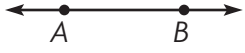
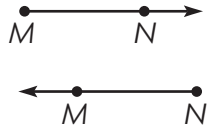
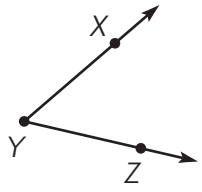
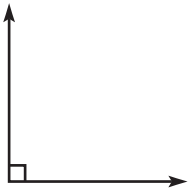
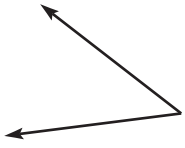
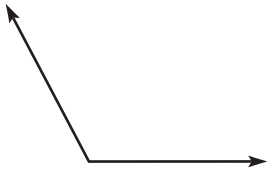
Name _____

Lines, Rays, and Angles

Name	What it looks like	Think
point *D*		A **point** names a location in space.
line *AB*; $\overleftrightarrow{AB}$ line *BA*; $\overleftrightarrow{BA}$		A **line** extends without end in opposite directions.
line segment *AB*; $\overline{AB}$ line segment *BA*; $\overline{BA}$		"Segment" means part. A **line segment** is part of a line. It is named by its two endpoints.
ray *MN*; $\overrightarrow{MN}$ ray *NM*; $\overrightarrow{NM}$		A **ray** has one endpoint and extends without end in one direction. A ray is named using two points. The endpoint is always named first.
angle *XYZ*; $\angle XYZ$ angle *ZYX*; $\angle ZYX$ angle *Y*; $\angle Y$		Two rays or line segments that share an endpoint form an angle. The shared point is the vertex of the angle.

A **right angle** forms a square corner.	An **acute angle** opens less than a right angle.	An **obtuse angle** opens more than a right angle and less than a straight angle.	A **straight angle** forms a line.
			

Draw and label an example of the figure.

1. $\overline{PQ}$

2. $\overrightarrow{KJ}$

3. obtuse $\angle FGH$

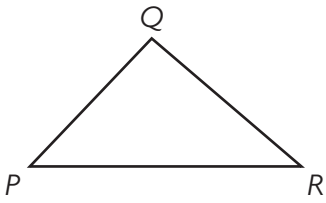
Name _____

Classify Triangles

A **triangle** is a polygon with 3 sides and 3 angles.
Each pair of sides joins at a vertex.

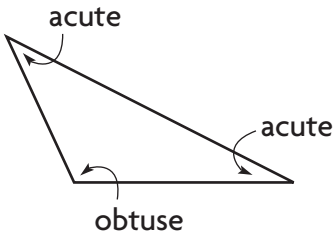
You can name a triangle by its vertices.

ΔPQR ΔQRP ΔRPQ
ΔPRQ ΔQPR ΔRQP

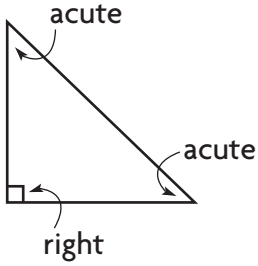


There are 3 types of triangles. All triangles have at least 2 acute angles.

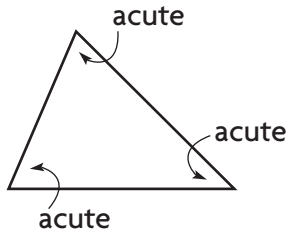
Obtuse triangle
one obtuse angle



Right triangle
one right angle

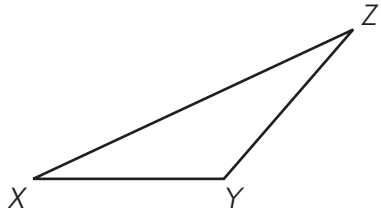


Acute triangle
three acute angles



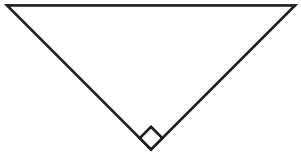
1. Name the triangle. Tell whether each angle is *acute*, *right*, or *obtuse*. A name for the triangle is _____.

$\angle X$ is _____.
$\angle Y$ is _____.
$\angle Z$ is _____.



Classify each triangle. Write *acute*, *right*, or *obtuse*.

2.



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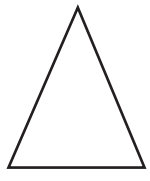
3.



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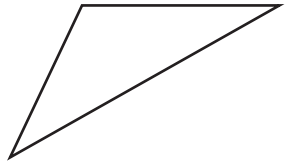
4.



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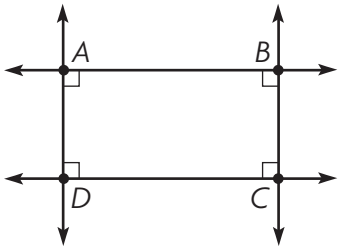
Parallel Lines and Perpendicular Lines

Parallel lines are lines in a plane that are always the same distance apart. Parallel lines or line segments never meet.

