Chapter 4

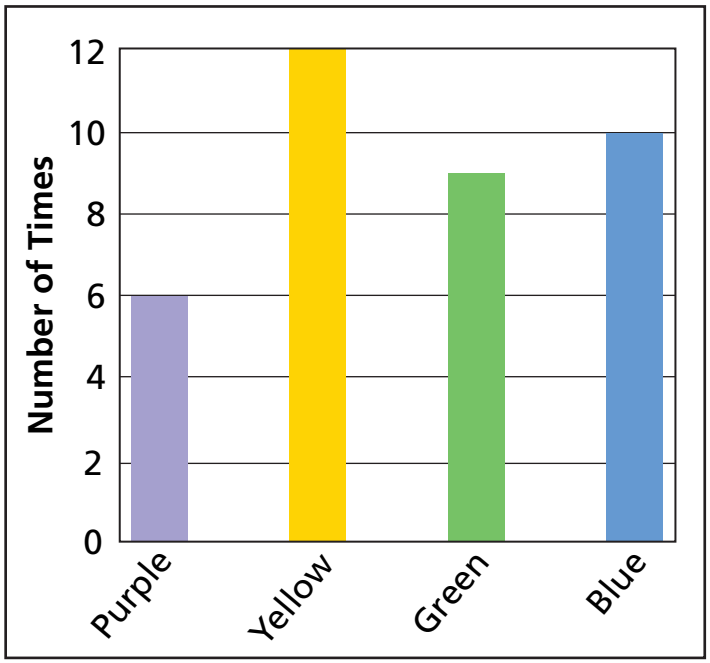
Lesson 1

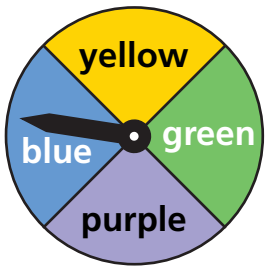
Name _____ Date _____

Introducing Angles

NCTM Standards 1, 2, 3, 6, 7, 8, 9, 10

A group made a graph of their 4-person spinner game.





1. Which color won the game? _____

2. How many times did the spinner stop on green? _____

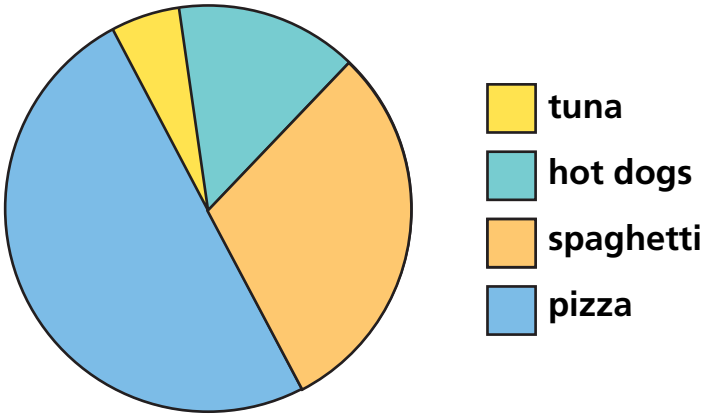
3. If purple and yellow were a team, and blue and green were a team, which team won?

   _____

4. The spinner stopped on yellow _____ more times than on green.

5. How many times did this group spin the spinner? _____

The students at Jefferson School were asked about their favorite school lunches.



Write if the statement is *true* or *false*.

6 About half of the students chose pizza. _____

7 More students chose pizza than hot dogs and spaghetti put together. _____

8 No one liked tuna. _____

9 Hot dogs were less popular than spaghetti. _____

10 About half as many students chose tuna as chose pizza. _____

11 **Challenge** If you created a spinner that looked like the pie chart above, would it be a fair spinner? Why or why not? Use pictures, numbers, or words to explain your answer.

_____

_____

_____

Chapter 4

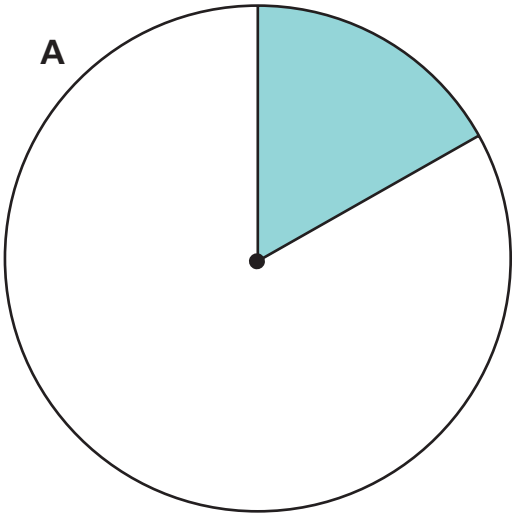
Lesson 2

Name _____ Date _____

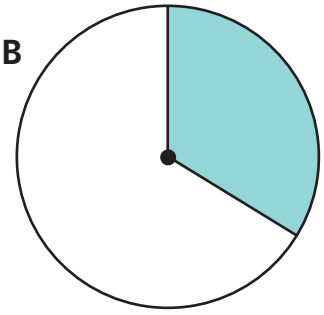
Classifying Angles

NCTM Standards 3, 4, 6, 7, 8, 9, 10

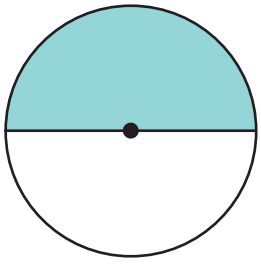
A



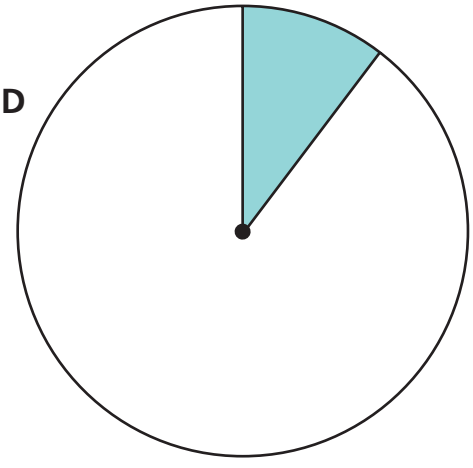
B



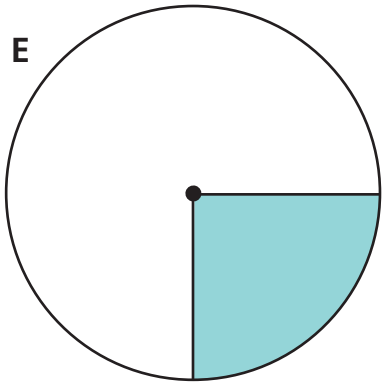
C



D



E



You can choose which spinner base to play with. If the spinner lands on the shaded part of a base, you win.

