Geometry and the Coordinate Plane

Grade 5: Unit 7

Standards addressed: 5.G.A.1, 5.G.B.3, 5.G.B.4, 5.G.A.2, 5.NBT.B.7, 5.OA.A.2, 5.OA.B.3

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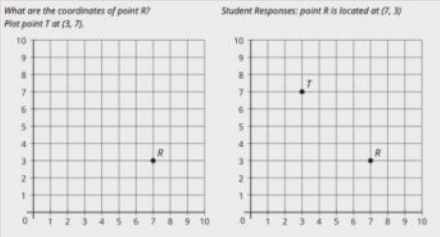
Unit 7 Progression Overview

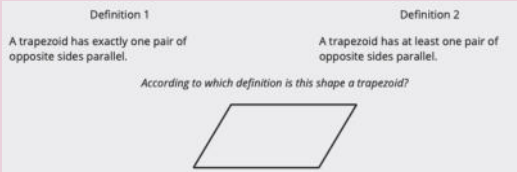
Section A
Lessons 1-3
5.G.A.1

- Locate points on a coordinate grid.



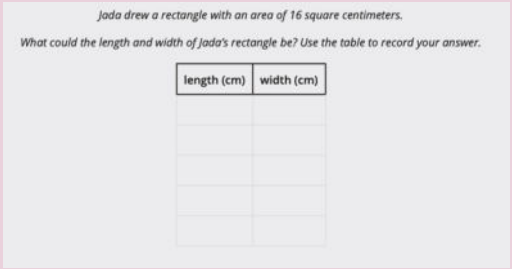
Section B
Lessons 4-8
5.G.B, 5.G.B.3, 5.G.B.4

- Classify triangles and quadrilaterals in a hierarchy based on angle measurements and side lengths.



Section C
Lessons 9-13
5.G.A.2, 5.NBT.B.7, 5.OA.A.2, 5.OA.B.3

- Generate, identify, and graph relationships between corresponding terms in two patterns, given a rule.
- Represent and interpret real world and mathematical problems on a coordinate grid.



Unit 7 Quick Links

L1 L2 L3 Adapt 1

Adapt 2 Adapt 3 L4 L5 L6 L7

L8 L9 L10 L11 L12 L13

1

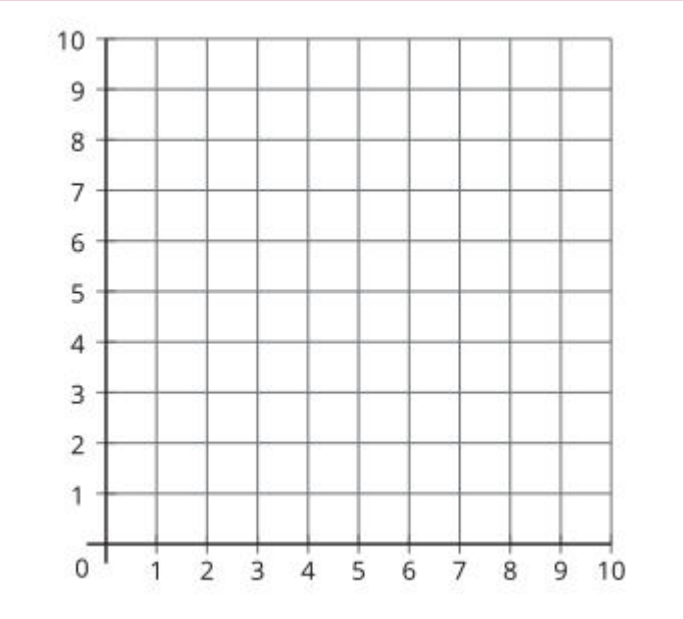
Explore the Coordinate Grid

Let’s explore the coordinate grid.

Notice and Wonder: The Grid

Warm up

What do you notice?



What do you wonder?

Can You Draw It:
Shapes on the Coordinate Grid

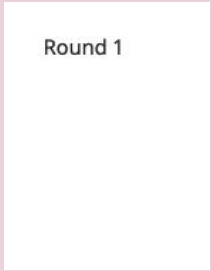
Activity #1

1. Play three rounds of Draw My Shape using the three sets of cards from your teacher.

For each round:

- Partner A chooses a card—without showing the other person—and describes the shape on the card.
- Partner B draws the shape as described.
- Partner A reveals the card and partner B reveals the drawing.
- Compare the shapes and discuss: What's the same? What's different?

2. Look at partner B's drawings for each round. When does partner B's drawing look most like the shape on the card? Explain why you think that is so.

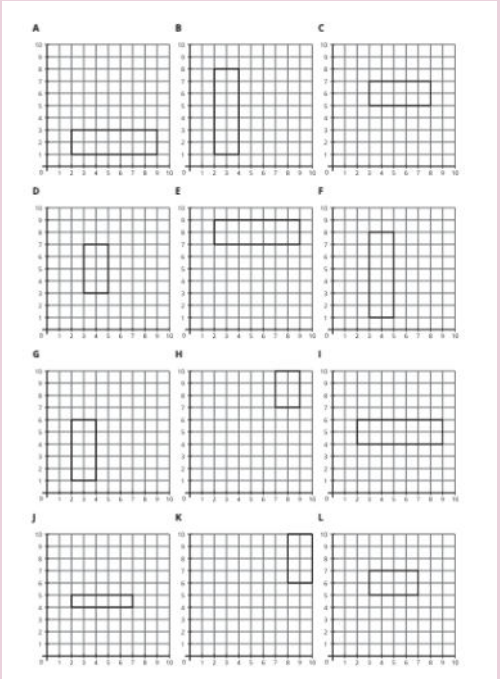


Guess Who:
Shapes on the Coordinate Grid

Activity #2

1. Play a round of Guess Which One.

- Sit next to your partner and lay the shape cards out in front of both of you.
- Partner A: Mentally choose a shape card without indicating which shape card you chose.
- Partner B: Ask yes or no questions to determine which shape card partner A has chosen.

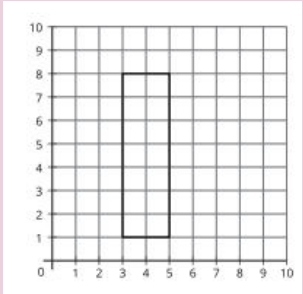


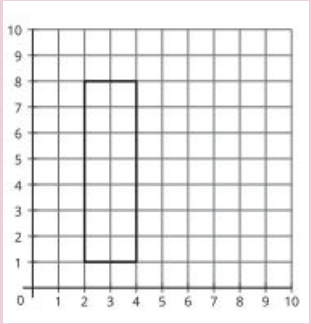
Guess Who:
Shapes on the Coordinate Grid

Activity #2

2. Switch roles and play another round of Guess Which One.

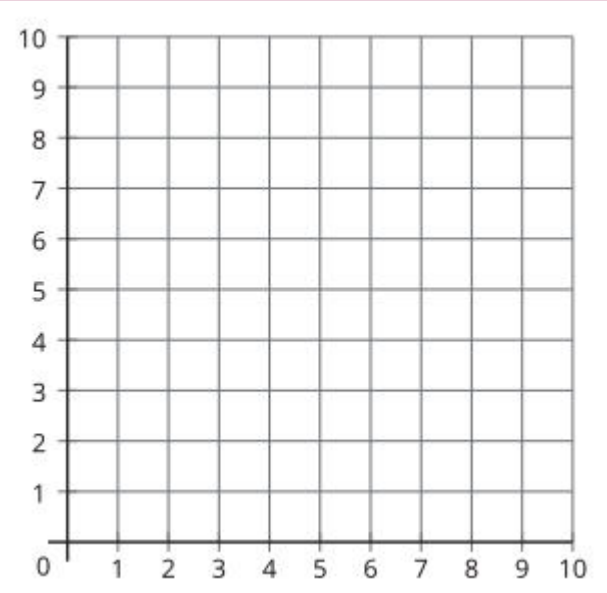
3. Diego and Kiran were playing a round of Guess Which One. These are the last two shapes. What question can Kiran ask to determine which shape is the one that Diego picked?

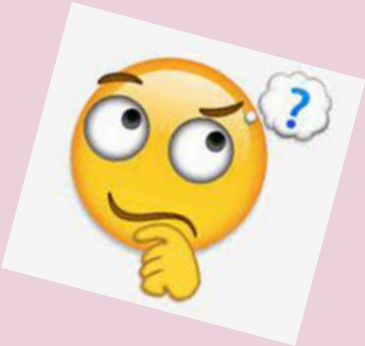




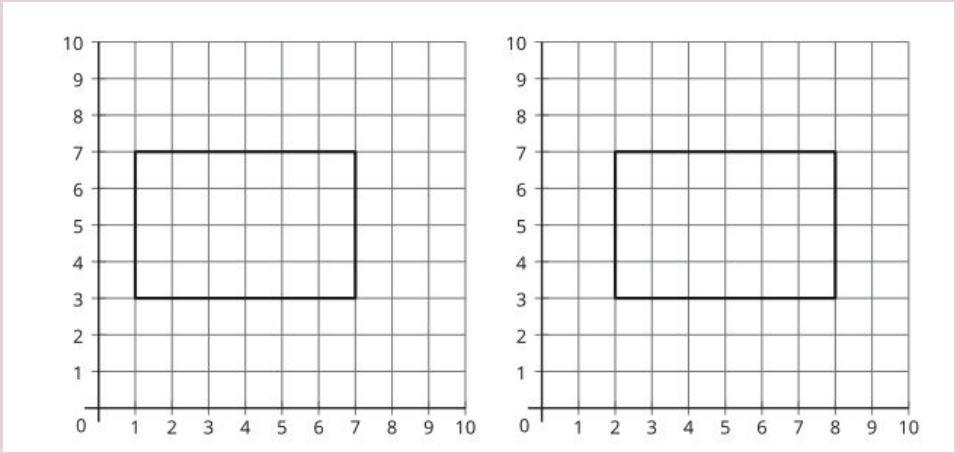
Lesson Synthesis

This was the image from our warm-up. What did we learn about it?





Lesson Synthesis



If you were playing the game Guess Which One and these were the last two cards, what question could you ask to determine which rectangle your partner had chosen?

2

Points on the Coordinate Grid

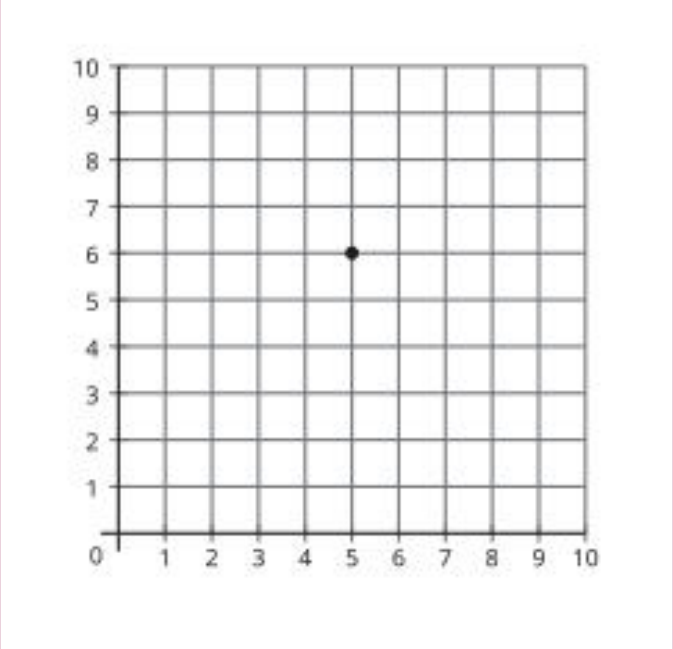
Let’s convert units.

