Polygons and Perimeter

Grade 3: Unit 7

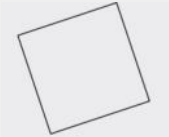
Standards addressed: 3.G.A.1, 3.NBT.A.3, 3.OA.C.7, 3.MD.D.8, 3.NBT.A.2, 3.MD.D.8, 3.OA.D.8, 3.G.A.1

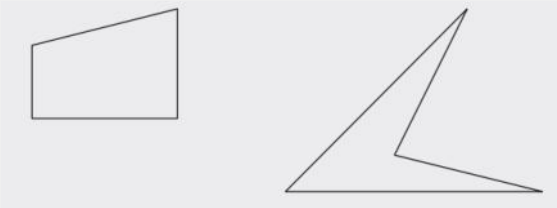
Unit 7 Progression Overview

Polygons and Perimeter

Section A
Lessons 1-5
3.G.A.1, 3.NBT.A.3, 3.OA.C.7

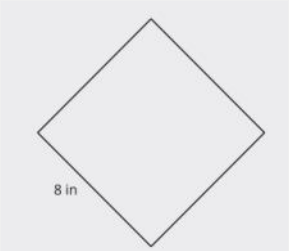
- Reason about shapes and their attributes.





Section B
Lessons 6-9
3.MD.D.8, 3.NBT.A.2, 3.OA.C.7

- Find the perimeter of polygons, including when all or some side lengths are given.



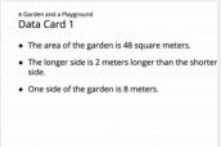
Section C
Lessons 10-12
3.MD.D.8, 3.OA.C.7, 3.OA.D.8

- Solve problems involving perimeter and area, in and out of context.


A Garden and a Playground
Problem Card 1

A gardener has a rectangular garden. She found its area in square meters.

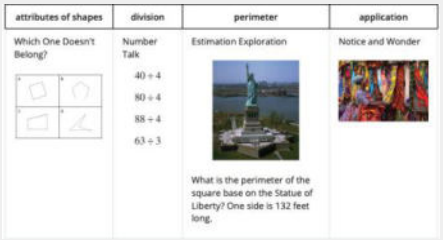
What is the perimeter of the garden?


A Garden and a Playground
Data Card 1

- The area of the garden is 48 square meters.
- The longer side is 2 meters longer than the shorter side.
- One side of the garden is 8 meters.

Section D
Lessons 13-15
3.G.A.1, 3.MD.D.8

- Apply geometric understanding to solve problems.



attributes of shapes	division	perimeter	application
Which One Doesn't Belong?	Number Talk 40 ÷ 4 80 ÷ 4 88 ÷ 4 63 ÷ 3	Estimation Exploration What is the perimeter of the square base on the Statue of Liberty? One side is 132 feet long.	Notice and Wonder

Unit 7 Quick Links

Adapt 1 | Adapt 2 | L1 | L2 | L3 | L4

L5 | L6 | L7 | L8 | L9 | L10

L11 | L12 | L13 | L14 | L15

Adaptation
Lesson 1

Identify and Sort Shapes

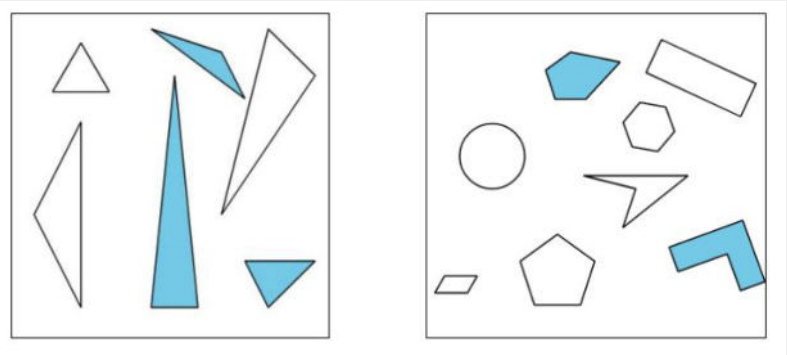
Let’s sort and name shapes based on their sides and corners.

2.G.A.1

Warm up

Notice and Wonder: Groups of Shapes

What do you notice?

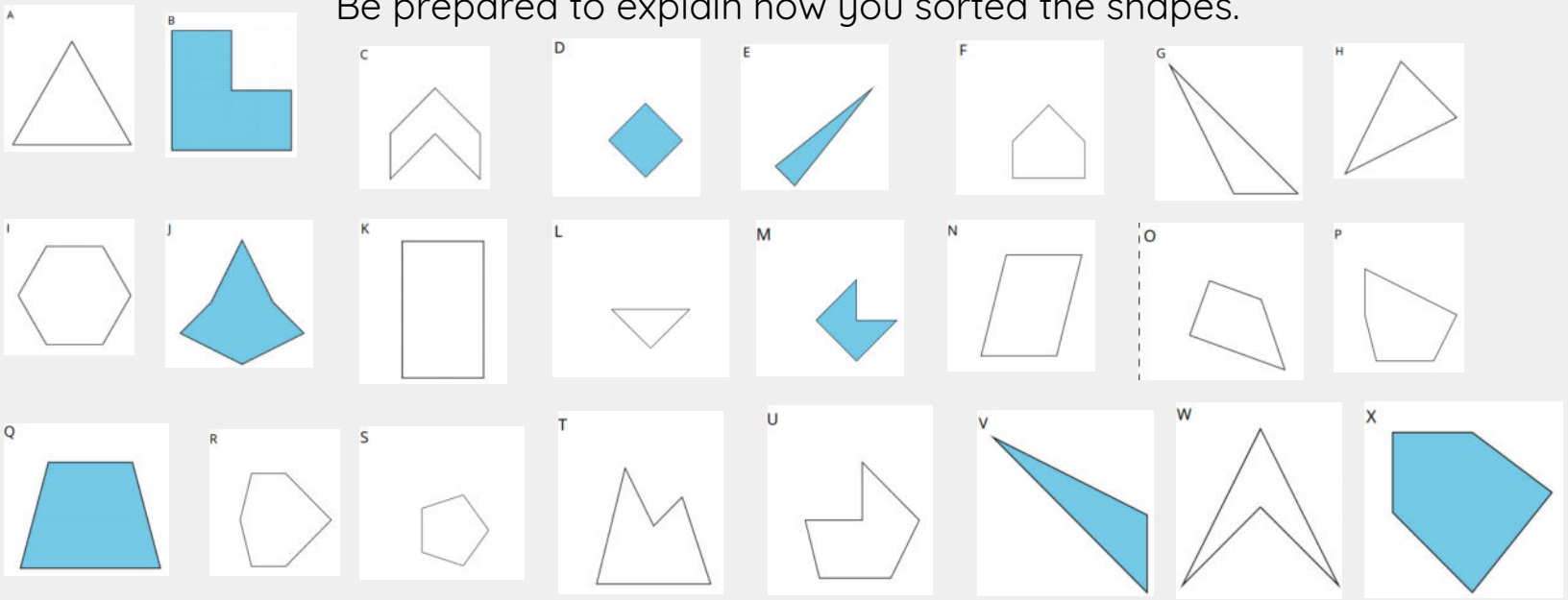


What do you wonder?

Activity #1

Sort the Shapes

Cut apart the shape cards.
Sort the shapes into categories in a way that makes sense to you.
Be prepared to explain how you sorted the shapes.



Sort the Shapes

Activity #2

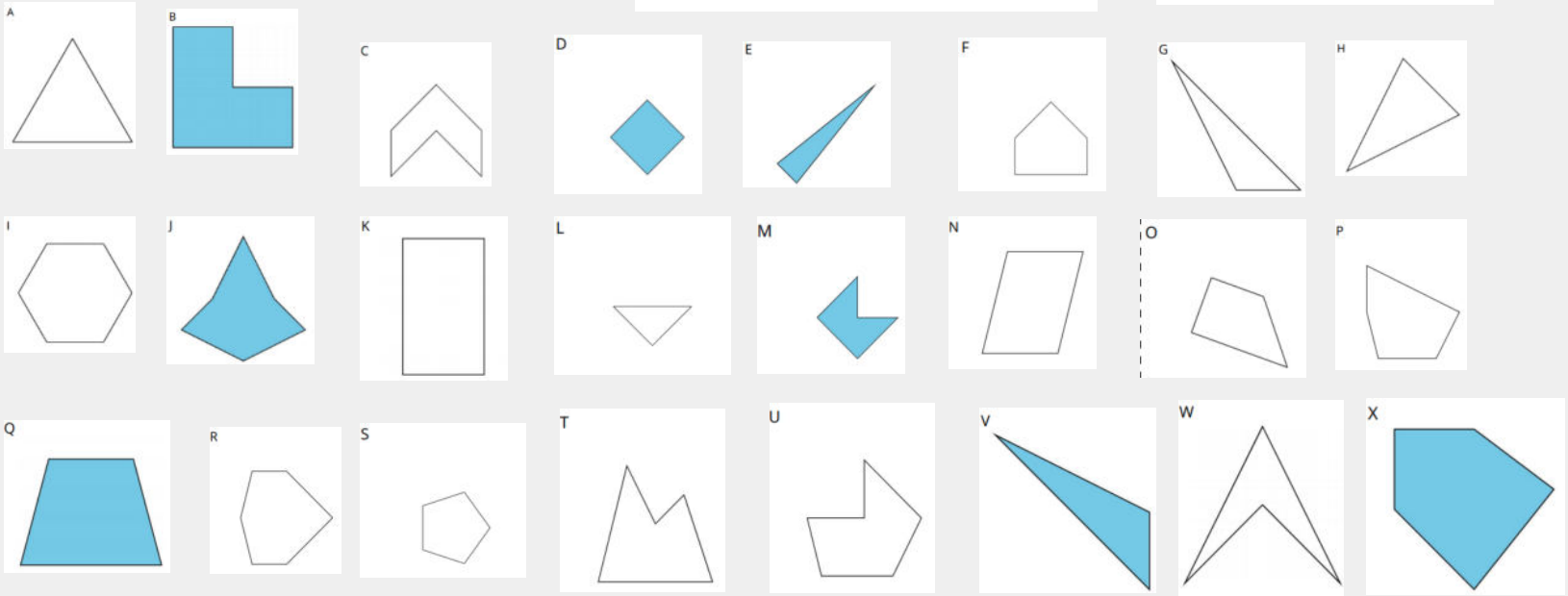
Cut out these shape name cards. Use these with the shape cards from Activity 1.

triangles

pentagons

quadrilaterals

hexagons



Penta-what?

Activity #2

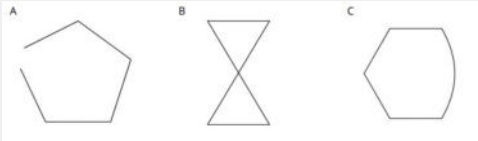
Gather clues to find out what kind of shapes belong in each of these categories.

triangle	pentagon	hexagon	quadrilateral

1. Ask the teacher whether a shape card belongs with one of these categories.
   Use this question frame: Is Shape _____ a _____?

2. Use the clues you gathered to make a true statement.
   Shape _____ is a _____ because it has _____.

3. Would these shapes belong to any of these categories? Explain.

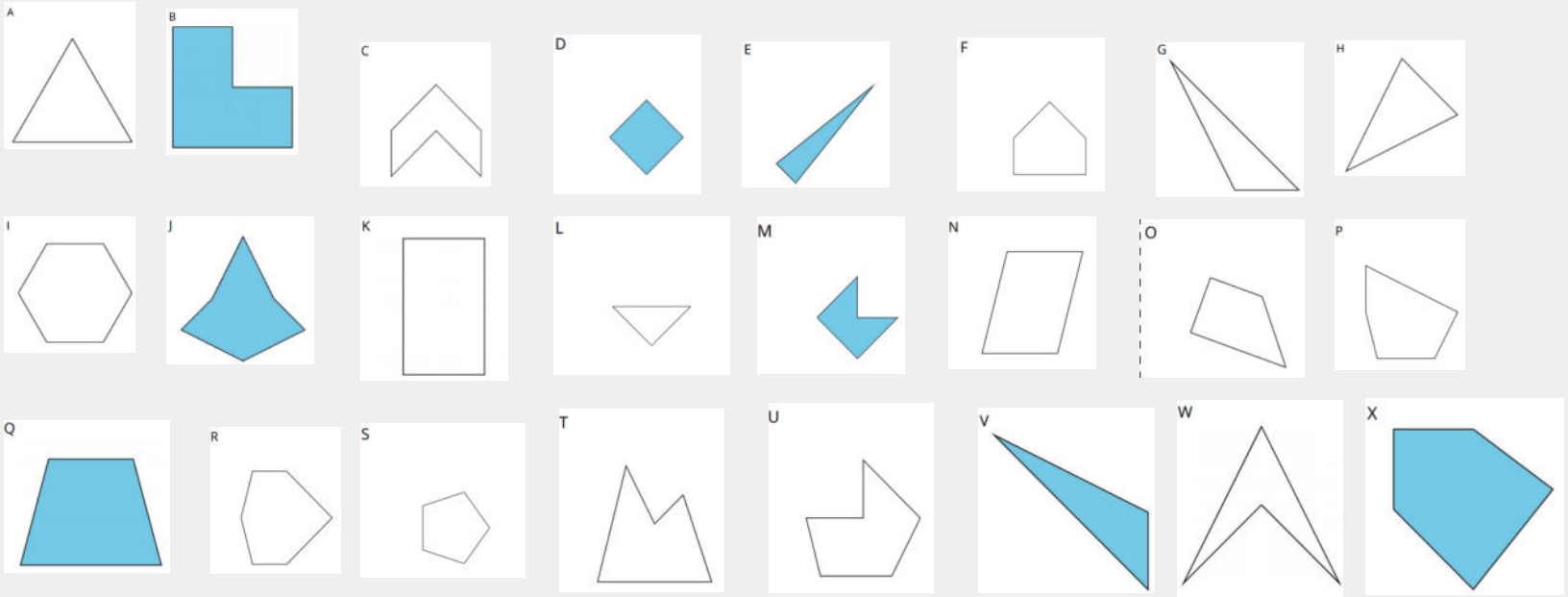


Compare Shapes

Activity #3

Pick 1 shape card.

