Name:_____Date:_____Period:_____

Chapter 4 Tiered Problems **Show all Work!**

Standard

B.G.GMD.A.2 Use several angle properties to find an unknown angle measure.

Tier 1 (up to 70 pts) Complete #1-3 Do not move to tier 2 if you have not completed tier 1.

Tier 2 (up to 85 pts) Complete #1-4 Do not move to tier 3 if you have not completed tier 2.

Tier 3 (up to 100 points) Complete #1-5.

1. (30 points) The measure of an angle in a triangle is eight less than twice the first angle. The last angle is two more than three times the measure of the first angle. Write an equation, then find the measure of each angle algebraically. Classify the triangle according to its angles.

2. (20 points) Determine whether each statements is *always true, sometimes true or never true*. Explain.
   a. Two interior angles of a triangle are obtuse angles.

   b. Two interior angles of a triangle are always acute angles.

   c. An exterior angle of a triangle is an obtuse angle.

   d. The measure of an exterior angle of a triangle is greater than the measure of each nonadjacent interior angle.

3. (20 points) Compare and Contrast interior and exterior angles with regards to triangles. Draw a diagram that includes both types of angles, be sure to label all angles. Determine the sum of the interior angles of a triangle and the sum of exterior angles.

4. (15 points) Using graph paper, plot the four points M(5, 6) N(7, 5) O(9,9) P(7, 10) creating a quadrilateral. Label the vertices.

   a. Using the **DISTANCE FORMULA** $\boldsymbol{d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}}$, find the length of each segment (you should have 4 distance formula problems)

   b. Using the **SLOPE FORMULA** $\boldsymbol{m = \frac{y_2 - y_1}{x_2 - x_1}}$, find the slope of each segment (you should have 4 slope formula problems). *If the slopes are perpendicular (opposite reciprocals), then they form right angles. If the slopes are the same, then the lines are parallel.*

   c. Using the calculations above, determine whether the quadrilateral is a parallelogram, rectangle, square, rhombus, or trapezoid.

5. (15 points) A playground has the shape of an irregular nonagon. A surveyor measures eight of the angles on the playground. They have measures 150, 130, 115, 140, 160, 125, 140 and 155. Find the measure of the unknown angle.