5.MD.A.1, 5.NBT.A.2

Notice and Wonder: The Grid

Warm up

What do you notice?



What do you wonder?

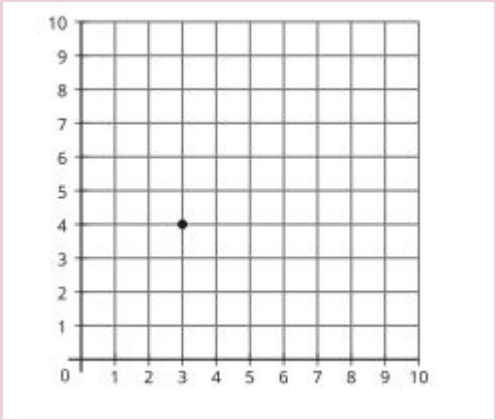
What's the Point?

Activity #1

1. Play 2 rounds of What's the Point so each partner gets a chance to draw.

- Sit back to back with your partner.
- Partner A: Choose a card. Then, describe the location of the point to your partner.
- Partner B: Draw the point on the blank coordinate grid.
- Compare the card with your partner's diagram.
- Discuss: What's the same? What's different?

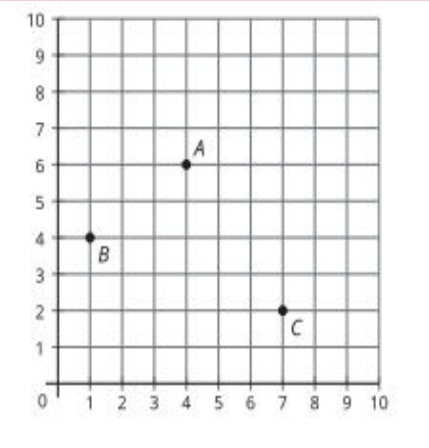
2. Use words to describe the location of the point on the grid.



Plot and Label Points

Activity #2

1. List the coordinates for each point.

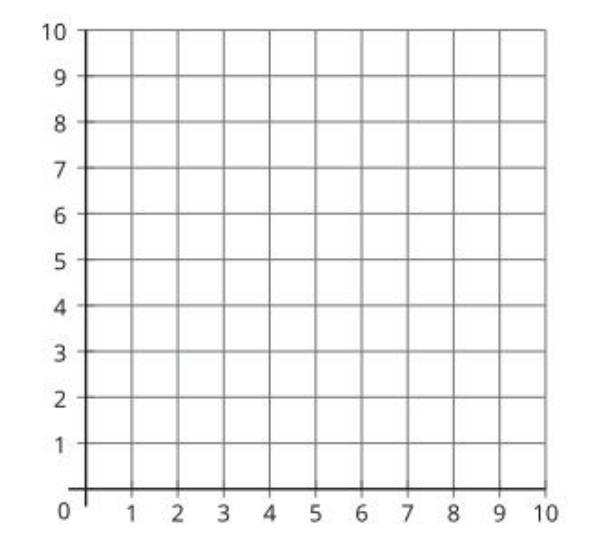


	coordinates
A	(__, __)
B	(__, __)
C	(__, __)

2. Plot points D, E, F on the same grid.

	coordinates
D	(6, 4)
E	(2, 5)
F	(8, 3)

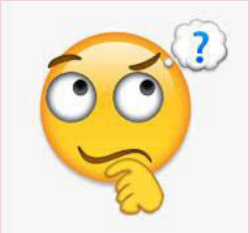
Lesson Synthesis



(4, 7) and (7, 4)

How do we plot each of these coordinate pairs?

What do we know about these points?



What information can we add to the chart about coordinate grids?

3

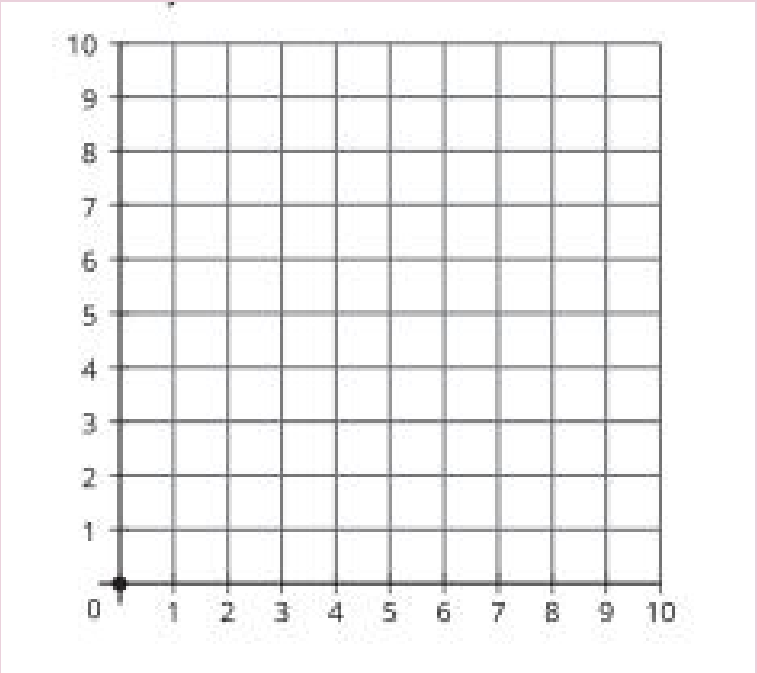
Plot More Points

Let’s locate and name points on the coordinate grid.

Notice and Wonder: The Origin

Warm up

What do you notice?



What do you wonder?

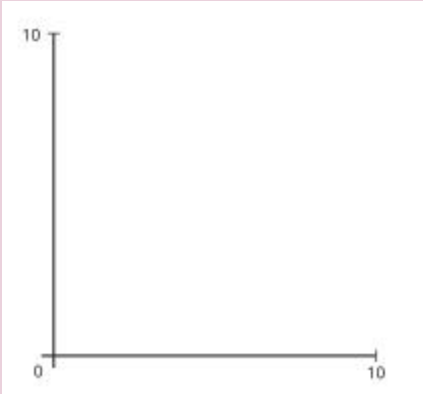
What's the Point?

Activity #1

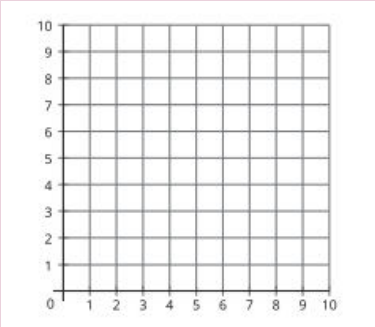
Partner A:

1. Estimate the location of each point.

Point	Coordinates
A	(5, 1)
B	(5, 2)
C	(5, 3)
D	(5, 4)



2. Plot and label the points on the coordinate grid.



3. What do the points have in common?

4. Plot the point with coordinates (5, 0) on the coordinate grid.

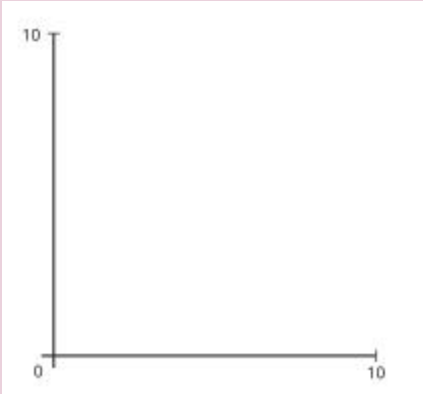
What's the Point?

Activity #1

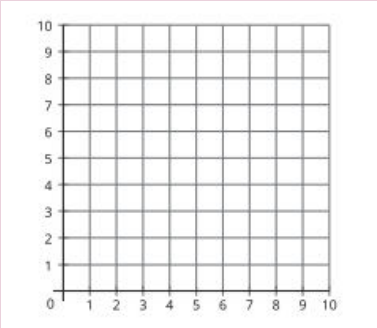
Partner B: :

1. Estimate the location of each point.

Point	Coordinates
A	(4, 3)
B	(5, 3)
C	(6, 3)
D	(7, 3)



2. Plot and label the points on the coordinate grid.



3. What do the points have in common?

4. Plot the point with coordinates (0, 3) on the coordinate grid.

What is Missing?

Activity #2

1. Where might this point be located on the coordinate grid? (7, ?)

2. Where could it not be located?

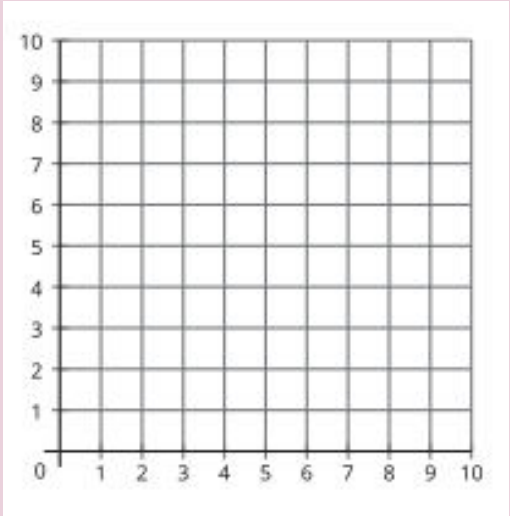
3. List some numbers that might go in the blank.

(7, __)

(7, __)

(7, __)

(7, __)



What is Missing?

