

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

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.**  $12x + 20y$ ; **17.**  $18x - 24$ ; **19.**  $-3x + 15y - 3$ ; **21.**  $-7r - 3$ ; **23.**  $-7r - 3$ ; **25.**  $-6a + 10$

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.  $-x, \frac{1}{x}$