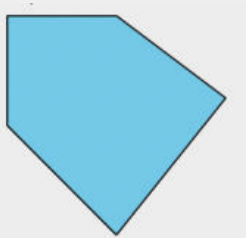
Be prepared to name and describe your shape to a partner.



Lesson Synthesis

Today we learned we can name shapes based on the number of sides and corners they have.

triangle	pentagon	hexagon	quadrilateral



Diego told his partner that this shape was a hexagon because it has 5 sides.

Do you agree or disagree? Explain.

Adaptation
Lesson 2

Draw Shapes

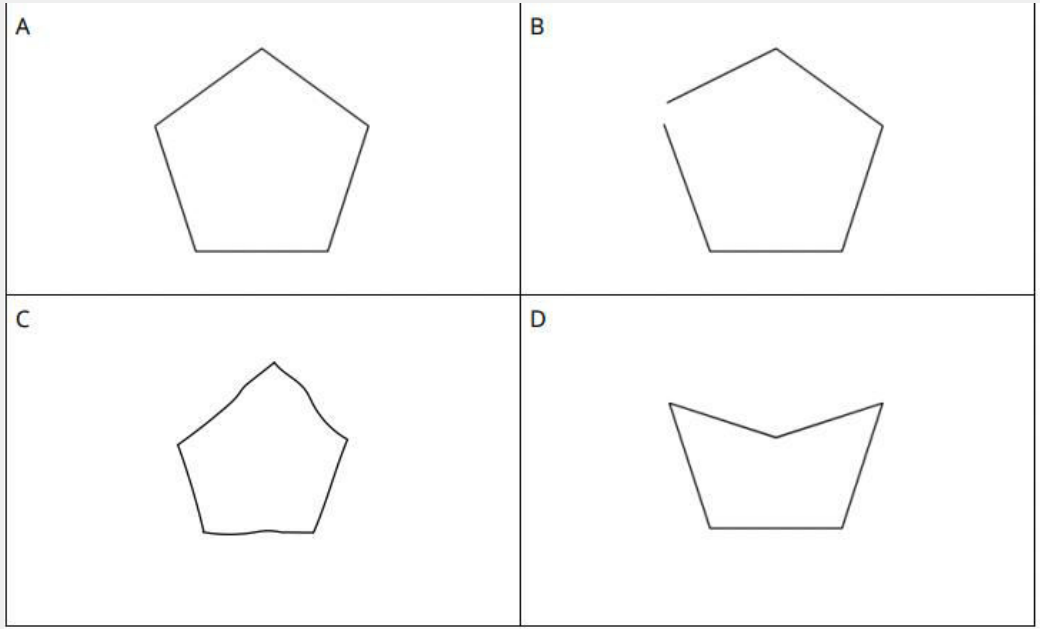
Let’s recognize and draw triangles, quadrilaterals, pentagons, and hexagons.

2.G.A.1

Warm up

Which One Doesn't Belong: Five-Sided Shapes

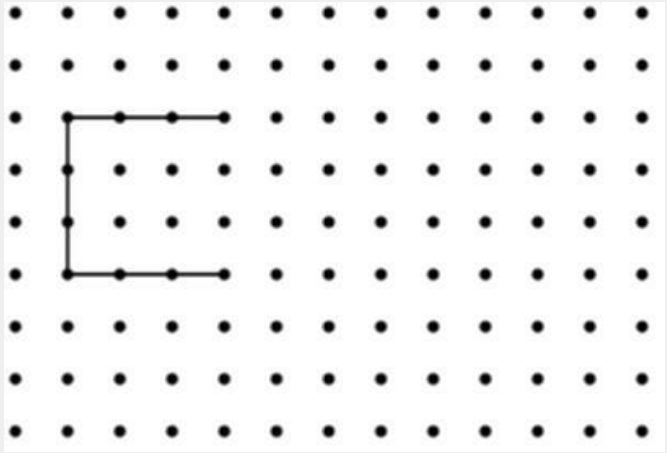
Which one doesn't belong?



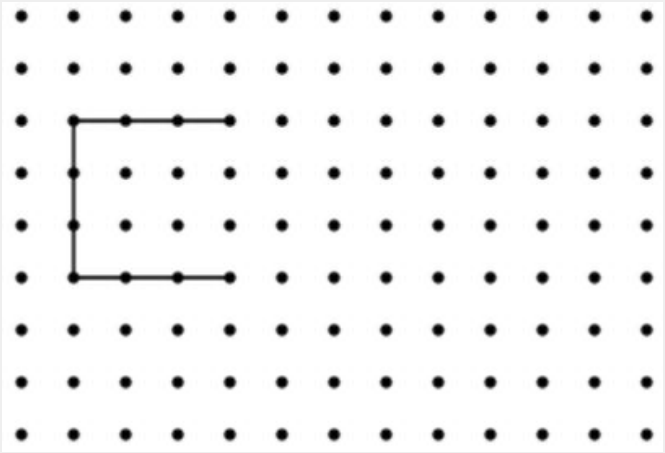
Draw Shapes

Activity #1

1. Complete the shape to make a quadrilateral. Then draw a different four-sided shape.



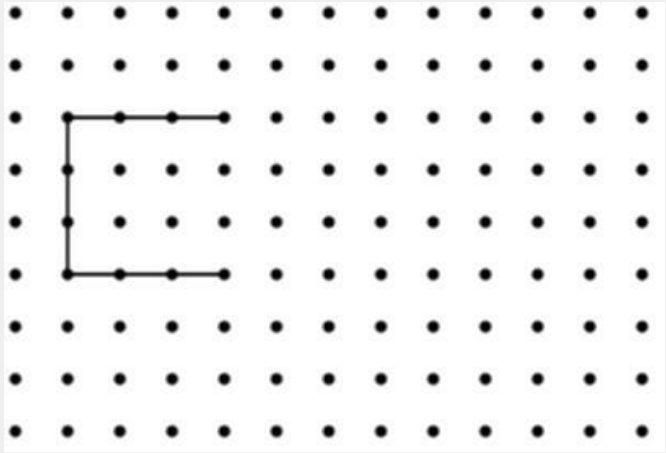
2. Complete the shape to make a pentagon. Then draw a different five-sided shape.



Draw Shapes

Activity #1

3. Complete the shape to make a hexagon. Then draw a different six-sided shape.

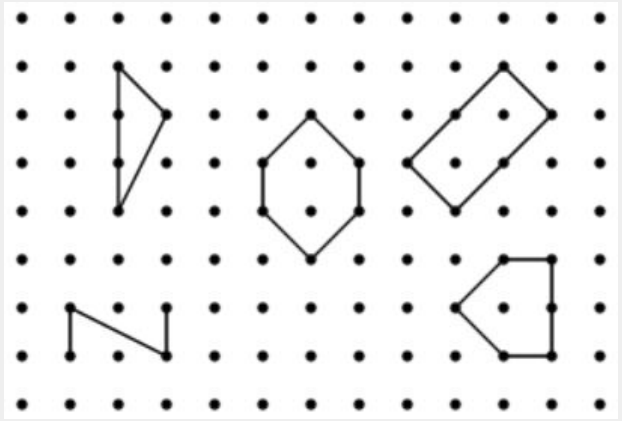


4. Compare your shapes with your partner's shapes. Find one way your shapes are similar and one way they are different.

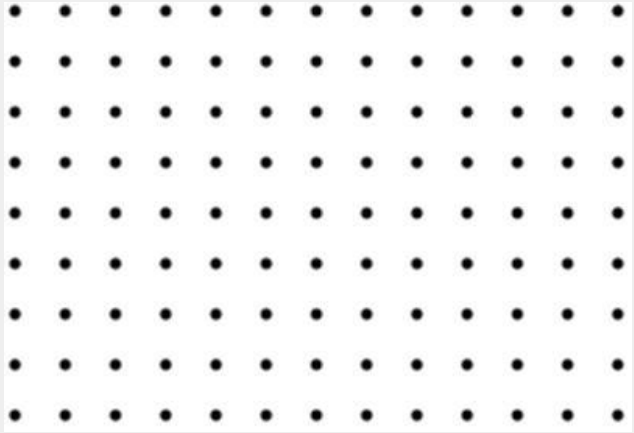
What Shape Could It Be?

Activity #2

1. Clare drew a shape that has fewer than 5 sides. Circle shapes that could be Clare's shape.



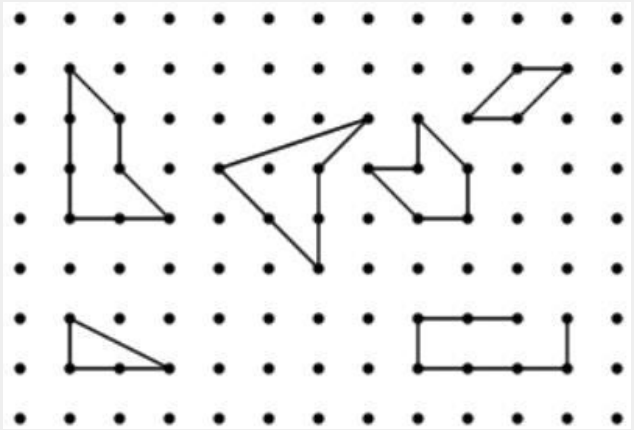
2. Draw a different shape that could be Clare's shape.



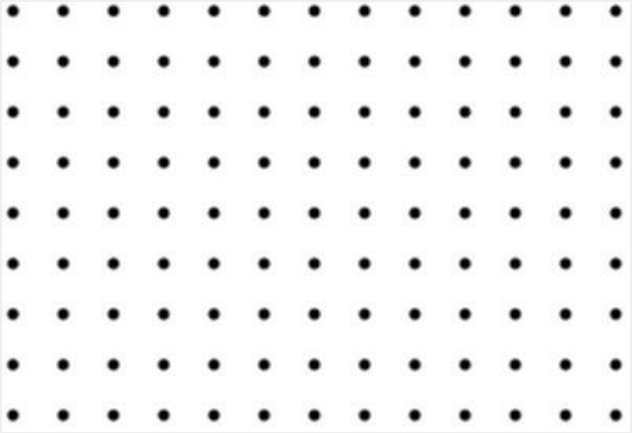
What Shape Could It Be?

Activity #2

3. Andre drew a shape that has 4 corners. Circle shapes that could be Andre's shape.



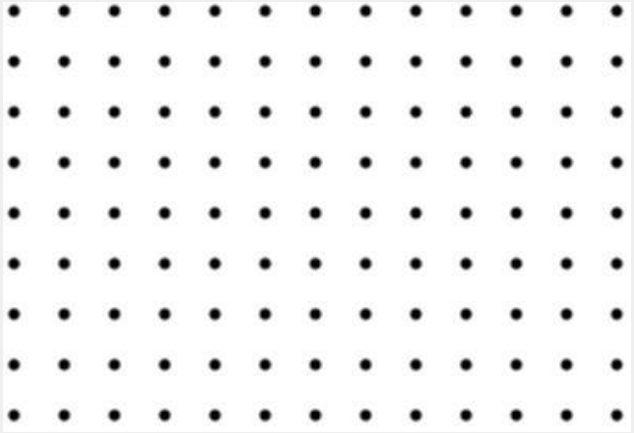
4. Draw a different shape that could be Andre's shape.



What Shape Could It Be?

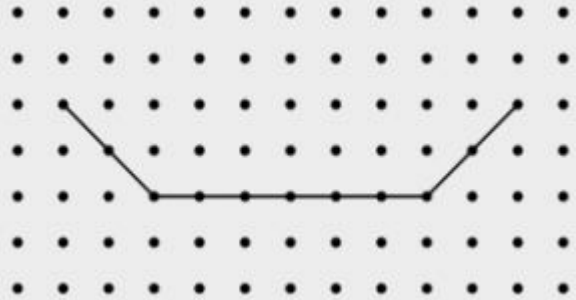
Activity #2

5. Han drew a shape that has more corners than Andre's shape. Draw two shapes that could be Han's shape.



Lesson Synthesis

Today you practiced drawing shapes based on the number of sides or corners. Mai started drawing a shape like this.



Could she make a triangle from her drawing? Could she make a hexagon from her drawing?

1

How Can You Sort?

Let’s sort shapes into groups.

3.G.A.1, 3.NBT.A.3

Warm up

True or False: Multiples of Ten

Decide if each statement is true or false

$$6 \times 40 = 24 \times 10$$

Be prepared to explain your reasoning.

Warm up

True or False: Multiples of Ten

Decide if each statement is true or false

$240 = 24 \times 10$

Be prepared to explain your reasoning.

