**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Block\_\_\_\_**

**1-16: State the property of equality that justifies each statement.**

|  |  |
| --- | --- |
| **1.** If 80 = y, then y = 80. | **2.** If x = 25, then x = 75. |
| **3.** If m = p and p = r, then m = r. | **4.** If *x + y* = 90 and y = 40, then *x* + 40 = 90. |
| **5.** If 7*x* = 28, then *x* = 4. | **6.** If x + y = 180 and 180 = t, then x + y = t. |
| **7.** If 2x + 27 = 57, then 2x = 30. | **8.** If x = y, then x = y. |
| **9.** If *y* = 30 and *y* = *x*, then *x* = 30. | **10.** If *2x* + *2y* = 180, then *x* + *y* = 90. |
| **11.** x - 12 = x - 12 | **12.** If 3x = 12 and 12 = 4y, then 3x = 4y. |
| **13.** If 12x - 10 = 15, then 12x = 25. | **14.** If 15 = x, then x = 15. |
| **15.** If 10(x – 15) = 200, then 10x – 150 = 200. | **16**. If 12x – 10 = 15x + 12, then -10 = 3x + 12. |

**17-20: Complete the following algebraic proofs with the correct statement or reason.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **17. Given:** 8*x* – 5 = 2*x* + 1  **Prove:** *x* = 1     |  |  |  | | --- | --- | --- | | **Statements** | **Reasons** |  | | **a.** 8*x* – 5 = 2*x* + 1 | **a.** |  | | **b.** 8*x* – 5 – 2*x* = 2*x* + 1 – 2*x* | **b.** |  | | **c.** | **c.** *Simplify b* |  | | **d.** | **d.** Addition POE |  | | **e.** 6*x* = 6 | **e.** *Simplify d* |  | | **f.** | **f.** |  | | **g.** | **g.** *Simplify f* |  | | **18. Given:**  **Prove:** *x* = 3   |  |  |  | | --- | --- | --- | | **Statements** | **Reasons** |  | | **a.** | **a.** |  | | **b.** | **b.** Multiplication POE |  | | **c.** | **c.** *Simplify b* |  | | **d.** 4*x* + 6 – 6 = 18 – 6 | **d.** |  | | **e.** 4*x =* | **e.** *Simplify d* |  | | **f.** | **f.** Division POE |  | | **g.** | **g.** *Simplify f* |  | |

**19. Given:** 4*x* + 8 = *x* + 2

**20. Now you do your own proof ☺:**

**Given:** -2(x + 5) – 4 = 20

**Prove:** x = \_\_\_\_\_

**Prove:** *x* = –2

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| **a.** 4*x* + 8 = *x* + 2 | **a.** |
| **b.** 4*x* + 8 – *x* = *x* + 2 – *x* | **b.** |
| **c.** | **c.** *Simplify b* |
| **d.** | **d.** Subtraction POE |
| **e.** | **e.** *Simplify d* |
| **f.** | **f.** |
| **g.** | **g.** *Simplify f* |