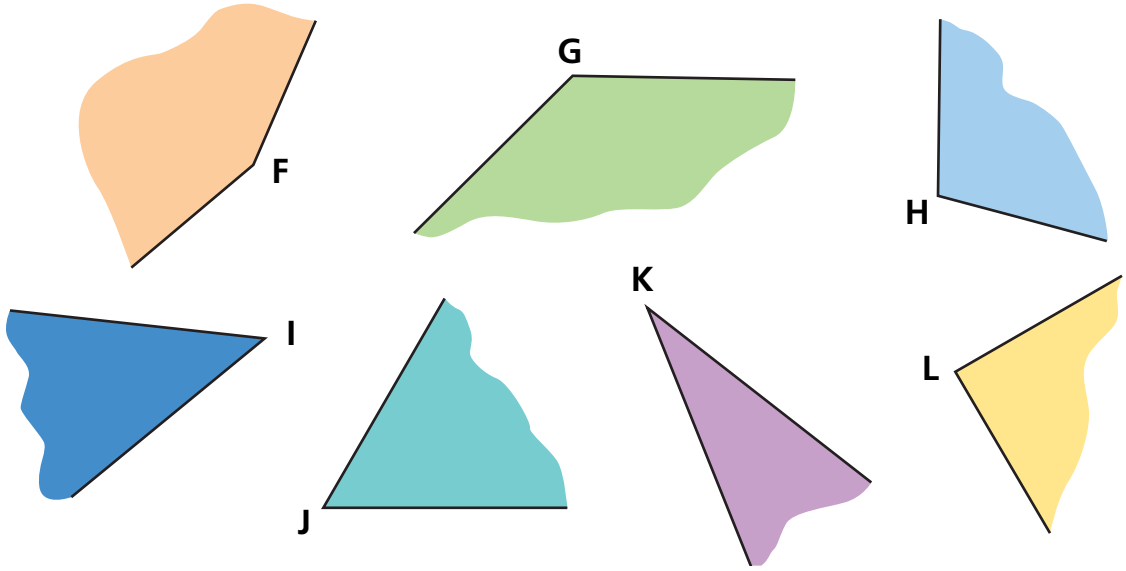
1. Which spinner base gives you the best chance of winning? spinner base _____

2. Which spinner base gives you the worst chance of winning? spinner base _____

3. Order the spinner bases from best to worst chance of winning. _____, _____, _____, _____, _____

4 Order the angles from the smallest to the largest.

_____, _____, _____, _____, _____, _____, _____



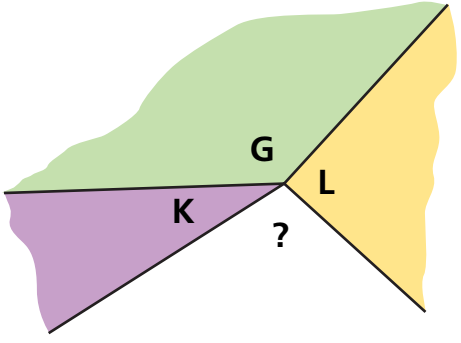
5 Challenge Compare each angle to a right angle.

Which angles are less than a right angle? _____, _____, _____

Which angle is equal to a right angle? _____

Which angles are greater than a right angle? _____, _____, _____

6 Challenge Angle _____ would fit in the empty space.



Chapter 4

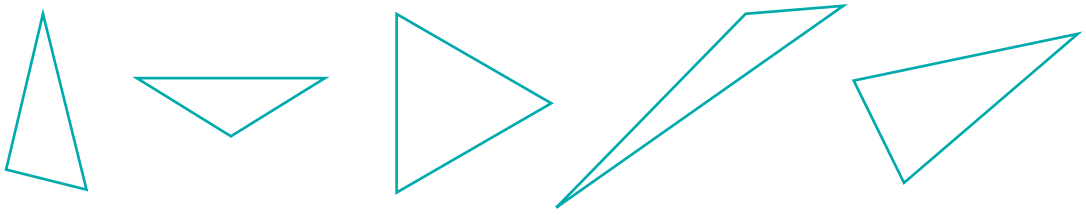
Lesson 3

Name _____ Date _____

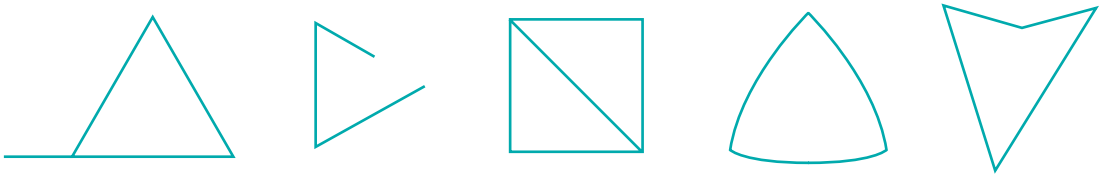
Classifying Triangles by Angles

NCTM Standards 3, 4, 6, 7, 8, 9, 10

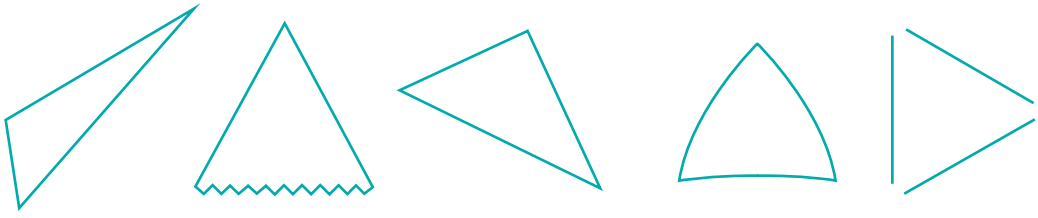
These are triangles.



