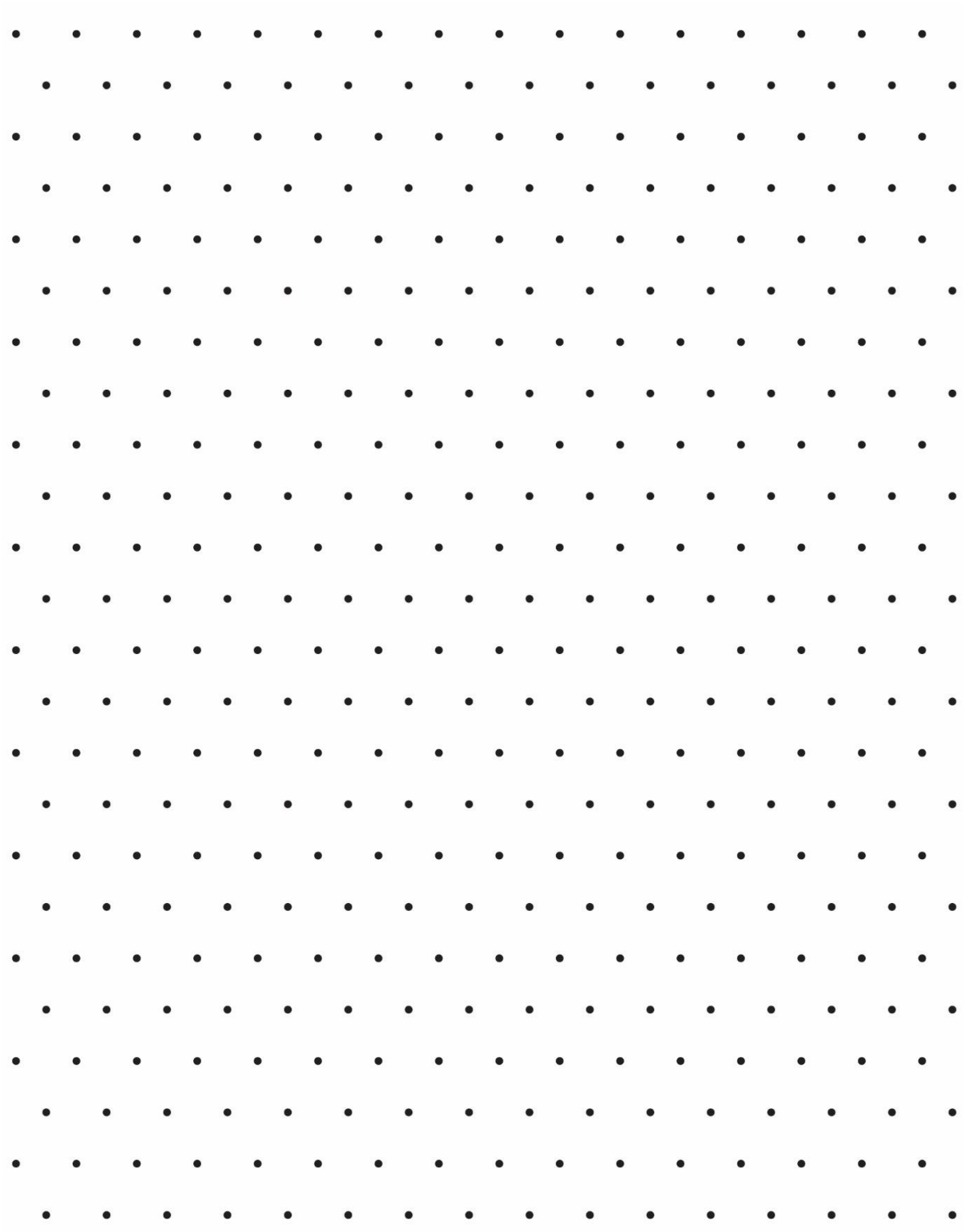
Square Dot Paper



Name _____ Date _____

Math Mat
Master 25

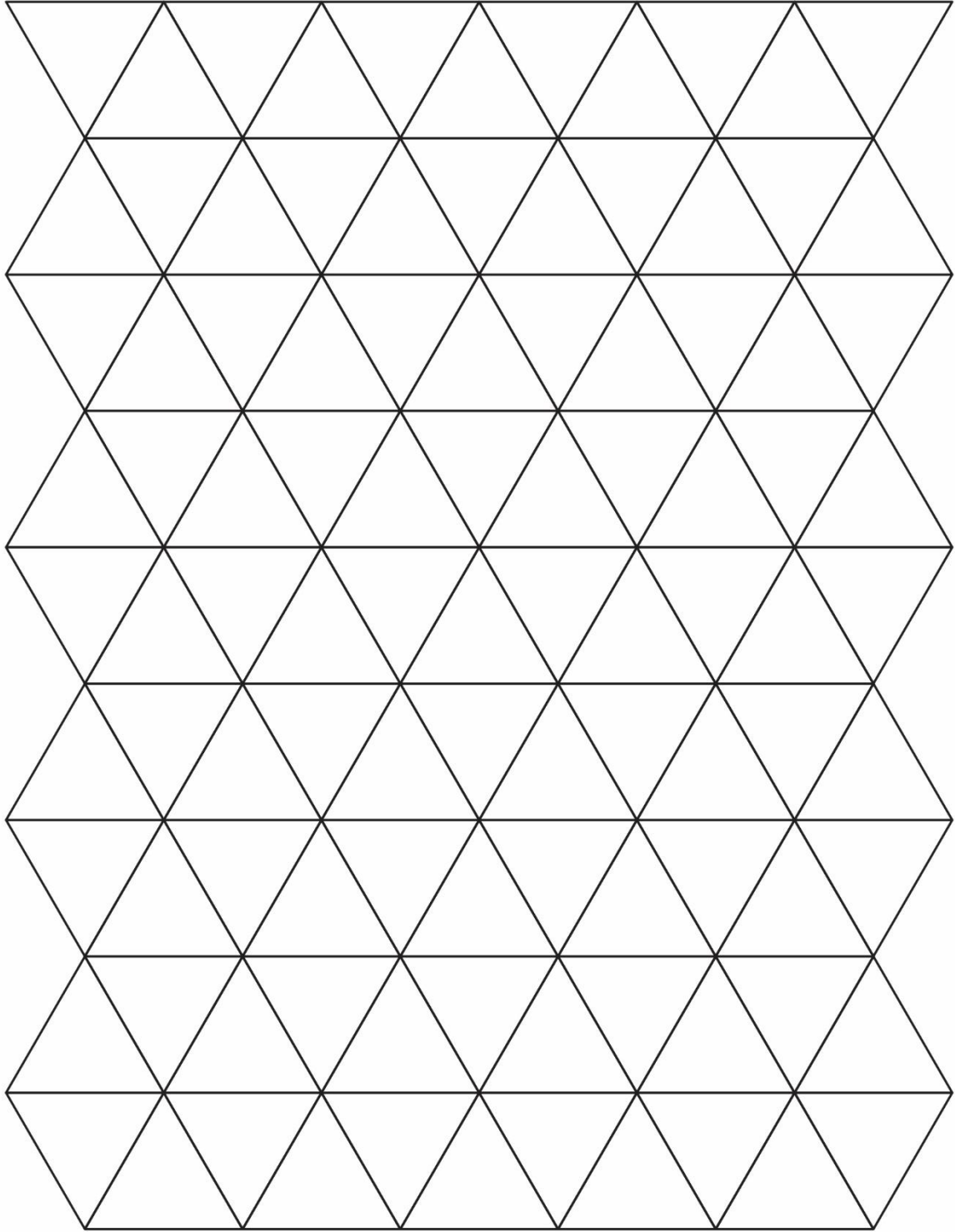
Triangular Dot Paper



Name _____ Date _____

**Math Mat
Master 26**

Triangular Grid Paper

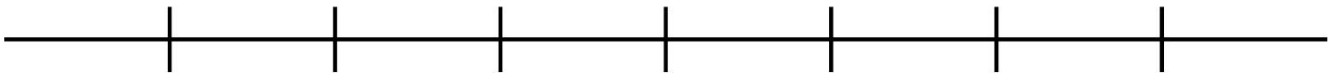