Activity #2

4. Where might this point be located on the coordinate grid? (? , 0)

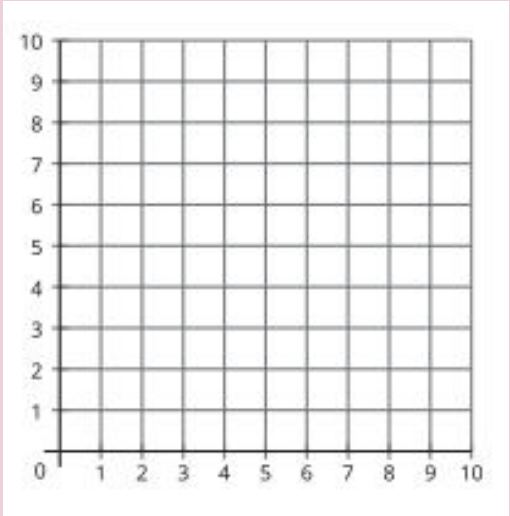
5. List some numbers that might go in the blank

(__ , 0)

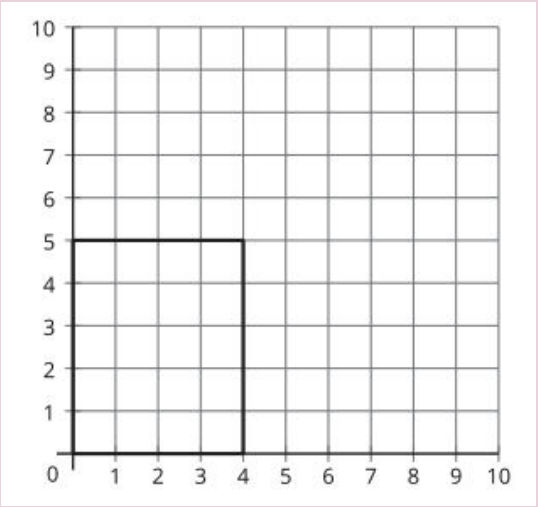
(__ , 0)

(__ , 0)

(__ , 0)

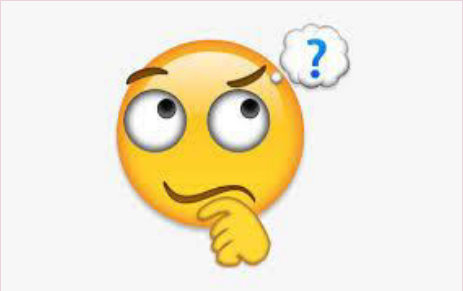


Lesson Synthesis



In the beginning of this section, we described the location of rectangles on a coordinate grid. How can we describe this rectangle?

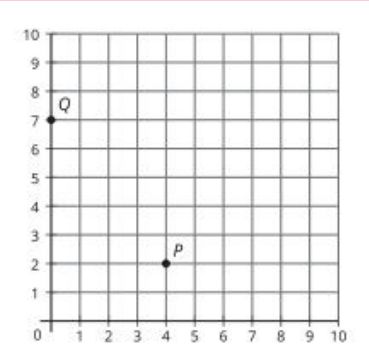
What are the coordinates of the 4 vertices of the rectangle?



In the next section, we will be exploring rectangles and other quadrilaterals.

Section Summary

In this section, we plotted and described points on the coordinate grid.



The point P is 4 units from the vertical axis and 2 units from the horizontal axis. Its coordinates are $(4, 2)$. The point Q is 0 units from the vertical axis since it is on the vertical axis. It is 7 units from the horizontal axis. Its coordinates are $(0, 7)$.

The first coordinate of a point tells us its horizontal position and the second coordinate gives its vertical position.

Adaptation
Lesson 1

Ways of Looking at Figures

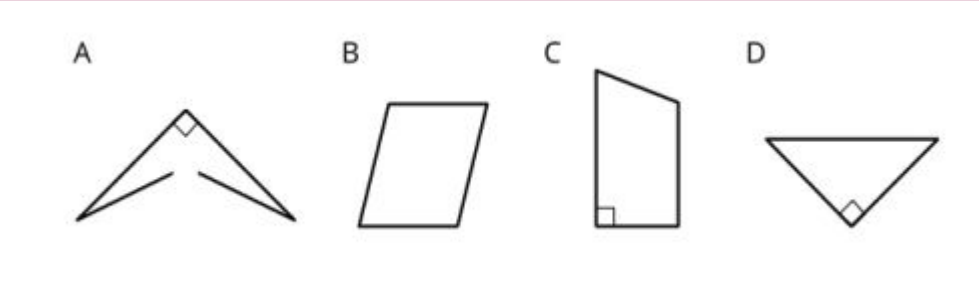
Let’s sort two-dimensional figures.

4.G.A.2

Which One Doesn't Belong: Geometric Figures

Warm up

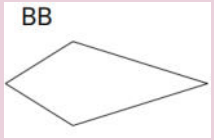
Which one doesn't belong?



Card Sort: Grouping Figures

Activity #1

1. Sort the figures from your teacher into 3–5 categories. For each category, write a title on a sticky note.

BB 

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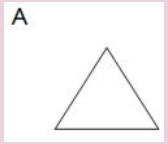
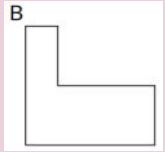
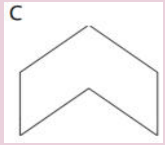
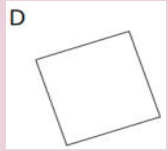
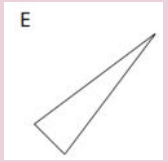
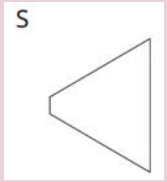
A 

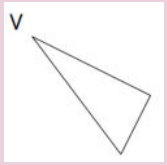
B 

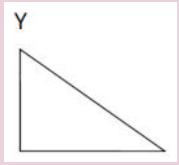
C 

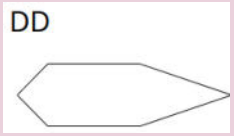
D 

E 

S 

V 

Y 

DD 

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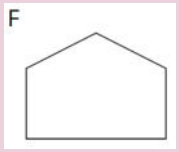
F 

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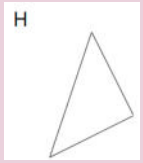
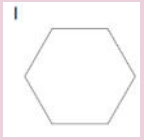
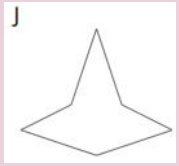
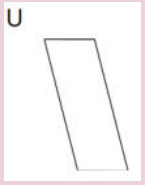
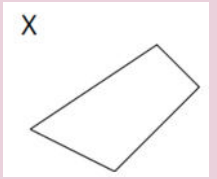
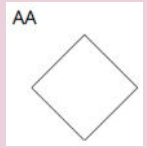
H 

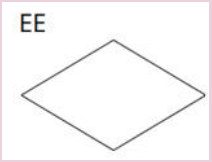
I 

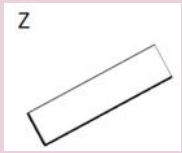
J 

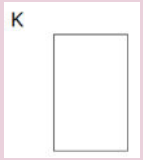
U 

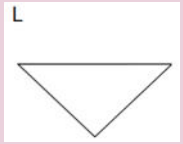
X 

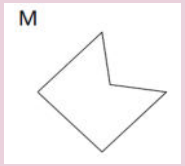
AA 

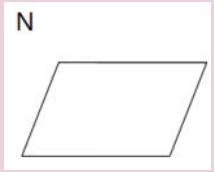
EE 

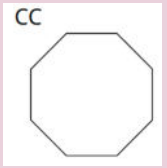
Z 

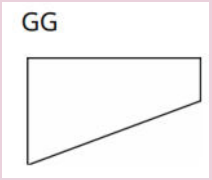
K 

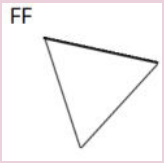
L 

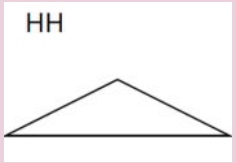
M 

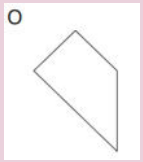
N 

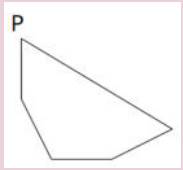
CC 

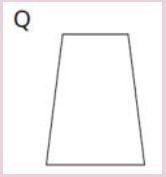
GG 

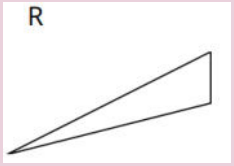
FF 

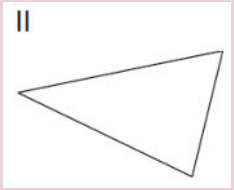
HH 

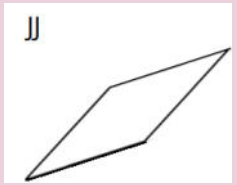
O 

P 

Q 

R 

II 

JJ 

Card Sort: Grouping Figures

Activity #1

2. Share your categories with another group. Take turns listening to each other's explanations.
    - Do your categories make sense to them?
    - Do their categories make sense to you?
    - Any suggestions or corrections?

3. Cover or hide the titles of your categories. Trade places with another group—study their sorted cards while they study yours. Can you guess their categories and how they sorted the figures?

Guess the Category

Activity #2

Partner A:

- Write down a category from the first activity (or think of a new one). Don't show it to your partner.
- Find 3 figures that fit the category and 3 figures that don't. Place them in the columns of the table.

Partner B:

- Study the figures chosen by your partner.
- Pick another figure from the set. Ask: "Does this figure fit in your category?"
- Find 2 figures that fit the category and 2 figures that don't.
- Guess the category. If your guess is off, ask more questions before guessing again.

Switch roles after the category is guessed correctly.

- Partner A's category: _____
- Partner B's category: _____

fit the category	do not fit the category

Lesson Synthesis

Today we sorted figures based on the different attributes or properties they have. We learned we can classify or group two-dimensional figures a variety of ways.

What are some ways to group using the sides of the figures?

What are some ways to group using the angles in the figures?

Besides sides and angles, what other attributes were used to classify the figures?

Let's continue to add new vocabulary to our word walls from the last unit. Take 1–2 minutes to add any new words from today's lesson to your word walls.

Adaptation
Lesson 2

Ways of Looking at Triangles

Let’s sort and analyze triangles.

Warm up

Number Talk: Sums and Products

Find the value of each expression mentally.

$$12 + 12 + 75$$

Warm up

Number Talk: Sums and Products

Find the value of each expression mentally.

$$12\frac{1}{2} + 12\frac{1}{2} + 75$$

Warm up

Number Talk: Sums and Products

Find the value of each expression mentally.

$$(2 \times 12\ \tfrac{1}{2}) + (4 \times 12\ \tfrac{1}{2})$$

Warm up

Number Talk: Sums and Products

Find the value of each expression mentally.

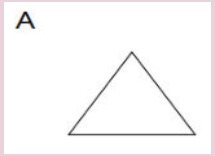
$$7 \times 12\frac{1}{2}$$

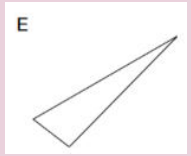
Triangle Hunt

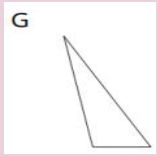
Activity #1

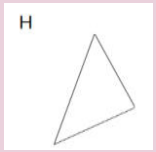
1. From the set of triangle cards, find all the triangles that have each property.

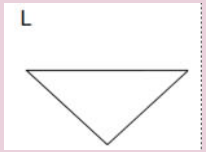
a. no right angles	b. parallel sides	c. perpendicular sides
d. the same length for all sides	e. the same size for all angles	f. more than one right angle
g. more than one obtuse angle	h. more than one acute angle	i. foldable into two equal halves

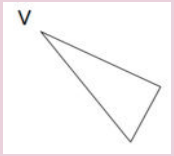


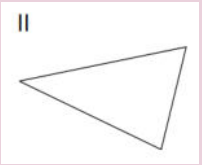


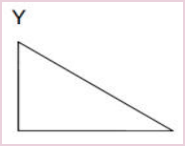


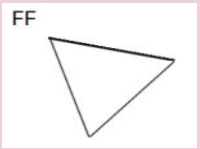


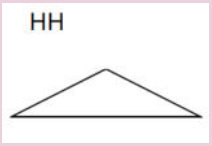












Triangle Hunt

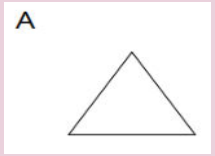
Activity #1

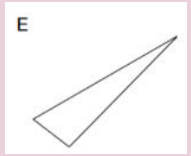
2. Choose one sentence to complete based on your work.

