

**Due: 4/4/17 at 5:00PM**

**Instructions:** Your answers to the following questions do not need to be lengthy or written in complete sentences, but should reflect preparation for our discussion about Chapter 10 at the beginning of class.

**Questions:**

1. Is there any type of polygon for which all the interior angles and all the exterior angles are congruent to each other? If so, must it be a regular polygon? Explain.

*This is true for any rectangle because all of the interior angles and all of the exterior angles are right angles. If this were true for a regular polygon, it would be a square, but it is true for all rectangles, whether they are squares or not.*

2. In a tessellation made up of polygons, why must the sum of the measures of the angles at every vertex be  $360^\circ$ ?

*If the sum of the angle measures is less than  $360^\circ$ , there will be a gap at the vertex between the polygons. If the sum of the angle measures is greater than  $360^\circ$ , the polygons will overlap at the vertex. Neither of these situations is allowed in a tessellation.*

3. Can the formulas for the area of a rectangle, a rhombus, and a parallelogram be used to find the area of a square? Explain.

*Yes, but the formula for the area of a square is simpler than any of the other area formulas. The formula for the area of a square is just the special case of the formula for the area of a rectangle or parallelogram with  $s = b = h$ . Since a square is also a rhombus, the rhombus formula could be used if the length of the diagonal is given rather than the side length.*

4. How can you find the measure of a central angle of a regular polygon? Describe how you would do this in words and then write an expression for the measure of a central angle of an  $n$ -gon.

*Divide  $360^\circ$  by the number of sides. The measure of a central angle of an  $n$ -gon is  $\frac{360^\circ}{n}$ .*

5. When comparing measurements of similar figures, why do we square the scale factor to find the ratio of their areas, but not to find the ratio of their perimeters?

*Perimeter is a one-dimensional measurement. The perimeter of a figure is the sum of the lengths of the sides, so if you double each length of each side, the perimeter will double. Area is a two-dimensional measurement that involves a product of side lengths, so if you double each length, the area will be multiplied by 4.*

6. Write a formula for the area of a semicircle. Why isn't it necessary to memorize this formula?

*$A = \frac{1}{2}\pi r^2$ ; it is not necessary to memorize this formula because the area of a semicircle is half the area of the circle.*

**Muddiest Point:**

What questions do you have about the notes you took in Chapter 10, or anything from this week?



**MML Homework Questions:**

Are there any MML homework problems from Chapter 10 that you would like to discuss?