Name _____ Date _____

**Math Mat
Master 27**

Line Plot

Title _____

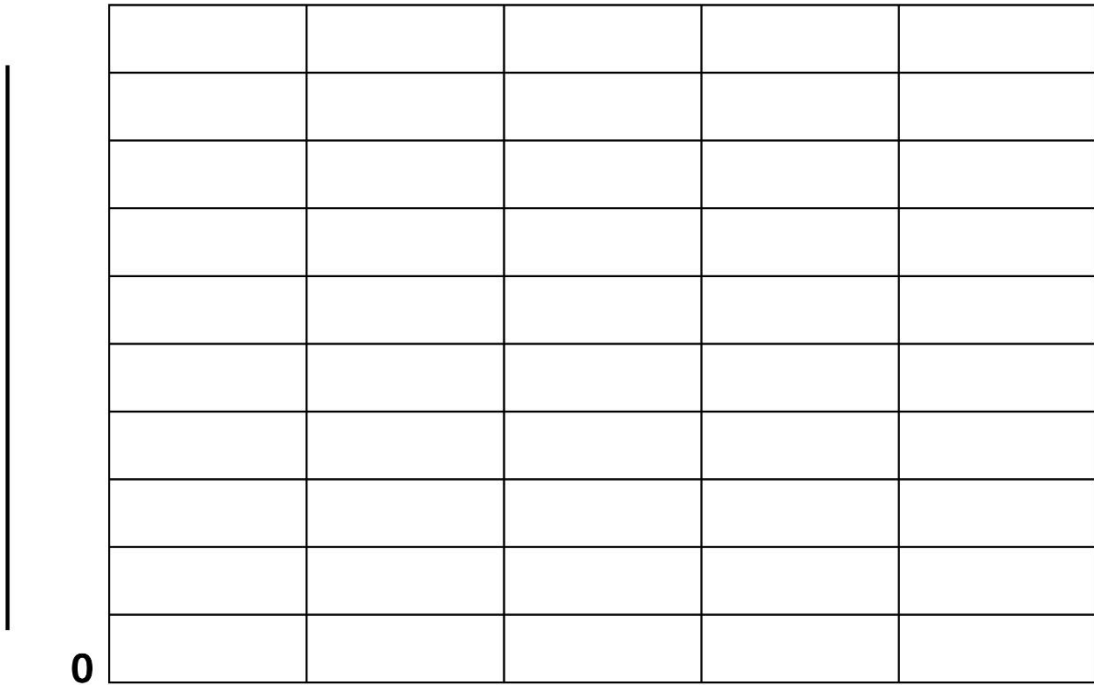


Name _____ Date _____

**Math Mat
Master 28**

Graphing Mat

Title _____

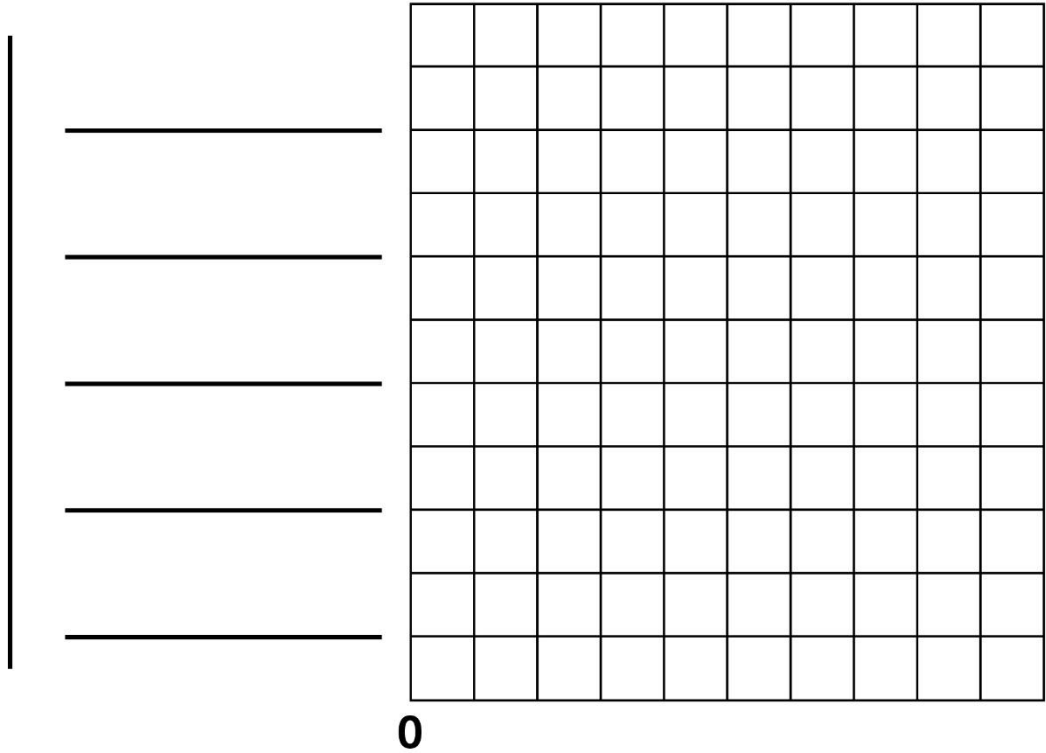


Name _____ Date _____

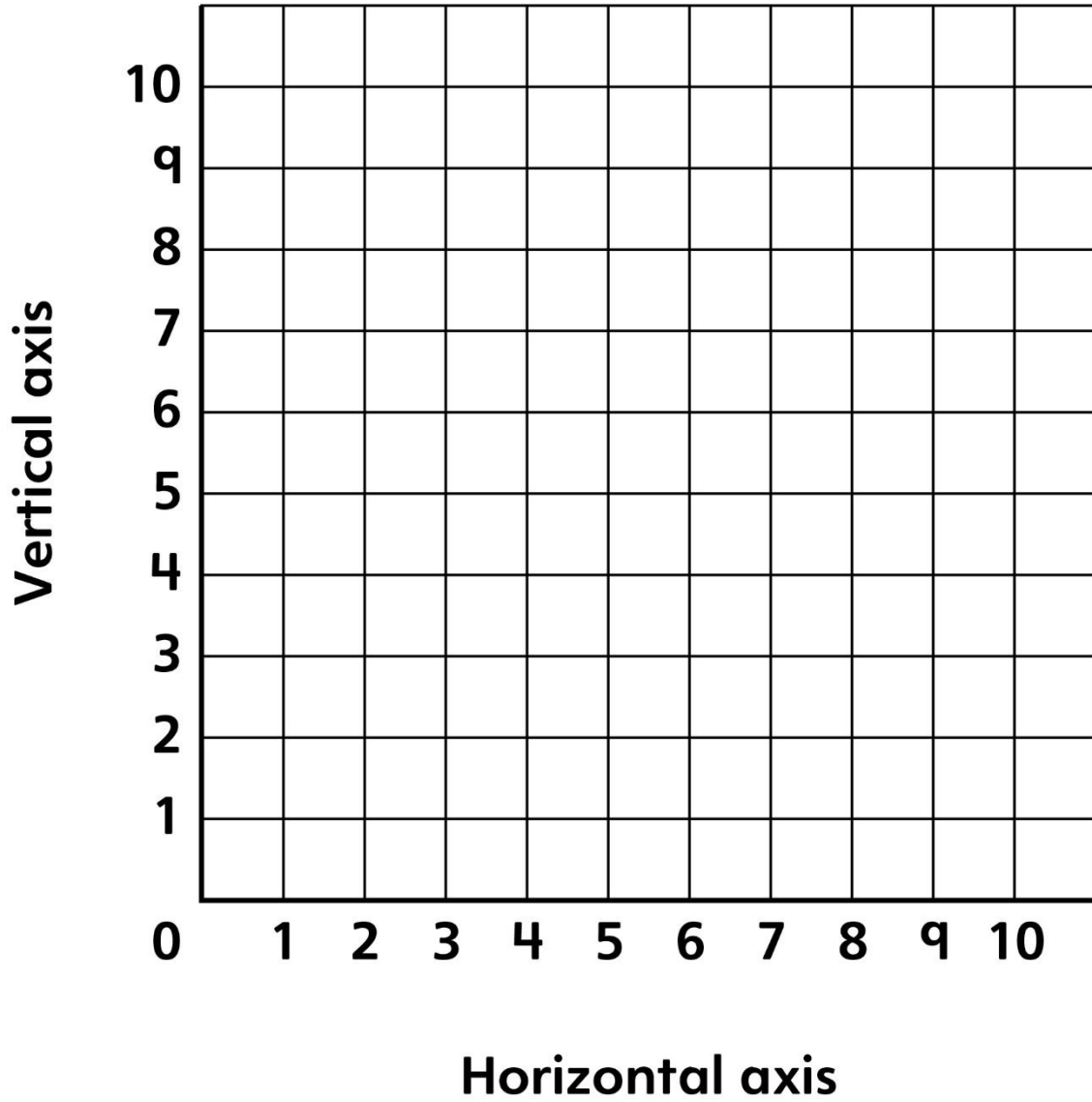
