Geometry
Unit 3 Review – Intro to Proofs

On problems 1-5 circle the letter next to the best answer. Take your time and check your work.

1. Which statement is the converse of the given statement?

    If points P, Q, and R are collinear, then Q is between P and R.

    (a) If Q is not between P and R, then points P, Q, and R are not collinear.

    (b) If points P, Q, and R are not collinear, then Q is not between P and R.

    (c) If Q is between P and R, then points P, Q, and R are collinear.

    (d) If points P, Q, and R are collinear, then Q is between P and R.

2. Which statement is a good definition of a square?

    (a) A square is a shape with four sides.

    (b) A square is a shape with four congruent sides.

    (c) A square is a quadrilateral with four congruent sides and four congruent angles.

    (d) A square is a parallelogram four congruent angles.

3. Which property justifies this statement: If 4x = 16, then x = 4

    (a) Multiplication Property of Equality
    (c) Division Property of Equality

    (b) Reflexive Property
    (d) Symmetric Property

4. The Symmetric Property justifies which statement below?

    (a) If $y - 17 = g$, then $y = g + 17$

    (b) If $\angle J \cong \angle R$ and $\angle R \cong \angle H$, then $\angle J \cong \angle H$

    (c) If $AM = RS$, then $RS = AM$

    (d) If $5(3a - 4) = 120$, then $15a - 20 = 120$

Name the property that justifies each statement.

5. $m\angle ABC = m\angle DEF$ and $m\angle DEF = m\angle ABC$

5. _____

6. $AB = CD$, $CD = EF$. Therefore, $AB = EF$.

6. _____

7. $x + 7 = 5; x + 7 - 7 = 5 - 7$

7. _____

8. $x = y$; If $x = 18$, then $y = 18$.

8. _____

9. $\angle A \cong \angle A$

9. _____

10. If $x + y = 7$, then $4(x + y) = 28$

10. _____

11. Fill in the blanks below to complete the proof.

   Given: $m\angle ABC = 80$

   Prove: x = 8

a. $m\angle ABC = 80$	**a.** <u>Given</u>
b. $m\angle ABD + m\angle DBC = m\angle ABC$	**a.** _____
c. $(3x + 3) + (6x + 5) = 80$	**b.** _____
d. $9x + 8 = 80$	**c.** _____
e. $9x = 72$	**d.** _____
f. $x = 8$	**e.** _____

(3x + 3)°

(6x + 5)°
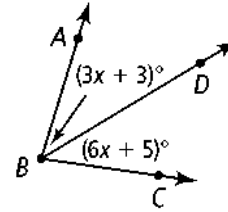
12. Name the property of equality that justifies each statement.
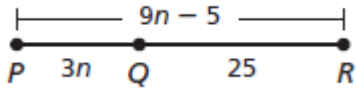**Given:** $3(x - 3) = x + 7$

Prove: x = 8

Proof:

Statements	Reasons
a. _____	**a.** _____
b. _____	**b.** _____
c. _____	**c.** _____
d. _____	**d.** _____
e. _____	**e.** _____

13.

Given:
$m\overline{PR} = 9n - 5$
$m\overline{PQ} = 3n$
$m\overline{QR} = 25$

	9n − 5	
P	3n Q	25 R

Prove: n = 5

	Statement		Reason
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	

14. Given: 5j + k = m
                   k = 3j
                   m = p

Prove: p = 8j

	Statement		Reason
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	

Short Response

SR #1: Determine if the following statements are true or false. If false, provide a counterexample.

   a. If a whole number is a multiple of 2, then the whole number is even.

   b. Animals that eat carrots are rabbits.

   c. Two lines that intersect to form four 90° angles are perpendicular.

   d. All plurals end with the letter s.

   e. If a quadrilateral has four congruent angles, then the quadrilateral is a square.

   f. An isosceles triangle is a triangle with at least two congruent angles.

SR #2: Use the following statement to answer the following questions: ***Cats are mammals***.

a. Write a conditional statement.

b. Is your conditional true or false? If false, give a counter example.

c. Write a converse statement.

d. Is your converse true or false? If false, give a counterexample.