These are not triangles.



1. Which of these are triangles? Circle the triangles.



2. Draw a triangle that is different from the others on the page.

3. Describe a triangle in your own words.

_____

_____

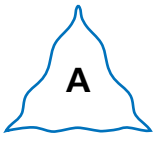
_____

_____

_____

_____

4 Circle the triangles and label them *acute*, *right*, or *obtuse*.



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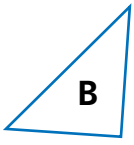

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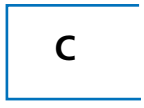

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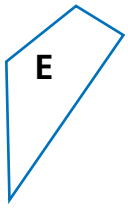
_____



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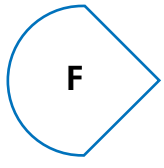

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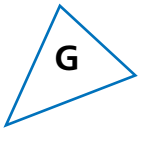
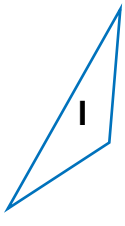


_____

_____



_____

5 **Challenge** What are the similarities and differences of acute, right, and obtuse triangles?

_____

_____

_____

_____

_____

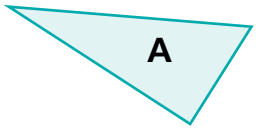
Chapter 4

Lesson 4

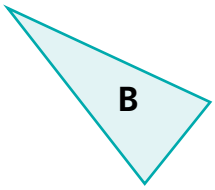
Name _____ Date _____

Classifying Triangles by Side Length

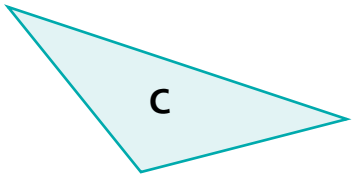
NCTM Standards 3, 4, 6, 7, 8, 9, 10



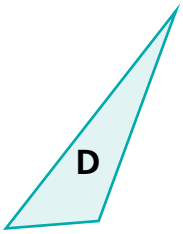
right and scalene



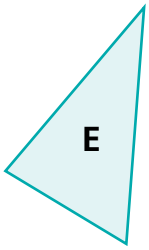
acute and isosceles



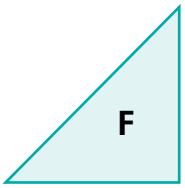
obtuse and isosceles



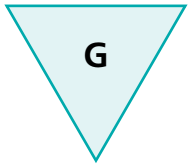
obtuse and scalene



acute and scalene



right and isosceles



equilateral

1. I have 2 sides that are the same length and 1 right angle.

   I am triangle _____.

2. All of my sides are the same length. All of my angles are the same.

   I am triangle _____.

3. I have exactly 2 sides that are the same length and 3 acute angles.

   I am triangle _____.

4. I have no equal sides. All of my angles are acute.

   I am triangle _____.

5. All of my sides are different lengths. I have an obtuse angle.

   I am triangle _____.

6. Two of my sides are the same length. One of my angles is greater than a right angle.

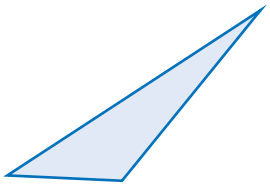
   I am triangle _____.

Use a ruler and the corner of a piece of paper to help label each triangle with the 2 names that best describe it:

a. *acute, right,* or *obtuse;* and

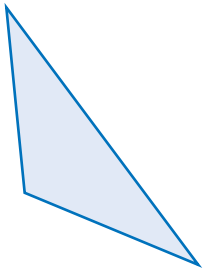
b. *scalene, isosceles,* or *equilateral.*

7

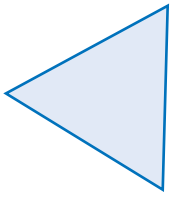


8

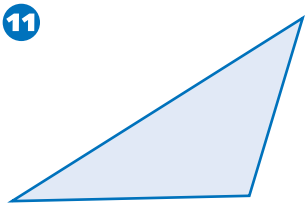
9



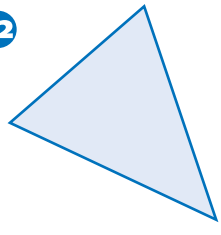
10



11



12



13 Challenge Draw a triangle and write clues to describe it. You might write about the number of equal sides, or the name of each angle.

Chapter 4

Lesson 5

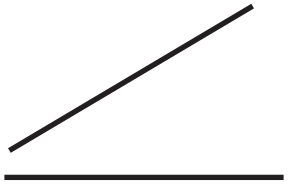
Name _____ Date _____

Introducing Perpendicular and Parallel Lines

NCTM Standards 3, 6, 7, 8, 9, 10

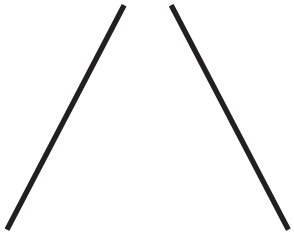
1 Imagine that the lines go on forever. Are they **intersecting** or are they **parallel?** If the lines are **perpendicular,** circle them.