Math Mat
Master 29

Horizontal Graphing Mat

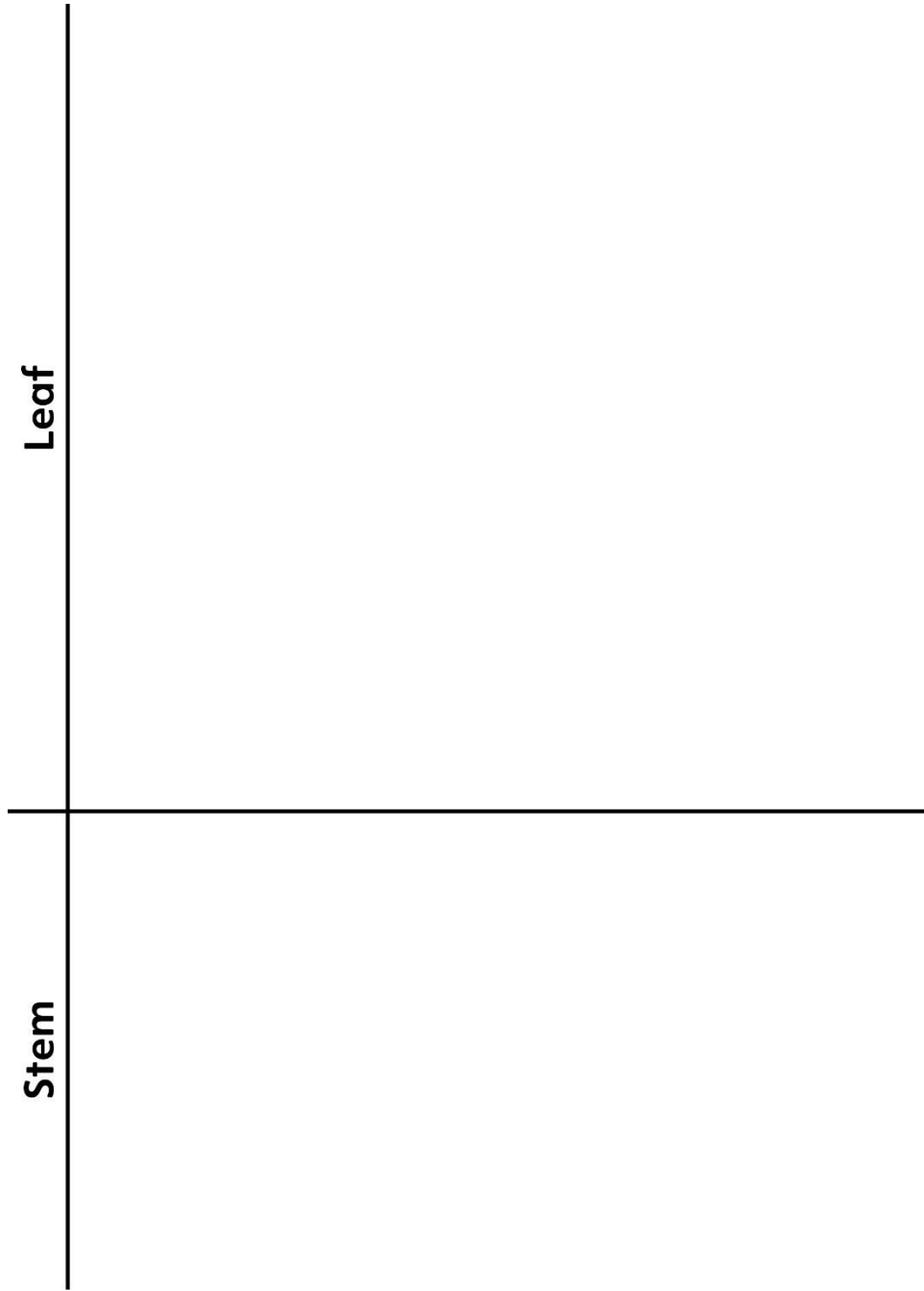
Title _____



Coordinate Grid



Stem-and-Leaf Plot



Name _____ Date _____

**Math Mat
Master 32**

Calendar

Saturday					
Friday					
Thursday					
Wednesday					
Tuesday					
Monday					
Sunday					

Fraction Strips

1	
$\frac{1}{2}$	$\frac{1}{2}$
$\frac{1}{3}$	$\frac{1}{3}$
$\frac{1}{4}$	$\frac{1}{4}$
$\frac{1}{5}$	$\frac{1}{5}$
$\frac{1}{6}$	$\frac{1}{6}$
$\frac{1}{7}$	$\frac{1}{7}$
$\frac{1}{8}$	$\frac{1}{8}$
$\frac{1}{9}$	$\frac{1}{9}$
$\frac{1}{10}$	$\frac{1}{10}$