Warm up

True or False: Multiples of Ten

Decide if each statement is true or false

$$3 \times 60 = 9 \times 10$$

Be prepared to explain your reasoning.

Warm up

True or False: Multiples of Ten

Decide if each statement is true or false

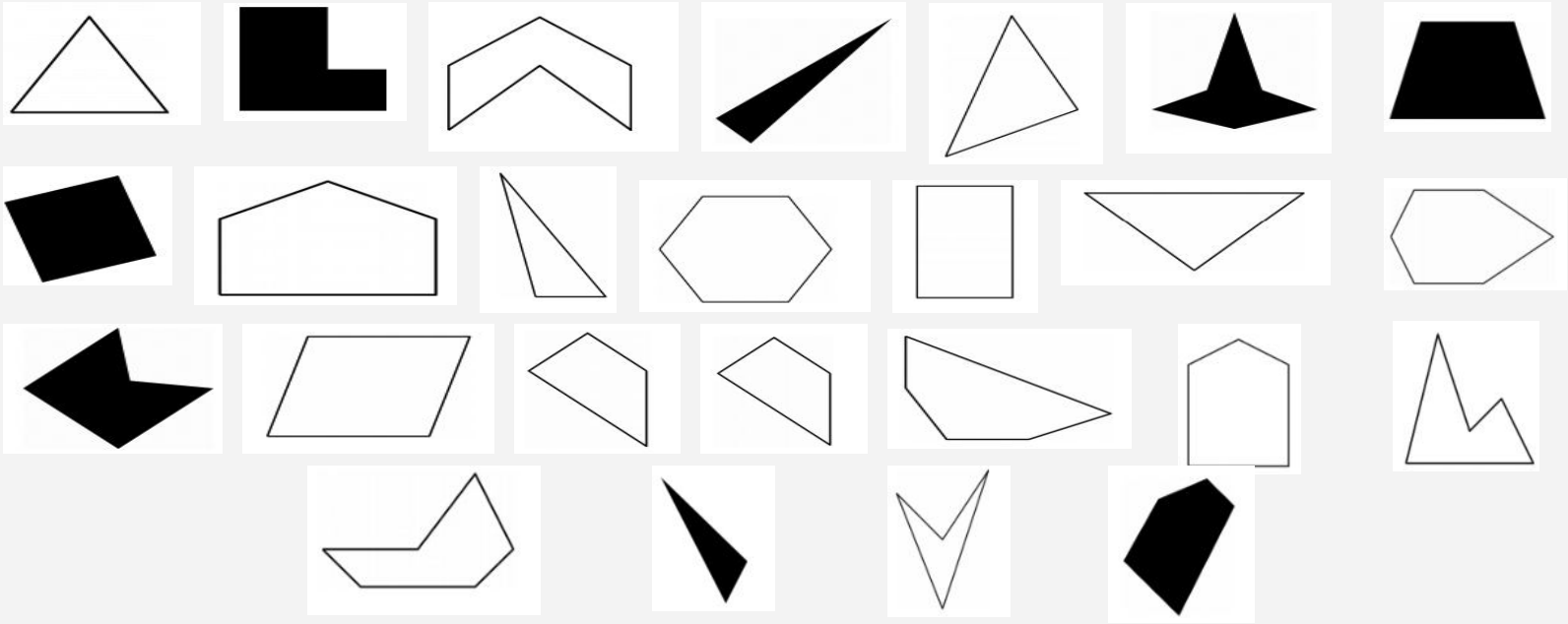
$180 = 3 \times 60$

Be prepared to explain your reasoning.

Activity 1

Card Sort: Shapes

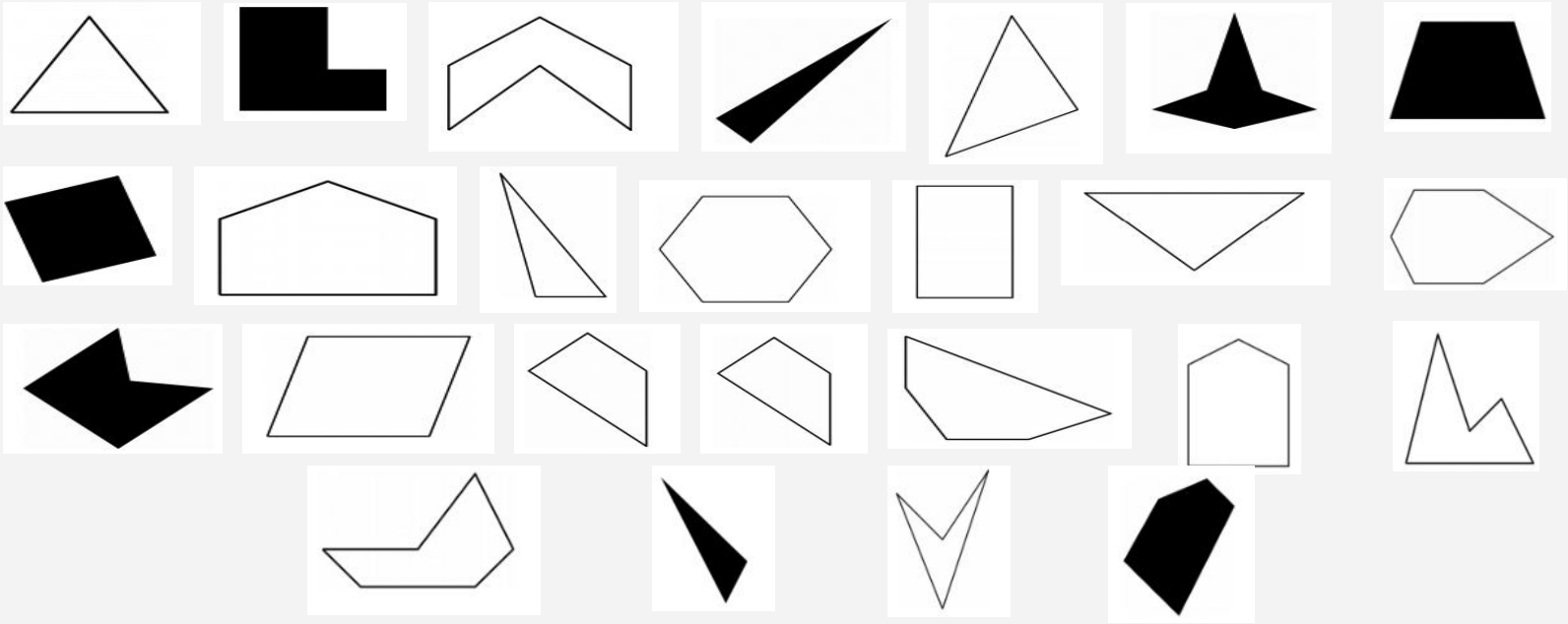
1. Your teacher will give you a set of cards that show shapes. Sort the cards into categories of your choosing. Be prepared to explain the meaning of your categories.



Activity 1

Card Sort: Shapes

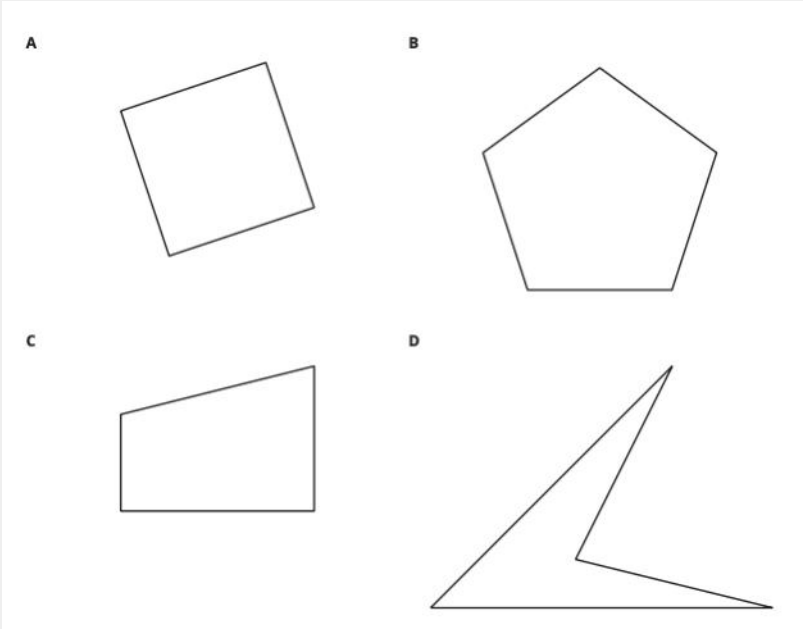
2. Take turns sorting the cards into 2 new categories. Don't tell your partner how you sorted them. Have your partner try to guess how you sorted your shapes.



Activity #2

Which One Doesn't Belong: Who's in the Group?

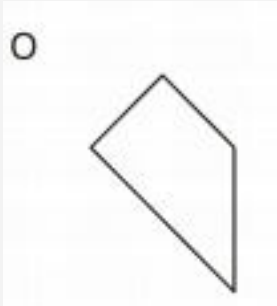
Which one doesn't belong?



Lesson Synthesis

Today we sorted shapes into categories based on their attributes and saw that a shape could be in several groups depending on how you sorted them.

What groups could this shape have been a part of based on its attributes?



2

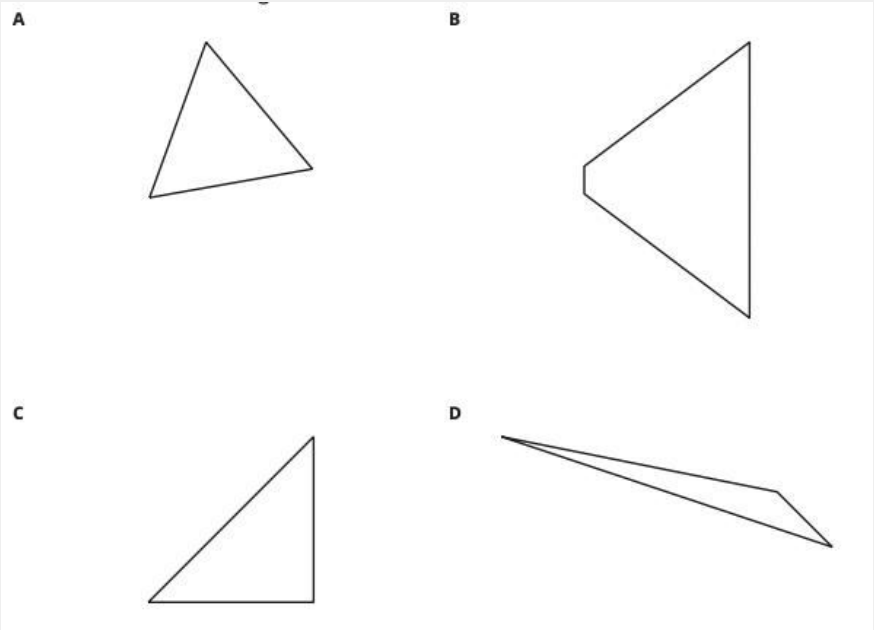
Sort Triangles and Quadrilaterals

Let’s sort shapes into more specific categories.

Warm up

Which One Doesn't Belong: Other Attributes

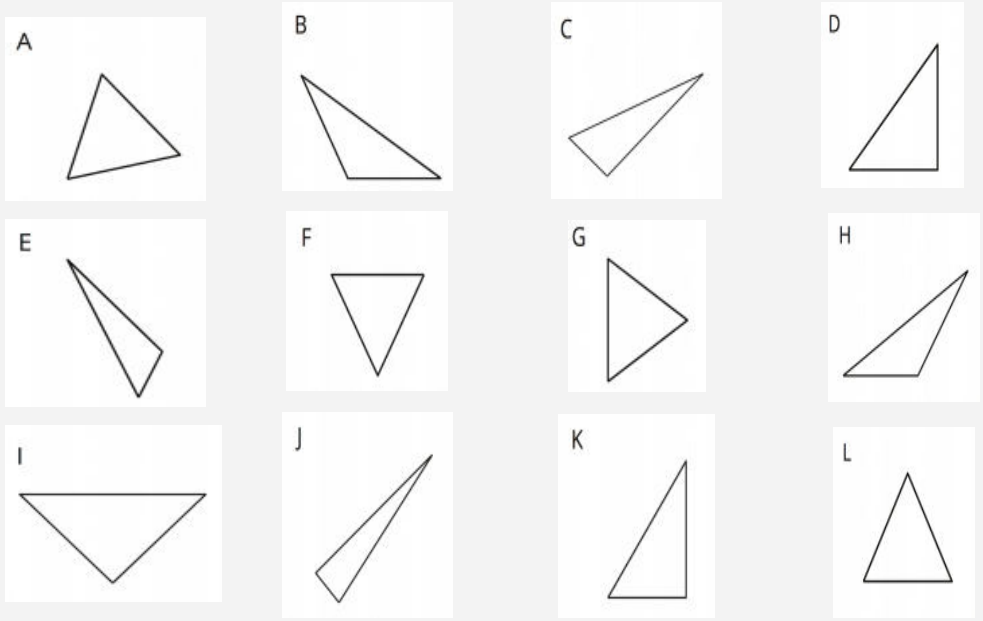
Which one doesn't belong?



Activity 1

Card Sort: Triangles

Sort the triangles into categories. Explain how you decided which triangles go in each category.