A



intersecting

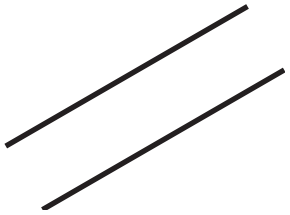
B



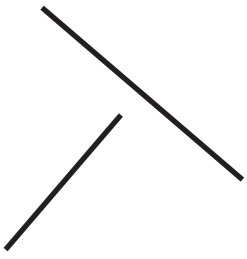
C

D

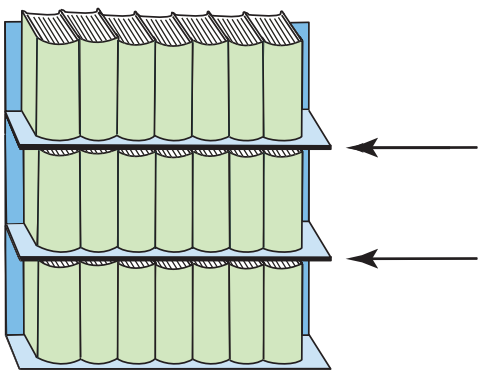
E



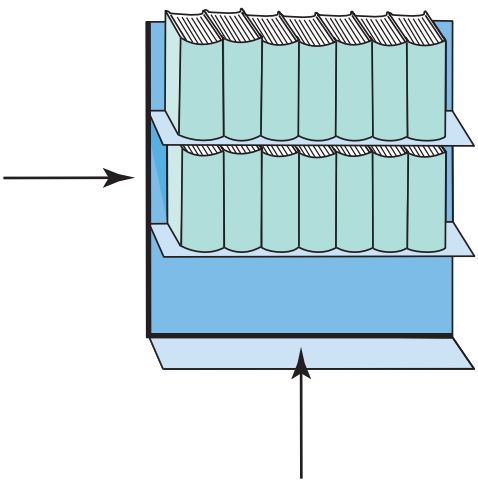
F



G

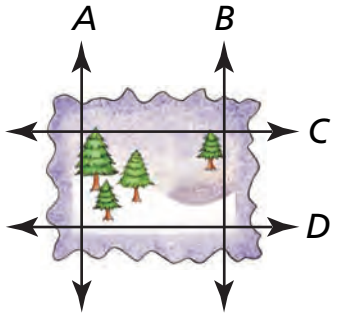


H



2 Identify the **parallel** and **perpendicular** lines in the figures. If there are no more, put an "x" on the answer line.

A



Parallel: _____ and _____

_____ and _____

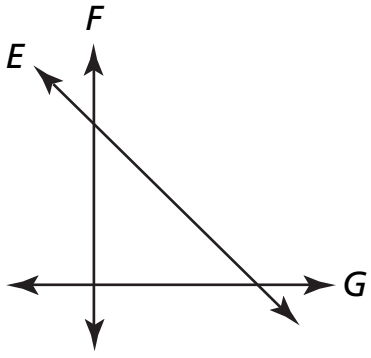
Perpendicular: _____ and _____

_____ and _____

_____ and _____

_____ and _____

B



Parallel: _____ and _____

_____ and _____

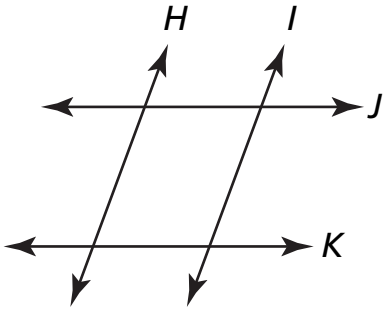
Perpendicular: _____ and _____

_____ and _____

_____ and _____

_____ and _____

C



Parallel: _____ and _____

_____ and _____

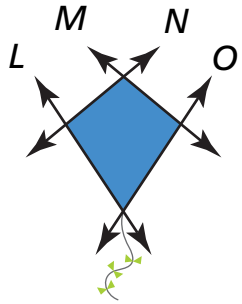
Perpendicular: _____ and _____

_____ and _____

_____ and _____

_____ and _____

D **Challenge**



Parallel: _____ and _____

_____ and _____

Perpendicular: _____ and _____

_____ and _____

_____ and _____

_____ and _____

Chapter 4

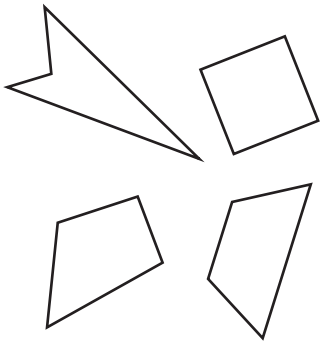
Lesson 6

Name _____ Date _____

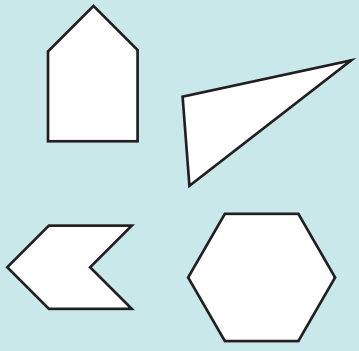
Classifying Quadrilaterals by the Number of Parallel Sides

NCTM Standards 3, 6, 7, 8, 9, 10

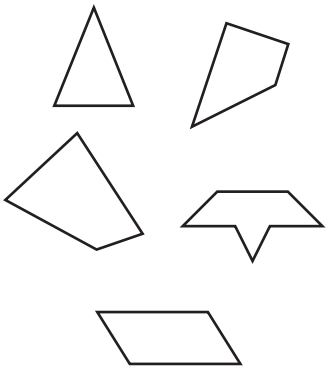
1 All of these belong.



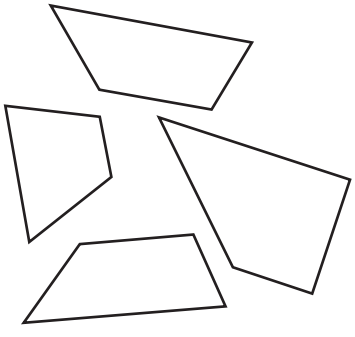
None of these belong.



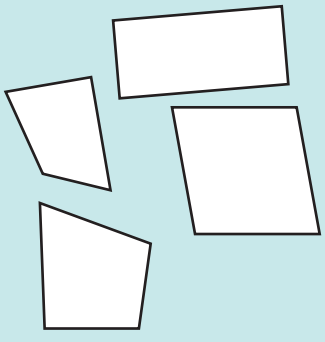
Which of these belong?



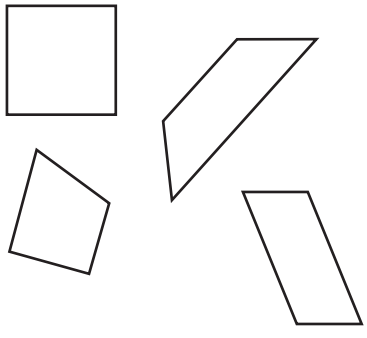
2 All of these belong.