Name _____

Date _____

**Math Mat
Master 34**

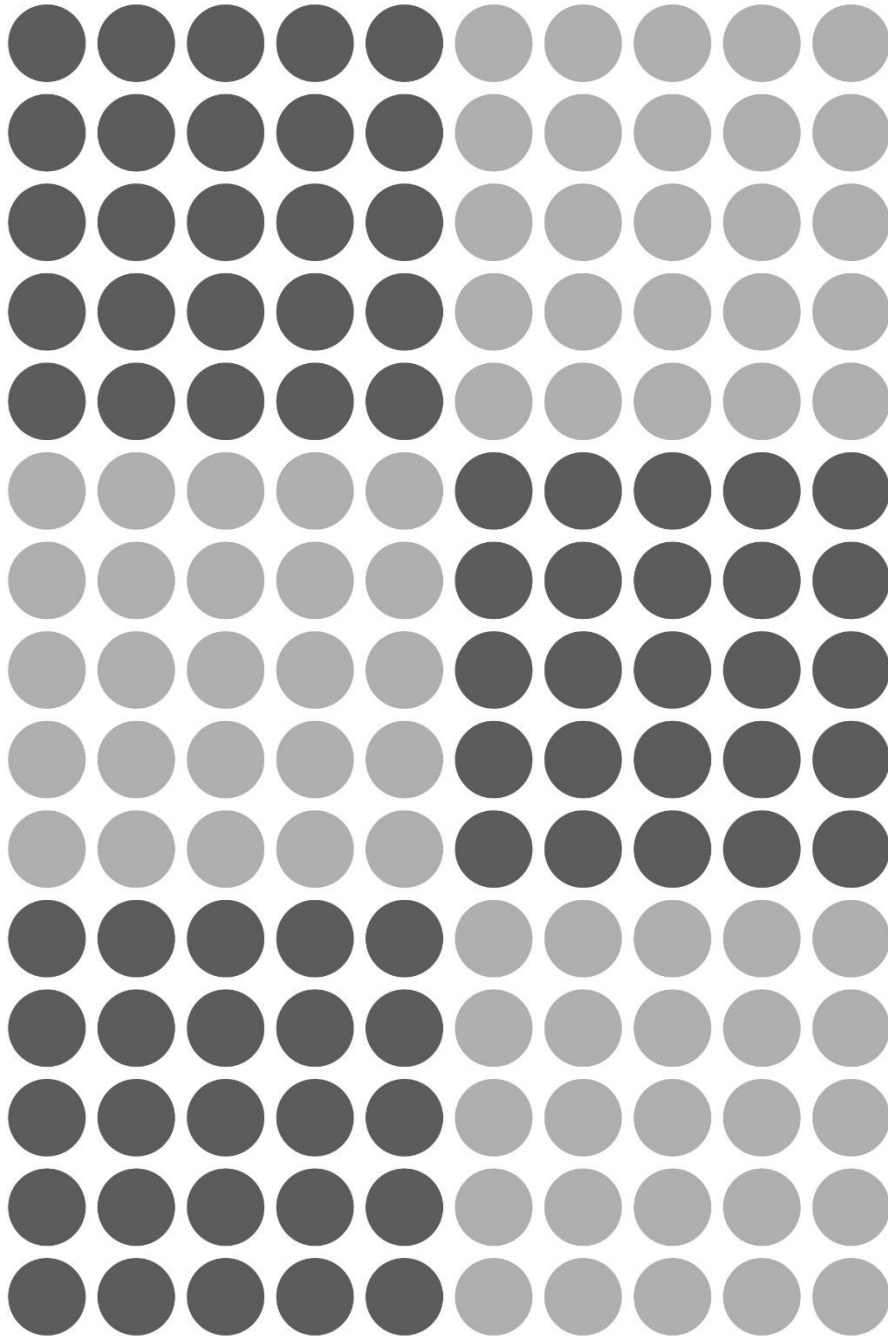
Money



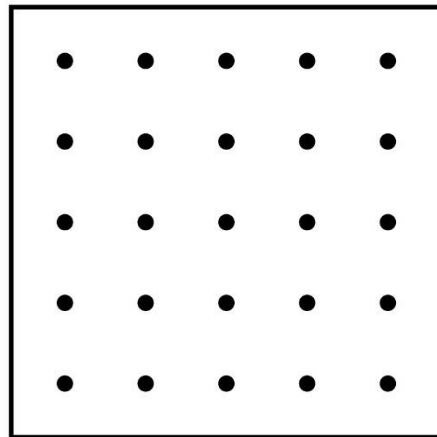
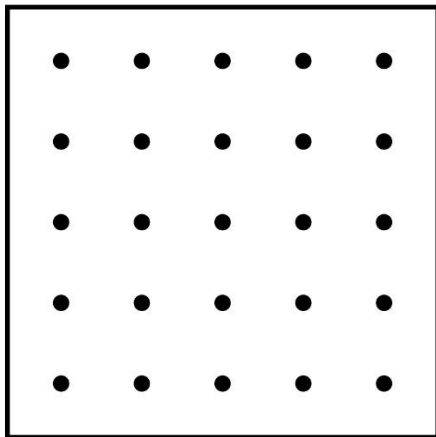