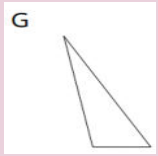
a. I noticed that some triangles . . .

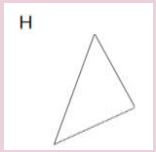
b. I noticed that all triangles . . .

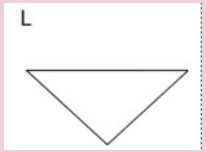
c. I noticed that no triangles . . .

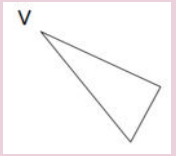


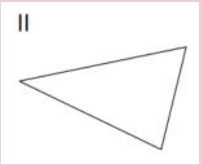


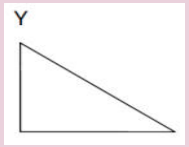


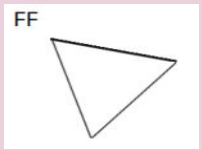


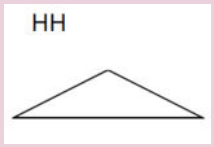








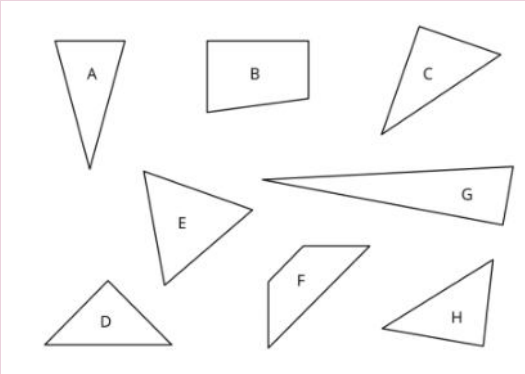




Activity #2

The Right Kind of Triangle

1. Identify all figures that are right triangles. For each right triangle, mark the right angle with a small square.



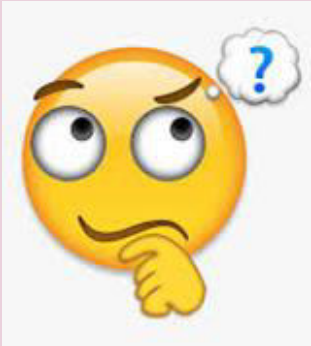
2. Explain why the other figures are not right triangles.

Lesson Synthesis

Today we analyzed and identified triangles with different properties.

How can we tell if sides were the same length?

If we classify or group triangles based on side length, what types might we see?



If we classify or group triangles based on side length, what types might we see?

Earlier we identified some right triangles. Which of these statements do you think defines a right triangle: ‘a triangle with one right angle’ or ‘a triangle with one pair of perpendicular sides’?

Adaptation
Lesson 3

Ways of Looking at Quadrilaterals

Let's sort and identify quadrilaterals.

4.G.A.1, 4.G.A.2

How Many Do You See: Brick Pattern

Warm up

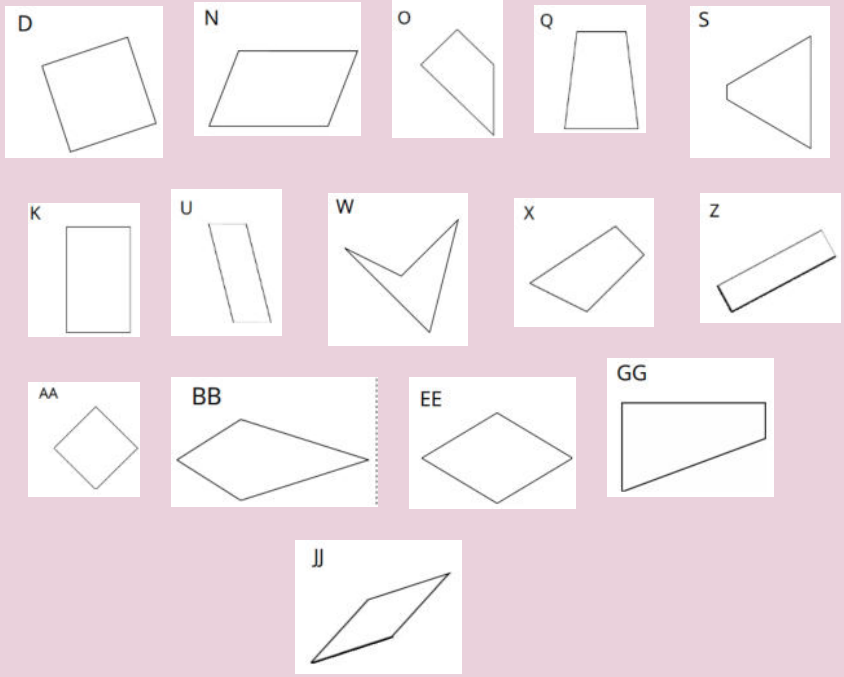
How many bricks have 2 pair of parallel sides?

Quadrilateral Hunt

Activity #1

1. Find the figures that have each of the following properties. List the letter names.

property	figures having the property
a. no right angles	
b. one pair of parallel sides	
c. one pair of perpendicular sides	
d. same length for all sides	
e. same size for all angles	
f. same length for only two sides	
g. no parallel sides	
h. two obtuse angles	



Quadrilateral Hunt

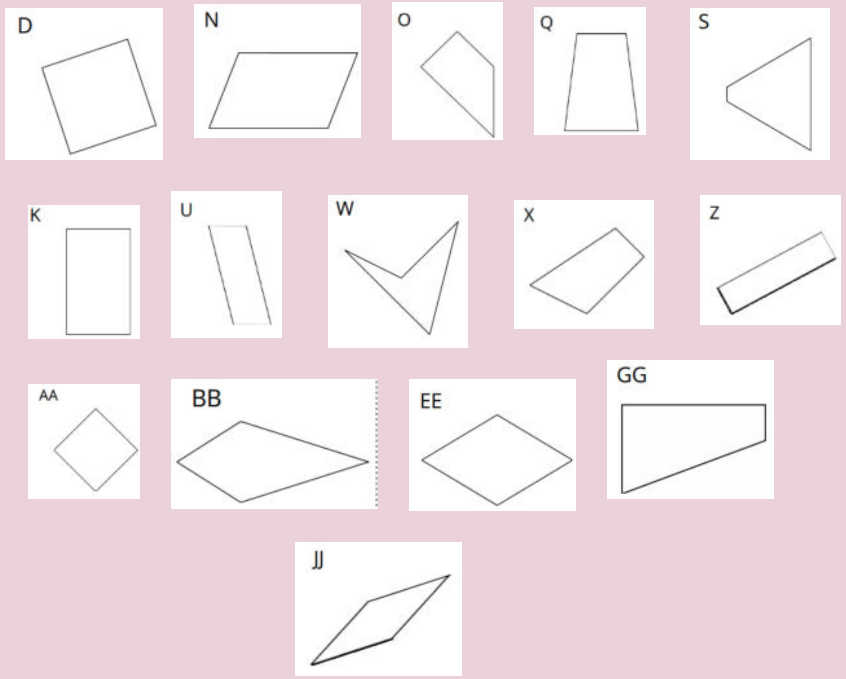
Activity #1

2. Choose one sentence to complete based on your work.

a. I noticed some quadrilaterals . . .

b. I noticed that all quadrilaterals . . .

c. I noticed that no quadrilaterals . . .

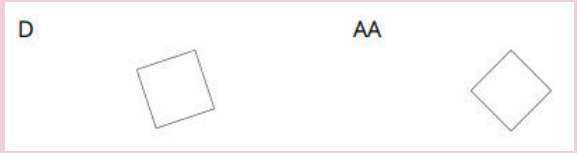


What's True about These Quadrilaterals?

Activity #2

Here are four sets of quadrilaterals. In the space on the next page, write 4–5 statements about the sides and angles of the figures in each set. Each statement must be true for all the figures in the set.

Figures D and AA are **squares.**



Figures N, U, and Z are **parallelograms.**

Figures K, Z, and AA are **rectangles.**

Figures N, U, and Z are **rhombuses.**

What's True about These Quadrilaterals?

Activity #2

Here are four sets of quadrilaterals. In the space on the next page, write 4–5 statements about the sides and angles of the figures in each set. Each statement must be true for all the figures in the set.

square	**Rectangle**
rhombus	**Parallelogram**

Guess Again

Activity #3

Partner A:
- Write down a property that a quadrilateral could have. Don't show it to your partner.
- Find 3 quadrilaterals that have that property and 3 that don't. Place them in the columns of the table.

Partner B:
- Study the quadrilaterals chosen by your partner.
- Pick another quadrilateral from the set. Ask: "Does this quadrilateral fit in your property?"
- Find at least 1 quadrilateral that fits the property and 1 that doesn't.
- Guess the property. If your guess is off, ask more questions before guessing again.

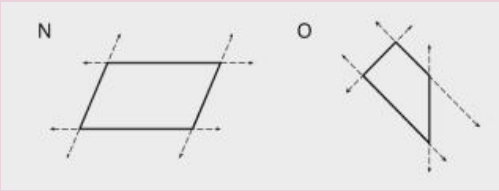
Switch roles after the property is guessed correctly.

- Partner A's property: _____
- Partner B's property: _____

fit the property	do not fit the property

Lesson Synthesis

Today we looked closely at quadrilaterals and identified ones whose sides and angles have certain attributes or properties.



What properties do they not share?

What properties do these quadrilaterals share?

What can we say about parallel sides in quadrilaterals?

4

Sort Quadrilaterals

Let’s sort quadrilaterals.

5.G.B.3, 5.G.B.4

Warm up

What Do You Know About....

