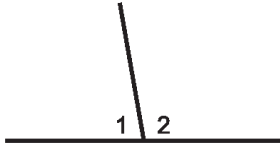Each correct question earns ½ bonus point with a maximum of 5 bonus points added to your assignment grade. Show your work for problem # 4.
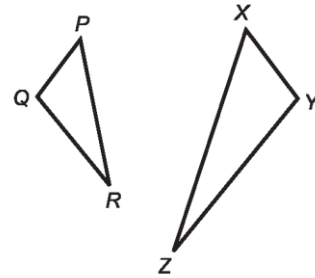
1. In this figure, what definition supports the following statement?

    If $m\angle 1 + m\angle 2 = 180°$, then $\angle 1$ is supplementary to $\angle 2$.
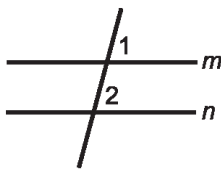
    A. Definition of complementary angles
    B. Definition of adjacent angles
    C. Definition of supplementary angles
    D. Definition of right angle

2. In the figure below, $\triangle PQR$ and $\triangle XYZ$ are both scalene. If $\triangle PQR \cong \triangle XYZ$, which congruency statement is true?

    A. $\angle Q \cong \angle X$
    B. $\overline{ZX} \cong \overline{RQ}$
    C. $\angle R \cong \angle Y$
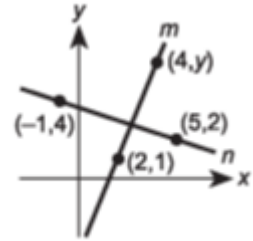   **D.** $\overline{PQ} \cong \overline{YX}$

3. Given that $\angle 1 \cong \angle 2$, what can be concluded about lines m and n ?

    A. m is parallel to n.
    B. m is perpendicular to n.
    C. m intersects n.
    D. m is skew to n.

4. In the coordinate plane, $\overleftrightarrow{n}$ passes through the points $(-1,4)$ and $(5,2)$ and $\overleftrightarrow{m}$ passes through the points $(2,1)$ and $(4,y)$. For what value of y is $\overleftrightarrow{n}$ perpendicular to $\overleftrightarrow{m}$?

    A. $-\frac{1}{3}$
    B. $\frac{1}{3}$
    C. 5
    D. 7

5. Given:

    $\overline{AC}$ is perpendicular to $\overline{GE}$
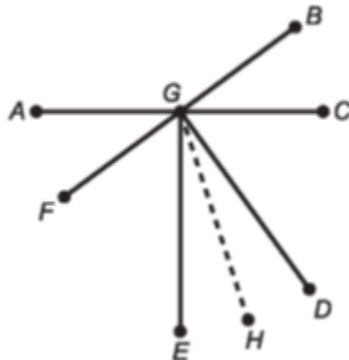
    $\overline{GD}$ is perpendicular to $\overline{BF}$

    $\overline{GH}$ bisects $\angle EGD$

    $m\angle BGC = 36°$

    What is $m\angle EGH$?

    A. 18°
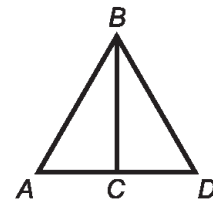   **B.** 27°
    C. 36°
    D. 54°

6. Given:

    $\triangle ABC \cong \triangle DBC$

 $2m\angle CBD = m\angle ADB$

    Which term best describes triangle $\triangle ABD$?

    A. Isosceles
    B. Right
    C. Scalene
    D. Equilateral

7. If a number is even, then it is divisible by 2. What is the contrapositive of this statement?

   A. If a number is divisible by 2, then it is even.

   B. If a number is not divisible by 2, then it is not even.

   C. If a number is not even, then it is not divisible by 2.

   D. A number is even if and only if it is divisible by 2.

8. In this figure, which triangle is congruent to $\triangle ABC$?
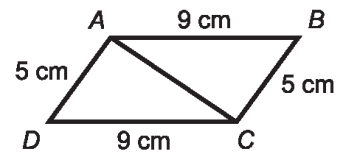
   A. $\triangle ADC$

   B. $\triangle ACD$

   C. $\triangle CAD$
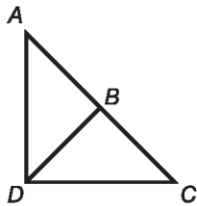
   D. $\triangle CDA$

9. The slope of $\overline{CD}$ is $\frac{4}{5}$ and the slope of $\overline{AB}$ is $-\frac{5}{4}$. What can be concluded about $\overline{CD}$ and $\overline{AB}$?

   A. $\overline{CD}$ and $\overline{AB}$ are parallel.

   B. $\overline{CD}$ and $\overline{AB}$ are congruent.

   C. $\overline{CD}$ is shorter than $\overline{AB}$.

   D. $\overline{CD}$ and $\overline{AB}$ are perpendicular.

10. Which is the equation of a line perpendicular to $y = \frac{3}{2}x + 8$?

   A. $y = \frac{3}{2}x + 5$

   B. $y = -\frac{3}{2}x + 5$

   C. $y = -\frac{2}{3}x + 5$

   D. $y = \frac{2}{3}x + 5$

11. Albert wrote this proof, which contains one mistake.

Given: $\overline{BD} \perp \overline{AC}$, $\overline{AB} \cong \overline{BC}$

Prove: $\triangle ADC$ is isosceles.

Statement	Reason
1. $\overline{BD} \perp \overline{AC}$	1. Given
2. $\angle ABD$ and $\angle CBD$ are right angles.	2. Perpendicular lines form right angles.
3. $\angle ABD \cong \angle CBD$	3. Right angles are congruent.
4. $\overline{AB} \cong \overline{BC}$	4. Given
5. $\overline{BD} \cong \overline{BD}$	5. Reflexive property
6. $\triangle ABD \cong \triangle CBD$	6. Hypotenuse leg
7. $\overline{AD} \cong \overline{CD}$	7. CPCTC
8. $\triangle ADC$ is isosceles.	8. Definition of isosceles triangle

Which statement or reason of Albert's proof is incorrect?

   A. Reason 3

   B. Reason 6

   C. Statement 2

   D. Statement 5

12. Given: $\triangle ABC$ with exterior $\angle 4$

Prove: $m\angle 4 = m\angle 2 + m\angle 3$
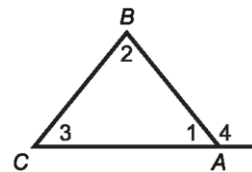
Statements	Reasons
1. $m\angle 1 + m\angle 2 + m\angle 3 = 180°$	
2. $m\angle 1 + m\angle 4 = 180°$	
3. $m\angle 1 + m\angle 4 =$ $m\angle 1 + m\angle 2 + m\angle 3$	
4. $m\angle 4 = m\angle 2 + m\angle 3$	

To complete the proof, what is the correct order of reasons I–IV ?

   I.   Substitution Property

   II.   Definition of Straight Angle

   III. Subtraction Property

   IV. The sum of the measures of the angles in a triangle is 180°.

   A. IV, II, I, III

   B. IV, II, III, I

   C. II, IV, I, III

   D. II, IV, III, I