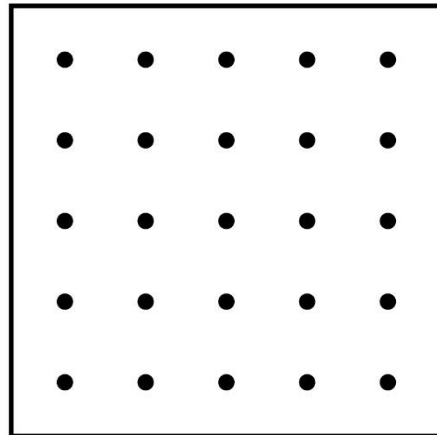
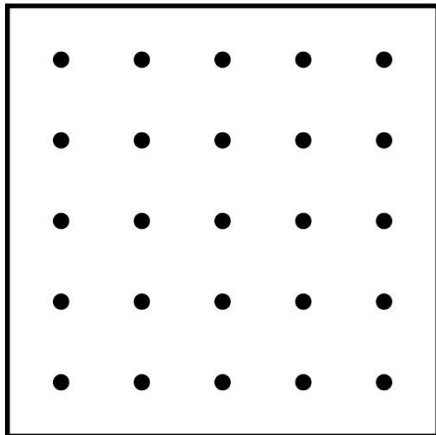
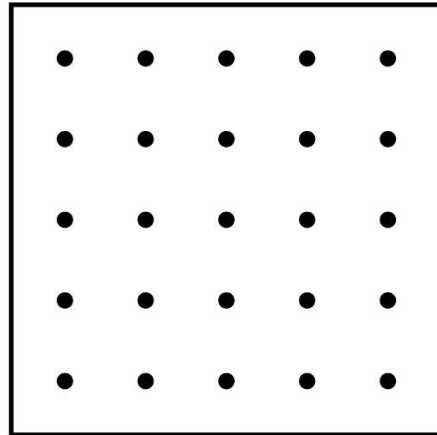
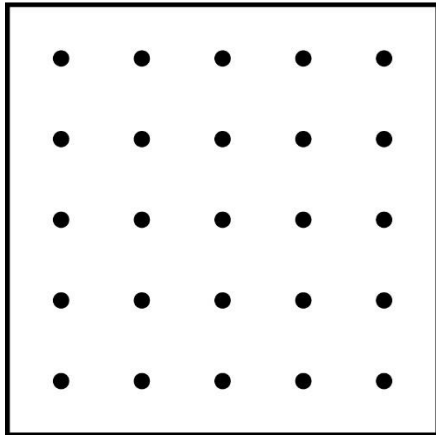
Amount: _____