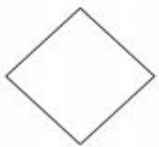


Activity 2

Card Sort: Quadrilaterals

Sort the quadrilaterals into categories.
Explain how you decided which quadrilaterals go in each category

M



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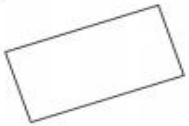

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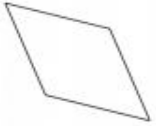

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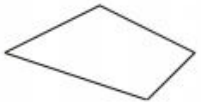

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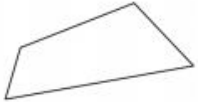

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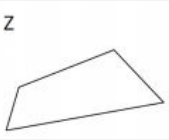
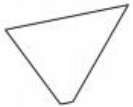


AA



BB

CC

DD

EE

Lesson Synthesis

Today we sorted triangles and quadrilaterals into more specific groups. What attributes of these shapes were helpful for creating more specific groups?

3

The Mystery Quadrilateral

Let’s play Mystery Quadrilateral.

3.G.A.1, 3.NBT.A.3

Number Talk: Multiply Multiples of Ten

Warm up

Find the value of each expression mentally.

4×40

Be prepared to explain your reasoning.

Number Talk: Multiply Multiples of Ten

Warm up

Find the value of each expression mentally.

8×40

Be prepared to explain your reasoning.

Number Talk: Multiply Multiples of Ten

Warm up

Find the value of each expression mentally.

7×40

Be prepared to explain your reasoning.

Number Talk: Multiply Multiples of Ten

Warm up

Find the value of each expression mentally.

9×40

Be prepared to explain your reasoning.

Activity 1

Learn How to Play Mystery Quadrilateral

Play a round of Mystery Quadrilateral with your teacher.

1. Partner A: Choose a shape from the group of quadrilaterals and place it in the mystery quadrilateral folder without your partner seeing it.
2. Partner B: Ask up to 5 “yes” or “no” questions to identify the quadrilateral, then guess which quadrilateral is the mystery quadrilateral.
3. Partner A: Show your partner the mystery quadrilateral.
4. Switch roles and play again.

Activity 2

Learn How to Play Mystery Quadrilateral

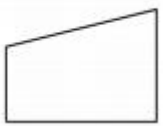
Play a round of Mystery Quadrilateral with your teacher.

1. Partner A: Choose a shape from the group of quadrilaterals and place it in the mystery quadrilateral folder without your partner seeing it.
2. Partner B: Ask up to 5 “yes” or “no” questions to identify the quadrilateral, then guess which quadrilateral is the mystery quadrilateral.
3. Partner A: Show your partner the mystery quadrilateral.
4. Switch roles and play again.

Lesson Synthesis

Here are some quadrilaterals that we worked with that are the same in some ways. What attributes of these shapes would you use to describe how they're different?

S



X

U

4

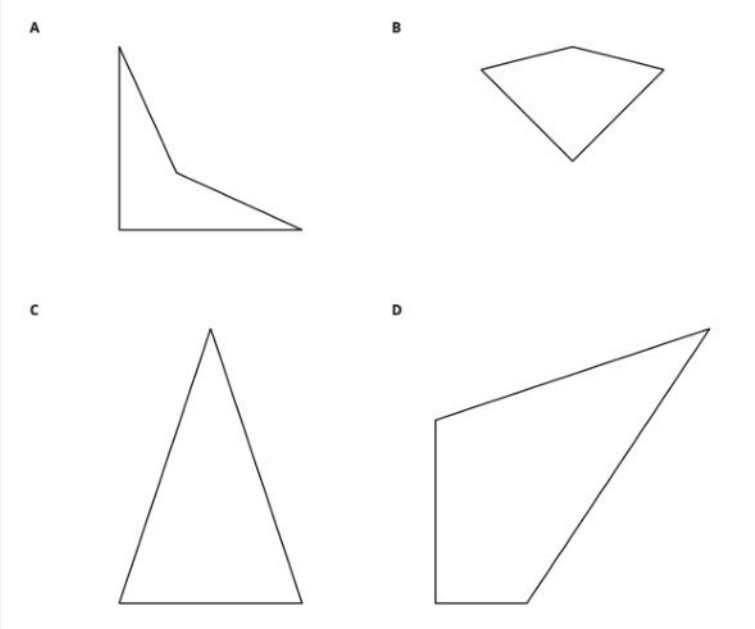
Quintessential Quadrilaterals

Let’s use attributes to name some quadrilaterals.

Warm up

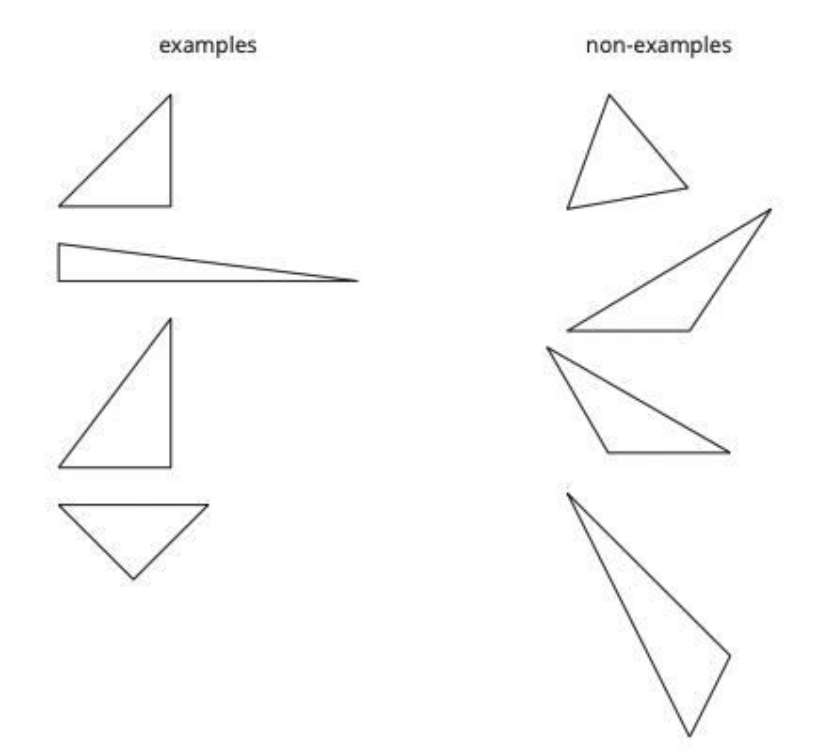
Which One Doesn't Belong: More Attributes

Which one doesn't belong?



Example, Non-Example, Describe, and Name

Activity 1

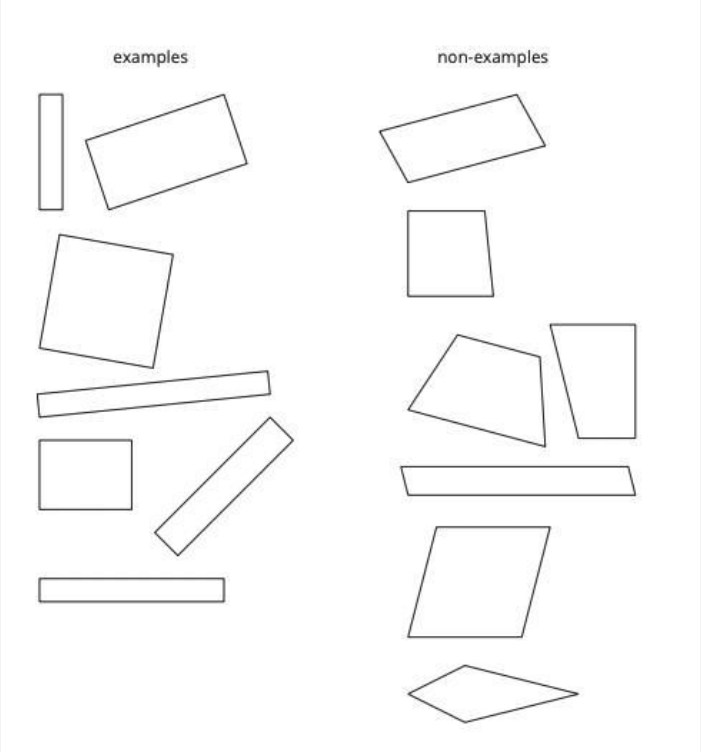


Describe the examples.

Name the shape.

Example, Non-Example, Describe, and Name

Activity 1

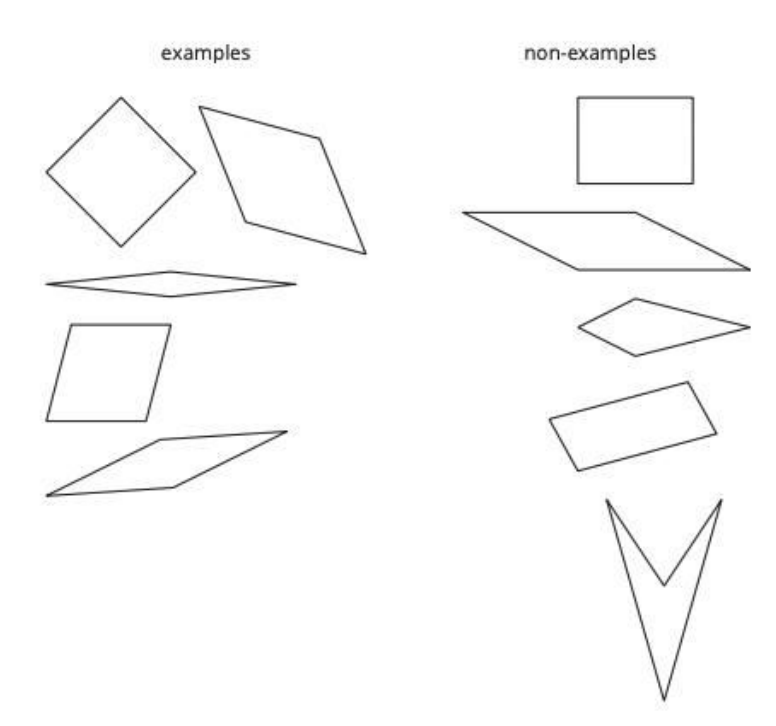


Describe the examples.

Name the shape.

Example, Non-Example, Describe, and Name

Activity 1

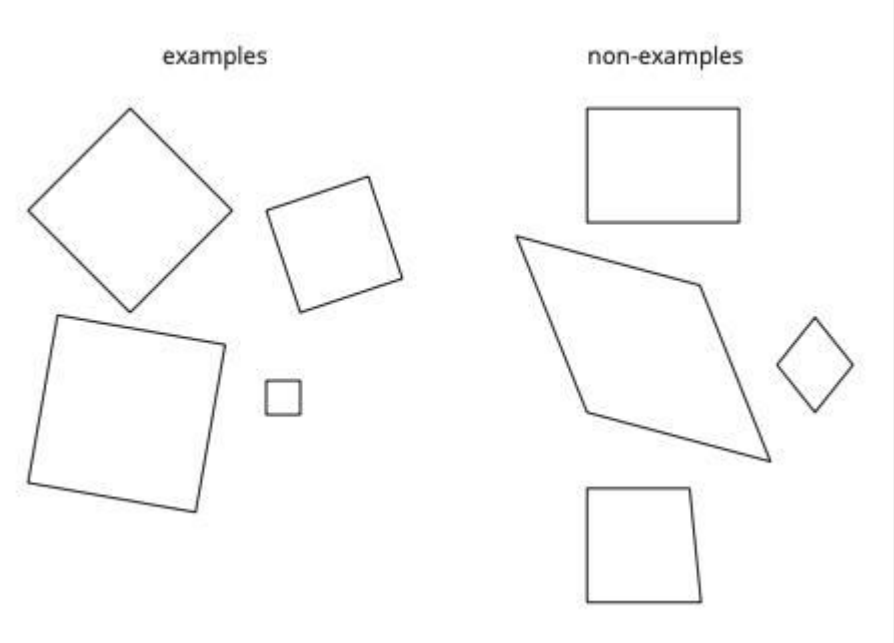


Describe the examples.

Name the shape.

Example, Non-Example, Describe, and Name

Activity 1

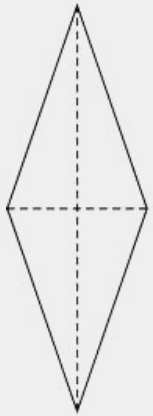


Describe the examples.

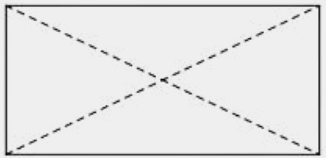
Name the shape.

Lesson Synthesis

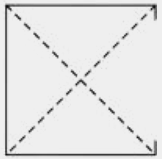
Today we learned about the attributes of each one of these quadrilaterals. What are the important attributes of each quadrilateral?