QUADRILATERALS

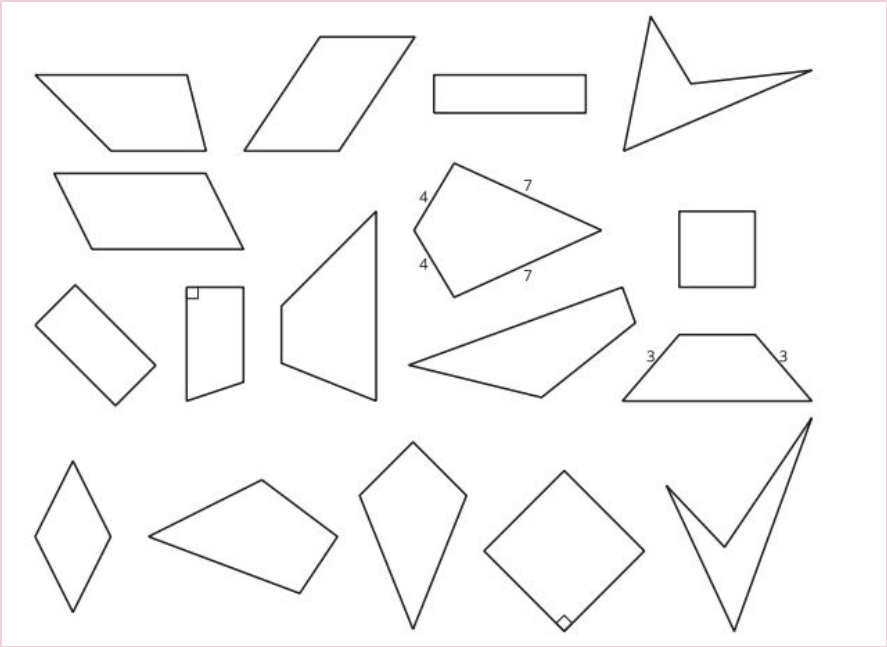
Guess Who?

Activity #1

1. Play a round of Guess Who

Partner A: Select one of the quadrilaterals. Do not reveal it to your partner.

Partner B: Ask “yes” or “no” questions to guess which shape your partner picked. Between each question, cross out or remove the quadrilaterals based on your partner’s answers.

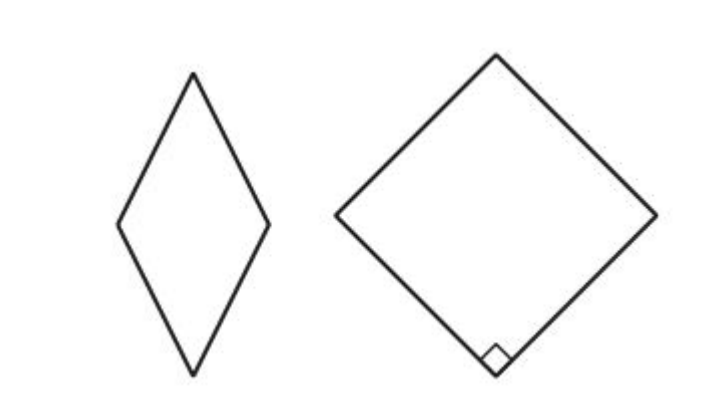


Guess Who?

Activity #1

2. Han and Mai were playing the same game. These are the last two shapes.

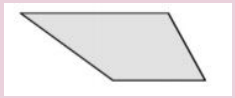
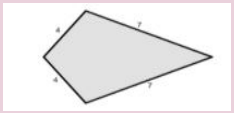
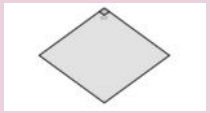
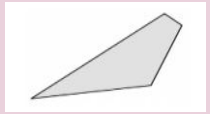
What question can Mai ask to determine which shape is the one that Han picked?

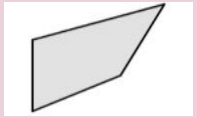


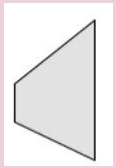
Activity #2

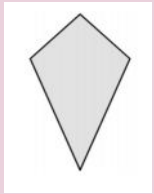
Card Sort: Quadrilaterals

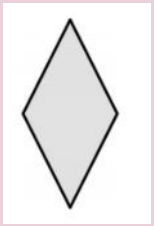
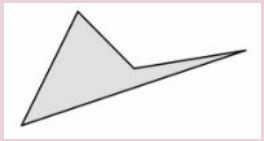
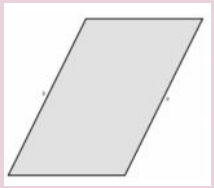
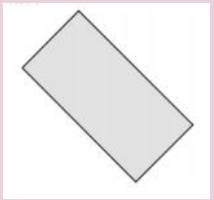
Your teacher will give you a set of cards.
1. Sort all of the quadrilateral cards in a way that makes sense to you. Name the categories in this sort.







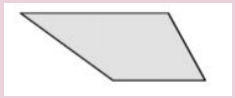
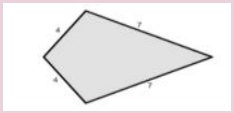
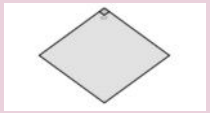
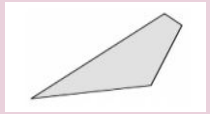





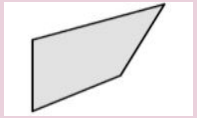
Activity #2

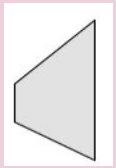
Card Sort: Quadrilaterals

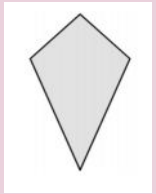
Your teacher will give you a set of cards.

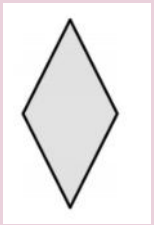
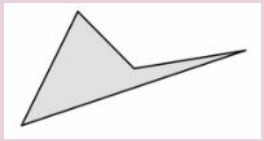
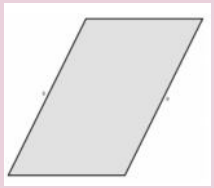
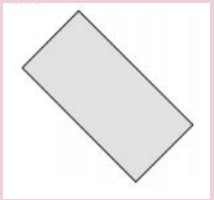
2. Sort the quadrilateral cards in a different way and name each of the categories in this sort.



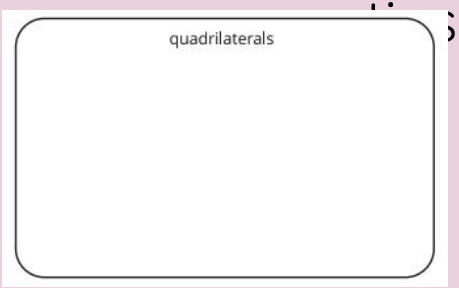




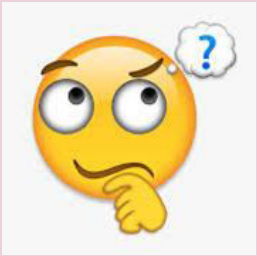
Lesson Synthesis

Today, we sorted quadrilaterals based on their .



Which of these shapes are most alike? Why?

What are some categories of shapes that fall under quadrilaterals?



Which of these shapes are most different? Why?

5

Trapezoids

Let’s explore trapezoids.

Warm up

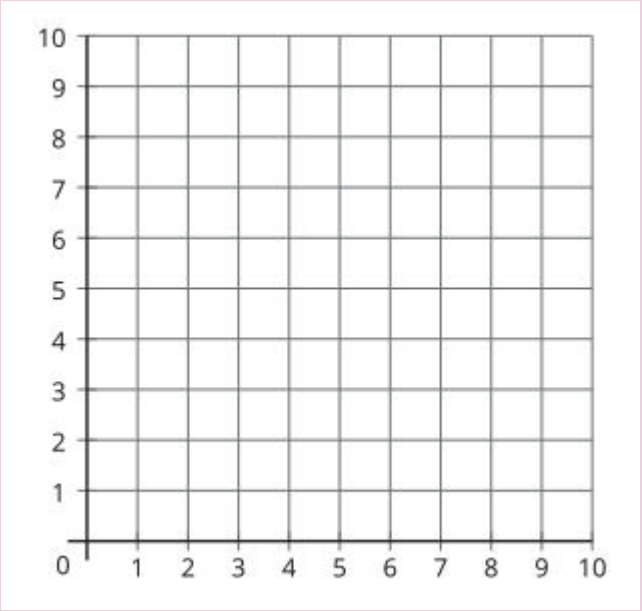
What Do You Know About....

TRAPEZOIDS

What's a Trapezoid?

Activity #1

1. Draw a trapezoid. Label your coordinates.



2. Is it a square? Rectangle? Rhombus? Parallelogram? Explain or show using the coordinate grid.

3. Describe a trapezoid in your own words. Compare your definition with a partner.

4. Is this shape a trapezoid according to your definition? Explain your reasoning.

Two Definitions of a Trapezoid

Activity #2

Definition 1

A trapezoid has exactly one pair of opposite sides parallel.

Definition 2

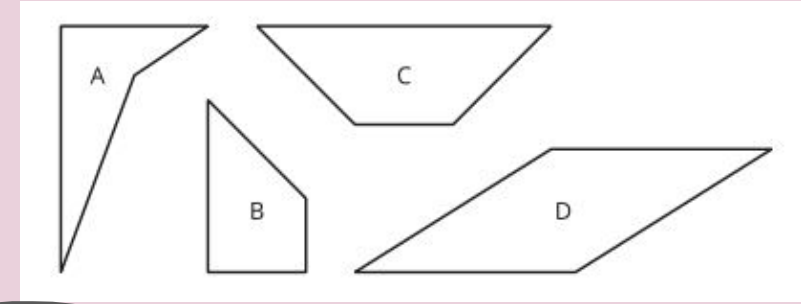
A trapezoid has at least one pair of opposite sides parallel.

Which statements go with the first definition?
Which statements go with the second definition?
Explain or show your reasoning.

1. All parallelograms are trapezoids.
2. No parallelograms are trapezoids.
3. All trapezoids are parallelograms.
4. Some trapezoids are parallelograms.
5. No trapezoids are parallelograms.

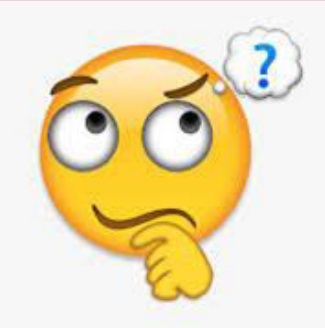
Lesson Synthesis

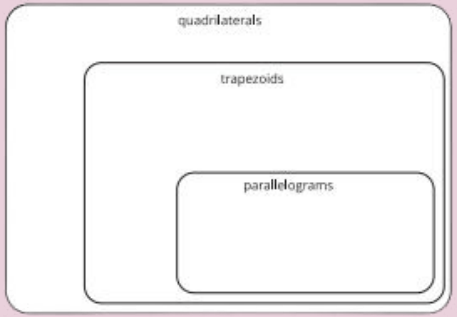
What do you know about trapezoids now?



Where would these shapes go in the diagram?

Turn and talk: Which of these shapes are trapezoids? Explain your reasoning





6

Hierarchy of Quadrilaterals

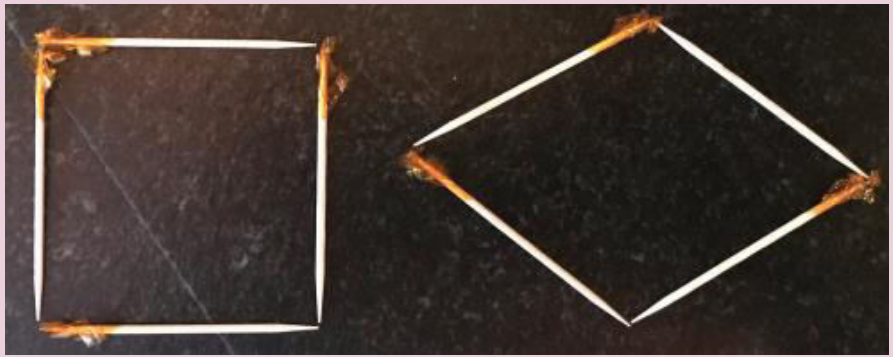
Let’s explore the hierarchy of quadrilaterals.