Dot Array



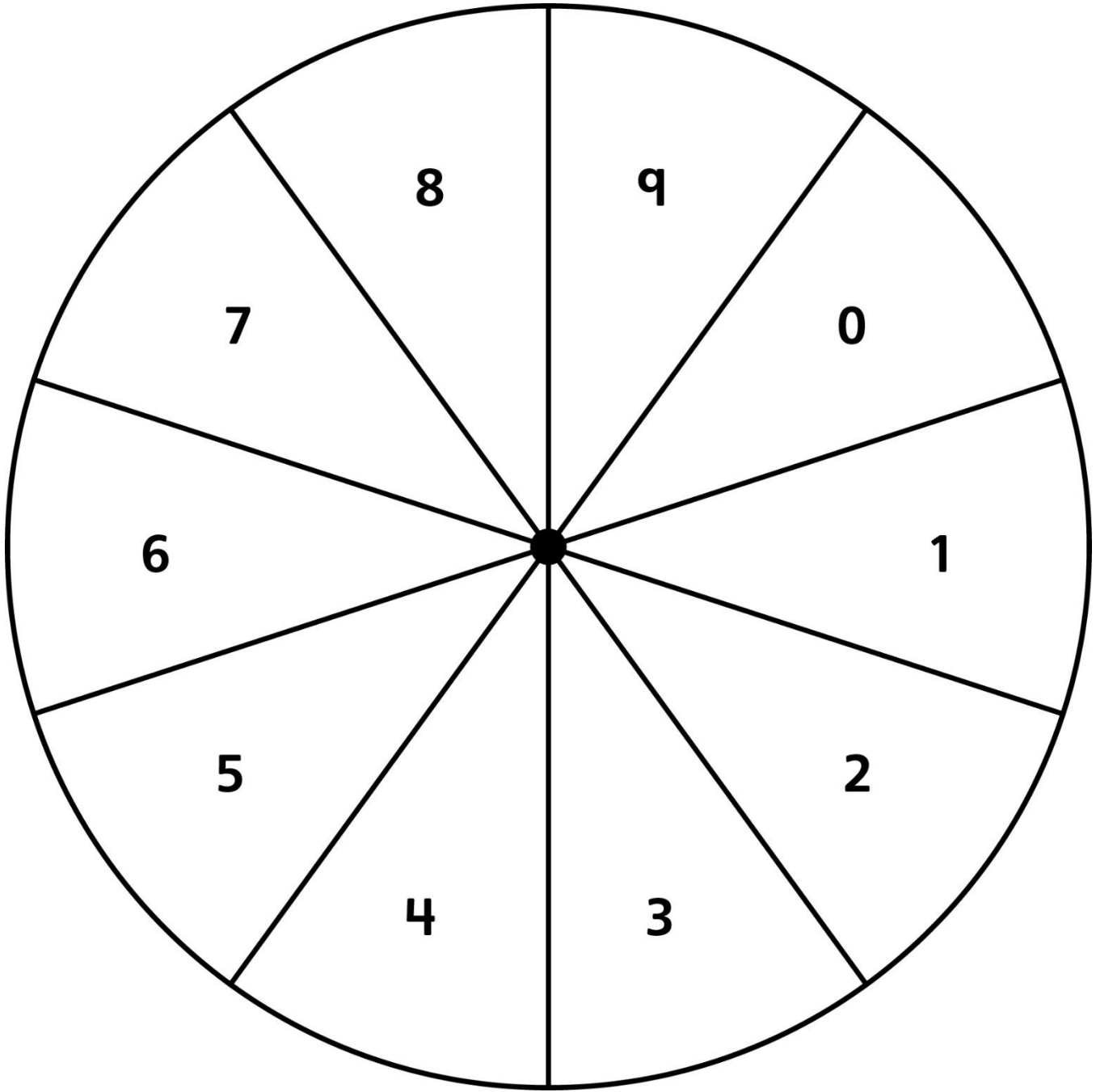
Geoboards



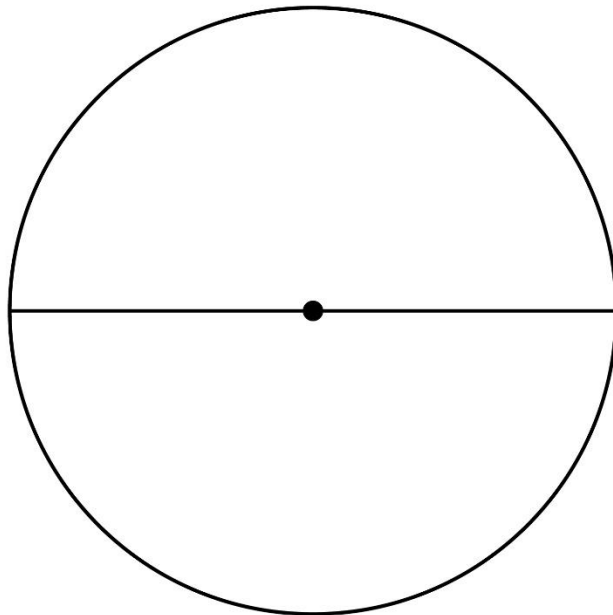
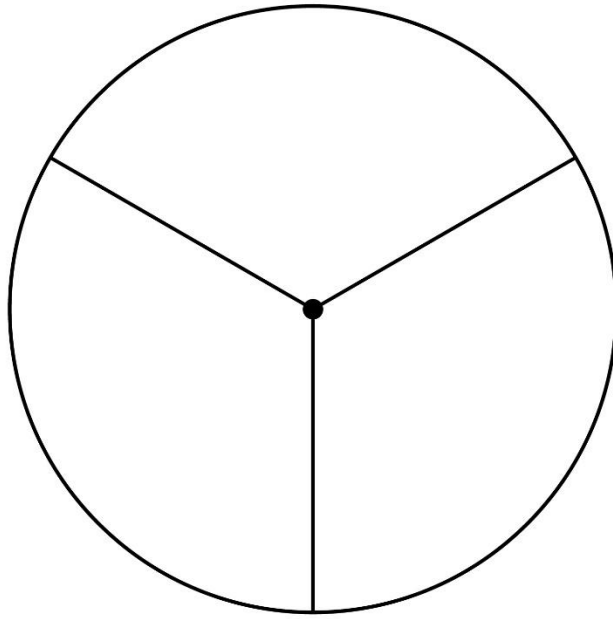