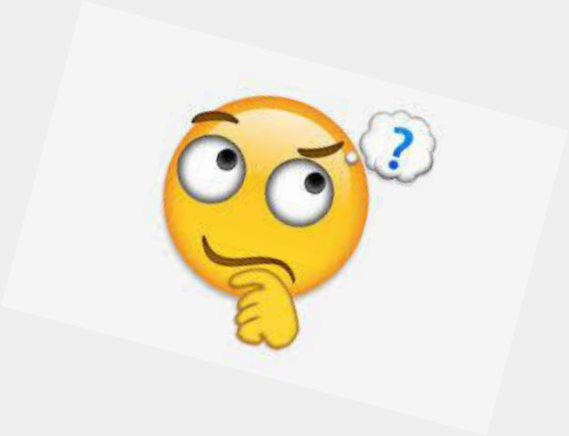
Rhombus



Rectangle

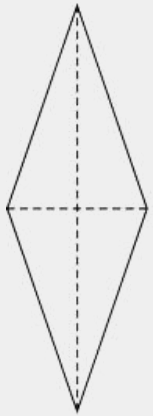


Square

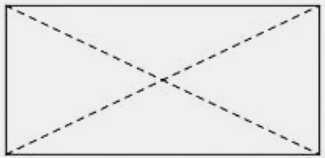


Lesson Synthesis

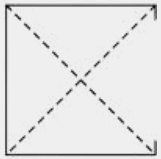
How are these quadrilaterals the same? How are they different?



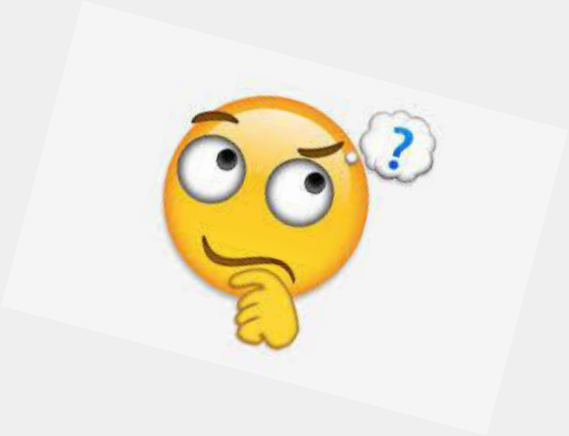
Rhombus



Rectangle



Square



5

To Be, or Not to Be (Part of the Group)

Let’s describe and draw shapes in specific groups.

3.G.A.1, 3.OA.C.7

Warm up

Number Talk: Divide by 7

Find the value of each expression mentally.

- $70 \div 7$

Warm up

Number Talk: Divide by 7

Find the value of each expression mentally.

$$77 \div 7$$

Warm up

Number Talk: Divide by 7

Find the value of each expression mentally.

$$63 \div 7$$

Warm up

Number Talk: Divide by 7

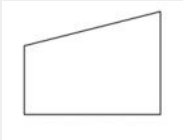
Find the value of each expression mentally.

$$56 \div 7$$

Activity #1

All the Ways

Select all the ways you could describe each shape.
Be prepared to explain your reasoning.



A. Triangle

B. Quadrilateral

C. Square

D. Rhombus

E. Rectangle

2.

A. Triangle

B. Quadrilateral

C. Square

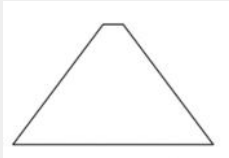
D. Rhombus

E. Rectangle

Activity #1

All the Ways

Select all the ways you could describe each shape.
Be prepared to explain your reasoning.

3. 

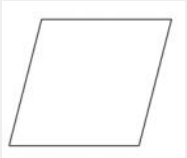
A. Triangle

B. Quadrilateral

C. Square

D. Rhombus

E. Rectangle

4. 

A. Triangle

B. Quadrilateral

C. Square

D. Rhombus

E. Rectangle

Activity #1

All the Ways

Select all the ways you could describe each shape.
Be prepared to explain your reasoning.

5. 

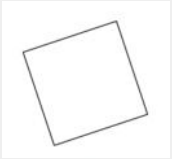
A. Triangle

B. Quadrilateral

C. Square

D. Rhombus

E. Rectangle

6. 

A. Triangle

B. Quadrilateral

C. Square

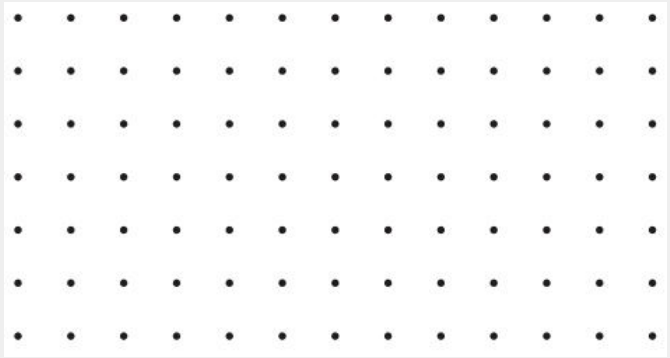
D. Rhombus

E. Rectangle

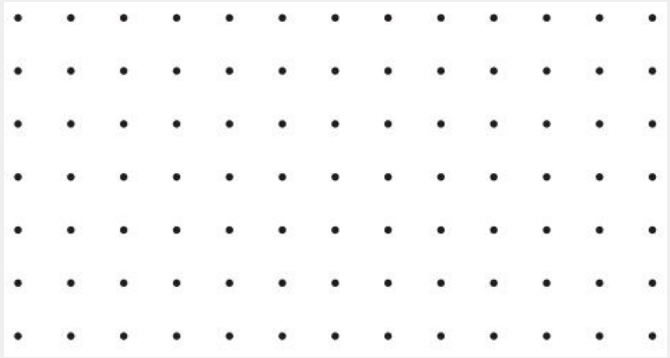
Activity #2

Draw One That's Not...

1. Draw a quadrilateral that isn't a square.



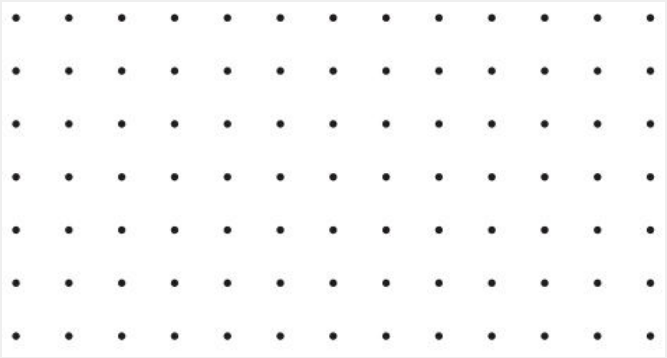
2. Draw a quadrilateral that isn't a rhombus.



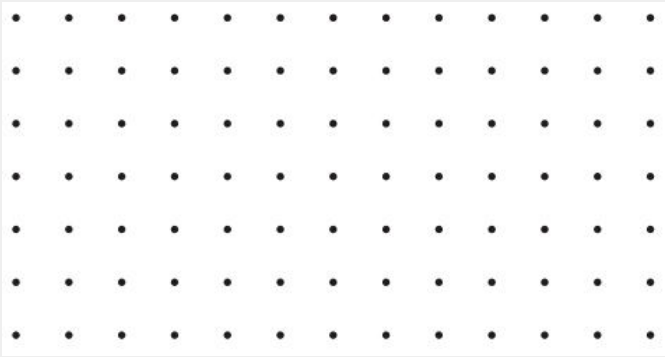
Activity #2

Draw One That's Not...

3. Draw a quadrilateral that isn't a rectangle.

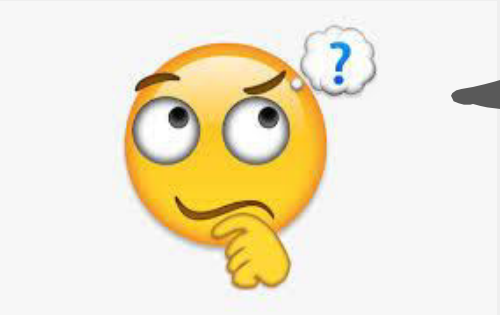


4. Draw as many quadrilaterals as you can that aren't rhombuses, rectangles, or squares.



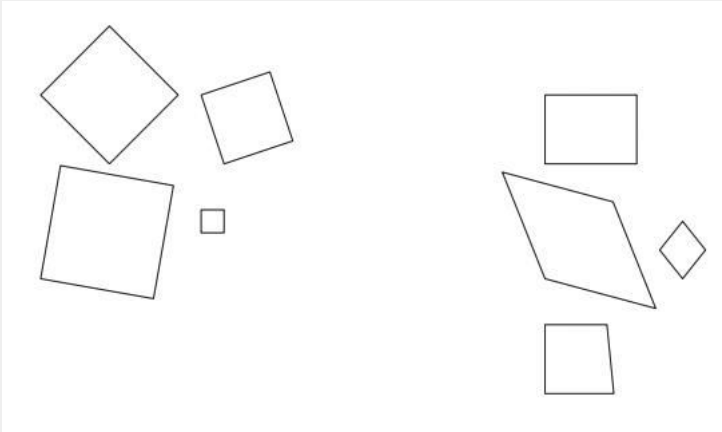
Lesson Synthesis

How has your thinking changed over the last few lessons about what a quadrilateral can look like?



Section Summary

In this section we learned about how we can sort shapes based on different attributes. We used the number of sides, side lengths, and whether angles were right angles to sort shapes. We learned how to sort quadrilaterals and triangles into more specific groups and how to draw quadrilaterals that aren't rhombuses, rectangles, or squares



6

Distance Around

Let’s find the distance around shapes.

Warm up

Notice and Wonder: Boundaries

What do you notice?

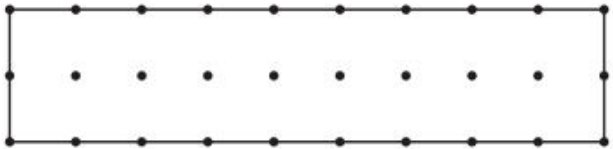
What do you wonder?

Activity #1

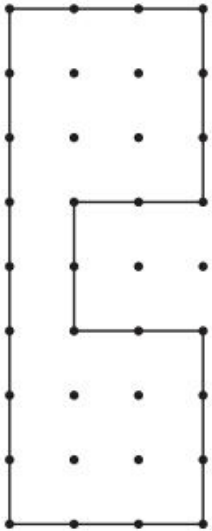
Distance Around

Find the distance around each shape. Explain or show your reasoning.

1.



2.

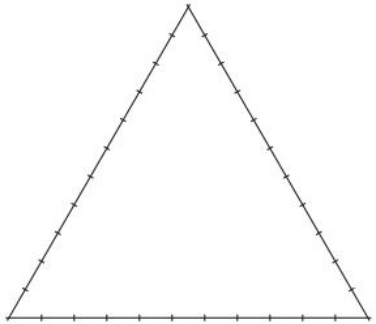


Distance Around

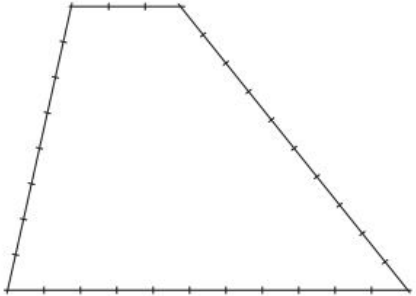
Activity #1

Find the distance around each shape. Explain or show your reasoning.

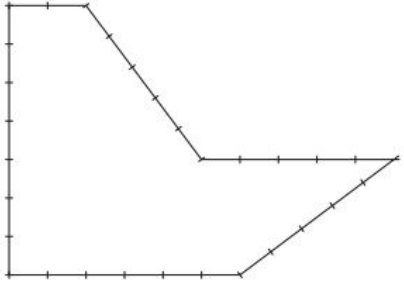
3.



4.



5.



Activity 2

Is it Perimeter?

1.

Select all the situations below that would involve finding the perimeter of a shape. Explain your reasoning.

A. Measuring how much fencing is needed to enclose a yard.

B. Measuring how much paint is needed to cover a wall.

C. Measuring how many tiles are needed to cover a floor.

D. Measuring how much ribbon is needed to decorate the edge of a piece of paper.

E. Measuring the distance from one corner of a room to another.

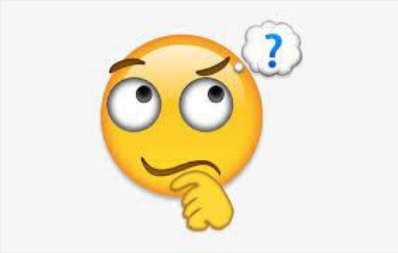
2.

List as many situations as you can think of in which you would need to find the perimeter.

Lesson Synthesis

Today we learned what perimeter is. How would you describe perimeter to a friend?

How do you find the perimeter of a shape?



7

Match and Draw Perimeters

Let’s learn about shapes with the same perimeter.

3.MD.D.8, 3.NBT.A.2

Warm up

True or False: Efficient Addition

Decide if each statement is true or false

$$123 + 75 + 123 + 75 = 208 + 208$$

Be prepared to explain your reasoning.

Warm up

True or False: Efficient Addition

Decide if each statement is true or false

$$123 + 75 + 123 + 75 = 100 + 100 + 70 + 70 + 5 + 5 + 3 + 3$$

Be prepared to explain your reasoning.

Warm up

True or False: Efficient Addition

Decide if each statement is true or false

$$123 + 15 + 123 + 15 = 246 + 150$$

Be prepared to explain your reasoning.