5.G.B.3, 5.G.B.4

Warm up

Notice and Wonder: Squares and Rhombuses

What do you notice?



What do you wonder?

Shapes with Toothpicks

Activity #1

1. Build a square with your toothpicks. How do you know it is a square?

2. Use the same four toothpicks to build this shape. What stayed the same? What changed?

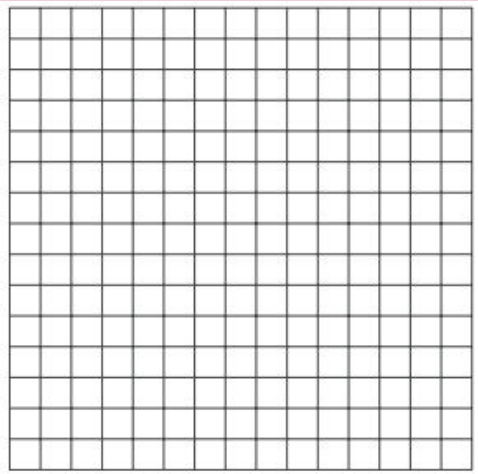
3. Build a rectangle with six toothpicks. How do you know it is a rectangle?

4. Use the same six toothpicks to build this shape. What stayed the same? What changed?

Activity #2

Three Quadrilaterals

1. Draw 3 different quadrilaterals on the grid, making sure at least one of them is a parallelogram.



2. For each of your quadrilaterals determine if it is a:
   - square
   - rhombus
   - rectangle
   - parallelogram

Explain or show your reasoning.

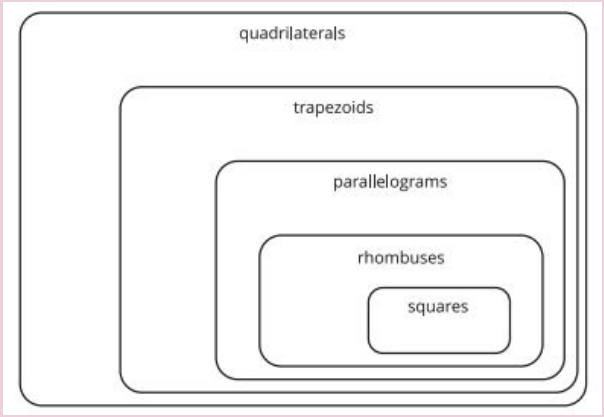
3. Draw a rhombus that is not a square. Show or explain how you know it is a rhombus but not a square.

4. Draw a rhombus that is a square. Show or explain how you know it is a rhombus and a square.

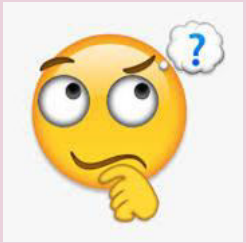
5. Diego says that it is impossible to draw a square that is not a rhombus. Do you agree with him? Show or explain your reasoning.

Lesson Synthesis

Turn and talk: What makes a square a rhombus?



How does this diagram show that a square is a rhombus and a parallelogram?



7

Rectangles and Squares

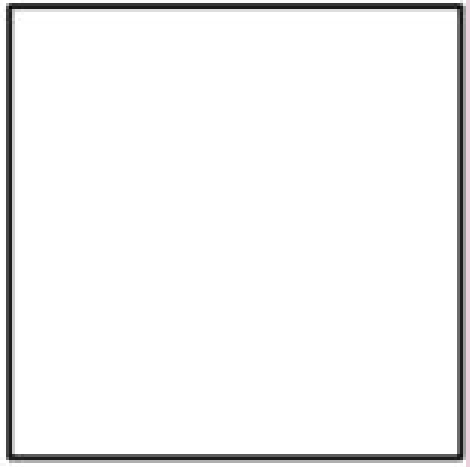
Let’s learn more about rectangles and squares.

5.G.B.3, 5.G.B.4

Warm up

What Do You Know About....

What do you know about this shape?



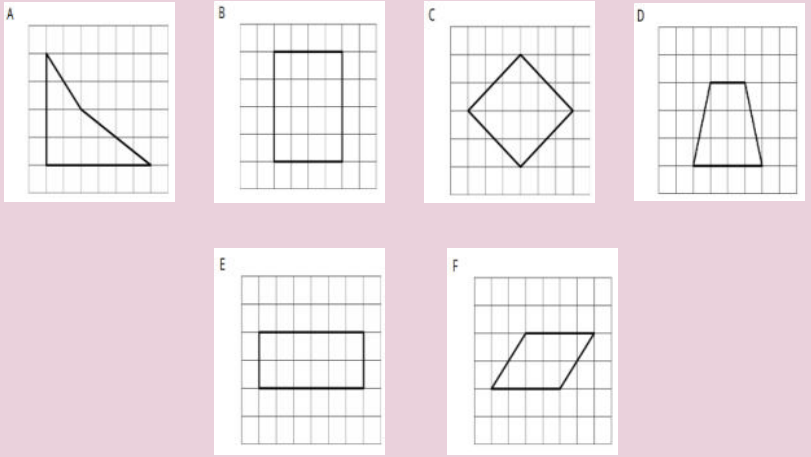
Quadrilateral Clues

Activity #1

Spread out your shape cards so you and your partner can see all of them.

1. Work together to find a shape that fits each clue. If you don't think it is possible to find that shape, explain why. You can only use each shape one time.

a. Find a quadrilateral that is not a parallelogram.
b. Find a rhombus that is also a square.
c. Find a rhombus that is not a square.
d. Find a trapezoid that is not a rectangle.
e. Find a rectangle that is not a square.
f. Find a parallelogram that is not a rectangle.



2. Elena is looking for a square that is not a rectangle. Explain why this is not possible.

Always, Sometimes, Never

Activity #2

Make each statement true by filling in the blanks with always, sometimes, or never.

For each statement that is completed with “sometimes,” draw and describe a figure for which the statement is true and another figure for which the statement is not true.

1. A rhombus is _____ a square.

2. A square is _____ a rhombus.

3. A triangle is _____a quadrilateral.

4. A square is _____ a rectangle.

5. A rectangle _____ a parallelogram.

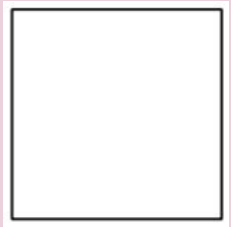
6. A parallelogram is _____a rhombus.

7. A trapezoid is _____ a parallelogram.

Lesson Synthesis

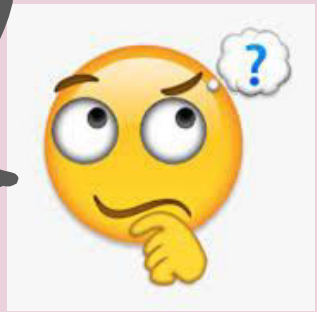
Earlier in the warm up we saw this shape.

We said this is called a square because . . .” Include statements students made earlier in the warm up. “What do you now know about this shape?



Why is a square also a rhombus?

Why is a square also a rectangle?



If a shape is a rectangle, is it also a square?

8

Sort Triangles

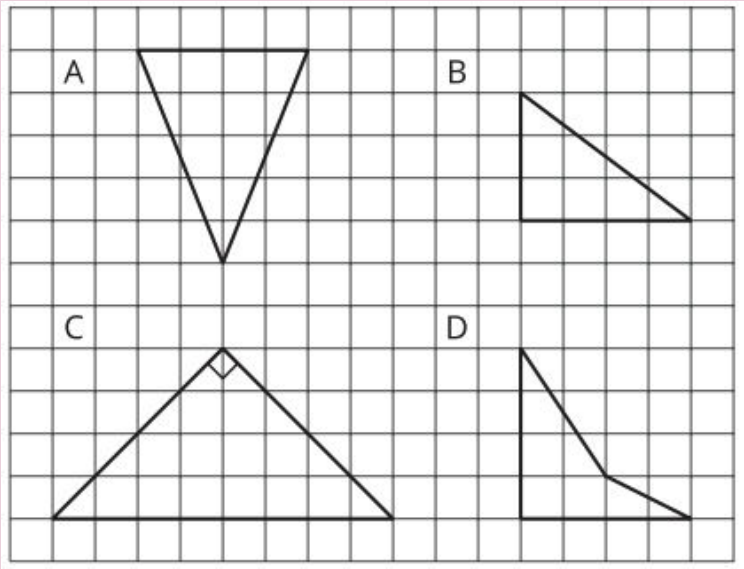
Let’s sort triangles.

5.G.B, 5.G.B.3, 5.G.B.4

Which One Doesn't Belong: Triangles

Warm up

Which one doesn't belong?



The Right Fit

Activity #1

1. Find a triangle card that fits in each space on the grid.

2. If you don't think it is possible to find a triangle that fits certain criteria, explain why not.

	all three side lengths are different	two of the sides are the same length	all three side lengths are the same
has a 90 degree angle			
has an angle that is greater than 90 degrees			
all three angles are less than 90 degrees			

All, Some, None

Activity #2

1. Use the triangle cards from activity 1.

2. For the triangles with 90 degree angles, write statements about each category.

All of the triangles with a 90 degree angle. . .	Some of the triangles with a 90 degree angle. . .	None of the triangles with a 90 degree angle. . .

Lesson Synthesis

How is classifying triangles the same as classifying quadrilaterals?

Based on what you know about triangles, how can we categorize or sort triangles?

Section Summary

In this section we sorted and analyzed different kinds of quadrilaterals and triangles. We described their properties. For example:

- A rectangle is a quadrilateral with 4 right angles.
- A rhombus is a quadrilateral with 4 equal sides.
- A square is a quadrilateral with 4 right angles and 4 equal sides.

We also described how the shapes are related to each other. For example, we can see that a square is always a rhombus because it has the property of a rhombus. A square is also always a rectangle because it has the property of a rectangle. On the other hand, a rectangle does not need to be a square because its side lengths don't have to all be the same. And a rhombus does not need to be a square because its angles do not have to be right angles.

9

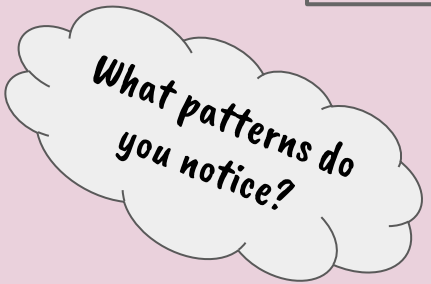
Generate Patterns

Let’s explore rules and patterns.