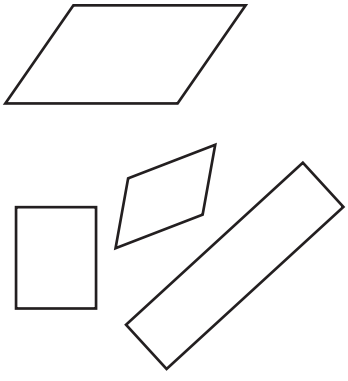
None of these belong.



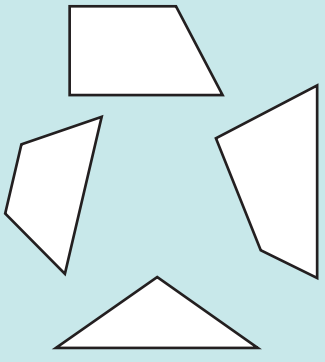
Which of these belong?



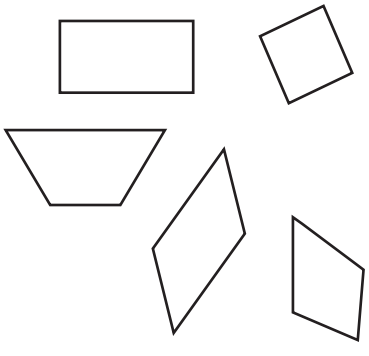
3 All of these belong.



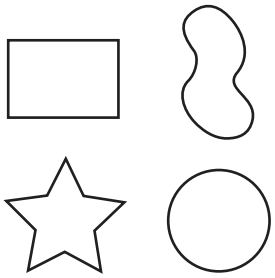
None of these belong.



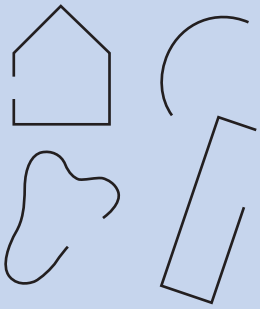
Which of these belong?



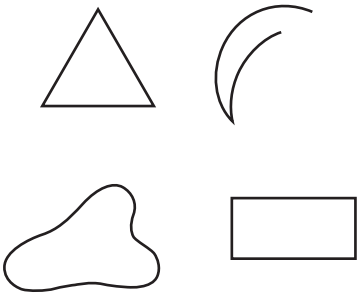
4 All of these belong.



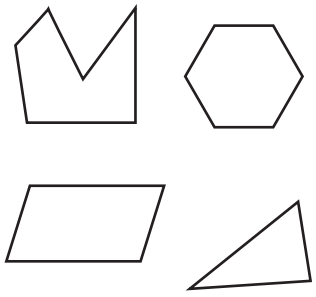
None of these belong.



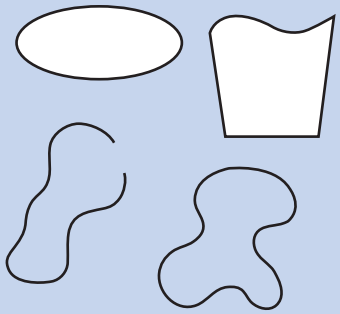
Which of these belong?



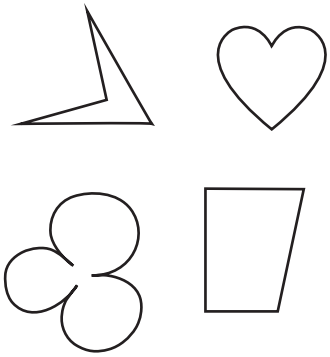
5 All of these belong.



None of these belong.



Which of these belong?



6 **Challenge** What do the figures that belong in Problem 4 have in common? Use pictures, numbers, or words to explain your answer.

7 **Challenge** What do the figures that belong in Problem 5 have in common? Use pictures, numbers, or words to explain your answer.

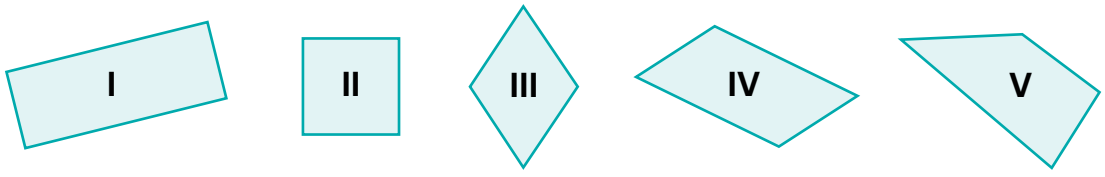
Chapter 4
Lesson 7

Name _____ Date _____

Classifying Parallelograms

NCTM Standards 3, 6, 7, 8, 9, 10

Each figure has at least one of these names:
parallelogram, rectangle, rhombus, square, trapezoid.



1 I have exactly one pair of parallel sides.

I am quadrilateral _____.

I am a _____.

2 All of my sides are equal. All of my angles are equal.

I am quadrilateral _____.

I am a _____.

3 I have 2 pairs of parallel sides.

I am quadrilateral _____, _____,

_____ or _____.

I am a _____.

I am sometimes a _____,

a _____ or a _____.

4 All of my sides are the same length.

I am quadrilateral _____ or _____.

I am a _____.

I am sometimes a _____.

5 I have 2 pairs of parallel sides. I have at least one right angle.

I am quadrilateral _____ or _____.

I am a _____.

