

SECONDARY MATH II // MODULE 5  
 GEOMETRIC FIGURES - 5.4

# Start HW 5.4

# 5.4

READY, SET, GO!

Name

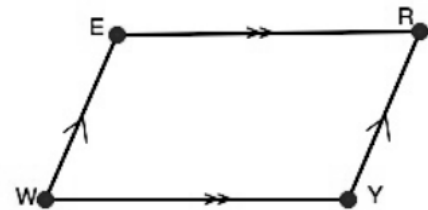
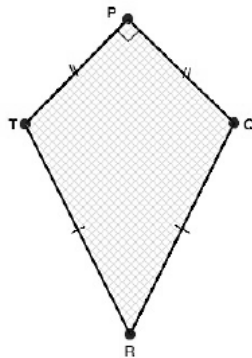
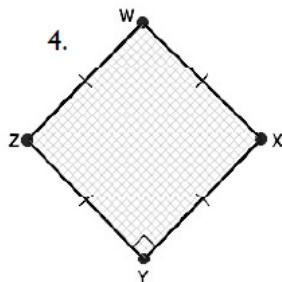
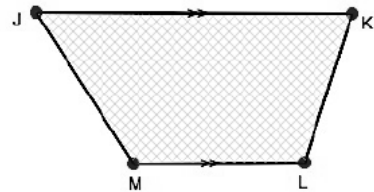
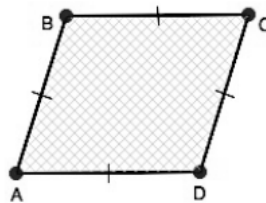
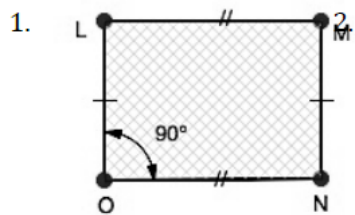
Period

Date

### READY

Topic: Special Quadrilateral

Identify each quadrilateral as a trapezoid, parallelogram, rectangle, rhombus, square, or none of these. List ALL that apply.

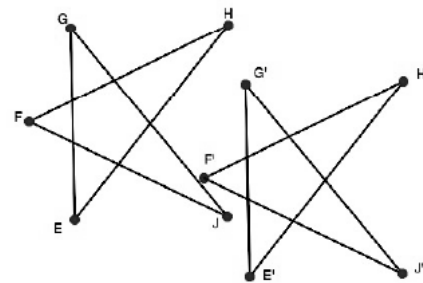
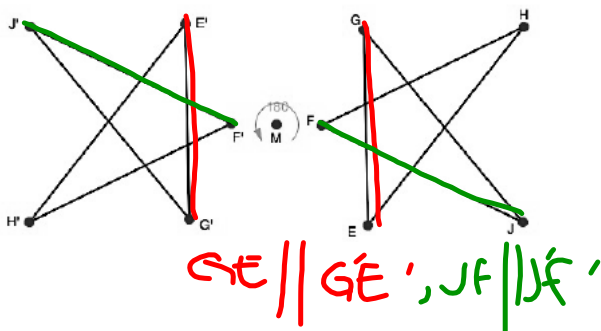


**SET**

Topic: Identifying parallel segments and lines produced from transformations

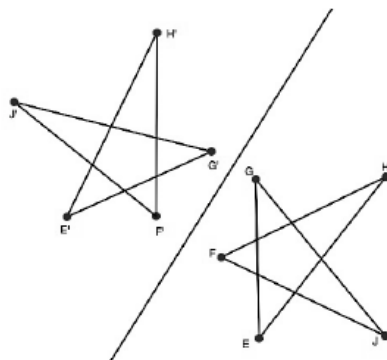
7. Verify the parallel postulates below by naming the line segments in the pre-image and its image that are still parallel. Use correct mathematical notation.

a. After a translation, corresponding line segments in an image and its pre-image are always parallel or lie along the same line.



b. After a rotation of  $180^\circ$ , corresponding line segments in a pre-image and its image are parallel or lie on the same line.

*c. After a reflection, line segments in the pre-image that are parallel to the line of reflection will be parallel to the corresponding line segments in the image.*



GO

Topic: Identifying congruence patterns in triangles

For each pair of triangles write a congruence statement and justify your statement by identifying the congruence pattern you used. Then justify that the triangles are congruent by connecting corresponding vertices of the pre-image and image with line segments.

How should those line segments look?

8.  $\triangle DCB \cong \triangle FEQ$  9.

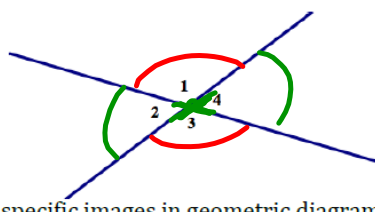
SSS

10.

11.

**Vertical Angles**

When two lines intersect, the opposite angles formed at the point of intersection are called *vertical angles*. In the diagram below,  $\angle 1$  and  $\angle 3$  form a pair of vertical angles, and  $\angle 2$  and  $\angle 4$  form



another pair of vertical angles.

Examine the tessellation diagram above, looking for places where vertical angles occur. (You may have to ignore some line segments and angles in order to focus on pairs of vertical angles. This is a skill we have to develop when trying to see specific images in geometric diagrams.)

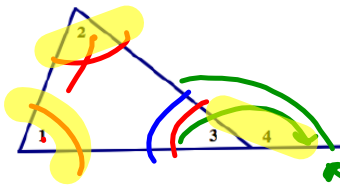
Based on several examples of vertical angles in the diagram, write a conjecture about vertical angles.

