Name: _____ Per.: _____

Looking Ahead: Geometry Unit 2

The questions below are examples of the type of questions you'll see on your **Semester 1 Final**, **Semester 2 Final**, and the **CST**. This is how these tests will ask you to apply your skills from **Unit 2**, as well as your common sense math skills. They are structured in a way that is deliberately complicated, but the skills are the same as what you have learned up to this point.

Semester 1 Final Examples

1. Identify the hypothesis and conclusion of the conditional statement.
If it is day, then the sun is up.

2. Write the converse, inverse and contrapositive of the conditional statement.
If Sean is a quarterback, then he plays football.

3. Write the definition as a biconditional.
Parallel lines are lines that never touch.

4. Write a conditional statement from the statement.
A chair has legs.

5. Identify the property that justifies each statement.
   a. If $\angle ABC \cong \angle LMN$, then $\angle LMN \cong \angle ABC$.
   b. b = 7, so 3b +2 = 3(7) + 2
   c. $\angle R \cong \angle R$
   d. 2x = 4 + 8, so 2x = 12
   e. $\overline{PQ} \cong \overline{RS}$, and $\overline{RS} \cong \overline{TU}$. So, $\overline{PQ} \cong \overline{TU}$

6. Fill in the blank to complete the two-column proof.
Given: $\angle 4$ and $\angle 5$ are supplementary. $m\angle 4 = 106^\circ$
Prove: $m\angle 5 = 74^\circ$

Statements	Reasons
1. $\angle 4$ and $\angle 5$ are supplementary. $m\angle 4 = 106^\circ$	1. Given
2. $m\angle 4 + m\angle 5 = 180^\circ$	2. [?]
3. $106 + m\angle 5 = 180$	3. Subst. Prop. =
4. $m\angle 5 = 74^\circ$	4. Subtr. Prop. =

7. Write the converse, inverse and contrapositive of the conditional statement.
If two angles are linear, then their measures add to equal 180°.

8. Show that the conjecture is false by finding a counterexample. Use the answer choices below.
If y < x, then x – y < xy
   a. x = -1, y = 0
   b. x = -3, y = 2
   c. x = 0, y = -1
   d. x = 3, y = 2

9. Complete the proof by supplying the missing reason.
Given that $m\angle ABD = m\angle BCE$, prove that $m\angle ABC = m\angle DCE$.

$m\angle ABD = m\angle BCE$	Given information
$m\angle ABD = m\angle ABC + m\angle BCD$	Angle Addition Postulate
$m\angle BCE = m\angle BCD + m\angle DCE$	Angle Addition Postulate
$m\angle ABC + m\angle BCD = m\angle BCD + m\angle DCE$	[?]
$m\angle ABC = m\angle DCE$.	Subtraction Property of Equality

Semester 2 Final Examples

10. Write the converse of the conditional statement.
"If a number has a factor of 9, then it is divisible by 3."
Is the converse True or False (if false, provide a counterexample)?

11. Provide a counter-example.
"If an angle is not obtuse, then it is acute."

12. Complete the proof.
Given: B is the midpoint of segment AC.
$AB = 2x + 3$ and $BC = 4x - 1$
Prove: $AC = 14$

$AB = 2x + 3$	[?]
$BC = 4x - 1$	[?]
$\overline{AB} \cong \overline{BC}$	[?]
$AB = BC$	[?]
$2x + 3 = 4x - 1$	[?]
$3 = 2x - 1$	[?]
$4 = 2x$	[?]
$2 = x$	[?]
$x = 2$	[?]
$AB + BC = AC$	[?]
$2x + 3 + 4x - 1 = AC$	[?]
$6x + 2 = AC$	[?]
$6(2) + 2 = AC$	[?]
$14 = AC$	[?]
$AC = 14$	[?]

CST Examples

13.	**Which of the following best describes Inductive Reasoning?** A. Using logic to draw conclusions from facts B. Accepting meaning with proof C. Using patterns to infer truth D. Defining mathematical space in terms of concrete objects *Which of the above best describes Deductive Reasoning?*	15.	***"Two acute angles always add to create an angle less than 90˚."*** **Which of the following best describes a *counter-example* to the assertion above?** A. $m\angle 2 = 33^\circ$ & $m\angle 3 = 100^\circ$ B. Complementary angles C. $m\angle A = 45^\circ$ & $m\angle B = 20^\circ$ D. $m\angle PQR = 90^\circ$ & $m\angle TUV = 90^\circ$
14.	**Consider the arguments below.** **I. Every even number is divisible by two. 48 is an even number. Therefore, it is divisible by two.** **II. A number cannot have any decimal places if it is an integer. 6.2 has one decimal place. Therefore, 6.2 is not an integer.** **Which one(s), if any, use deductive reasoning?** A. I only B. Both I and II C. II only D. Neither I nor II	16.	**The point (-3, 7) lies on a circle whose equation is $(x+3)^2+(y-2)^2 = r^2$. Which of the following must be the radius of the circle?** A. $\sqrt{13}$ B. 25 C. 5 D. 13