In the figure, lines *AB* and *CD*, even if extended, will never meet. The lines are parallel. Write $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$.
Lines AD and BC are also parallel. So, $\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$.

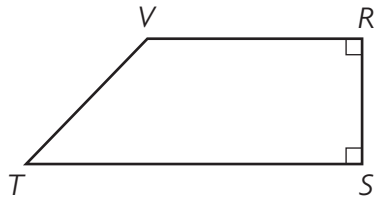


Intersecting lines cross at exactly one point. Intersecting lines that form right angles are **perpendicular.**

In the figure, lines AD and AB are perpendicular because they form right angles at vertex *A*. Write $\overleftrightarrow{AD} \perp \overleftrightarrow{AB}$.

Lines BC and CD are also perpendicular. So, $\overleftrightarrow{BC} \perp \overleftrightarrow{CD}$.

Use the figure for 1–3.



1. Name two sides that appear to be parallel.

_____

2. Name two sides that appear to be perpendicular.

_____

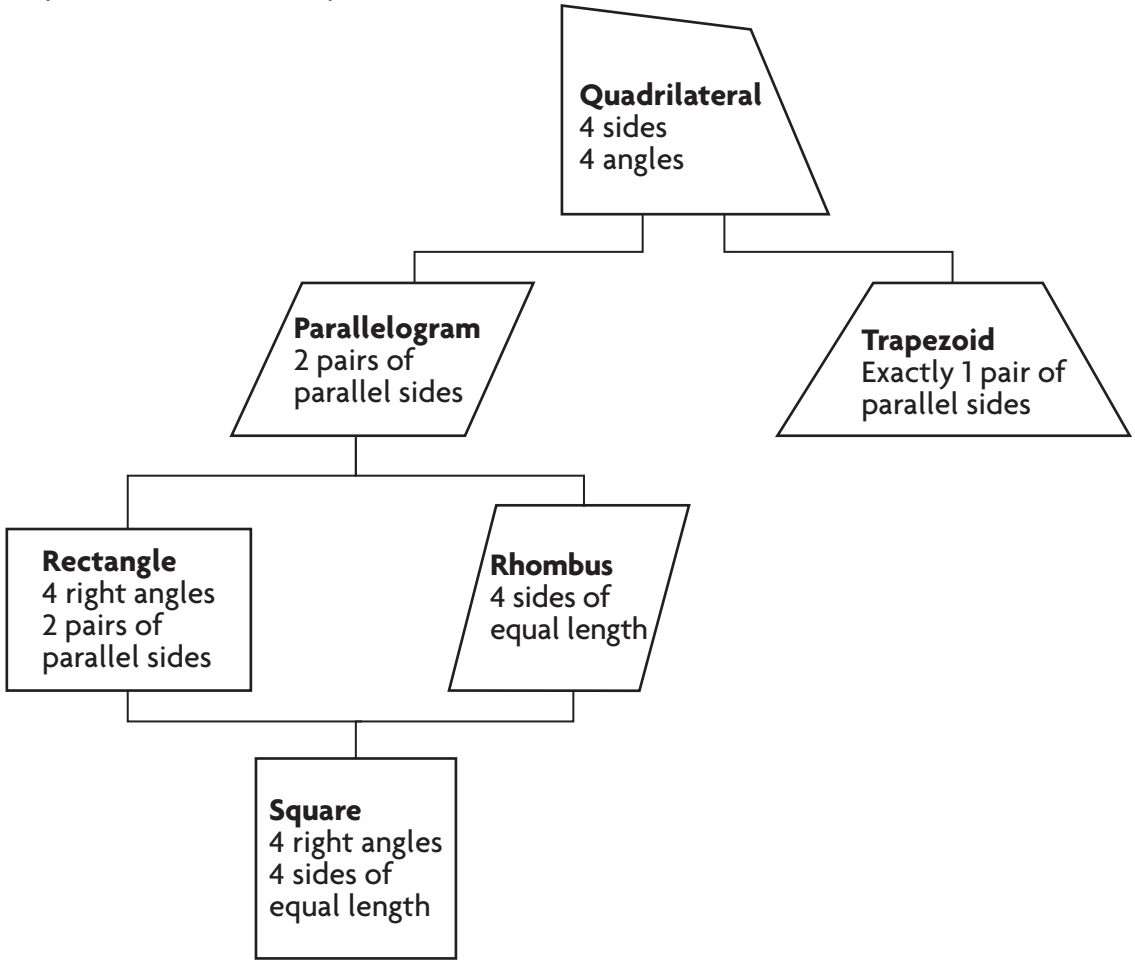
3. Name two sides that appear to be intersecting, but not perpendicular.