My conjecture:

$$\begin{aligned} \angle 1 &\cong \angle 3 \\ \angle 2 &\cong \angle 4 \end{aligned}$$

Exterior Angles of a Triangle

When a side of a triangle is extended, as in the diagram below, the angle formed on the exterior of the triangle is called an *exterior angle*. The two angles of the triangle that are not adjacent to the exterior angle are referred to as the *remote interior angles*. In the diagram,  $\angle 4$  is an exterior angle, and  $\angle 1$  and  $\angle 2$  are the two remote interior angles for this exterior angle



Examine the tessellation diagram above, looking for places where exterior angles of a triangle occur. (Again, you may have to ignore some line segments and angles in order to focus on triangles and their vertical angles.)

← obtuse

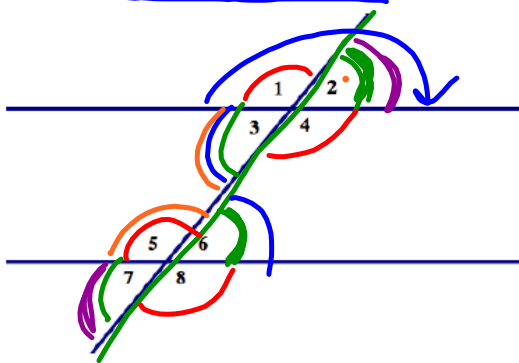
Based on several examples of exterior angles of triangles in the diagram, write a conjecture about exterior angles.

My conjecture:

$$\begin{aligned} & \angle 3 + \angle 4 = 180^\circ \\ & \angle 1 + \angle 2 + \angle 3 = 180^\circ \\ \longrightarrow & \angle 1 + \angle 2 = \angle 4 \end{aligned}$$

Parallel Lines Cut By a Transversal

When a line intersects two or more other lines, the line is called a *transversal* line. When the other lines are parallel to each other, some special angle relationships are formed. To identify these relationships, we give names to particular pairs of angles formed when lines are crossed (or cut) by a transversal. In the diagram below,  $\angle 1$  and  $\angle 5$  are called *corresponding angles*,  $\angle 3$  and  $\angle 6$  are called alternate interior angles, and  $\angle 3$  and  $\angle 5$  are called same side interior angles.



Examine the tessellation diagram above, looking for places where parallel lines are crossed by a transversal line.

Based on several examples of parallel lines and transversals in the diagram, write some conjectures about corresponding angles, alternate interior angles and same side interior angles.

My conjectures:

- $\angle 2 \cong \angle 6 = \angle 3 = \angle 7$   
Corresponding
- $\angle 1 \cong \angle 4 \cong \angle 5 \cong \angle 8$
- $\angle 1 + \angle 2 = 180^\circ$  supplementary.  
linear pair.
- $\angle 3 \cong \angle 6$  Alt. Interior Angle.
- $\angle 2 \cong \angle 7$  Alt. Exterior Angles.
- $\angle 3 \cong \angle 5$  Same Side Interior
- $\angle 3 + \angle 5 = 180^\circ$

SECONDARY MATH II // MODULE 5  
 GEOMETRIC FIGURES - 5.5

5.5

READY, SET, GO!

Name

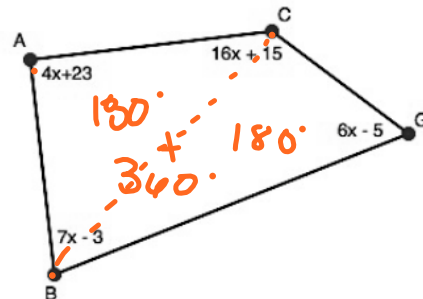
Period

Date

**READY**

Topic: Properties of Quadrilaterals

- Use what you know about triangles to write a paragraph proof that proves that the sum of the angles in a quadrilateral is  $360^\circ$ .



- Find the measure of  $x$  in quadrilateral  $ABGC$ .



Match the equation with the correct line in the graph of lines  $p$ ,  $q$ ,  $r$ , and  $s$ .

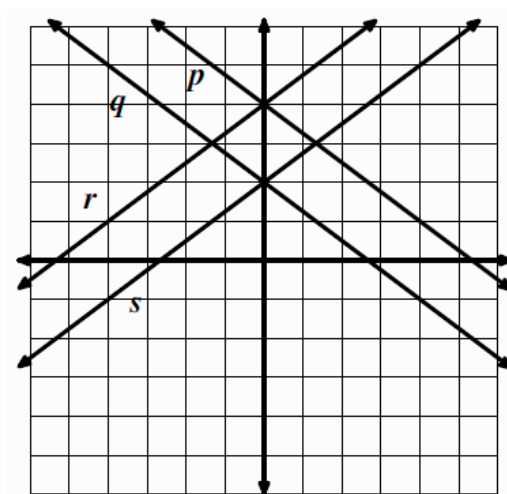
3.  $y = \frac{3}{4}x + 2$

4.  $y = -\frac{3}{4}x + 2$

5.  $y = \frac{3}{4}x + 4$

6.  $y = -\frac{3}{4}x + 4$

7. Describe the shape made by the intersection 4 lines. List as many observations as you shape and its features.



**SET**

Topic: Parallel lines cut by transversal, vertical angles and exterior angle of a triangle

Label each picture as showing *parallel lines with a transversal*, *vertical angles*, or an *exterior angle of a triangle*. Highlight the geometric feature you identified. Can you find all 3 features in 1 picture? Where?

8.



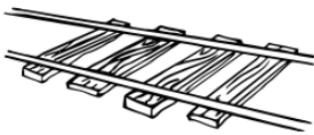
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12.



13.



14.



15.



16.

