

**1.5 Properties of Real Numbers** Name \_\_\_\_\_

Use the commutative property of addition or the commutative property of multiplication to rewrite in an equivalent form.	
1. $4 + 20$	2. $3 + x$
3. $x \cdot 5$	4. $yx$
Use the associative property of addition or the associative property of multiplication to rewrite in an equivalent form. Simplify if possible.	
5. $(x + 5) + 7$	6. $a + (b + c)$
7. $-3(4a)$	8. $(-9x)y$
Use commutative and/or associative properties to simplify.	
9. $(4 + x) + 5$	10. $(-2 + x) + 7$
11. $12\left(\frac{3}{4}x\right)$	12. $15\left(-\frac{3}{5}a\right)$
13. $6x(-2)$	14. $-5y(-5)$
Answers: 1. $20 + 4$ ; 3. $5x$ ; 5. $x + 12$ ; 7. $-12a$ ; 9. $x + 9$ ; 11. $9x$ ; 13. $-12x$	

Multiply by using the distributive property,  $a(b + c) = ab + ac$ .

15.  $4(3x + 5y)$

16.  $4(3x - 5y)$

17.  $-6(-3x + 4)$

18.  $-5(2x + 7)$

19.  $-3(x - 5y + 1)$

20.  $3(x - 5y + 1)$

21.  $-1(7r + 3)$

22.  $-1(7r - 3)$

23.  $-(7r + 3)$

24.  $-(7r - 3)$

25.  $(-3a + 5)(2)$

26.  $(-3a + 5)(-2)$

Answers: 15.  $12x + 20y$ ; 16.  $12x - 20y$ ; 17.  $18x - 24$ ; 18.  $-10x - 35$ ; 19.  $-3x + 15y - 3$ ; 20.  $3x - 15y + 3$ ; 21.  $-7r - 3$ ; 22.  $-7r + 3$ ; 23.  $-7r - 3$ ; 24.  $-7r + 3$ ; 25.  $-6a + 10$ ; 26.  $6a - 10$

Match the letter of the property to the appropriate problem number.

- a) commutative property of addition
- b) commutative property of multiplication
- c) associative property of addition
- d) associative property of multiplication

- e) distributive property
- f) additive identity
- g) multiplicative identity
- h) additive inverse property
- i) multiplicative inverse property

27. $x \cdot 3 = 3x$ _____	28. $(x + 7) + 4 = x + (7 + 4)$ _____
29. $x \cdot 1 = x$ _____	30. $-2(5x) = (-2 \cdot 5)x$ _____
31. $-3 + 0 = -3$ _____	32. $3 + -3 = 0$ _____

Find the additive inverse (opposite) and the multiplicative inverse (reciprocal)

	Opposite	Reciprocal		Opposite	Reciprocal
33. $\frac{2}{3}$			34. $-\frac{3}{4}$		
35. $-\frac{1}{5}$			36. $5$		
37. $x$			38. $-x$		

Answers: 27. b; 29. g; 31. f; 33.  $-\frac{2}{3}, \frac{3}{2}$ ; 35.  $\frac{1}{5}, -5$ ; 37.  $-x, \frac{1}{x}$