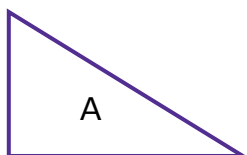


Prerequisite: Describe the Properties of Shapes

Study the example showing how to describe the sides and angles in shapes. Then solve problems 1–6.

Example

Compare the triangles below. What is the same and different about the shapes?



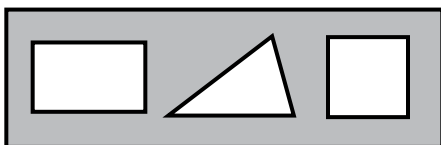
Same

Both triangles have 3 sides.
Both triangles have 3 angles.

Different

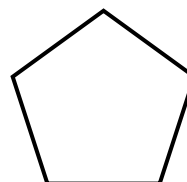
Triangle A has 1 square corner and Triangle B has no square corners.
Triangle A has 0 sides the same length and Triangle B has 2 sides the same length.

1 Look at the shapes below. Read the descriptions in the table. Draw each shape in the column that describes it.



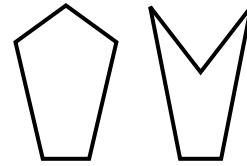
All square corners <i>and</i> all sides the same length	Square corners <i>and</i> some sides the same length	No square corners <i>and</i> no sides the same length

2 Describe the sides and angles of the pentagon at the right.



Solve.

3 Describe how the two shapes shown are alike.



For problems 4–6, use the shapes at the right.

4 Fill in the table. Write each shape in the column that describes the number of sides and angles it has.


Fewer than 4 sides and 4 angles	4 sides and 4 angles	More than 4 sides and 4 angles


5 Fill in the table. Write each shape in the column that describes the length of its sides.


All sides the same length	Some sides the same length	No sides the same length


6 Fill in the table below. Write each shape in the column that describes whether it has square corners or has no square corners.


Has a square corner	Has no square corners



 triangle


 rectangle


 square


 rhombus


 parallelogram


 pentagon

Identify Points, Lines, Line Segments, and Rays

Study the example that shows a drawing with points, lines, line segments, and rays. Then solve problems 1–9.

Example

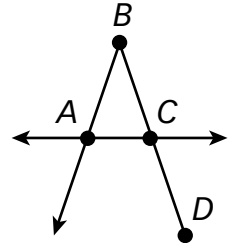
Amy made a drawing of a letter “A” in her math notebook. Use geometry words to describe the drawing.

There are 4 points on the drawing: point A, point B, point C, and point D.

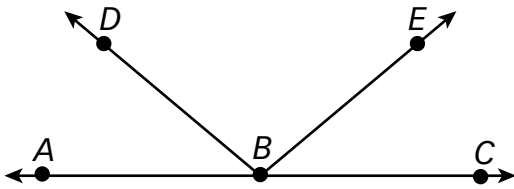
There is a line segment from point B to point D. \overline{BD}

There is a line through points A and C. $\longleftrightarrow AC$

There is a ray from point B through point A. \overrightarrow{BA}



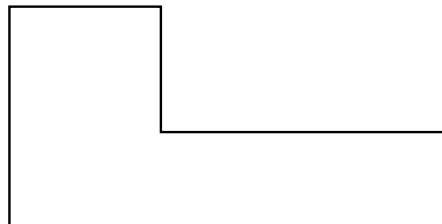
Use the drawing below to answer questions 1–4.



- 1 How many lines are in the drawing? _____
- 2 How many rays are in the drawing? _____
- 3 Write the name of the line in the drawing.

- 4 Write the names of the rays in the drawing.

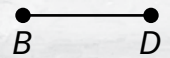
- 5 Look at the shape at the right. How many line segments are in the shape? _____



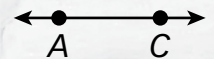
Vocabulary

point a single location in space. \bullet B

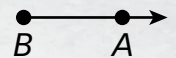
line segment a straight row of points that starts at one point and ends at another point.



line a straight row of points that goes on forever in both directions.

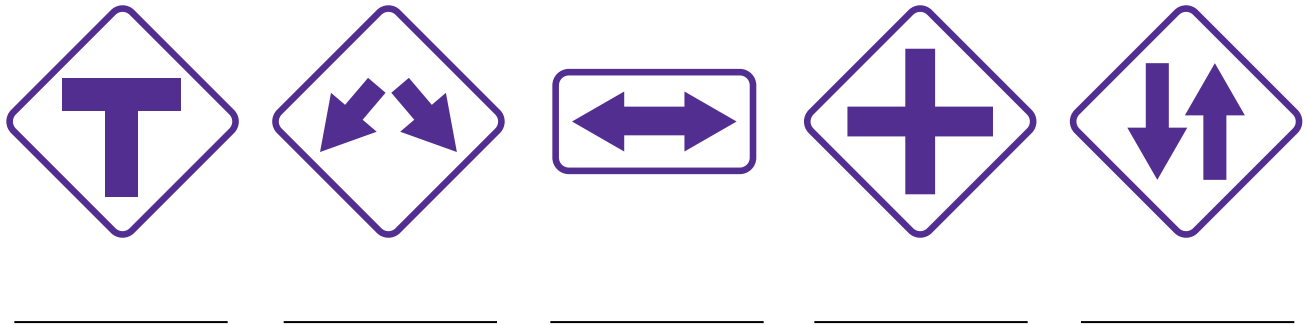


ray a straight row of points that starts on one point and goes on forever in one direction.