Warm up

True or False: Efficient Addition

Decide if each statement is true or false

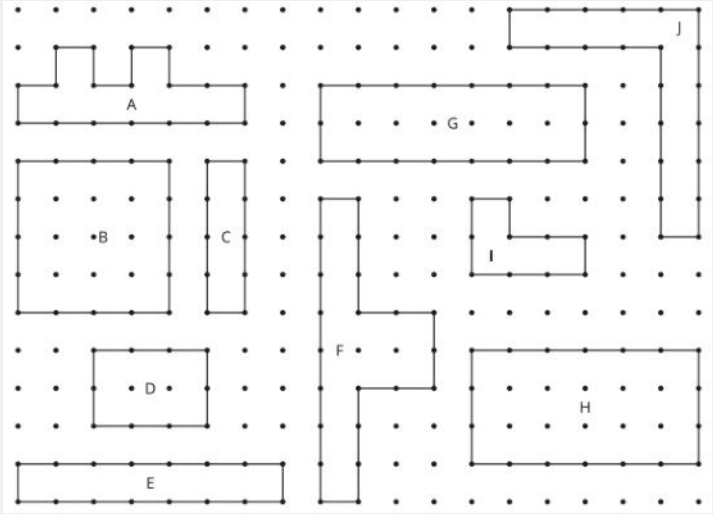
$$123 + 75 + 123 + 75 = (2 \times 123) + (2 \times 75)$$

Be prepared to explain your reasoning.

Perimeter Pairs

Activity #1

1. Select the shapes that have the same perimeter. Be prepared to explain your reasoning.



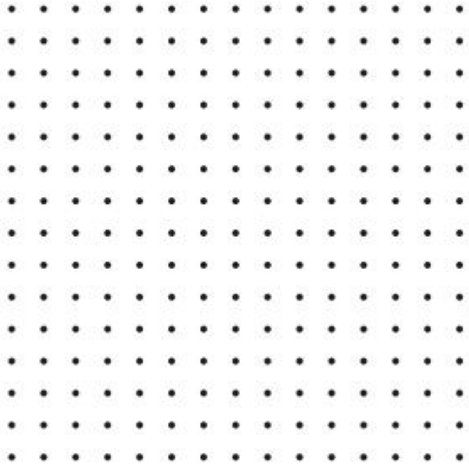
2. Choose any 3 shapes. Explain or show your reasoning for finding the perimeter of those shapes.

Draw Your Own

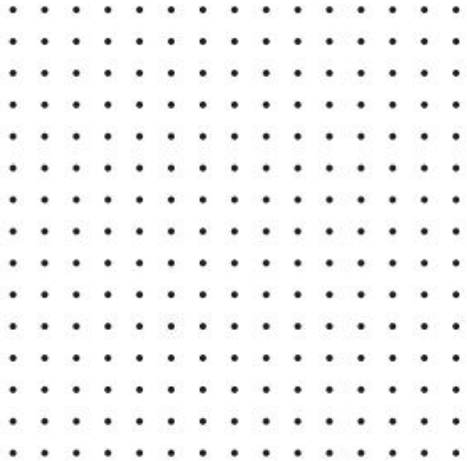
Activity #2

1. Draw 2 shapes with each perimeter.

a. 12 units



b. 26 units

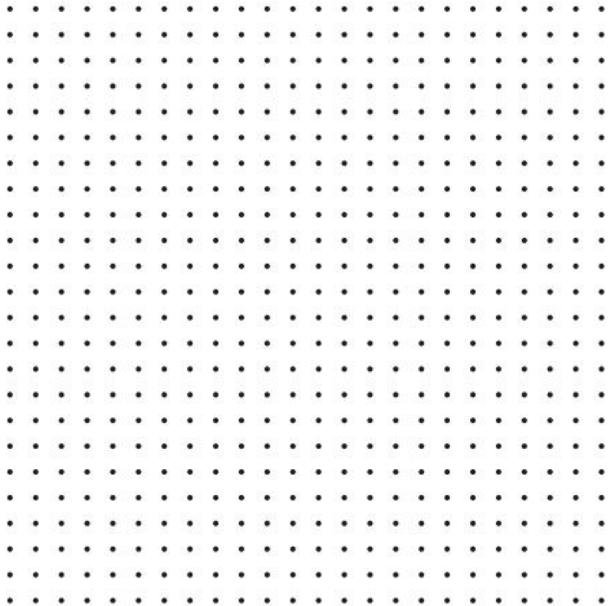


Draw Your Own

Activity #2

1. Draw 2 shapes with each perimeter.

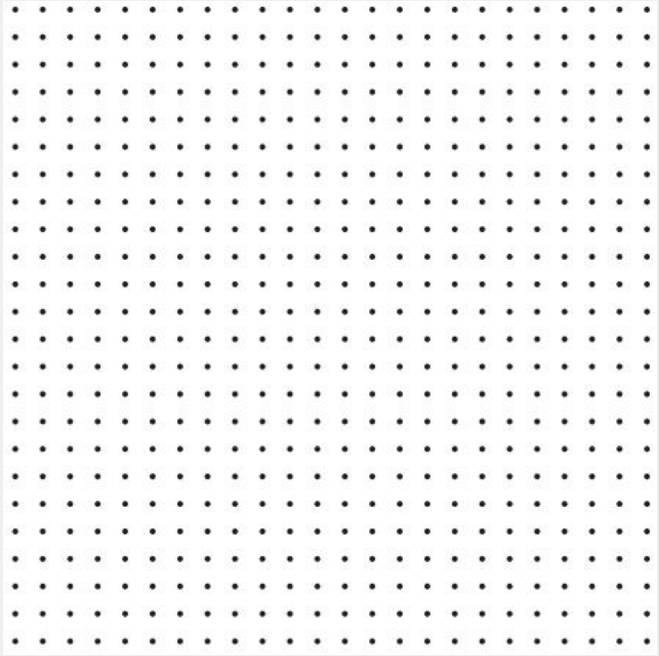
c. 48 units



Draw Your Own

Activity #2

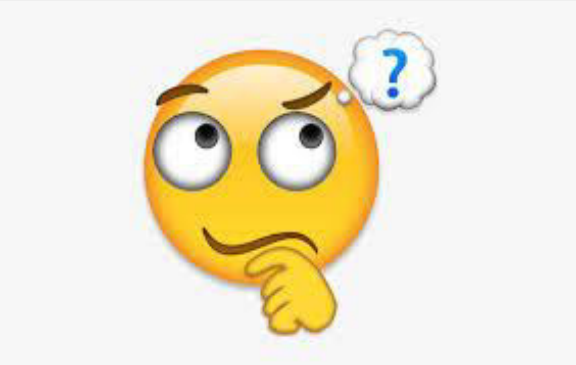
2. You and your partner are going to draw different shapes with the same perimeter. Together, choose a perimeter you'd like to draw. Then, each draw a shape with that perimeter.



Share the shapes you drew and discuss how they are the same and different.

Lesson Synthesis

Today we learned that different shapes can have the same perimeter. Did this surprise you? Why or why not?



8

Find the Perimeter

Let’s find the perimeter of more shapes.

Warm up

Number Talk: Decreasing Dividend

Find the value of each expression mentally.

$$90 \div 9$$

Number Talk: Decreasing Dividend

Warm up

Find the value of each expression mentally.

$$81 \div 9$$

Number Talk: Decreasing Dividend

Warm up

Find the value of each expression mentally.

$$45 \div 9$$

Warm up

Number Talk: Decreasing Dividend

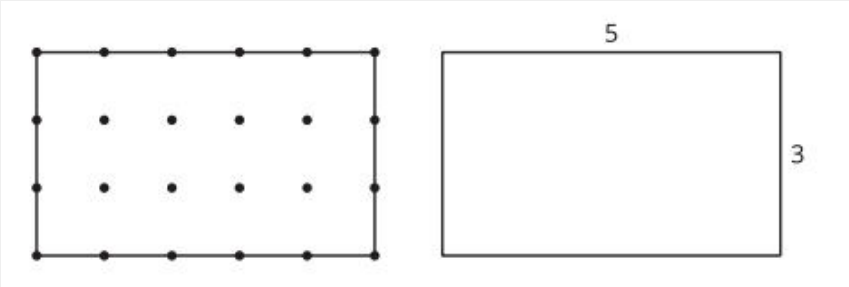
Find the value of each expression mentally.

$$54 \div 9$$

Ways to Find Perimeter

Activity #1

What do you notice?

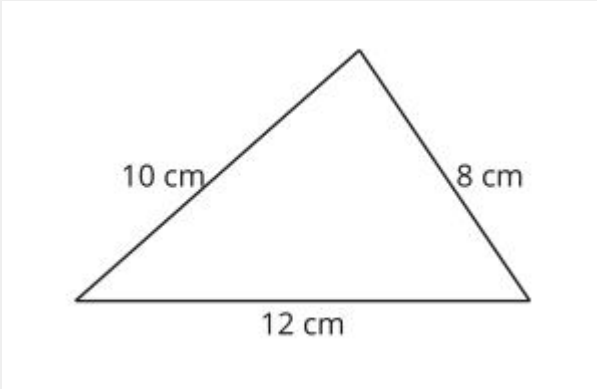


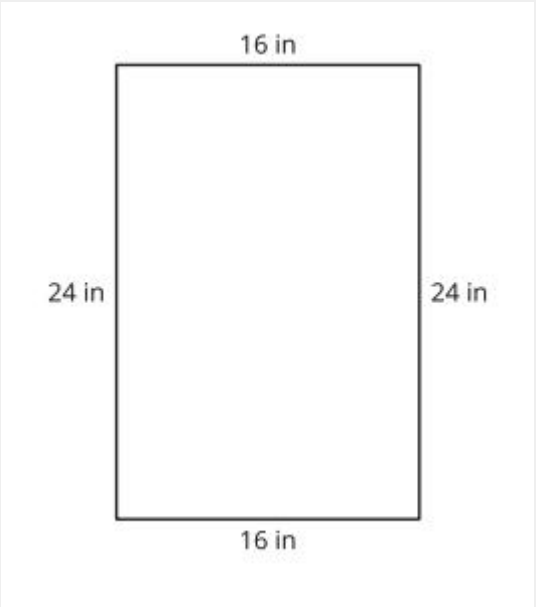
What do you wonder?

Activity #1

Ways to Find Perimeter

Find the perimeter of each shape. Explain or show your reasoning.

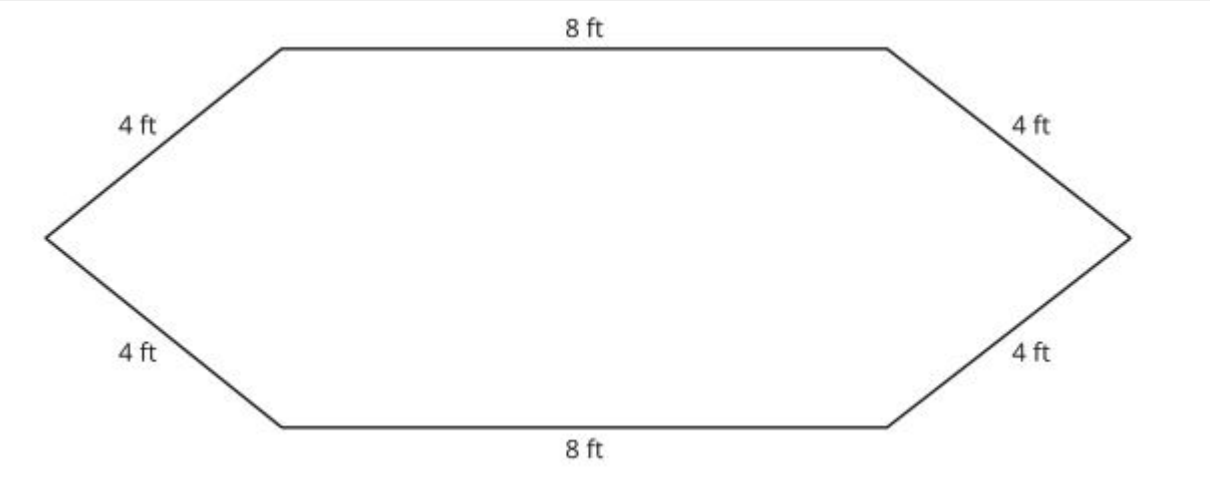




Activity #1

Ways to Find Perimeter

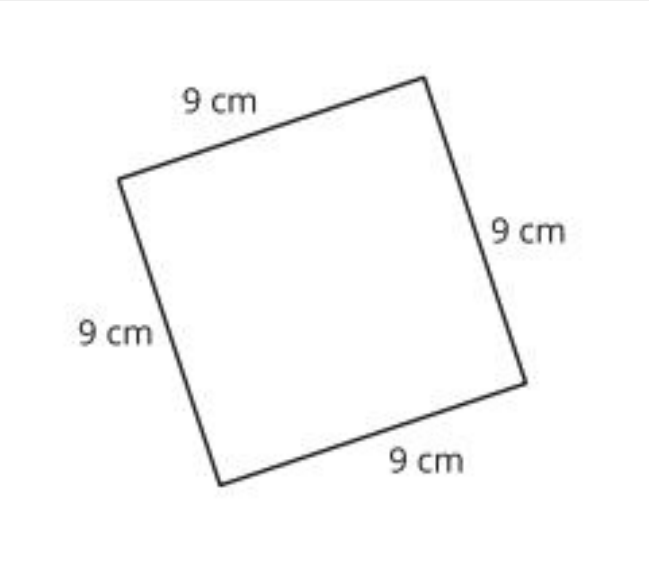
Find the perimeter of each shape. Explain or show your reasoning.