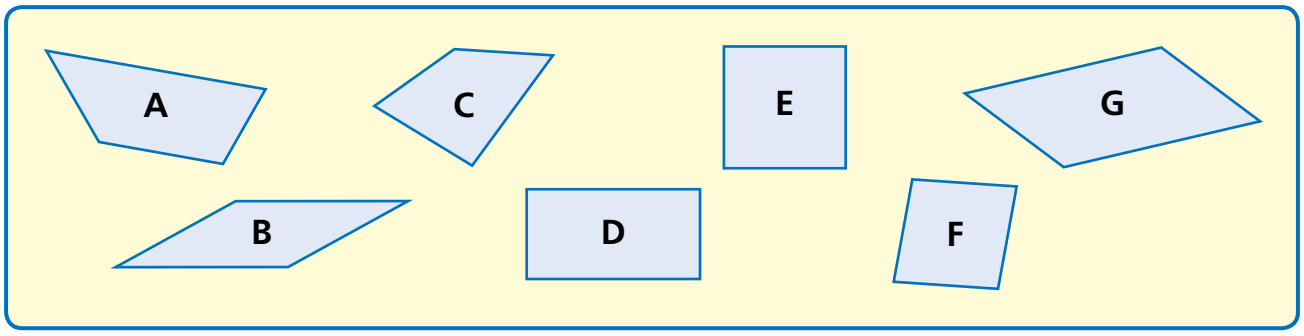
I am sometimes a _____.

6 I have more than 1 pair of parallel sides. My sides are not all the same length.

I am quadrilateral _____ or _____.

I am a _____.

I am sometimes a _____.



7 List all:

A quadrilaterals _____

B trapezoids _____

C parallelograms _____

D rhombuses _____

E rectangles _____

F squares _____

Write whether the statement is *true* or *false*.

8 Some quadrilaterals are parallelograms. true

9 All squares are parallelograms. _____

10 All parallelograms are squares. _____

11 All squares are rectangles. _____

12 All rectangles are squares. _____

13 All parallelograms are rectangles. _____

14 All quadrilaterals are either trapezoids or parallelograms. _____

Challenge

15 Some rhombuses are rectangles. _____

16 Some squares are trapezoids. _____

17 All squares are rhombuses. _____

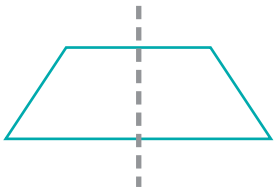
Chapter 4
Lesson 8

Name _____ Date _____

Symmetry in Triangles and Quadrilaterals

NCTM Standards 3, 6, 7, 8, 9, 10

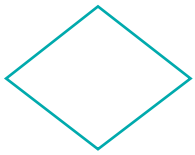
Sketch any lines of symmetry for these figures.

1. 

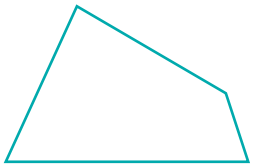
[1] line(s) of symmetry

2. 

[ ] line(s) of symmetry

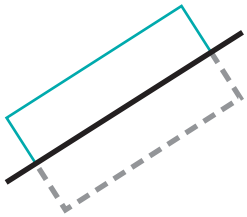
3. 

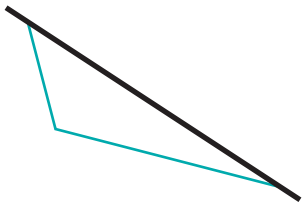
[ ] line(s) of symmetry

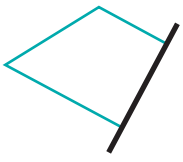
4. 

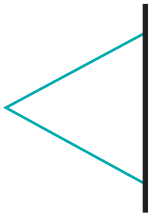
[ ] line(s) of symmetry

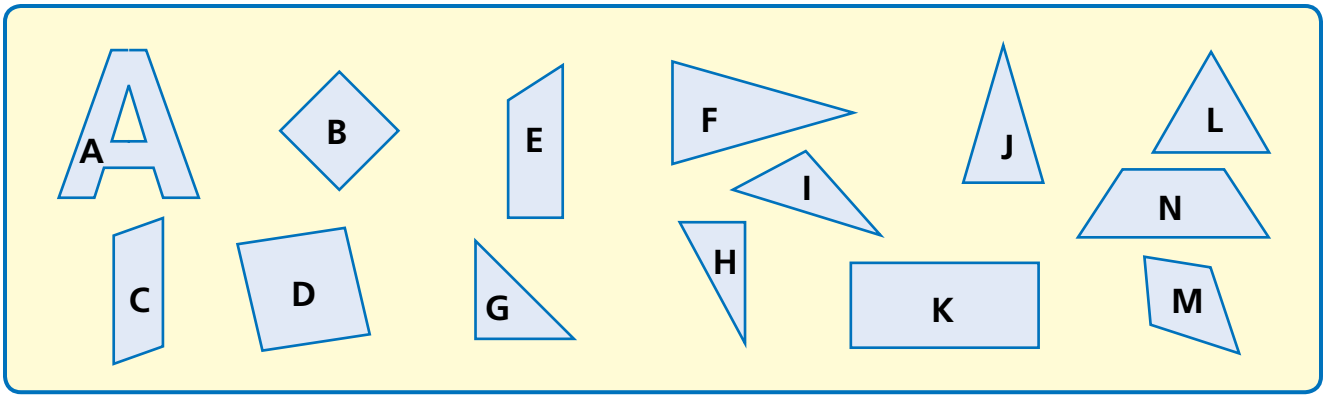
Complete each figure by reflecting across the line of symmetry.

5. 

6. 

7. 

8. 



Draw the lines of symmetry for each figure and list all figures with:

9 **no lines of symmetry** _____

10 exactly **1 line of symmetry** _____

11 exactly **2 lines of symmetry** _____

12 exactly **3 lines of symmetry** _____

13 more than **3 lines of symmetry** _____

Write whether the statement is *true* or *false*.