_____

Name _____

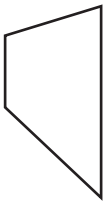
Classify Quadrilaterals

A **quadrilateral** is a polygon with 4 sides and 4 angles.
Some quadrilaterals have special names:

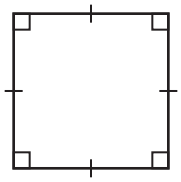


Classify each figure as many ways as possible. Write *quadrilateral*, *trapezoid*, *parallelogram*, *rhombus*, *rectangle*, or *square*.

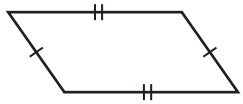
1.



2.

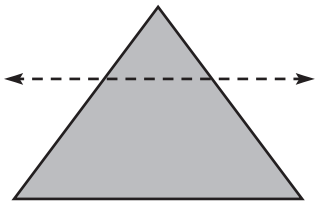


3.



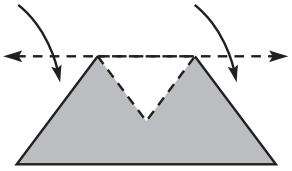
Line Symmetry

Tell whether the parts on each side of the line match. Is the line a line of symmetry?



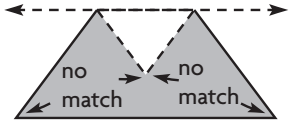
Step 1 Trace and cut out the shape.

Fold the shape along the dashed line.



Step 2 Tell whether the parts on each side match.

Compare the parts on each side.



The parts do not match.

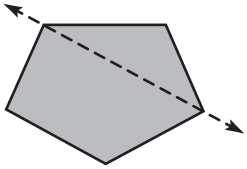
Step 3 Decide if the line is a line of symmetry.

The parts on each side of the line do not match.

So, the line is not a line of symmetry.

Tell if the line appears to be a line of symmetry. Write *yes* or *no*.

1.



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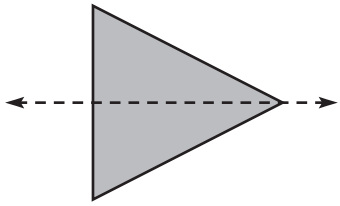
2.



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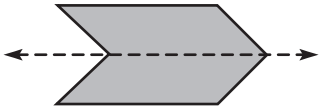
3.



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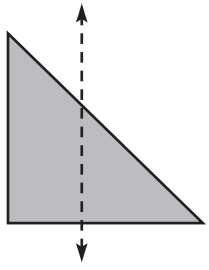
4.



_____

Name _____

Find and Draw Lines of Symmetry

Tell whether the shape appears to have zero lines, 1 line, or more than 1 line of symmetry. Write *zero, 1,* or *more than 1*.

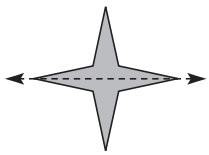
Step 1 Decide if the shape has a line of symmetry.

Trace and cut out the shape. Fold the shape along a vertical line.

Do the two parts match exactly? yes

Step 2 Decide if the shape has another line of symmetry.

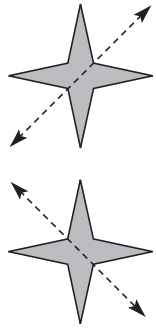
Open the shape and fold it along a horizontal line.



Do the two parts match exactly? yes

Step 3 Find any other lines of symmetry.

Think: Can I fold the shape in other ways so that the two parts match exactly?

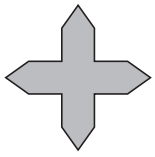


I can fold the paper diagonally two different ways, and the parts match exactly.

So, the shape appears to have more than 1 line of symmetry.

Tell whether the shape appears to have zero lines, 1 line, or more than 1 line of symmetry. Write *zero, 1,* or *more than 1.*

1.



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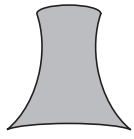
2.



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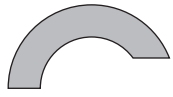
3.



_____

Name _____

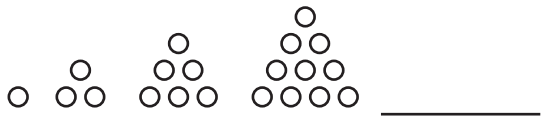
Problem Solving • Shape Patterns

Use the strategy *act it out* to solve pattern problems.

What might be the next three figures in the pattern below?

Read the Problem		
What do I need to find? I need to find the next three figures in the pattern.	**What information do I need to use?** I need to look for a group of figures that repeat.	**How will I use the information?** I will use pattern blocks to model the pattern and act out the problem.
Solve the Problem		
Look for a group of figures that repeat and circle that group. The repeating group is triangle, triangle, square, triangle, square. I used triangles and squares to model and continue the pattern by repeating the figures in the group. These are the next three figures in the pattern: 		

1. Describe the pattern shown at right. Draw what might be the next figure in the pattern.



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_____

2. Use the pattern. How many circles will be in the sixth figure?

_____