5.OA.B.3

Choral Count: Two Patterns

Warm up



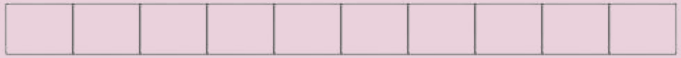
- Count by 6, starting at 0.
- Record as students count.
- Stop counting and recording at 60.

What's the Pattern?

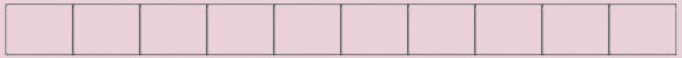
Activity #1

1. Jada and Priya are creating rules for patterns. Follow each rule to complete each pattern:

Jada's rule: start with 0 and keep adding 4.



Priya's rule: start with 0 and keep adding 8.



2. If Jada and Priya kept their patterns going, what number will be in Priya's box when Jada's box shows:

a. 40
b. 60

3. What relationship do you notice between the numbers in Priya's boxes and the numbers in Jada's boxes?

4. If Jada and Priya keep their patterns going, what number will be in Jada's box when Priya's box shows 192?

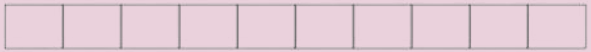
More Patterns

Activity #2

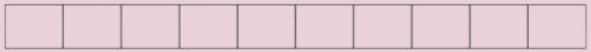
Partner A

1. Jada and Priya are creating rules for patterns. Use each rule to generate a pattern.

Jada's rule: Start at 0. Keep adding 2.



Priya's rule: Start at 0. Keep adding 6.



2. If Jada and Priya kept their patterns going:

   a. What number will be in Priya's box when Jada's box shows 34? Explain your thinking.
   b. What number will be in Jada's box when Priya's box shows 120? Explain your thinking.

3. What relationship do you notice between the numbers in Priya's pattern and the numbers in Jada's pattern?

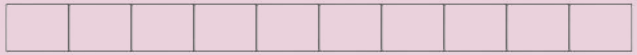
More Patterns

Activity #2

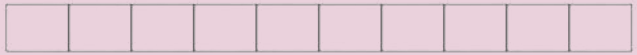
Partner B

4. Jada and Priya are creating rules for patterns. Use each rule to generate a pattern.

Jada's rule: Start at 0. Keep adding 3.



Priya's rule: Start at 0. Keep adding 9.



5. If Jada and Priya kept their patterns going,

a. What number will be in Priya's box when Jada's box shows 54? Explain your thinking.
b. What number will be in Jada's box when Priya's box shows 198? Explain your thinking.

6. What relationship do you notice between the numbers in Priya's pattern and the numbers in Jada's pattern?

Lesson Synthesis

Today we generated patterns and recognized relationships between two different patterns.

- Count by 6, starting at 0.
- Record as students count.
- Stop counting and recording at 60.

What relationships do you notice between the patterns in each of the counts?

Explain to your partner why these relationships will continue if the patterns continue.

10

Interpret Relationships

Let’s find relationships between patterns.

5.OA.B.3

Warm up

True or False: Multiply and Divide

Decide whether each statement is true or false.

$$276 \div 3 = \frac{1}{3} \times 276$$

Be prepared to explain your reasoning.

Warm up

True or False: Multiply and Divide

Decide whether each statement is true or false.

$276 \div 3 = 92 \times 3$

Be prepared to explain your reasoning.

Warm up

True or False: Multiply and Divide

Decide whether each statement is true or false.

$$(276 \div 3) \times 2 = \frac{2}{3} \times 276$$

Be prepared to explain your reasoning.

Activity #1

Mix and Match: 3 Patterns

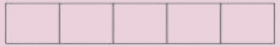
1. Complete the patterns for each set of rules.

2. What are some relationships between the patterns in each set of rules? Be prepared to explain your thinking.

Set A

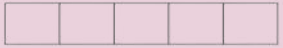
Rule 1: Start at 0. Add 3.

Rule 2: Start at 0. Add 6.



Set B

Rule 1: Start at 4. Add 3.



Rule 2: Start at 9. Add 6.

Set C

Rule 1: Start of 0. Add 5.

Rule 2: Start at 0. Add 3.

Generate Patterns

Activity #2

Partner A

Rule 1: Start with 0. Add 4.

Rule 2: Start with 0. Add 6.

1. Generate a pattern for rule 1.

Generate a pattern for rule 2.

2. Compare your patterns. What relationships do you notice?

3. What number will be in pattern 2 when the number in the pattern 1 box is 40?

4. What number will be in pattern 1 when the number in the pattern 2 box is 120?

Generate Patterns

Activity #2

Partner B

Rule 1: Start with 0. Add 2.

Rule 2: Start with 0. Add 3.

5. Generate a pattern for rule 1.

Generate a pattern for rule 2.

6. Compare your patterns. What relationships do you notice?

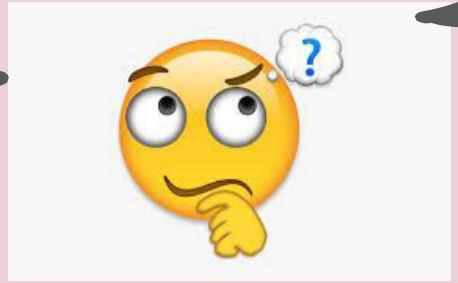
7. What number will be in pattern 2 when the number in the pattern 1 box is 30?

8. What number will be in pattern 1 when the number in the pattern 2 box is 60?

Lesson Synthesis

Today we noticed and explained relationships between patterns. Some of the relationships involved fractions.

What relationships did you find between the patterns we studied today?



Describe how you can use a relationship between two patterns to predict what numbers will be in a pattern.

11

Patterns and Ordered Pairs

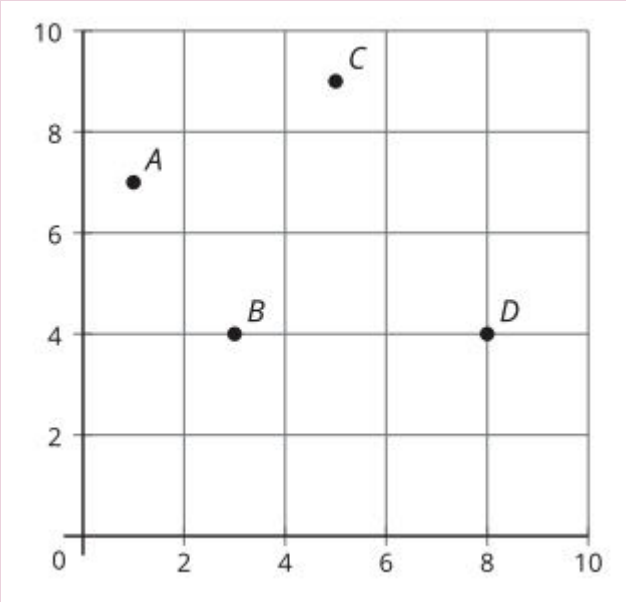
Let’s graph patterns on the coordinate grid.

5.OA.B.3

Warm up

Notice and Wonder: The Coordinate Grid

What do you notice?



What do you wonder?

Patterns on the Coordinate Grid, Part 1

Activity #1

Partner A

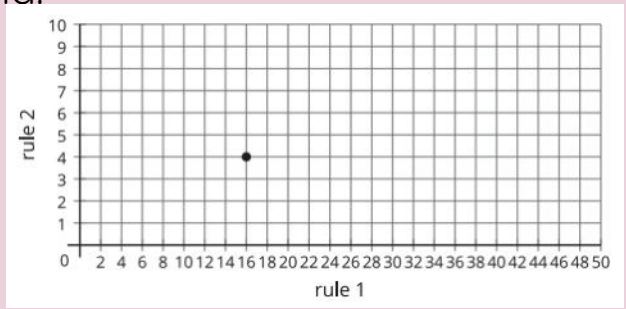
Rule 1: Start at 0. Add 8.

Rule 2: Start at 0. Add 2.

1. Use the rules to complete the table.

	A	B	C	D	E	F
rule 1						
rule 2						

2. Which point in the table represents the point on the coordinate grid? Label the point with the appropriate letter on the grid.



3. Plot and label the rest of the points.

Patterns on the Coordinate Grid, Part 1

Activity #1

Partner B

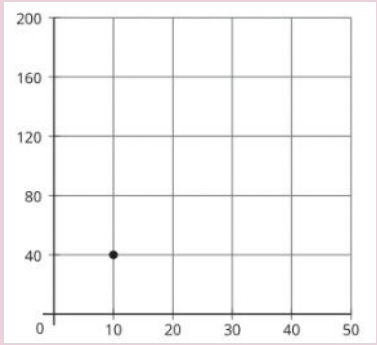
Rule 1: Start at 0. Add 10.

Rule 2: Start at 0. Add 40.

1. Use the rules to complete the table.

	A	B	C	D	E	F
rule 1						
rule 2						

2. Which point on the table represents the point on the coordinate grid? Label the point with the appropriate letter on the grid.



3. Plot and label the rest of the points.

Patterns on the Coordinate Grid, Part 2

Activity #2

1. Use the rules to complete the table.

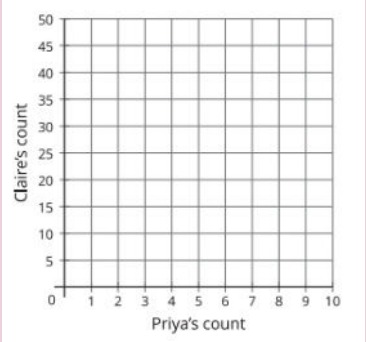
Rule 1: Priya starts at 0. She continues to count by 2.

Rule 2: Clare starts at 0. She continues to count by 5.

	A	B	C	D	E	F
Priya						
Clare						

2. What patterns do you notice between the numbers in Priya's list and Clare's list?

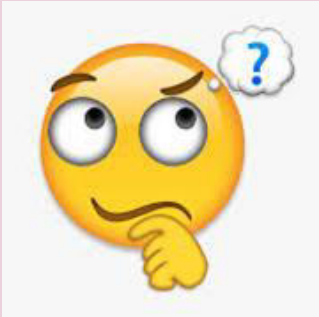
3. Plot and label the points from the table.



4. What does the point C tell you about Clare's and Priya's counts?

Lesson Synthesis

Today, we plotted rules on a coordinate grid and noticed patterns.



How is looking at relationships between patterns in a table the same as looking at relationships between patterns on a coordinate grid? How is it different?

12

Represent Problems on the Coordinate Grid

Let’s represent problems on the coordinate grid.

5.G.A.2, 5.OA.A.2

Warm up

True or False: Addition and Multiplication

Decide whether each statement is true or false.

$$(2 \times 10) + (3 \times 5) = (3 \times 10) + (1 \times 5)$$

Be prepared to explain your reasoning.

Warm up

True or False: Addition and Multiplication

Decide whether each statement is true or false.

$$(3 \times 25) + (5 \times 5) = 8 \times 25$$

Be prepared to explain your reasoning.

Warm up

True or False: Addition and Multiplication

Decide whether each statement is true or false.