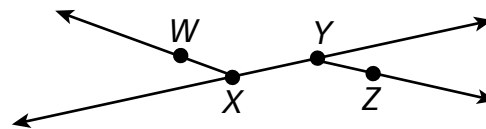
Solve.

6 Label each sign below. Write *line*, *line segment*, or *ray*.

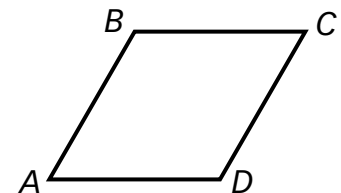


7 Look at the drawing below. Choose *Yes* or *No* to tell whether each line, line segment, ray, or angle is shown in the drawing.

- a. \overleftrightarrow{XY} Yes No
- b. \overleftrightarrow{XZ} Yes No
- c. \overrightarrow{WX} Yes No
- d. \overrightarrow{YX} Yes No
- e. \overline{ZY} Yes No
- f. $\angle XYZ$ Yes No



8 Use geometry words and symbols to describe the rhombus shown.



9 Read the description of a shape below. Then draw the shape at the right.

It has 3 line segments, \overline{RS} , \overline{ST} , \overline{TR} .

Line segments \overline{RS} and \overline{TR} are the same length.

It has 1 square corner, $\angle R$.

Identify Angles

Study the example identifying angles in a shape.
Then solve problems 1–10.

Example

Name and describe the angles in the shape below.

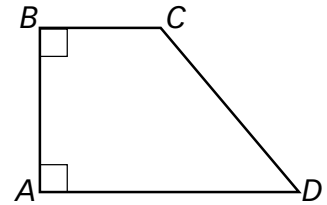
$\angle A$ is a right angle. It has a shape like a square corner.

$\angle B$ is also a right angle.

$\angle C$ is an obtuse angle. It has a wider opening than a right angle.

$\angle D$ is an acute angle. It has a smaller opening than a right angle.

The shape has 2 right angles, 1 acute angle, and 1 obtuse angle.



Use the shape at the right to answer questions 1–5.

1 How many right angles are in this shape? _____

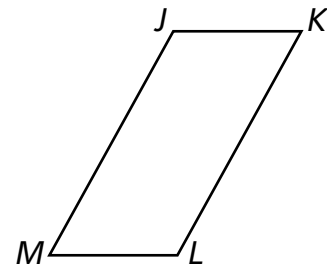
2 How many acute angles are in this shape? _____

3 How many obtuse angles are in this shape? _____

4 Name the acute angles in the shape.

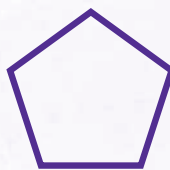
5 Name the obtuse angles in the shape.

6 Look at the shape at the right. Describe the number and kind of angles it has.



Solve.

Jasmine drew this pentagon. She says that all pentagons have 5 sides of equal length and 5 obtuse angles.



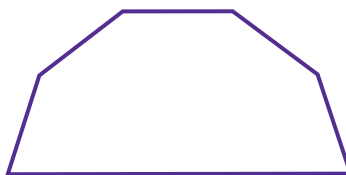
- 7** Draw a pentagon that is different from the one Jasmine drew. Describe the lines and angles of your pentagon.

- 8** In what way is Jasmine's thinking correct?

- 9** In what way is Jasmine's thinking incorrect?

- 10** Which of the following statements describes the shape at the right? Circle all that apply.

- A** The shape has acute angles.
- B** The shape has right angles.
- C** The shape has obtuse angles.
- D** The shape has 6 angles.



Identify Parallel and Perpendicular Lines

Study the example identifying parallel and perpendicular lines and segments. Then solve problems 1–6.

Example

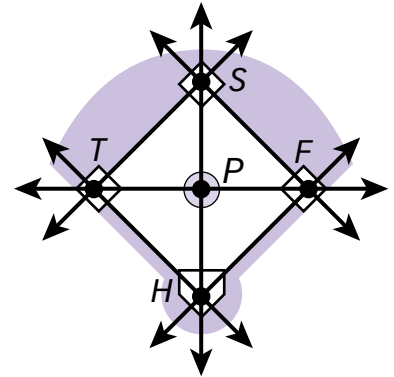
Colby drew parallel and perpendicular lines to place the bases and pitcher's mound on a drawing of a baseball field.

\overleftrightarrow{SF} and \overleftrightarrow{TH} are parallel lines.

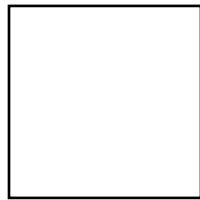
\overleftrightarrow{ST} and \overleftrightarrow{FH} are parallel lines.