Activity #1

Ways to Find Perimeter

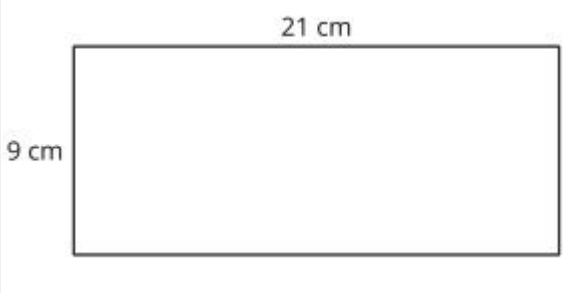
Find the perimeter of each shape. Explain or show your reasoning.



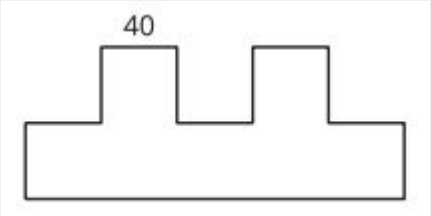
Something is Missing

Activity #2

1. Find the perimeter. Explain or show your reasoning.



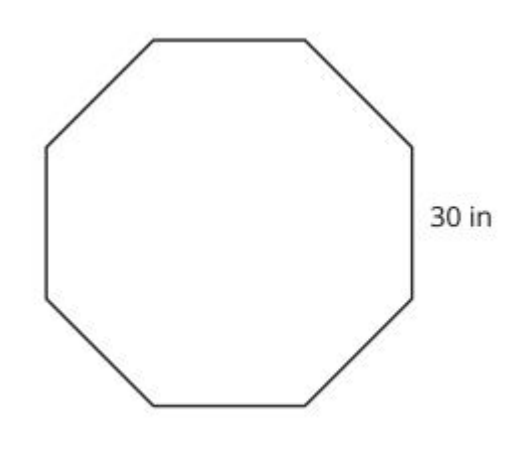
2. All the short sides are the same length. Find the perimeter. Explain or show your reasoning.



Something is Missing

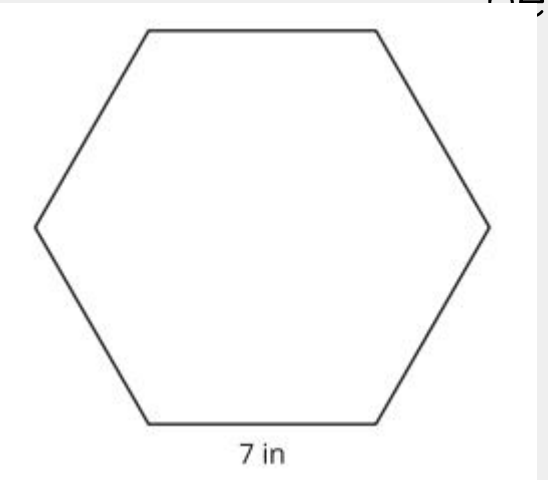
Activity #2

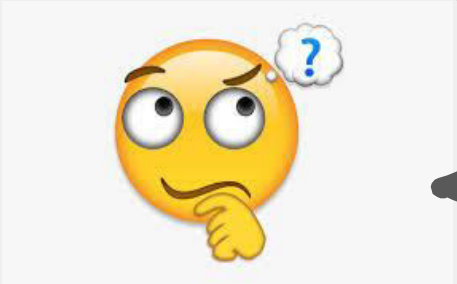
3. All the sides of the octagon are the same length. Find the perimeter. Explain or show your reasoning.



Lesson Synthesis

When you are finding the perimeter of a shape, you can always add the lengths of the sides one by one. What other methods do you have for finding the perimeter of shapes?





Kiran wants to find the perimeter of this shape, but he says he can't because he only knows one side length. Jada says, 'You can do it, just multiply!' What do you think Jada means?

Perimeter Problems

Let’s solve problems about perimeter.

Warm up

Estimation Exploration: Perimeter

What is the perimeter of the square base on the Statue of Liberty? One side is 132 feet long.

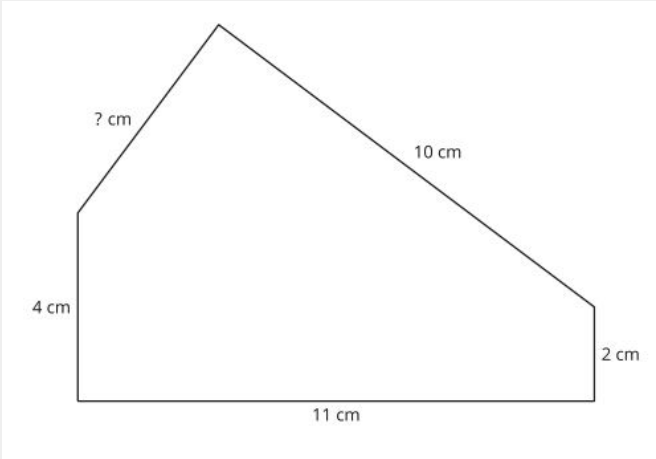
Record an estimate that is:

Too low	About right	Too high

More Missing Measurements

Activity #1

1. This pentagon has a perimeter of 32 cm. What is the length of the missing side? Explain or show your work.



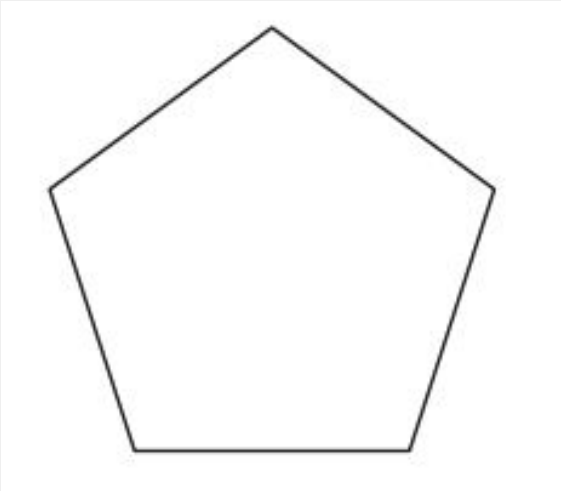
2. This rectangle has a perimeter of 56 feet. What are the lengths of the unlabeled sides? Explain or show your work.

More Missing Measurements

Activity #1

3. This pentagon has a perimeter of 65 inches. All the sides are the same length.

What is the length of each side? Explain or show your work.



Can I Use Perimeter?

Activity #2

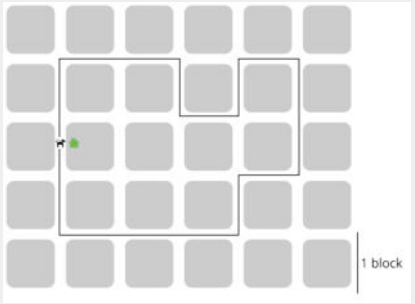
Solve each problem. Explain or show your reasoning.

1. A rectangular park is 70 feet on one side and 120 feet on the side next to it. How much fencing is needed to fence in the whole park?

2. Priya drew a picture and is framing it in ribbon. Her picture is square and one side is 9 inches long. How much ribbon will she need?

3. A flower bed has a rectangular fence that is 32 feet around. If it is 12 feet on one side, what is the measurement of the side next to that?

4. Kiran took his dog for a walk. Their route is shown. How many blocks did they walk?



5. A room is 10 feet by 8 feet. How many tiles will be needed to cover the floor if each tile is 1 square foot?

Lesson Synthesis

Look back through the problems you solved in the last activity. Discuss with your partner how each problem makes use of perimeter or if perimeter was not useful to solve the problem."

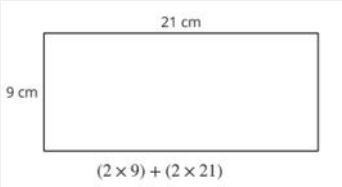
How do you know if a situation involves perimeter?

Why was perimeter not useful in the last problem about tiling a floor?

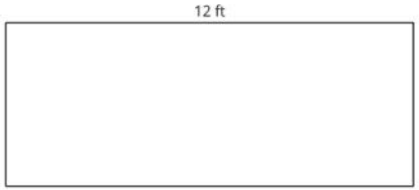
What is the difference between perimeter and area?

Section Summary

In this section, we learned that a perimeter is the boundary of a two-dimensional shape. We found the length of the perimeter by finding the sum of the lengths of the sides of the shape. We used our knowledge of multiplication to find the sum of the side lengths in efficient ways.



We used our knowledge of shapes to find the perimeter even when some side lengths were missing. We also used the perimeter to find missing side lengths.



A flower bed has a rectangular fence that is 32 feet around. If it is 12 feet on one side, what is the measurement of the side next to that?

Problem Solving With Perimeter and Area

Let’s solve problems involving perimeter and area.

Warm up

True or False: Divide in Parts

Decide if each statement is true or false

$$60 \div 6 = 10$$

Be prepared to explain your reasoning.

Warm up

True or False: Divide in Parts

Decide if each statement is true or false

$$72 \div 6 = (60 \div 6) + (12 \div 6)$$

Be prepared to explain your reasoning.

Warm up

True or False: Divide in Parts

Decide if each statement is true or false

$$78 \div 6 = (60 \div 10) + (18 \div 6)$$

Be prepared to explain your reasoning.

Warm up

True or False: Divide in Parts

Decide if each statement is true or false

$$96 \div 8 = (80 \div 8) - (16 \div 8)$$

Be prepared to explain your reasoning.

Rope Off the Garden

Activity #1

Andre wants to know how much rope is needed to rope off the new rectangular school garden. The length of the garden is 30 feet. The width of the garden is 8 feet.

Clare says she can use multiplication to find the amount of rope Andre needs.

Diego says he can use addition to find the amount of rope Andre needs.

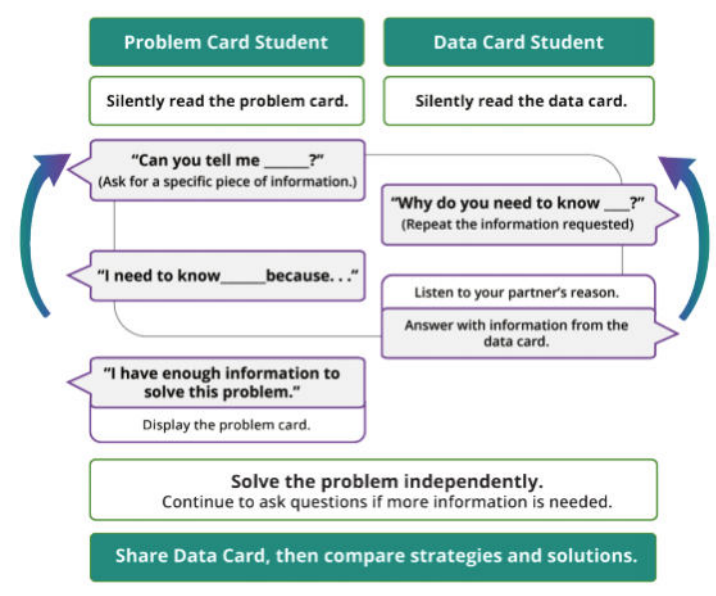
1. Who do you agree with? Explain or show your reasoning.

2. How could you build on the thinking of the student you disagree with to find out how many feet of rope Andre needs?

Info Gap: A Garden and a Playground

Activity #2

Your teacher will give you either a problem card or a data card.
Do not show or read your card to your partner.



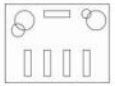
Pause here so your teacher can review your work. Ask your teacher for a new set of cards and repeat the activity, trading roles with your partner.

Lesson Synthesis

Today we expanded our thinking about perimeter as we saw some problems that asked us to think about area and perimeter together. We just talked about how area is measured in square units and perimeter is measured in length units. What else is different about perimeter and area? What is the same about perimeter and area?

A Garden and a Playground
Problem Card 1

A gardener has a rectangular garden. She found its area in square meters.



What is the perimeter of the garden?

A Garden and a Playground
Data Card 1

- The area of the garden is 48 square meters.
- The longer side is 2 meters longer than the shorter side.
- One side of the garden is 8 meters.

- What do you need to know in order to find the perimeter or area of these rectangles?
- How did you use the area and one side you knew to find the missing side length?
- How did you use the perimeter and one side you knew to find the missing side length?

Rectangles with the Same Perimeter

Let’s explore rectangles with the same perimeter.

Warm up

Number Talk: Multiply to Divide

Find the value of each expression mentally.

5×5

Number Talk: Multiply to Divide

Warm up

Find the value of each expression mentally.

$$10 \times 5$$

Warm up

Number Talk: Multiply to Divide

Find the value of each expression mentally.

2×5

Number Talk: Multiply to Divide

Warm up

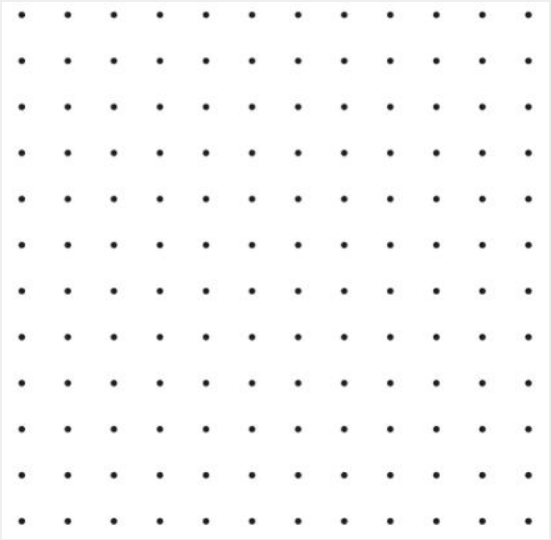
Find the value of each expression mentally.

