Section 2.3 – Properties of Numbers

Problem Set 1

Give the name of the property that justifies each of the following equations.

1. $4 (2 - 4) = 4 \cdot 2 - 4 \cdot 4$
2. $6 + 7 = 7 + 6$
3. $(6 + -4) + 8 = 6 + (-4 + 8)$
4. $(6 \cdot 5) \cdot 7 = 4 \cdot (5 \cdot 7)$
5. $8 + 1 = 8$
6. $8 - 4 = -4 + 8$
7. $-4 (6 - x) = -16 + 4x$
8. $(x + 2) - 4 = x + (2 - 4)$
9. $a (4 + b) = (4 + b) a$
10. $6 \cdot (-x) = -6x$
11. $(x + 3)(6) = 6x + 11$
12. $(x + y + z) + 6 = x + (y + z + 6)$

Use the distributive property to simplify the following expressions.

13. $x (4 – 8)$
14. $-4 (-4 + 5)$
15. $-8 (-x + 13)$
16. $-6 (x – 3)$
17. $-4x (y + 8)$
18. $-y (4x + 5)$

Find the additive and multiplicative inverses of the following numbers.

19. 5
20. 18
21. -6
22. .2
23. $\frac{1}{5}$
24. $\frac{3}{6}$
25. -.7
26. $-\frac{10}{8}$

Identify the property illustrated in the following expressions.

27. $(x + y) + 2 = x + (y + 2)$
28. $(4 \cdot 6) \cdot 11 = 4 \cdot (4 \cdot 11)$
29. $(4 + 2) \cdot 6 = 16 + 6$
30. $4 (a + b) = (a + b) \cdot 4$
31. $x + 2 = 2 + x$
32. $4a = a \cdot 4$

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