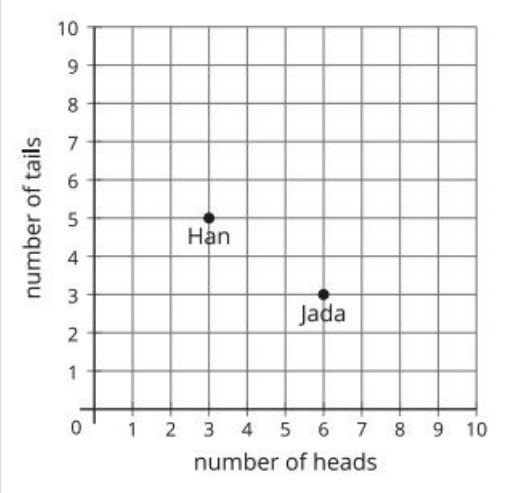
$$(4 \times 25) + (10 \times 5) = (2 \times 25) + (5 \times 20)$$

Be prepared to explain your reasoning.

Heads or Tails

Activity #1

Han and Jada flipped a penny several times and counted how many times it came up heads and how many times it came up tails. Their overall results are plotted on the graph.



1. How many heads did Jada get? How many tails did Jada get? Show or explain how you know.

2. How many heads did Han get? How many tails did Han get? Show or explain how you know.

3. Flip the coin 10 times and record how many heads and tails you get. Plot the point in the coordinate grid representing your coin flips.

4. How many heads and tails did your partner get? Show or explain how you know.

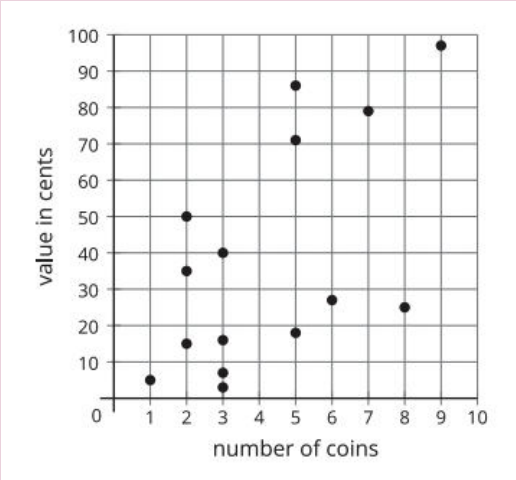
5. Do any of the points you plotted lie on the horizontal axis? What would a point on the horizontal axis mean in this situation?

6. If time allows, toss the coin 10 more times and record your and your partner's results in the coordinate grid.

Coin Values

Activity #2

The graph shows the number and value of coins some students had with them.



1. Tyler has 1 dime, 3 nickels, and 2 pennies. Plot and label a point representing Tyler on the grid.

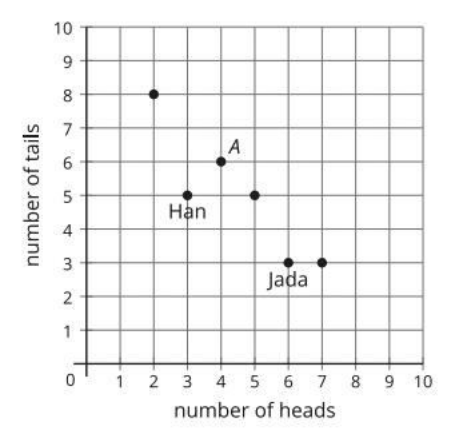
2. Lin has 3 quarters, 1 dime, and 1 penny. Plot and label a point representing Lin on the grid.

3. Diego has 1 quarter and 1 dime. Which point represents Diego? Explain how you know.

4. Clare has 5 coins and does not have a quarter. Which point represents Clare? Which coins does Clare have?

Lesson Synthesis

Today we represented real world and mathematical problems by graphing points in the first quadrant of the coordinate grid and interpreted the points.



Jada says both she and Han flipped the coin 9 times. Do you agree with her? Explain your reasoning

Which point on the graph represents the most heads?

Han says point A means 6 heads and 4 tails were flipped. Do you agree with him? Explain your reasoning.

13

Perimeter and Area of Rectangles

Let’s explore the perimeter and area of rectangles on the coordinate grid.

5.G.A.2, 5.NBT.B.7, 5.OA.B.3

Warm up

Estimation Exploration: Window Washing

What is the area of one window?

Record an estimate that is:

Too low	About right	Too high

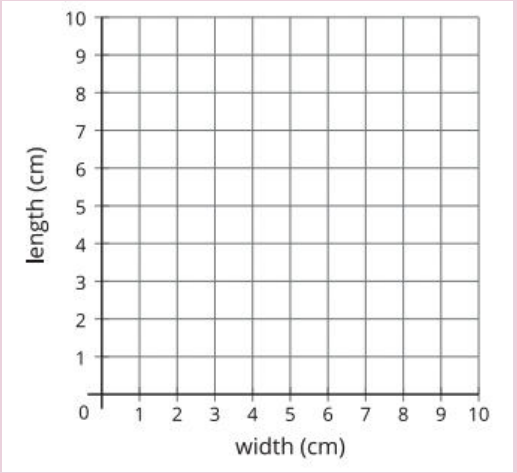
Rectangle Perimeters

Activity #1

1. Jada drew a rectangle with perimeter 12 centimeters. What could the length and width of Jada's rectangle be? Use the table to record your answer.

length (cm)	width (cm)

2. Plot the length and width of each rectangle on the coordinate grid.



Rectangle Perimeters

Activity #1

3. If Jada's rectangle was 2.5 cm long, how wide was it? Plot this point on the coordinate grid.

4. If Jada's rectangle was 3.25 cm long, how wide was it? Plot this point on the coordinate grid.

5. If Jada drew a square, how long and wide was it? 6. Tyler draws a rectangle with a perimeter of 45 cm and a width of 5 cm. What is the area of his rectangle?

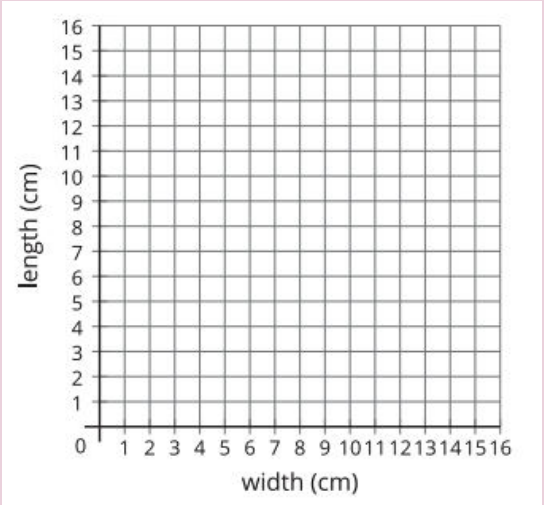
Rectangle Areas

Activity #2

1. Jada drew a rectangle with area 16 square centimeters. What could the length and width of Jada's rectangle be? Use the table to record your answer.

length (cm)	width (cm)

2. Plot the length and width of each rectangle on the coordinate grid.



Rectangle Areas

Activity #2

3. l If Jada's rectangle was 5 cm long, how wide was it? Plot this point on the coordinate grid.

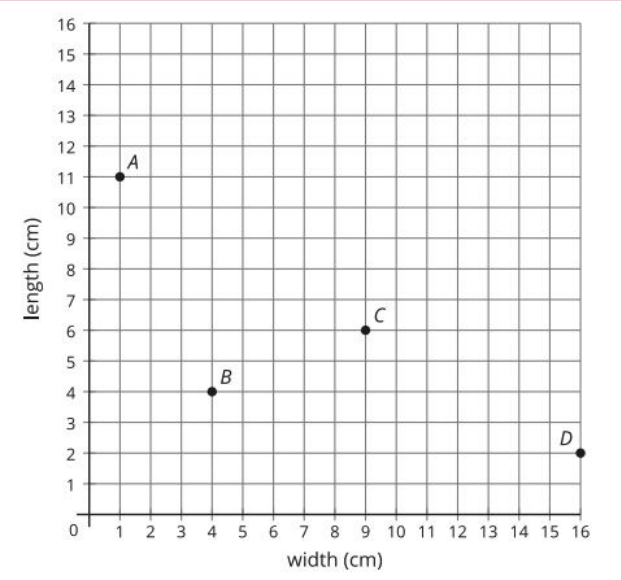
4. If Jada's rectangle was 3 cm long, how wide was it? Plot this point on the coordinate grid.

5. If Jada drew a square, how long and wide was it? Explain how you know.

6. Tyler draws a rectangle with an area of 15 sq cm and a width of 6 cm. What is the perimeter of Tyler's rectangle?

Lesson Synthesis

Today we represented real world and mathematical problems by graphing points on the coordinate grid.



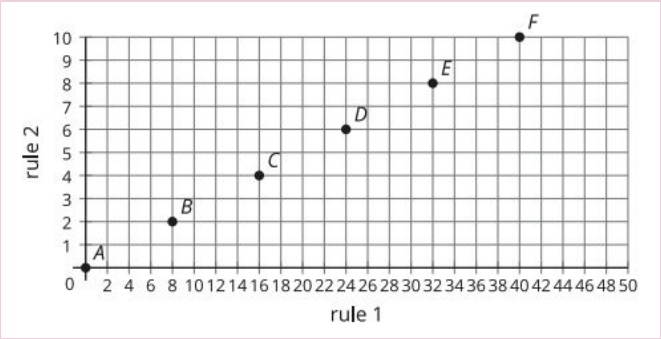
This coordinate grid represents information about rectangles A–D. Based on the coordinate grid, what do we know about rectangle C?

Section Summary

In the beginning of the section, we used rules to generate patterns and recognized relationships between two different patterns.

Jada's rule: Start at 0. Add 3.	Priya's rule: Start at 0. Add 9.
0 3 6 9 12 15 18 21 24 27	0 9 18 27 36 45 54 63 72 81

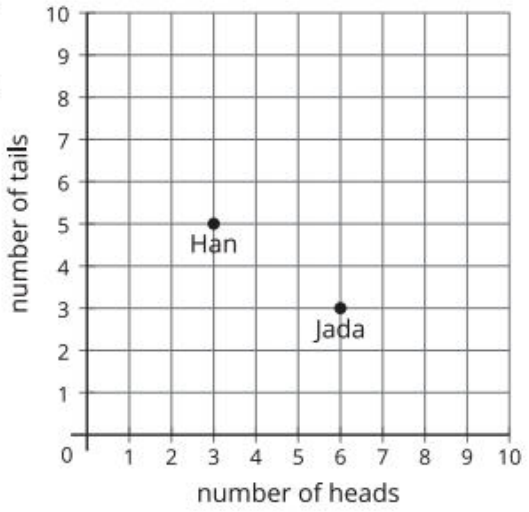
Then, we plotted rules on a coordinate grid and noticed patterns.



Section Summary

Finally, we represented real world and mathematical problems by graphing points on the coordinate grid.

Han and Jada flipped a penny several times and counted how many times it came up heads and how many times it came up tails.

Their overall results are plotted.

How many heads did Jada get?
How many tails did Jada get?
Show or explain how you know.