Name _____ Date _____

**Math Mat
Master 37**

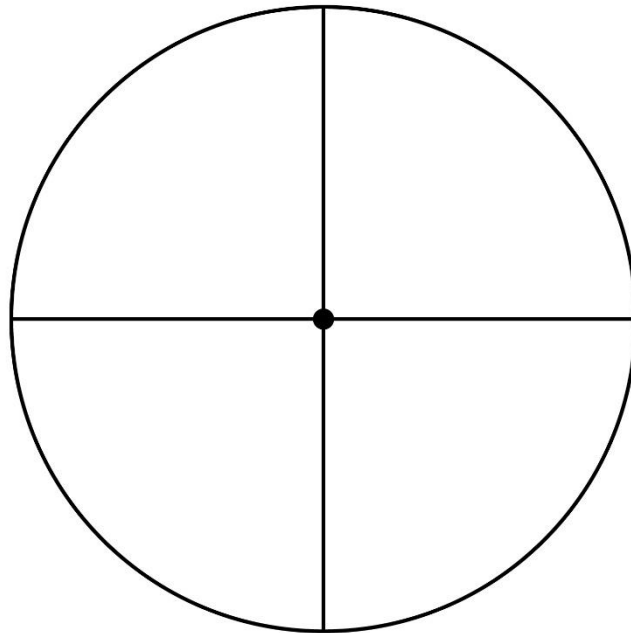
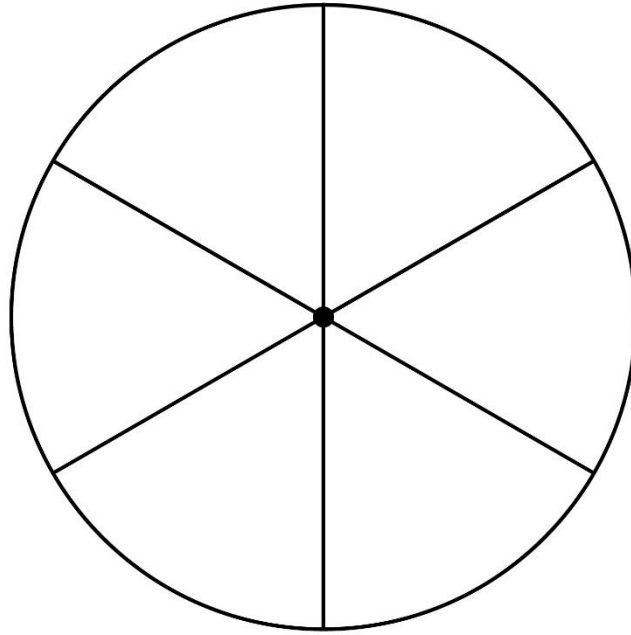
Spinner



Spinners



Spinners



Clocks