14 If a quadrilateral has exactly 1 line of symmetry, it is a rectangle. _____

15 If a triangle has more than **1** line of symmetry, it's equilateral. _____

16 If a triangle has **0** lines of symmetry, it's scalene. _____

Challenge

17 If a figure has exactly **2** lines of symmetry, it's not a triangle. _____

18 If a figure has exactly **3** lines of symmetry, it's not a quadrilateral. _____

19 A rhombus has more lines of symmetry than any other quadrilateral. _____

Chapter 4
Lesson 9

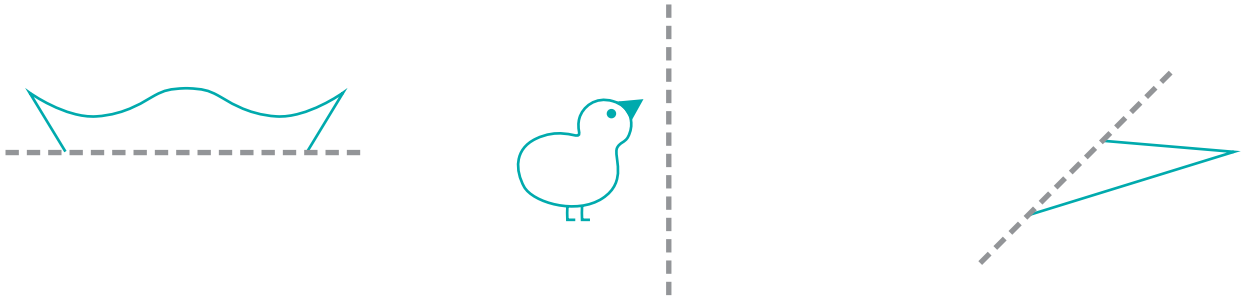
Name _____ Date _____

Working with Transformations

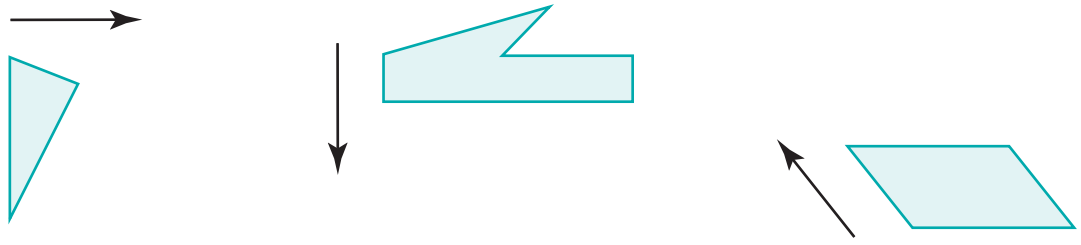
NCTM Standards 3, 6, 7, 8, 9, 10

Perform each transformation.

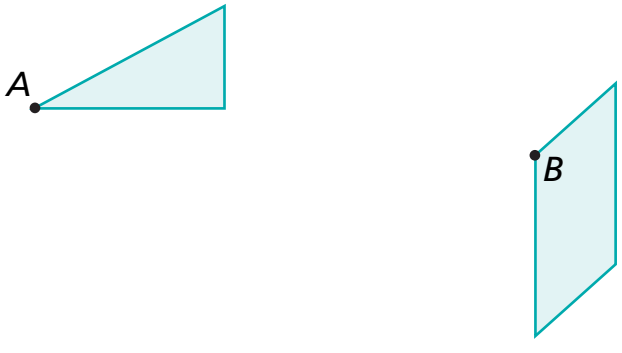
1. Reflect across the dotted line.



2. Translate in the direction of the arrow so that the resulting figure does not overlap with the original.



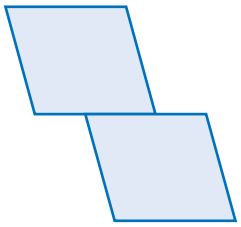
3. Rotate around the labeled point so that the resulting figure does not overlap with the original.



Show how to cut each figure into two congruent pieces.

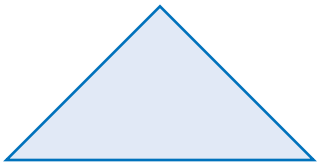
Explain why the two pieces in each figure are congruent by circling all the terms that describe the transformation.

4



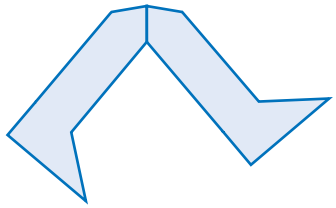
Rotation
Reflection
Translation

5



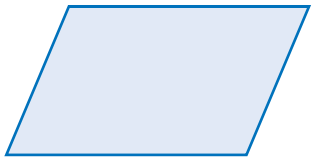
Rotation
Reflection
Translation

6



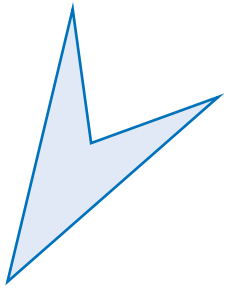
Rotation
Reflection
Translation

7



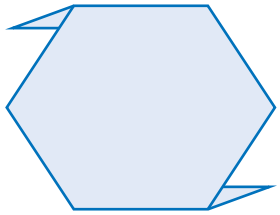
Rotation
Reflection
Translation

8



Rotation
Reflection
Translation

9 Challenge



Rotation
Reflection
Translation

Chapter 4

Lesson 10

Name _____ Date _____

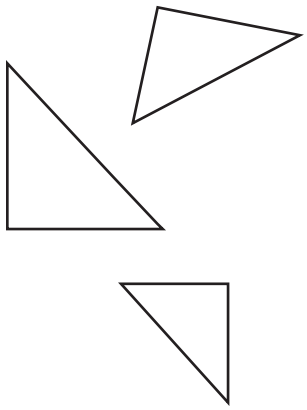
Problem Solving Strategy

Look for a Pattern

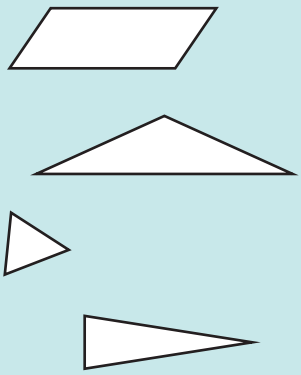
NCTM Standards 3, 6, 7, 8, 9, 10

Understand
Plan
Solve
Check

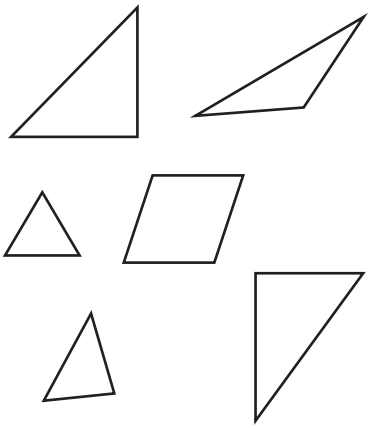
1 All of these belong.



