Due: 2/21/17 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 4 at the beginning of class.

Questions:

1. Which of the following is not possible: (a) a scalene acute triangle, (b) an equilateral right triangle, (c) an isosceles obtuse triangle, (d) a scalene right triangle, or (e) an isosceles right triangle?

   an equilateral right triangle

2. Can an interior angle and an exterior angle of a triangle with the same vertex ever be congruent? If so, when?

   An interior angle and exterior angle with the same vertex form a linear pair, so they are supplementary. Two supplementary angles are congruent if and only if they are right angles. So, this occurs only at the right-angle vertex of a right triangle.

3. If two pentagons (5-sided figures) are congruent, how many pairs of corresponding congruent parts will there be? Describe them.

   There will be 10 pairs of corresponding parts: 5 pairs of corresponding congruent angles and 5 pairs of corresponding congruent angles.

4. Which combinations of three congruent sides and/or angles guarantee that two triangles will be congruent? Which combinations do not guarantee congruence?

   SSS, SAS, ASA, and AAS guarantee congruence. SSA and AAA do not.

5. Why is the AAS congruence condition a theorem, while SSS, SAS, and ASA are postulates?

   We are not able to prove the SSS, SAS, and ASA conditions, so must assume that they are true, making them postulates. But, we can prove the AAS condition using the ASA Postulate and the Third Angle Theorem, so AAS is a theorem.

6. What does "cpoctac" mean? How is it used in triangle congruence proofs?

   *It means "**C**ongruent **P**arts **O**f **C**ongruent **T**riangles **A**re Congruent." Once you have proved that two triangles are congruent by using a combination of three corresponding parts (SSS, SAS, ASA, or AAS), you can use cpoctac to conclude that any of the three remaining pairs of corresponding parts are congruent.*

7. How can the Isosceles Base Angles Theorem and its converse be combined into one biconditional statement?

   Two sides of a triangle are congruent if and only if the angles opposite those two sides are congruent.

8. Every equilateral triangle is an isosceles triangle, but the terms base, legs, base angles, and vertex angle are rarely used when talking about equilateral triangles. Why do you think this is so?

   Because all three sides of an equilateral triangle are congruent, any pair of sides could be considered as the legs and the third side as the base. Because all three angles of an equilateral triangle are congruent, any pairs of sides could be considered as the base angles and the third angle as the vertex angle. So, there is no reason to identify sides and angles of an equilateral triangle with these special names.

Muddiest Point:

What questions do you have about the notes you took in Chapter 4, or anything from this week?

MML Homework Questions:

Are there any MML homework problems from Chapter 4 that you would like to discuss?