The pitcher's mound is one place where perpendicular lines cross. At what point do perpendicular lines cross at the pitcher's mound?

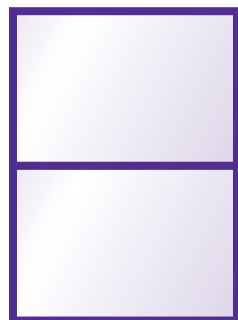
They cross at point P , where \overleftrightarrow{TF} crosses \overleftrightarrow{SH} .



For problems 1 and 2, use the shape below.

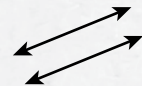


- 1 How many pairs of parallel sides does the square appear to have? _____
- 2 Put Xs on the square where each pair of perpendicular line segments meet.
- 3 Look at the drawing of a window below. Circle 3 parallel line segments in the drawing.



Vocabulary

parallel lines two lines that are always the same distance apart and will never cross.

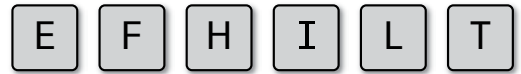


perpendicular lines two lines that cross at a 90° angle.



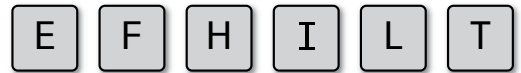
Solve.

4 Look at the line segments in the letters on the tiles to the right. Fill in the table with each letter to identify parallel lines. The first one is done for you.



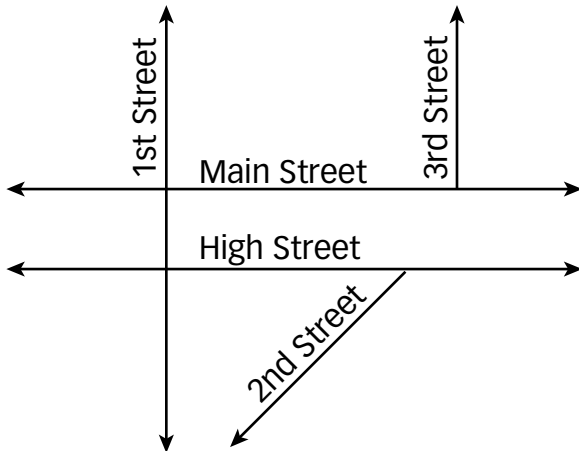
No parallel lines	1 pair of parallel lines	More than 1 pair of parallel lines
L		

5 Look at the line segments in the letters on the tiles again. Fill in the table to identify perpendicular lines.



1 pair of perpendicular lines	2 pairs of perpendicular lines	3 pairs of perpendicular lines

6 Choose *True* or *False* to tell if each statement correctly describes the streets shown on the map.

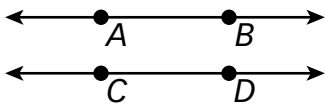


- a. 1st and 3rd Street are perpendicular. True False
- b. Main and High Street are parallel. True False
- c. 2nd street is perpendicular to Main St. True False
- d. 1st street is perpendicular to High St. True False

Points, Lines, Rays, and Angles

Solve the problems.

- 1 Which of the following describes the drawing below? Circle the letter for all that apply.



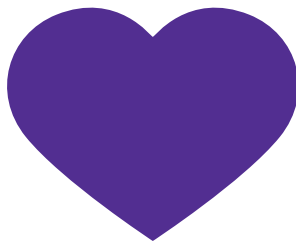
- A \overleftrightarrow{AB} is parallel to \overleftrightarrow{CD} .
- B \overleftrightarrow{AB} is perpendicular to \overleftrightarrow{CD} .
- C \overrightarrow{BA} is shown.
- D \overline{CD} is shown.
- E \overrightarrow{AC} is shown.

What kind of lines are shown? How do you name the lines, segments, or rays?

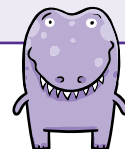


- 2 Look at the heart shape below. How many angles does the heart shape have?

- A 0
- B 1
- C 2
- D 3



Does the heart shape have any rays?

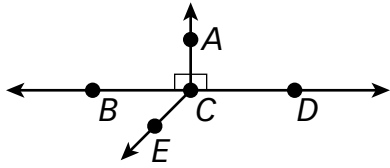


Mina chose **C** as the correct answer. How did she get that answer?

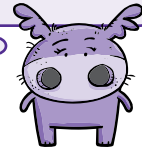


Solve.

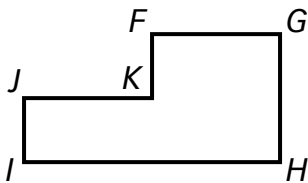
- 3** Name and describe all the angles in the drawing below.



How is an acute angle different than a right angle? How is an obtuse angle different than a right angle?



- 4** Does the shape below have more pairs of parallel line segments or more pairs of perpendicular line segments? Explain.



Put an X where the perpendicular lines meet. Name the parallel lines.