None of these belong.



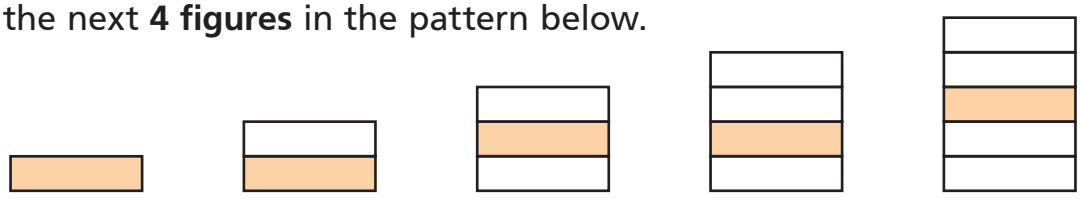
Circle the ones that belong.



What is the same about all of the figures that belong?

_____

2 Draw the next **4 figures** in the pattern below.



3 Describe this pattern and fill in the missing number:
1, 3, 9, _____, 81, 243. Explain.

_____

_____

Problem Solving Test Prep

Choose the correct answer.

1 The Wu family bought 2 adult, 1 child, and 3 student tickets.

AMUSEMENT PARK	
Ticket	**Price**
Adult	$11.95
Student	$10.50
Child (under 6)	$8.25

If they gave the cashier $100.00, how much change did they receive?

A. $35.35 **C.** $44.60

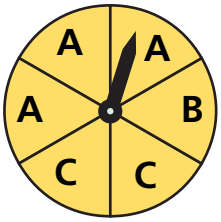
B. $36.35 **D.** $63.65

2 Cassie had 150 invitations to send. She sent 55 on Monday and 42 on Tuesday. How many invitations does Cassie still have to send?

A. 53 **C.** 108

B. 95 **D.** 247

3 Which fraction represents the part of the spinner labeled B?



A. $\frac{0}{6}$ **C.** $\frac{2}{6}$

B. $\frac{1}{6}$ **D.** $\frac{3}{6}$

4 The electronics store received 8 large boxes of batteries. Each large box had 16 small boxes in it. Each small box had 6 batteries in it. How many batteries did the store receive?

A. 30 batteries **C.** 128 batteries

B. 96 batteries **D.** 768 batteries

Show What You Know

Solve each problem. Explain your answer.

5 Mike's family bought 147 tickets for fair rides. Each ride takes 3 tickets. Do they have enough tickets to ride 50 rides? Explain.

6 What is the next figure in the pattern? Explain.

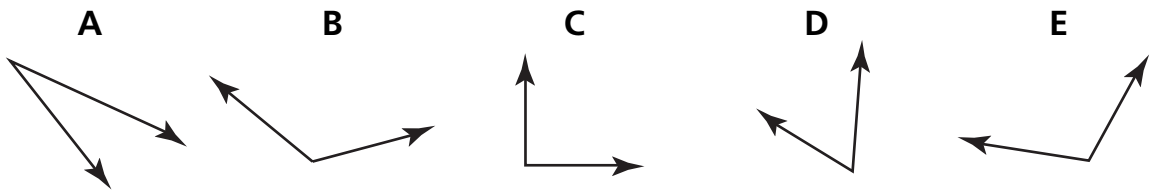
Chapter 4

Name _____ Date _____

Review/Assessment

NCTM Standards 3, 6, 7, 8, 9, 10

Use the angles to answer the questions. Lesson 2



1. Order the angles from the largest to the smallest. ____, ____, ____, ____, ____

2. Compare each angle to a right angle.

   Which angles are acute angles? ____, ____

   Which angle is a right angle? ____

   Which angles are obtuse angles? ____, ____

Label each triangle as *acute, right,* or obtuse, and *scalene, isosceles,* or *equilateral.* Lesson 4

3. 

   _____

   _____

4. 

   _____

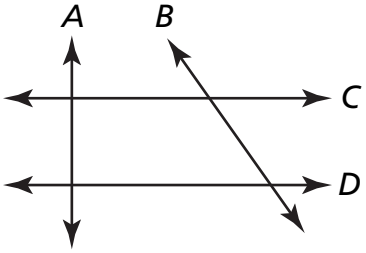
   _____

5. 

   _____

   _____

6. Identify the parallel and perpendicular lines in the figure. If there are no more, put an "X" on the answer line. Lesson 5



Parallel:

_____ and _____

_____ and _____

Perpendicular:

_____ and _____

_____ and _____

List all names for each figure: *parallelogram, rectangle, rhombus, square,* or *trapezoid.* Lesson 6

7 

8 

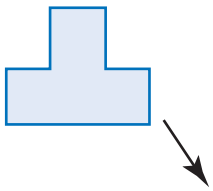
Write whether the statement is *true* or *false*. Lesson 8

9 If a triangle has exactly 1 line of symmetry, it is isosceles. _____

10 If a quadrilateral has exactly 4 lines of symmetry, it is a square. _____

Perform each transformation. Lesson 9

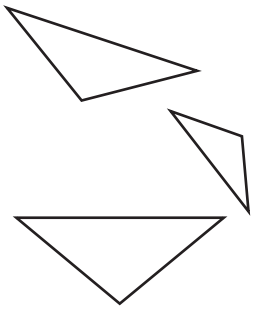
11 Translate in the direction of the arrow so that the resulting figure does not overlap with the original.



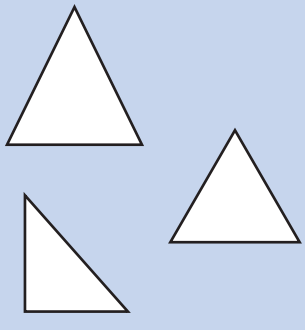
12 Reflect across the dotted line.

Solve the problem. Lesson 10

13 All of these belong.



None of these belong.



Circle the ones that belong.