$85 \div 5$

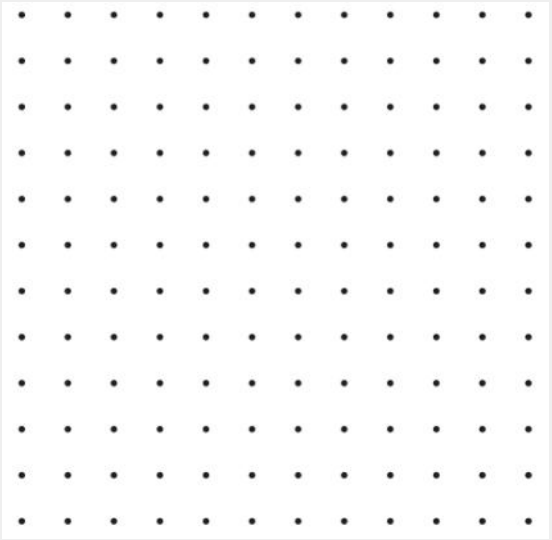
Perimeter of 16 Units

Activity #1

1. Draw as many different rectangles with a perimeter of 16 units as you can.



2. Calculate the area of each rectangle you draw. Explain or show your reasoning.



Same Perimeter, Different Area

Activity #2

1. For each perimeter, draw 2 rectangles with that perimeter that have different areas.

    a. 12 units

    b. 20 units

    c. 26 units

    d. 34 units

    e. Choose your own perimeter.

2. Cut out the rectangles you want to share and place them on the appropriate poster. Try to look for rectangles that are different from what other groups have already placed.

3. Gallery Walk: As you visit the posters, discuss something you notice and something you wonder with your partner.

Lesson Synthesis

How is it possible that many rectangles can have the same perimeter, but not have the same area?

Lesson Synthesis

How did you know the areas were different? Can you tell by looking at the rectangles whether they have the same area?

Rectangles with the Same Area

Let’s explore rectangles with the same area.

Warm up

Number Talk: Divide in Parts

Find the value of each expression mentally.

$$40 \div 4$$

Warm up

Number Talk: Divide in Parts

Find the value of each expression mentally.

$$80 \div 4$$

Warm up

Number Talk: Divide in Parts

Find the value of each expression mentally.

$$16 \div 4$$

Warm up

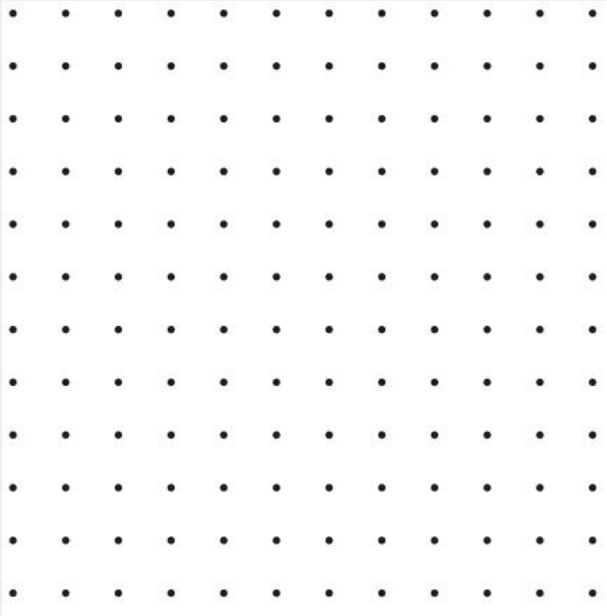
Number Talk: Divide in Parts

Find the value of each expression mentally.

$$96 \div 4$$

Area of 24

Activity #1



1. Draw as many different rectangles as you can with an area of 24 square units.

2. Calculate the perimeter of each rectangle you draw. Explain or show your reasoning.

Same Perimeter, Different Perimeter

Activity #2

1. For each area, draw 2 rectangles that each have that area and have different perimeters.

a. 12 square units

b. 20 square units

c. 42 square units

d. 48 square units

. Choose your own area.

2. Cut out the rectangles you want to share and place them on the appropriate poster. Try to look for rectangles that are different from what other groups have already placed.

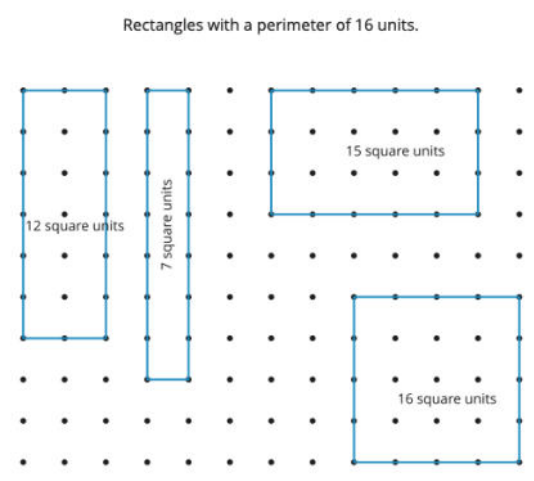
3. Gallery Walk: As you visit the posters, discuss something you notice and something you wonder with your partner.

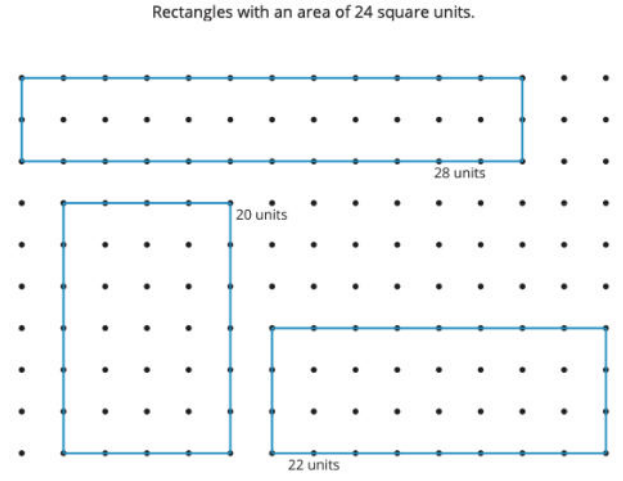
Lesson Synthesis

Over the last few lessons, we've been learning about area and perimeter. What have you learned about area and perimeter that you want to be sure to remember.

Section Summary

In this section we studied area and perimeter. We solved problems involving both area and perimeter. We drew rectangles with the same perimeter and different areas and rectangles with the same area and different perimeters.





13

Wax Prints

Let’s analyze and make wax prints.

3.G.A.1, 3.MD.D.8

Warm up

Notice and Wonder: Textiles

What do you notice?

What do you wonder?

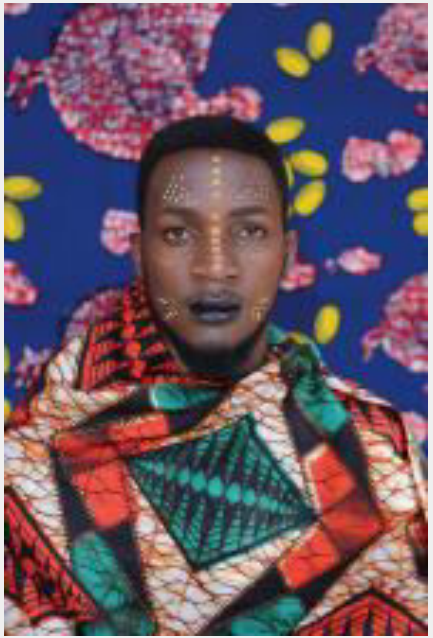
Create a Wax Print Pattern

Activity #1

1. Use the dot paper to design your own wax print pattern. Your pattern should:

a. Use a rhombus, rectangle, or square.
b. Use a quadrilateral that is not a rhombus, rectangle, or square.
c. Have each shape repeat at least 5 times.

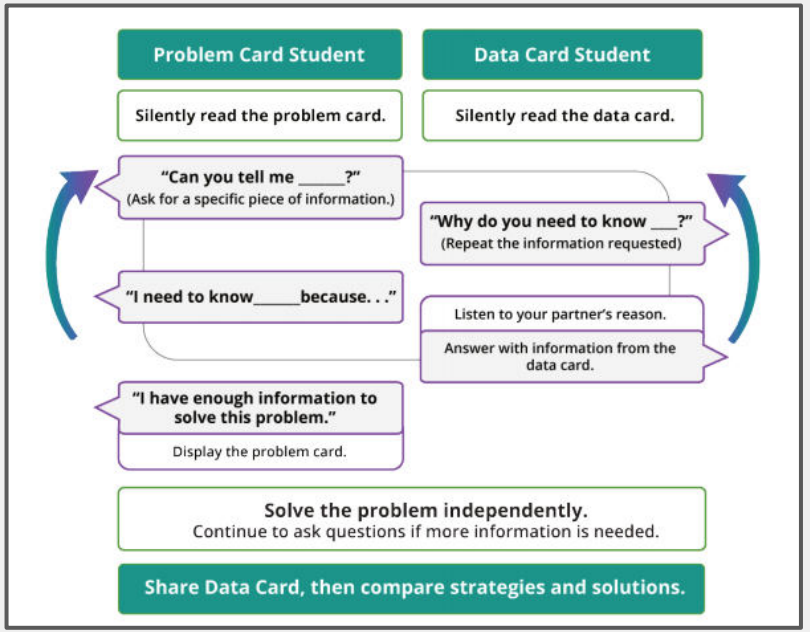
2. Color the pattern in a way that highlights the shapes you chose or choices you made.



Activity #2

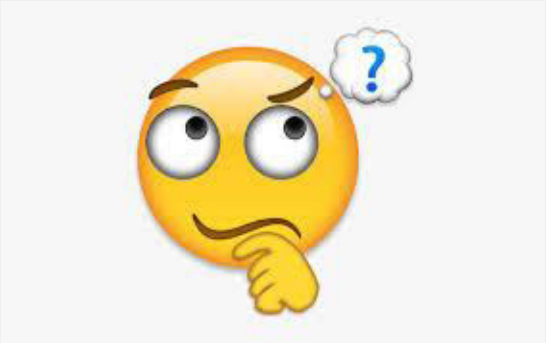
Info Gap: The Bundle

- Your teacher will give you either a problem card or a data card.
- Do not show or read your card to your partner.



Lesson Synthesis

Today, we learned about how shapes can be used in fabric designs and how fabric can be used to make clothing. What ways have you seen shapes in designs or used fabric to make something?



How can area and perimeter be used when making something out of fabric?

14

Shapes and Play

Let’s design a park.

Warm up

Notice and Wonder: A Park

What do you notice?

What do you wonder?

Design a Park

Activity #1

1. The distance from 1 dot to another horizontally or vertically represents 1 yard. Connect dots on the grid horizontally or vertically to design a small park that has 5 of these features:

a. basketball court
b. soccer goal
c. swings
d. a slide
e. an open area
f. picnic table
g. water play area
h. skate park
i. a feature of your choice

2. Describe the area and the perimeter of 3 features in the park.

Park Problems

Activity #2

Solve each problem. Explain or show your reasoning.

1. A rectangular basketball court is 94 feet by 50 feet.
   What is the perimeter of the basketball court?

2. A rectangular playground is 6 yards by 14 yards.

   a. How much fencing is needed to fence in the playground?
   b. What is the area of the playground?
   c. Give another set of dimensions that would have the same perimeter, but a different area.

3. An open rectangular area in a park is going to have an area of 48 square yards. Give 2 possible perimeters for the rectangular area. Explain or show your reasoning.

Lesson Synthesis

What did you and your partner notice about the different perimeters that can be created with rectangles that have the same area?

Design Your Own Robot

Let’s use perimeter and area to design robots.

Warm up

What Do You Know About...

Create Your Own Robot

Activity #1

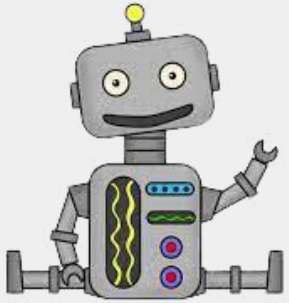
1. Create your own robot with these specifications. Show or explain your work so it is clear your robot meets the required specifications.

a. Each body part must be a rectangle.
b. Head: perimeter of 36 units
c. Neck: perimeter of 8 units
d. Body: perimeter of 64 units
e. Each arm: perimeter of 24 units
f. Each leg: perimeter of 32 units
g. Include one more rectangular feature of your choice on your robot.

2. Find the area of each of your robot's body parts.

3. Find the total area of your robot.

4. Gallery Walk: As you visit the robots with your partner, discuss the different areas that can be created with rectangles that have the same perimeter.

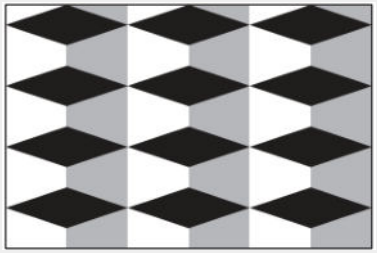


Lesson Synthesis

Over the last three lessons we've used shapes, perimeter, and area to design fabric patterns, parks, and robots. What are some other things you are interested in designing that could use shapes, perimeter, and area?

Section Summary

In this section we reasoned about shapes to design wax prints, a park, and a robot.



Also, we solved problems involving area and perimeter.