Geometry Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Algebraic and Geometric Proofs Hour \_\_\_\_\_\_

Name the property that justifies each statement in the following proofs.

1. Given: 

Prove: x = -15

Statements Reasons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1.  1.

2. 3x = -45 2.

3. x = -15 3.

2. Given: 3x – 2 = x – 8

Prove: x = -3

Statements Reasons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 3x – 2 = x – 8 1. Given

2. 2x – 2 = -8 2. S.P.E

3. 2x = -6 3. A.P.E.

4. x = -3 4. D.P.E

3. Given: 2(x – 3) = 8

Prove: x = 7

Statements Reasons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 2(x – 3) = 8 1. Given

2. 2x – 6 = 8 2. Distributive Property

3. 2x = 14 3. A.P.E.

4. x = 7 4. D.P.E

4. Given: 

Prove: x = 4

Statements Reasons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1.  1.

2.  2. S.P.E

3.  3.

4. x = 4 4.



5. Given: PQ = 3n, QR = 25, PR = 9n – 5

P Q R

Prove: n = 5

Statements Reasons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. PQ = 3n, QR = 25, PR = 9n – 5 1. Given

2. PQ + QR = PR 2. Segment Addition Postulate

3. 3n + 25 = 9n – 5 3. Substitution

4. 25 = 6n – 5 4. S.P.E

5. 30 = 6n 5. A.P.E

6. 5 = n 6. D.P.E

7. n = 5 7. Symmetric Property

6. Given: AB = 5y + 6, BC = 2y + 21,

B is a midpoint

Prove: y = 5

Statements Reasons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. AB = 5y + 6, BC = 2y + 21, 1. Given

B is a midpoint

2. AB = BC 2. Definition of Midpoint

3. 5y + 6 = 2y + 21 3. Substitution

4. 3y + 6 = 21 4. S.P.E.

5. 3y = 15 5. S.P.E

6. y = 5 6. D.P.E.

7.  Given:



Prove: n = 26

Statements Reasons\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 1. Given



2.  2. Angle Addition Postulate

3. 58 + 2n – 12 = 4n – 6 3. Substitution

4. 46 + 2n = 4n - 6 4. C.L.T

5. 46 = 2n - 6 5. S.P.E.

6. 52 = 2n 6. A.P.E

7. 26 = n 7. D.P.E.

8. n = 26 8. Symmetric

Use the indicated property/postulate to complete each statement.

9. **Reflexive Property of Equality:** 3x – 1 = \_\_\_3x-1\_\_\_\_\_\_\_\_\_\_\_\_.

10. **Transitive Property of Equality:** If , then

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

11. **Symmetric Property of Equality:** If , then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

12. **Addition Property of Equality:** If x – 2 = 5, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

13. **Division Property of Equality:** If 2x = 12, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

14. **Multiplication Property of Equality:** If , then \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

15. **Subtraction Property of Equality:** If x + 3 = 12, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_.



16. **Segment Addition Postulate:** If , then

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



17. **Angle Addition Postulate:** If , then

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.