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1-2

Study Guide and Intervention

Order of Operations

Evaluate Rational Expressions Numerical expressions often contain more than one operation. To evaluate them, use the rules for order of operations shown below.

Order of Operations	**Step 1** Evaluate expressions inside grouping symbols. **Step 2** Evaluate all powers. **Step 3** Do all multiplication and/or division from left to right. **Step 4** Do all addition and/or subtraction from left to right.

Example 1 **Evaluate each expression.**

a. $7 + 2 \cdot 4 - 4$

$7 + 2 \cdot 4 - 4 = 7 + 8 - 4$ Multiply 2 and 4.

$= 15 - 4$ Add 7 and 8.

$= 11$ Subtract 4 from 15.

b. $3(2) + 4(2 + 6)$

$3(2) + 4(2 + 6) = 3(2) + 4(8)$ Add 2 and 6.

$= 6 + 32$ Multiply left to right.

$= 38$ Add 6 and 32.

Example 2 **Evaluate each expression.**

a. $3[2 + (12 \div 3)^2]$

$3[2 + (12 \div 3)^2] = 3(2 + 4^2)$ Divide 12 by 3.

$= 3(2 + 16)$ Find 4 squared.

$= 3(18)$ Add 2 and 16.

$= 54$ Multiply 3 and 18.

b. $\dfrac{3 + 2^3}{4^2 \cdot 3}$

$\dfrac{3 + 2^3}{4^2 \cdot 3} = \dfrac{3 + 8}{4^2 \cdot 3}$ Evaluate power in numerator.

$= \dfrac{11}{4^2 \cdot 3}$ Add 3 and 8 in the numerator.

$= \dfrac{11}{16 \cdot 3}$ Evaluate power in denominator.

$= \dfrac{11}{48}$ Multiply.

Exercises

Evaluate each expression.

1. $(8 - 4) \cdot 2$

2. $(12 + 4) \cdot 6$

3. $10 + 2 \cdot 3$

4. $10 + 8 \cdot 1$

5. $15 - 12 \div 4$

6. $\dfrac{15 + 60}{30 - 5}$

7. $12(20 - 17) - 3 \cdot 6$

8. $24 \div 3 \cdot 2 - 3^2$

9. $8^2 \div (2 \cdot 8) + 2$

10. $3^2 \div 3 + 2^2 \cdot 7 - 20 \div 5$

11. $\dfrac{4 + 3^2}{12 + 1}$

12. $\dfrac{8(2) - 4}{8 \div 4}$

13. $250 \div [5(3 \cdot 7 + 4)]$

14. $\dfrac{2 \cdot 4^2 - 8 \div 2}{(5 + 2) \cdot 2}$

15. $\dfrac{4 \cdot 3^2 - 3 \cdot 2}{3 \cdot 5}$

16. $\dfrac{4(5^2) - 4 \cdot 3}{4(4 \cdot 5 + 2)}$

17. $\dfrac{5^2 - 3}{20(3) + 2(3)}$

18. $\dfrac{8^2 - 2^2}{(2 \cdot 8) + 4}$

Lesson 1-2

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1-5 Study Guide and Intervention

The Distributive Property

Evaluate Expressions The Distributive Property can be used to help evaluate expressions.

Distributive Property	For any numbers a, b, and c, $a(b + c) = ab + ac$ and $(b + c)a = ba + ca$ and $a(b - c) = ab - ac$ and $(b - c)a = ba - ca$.

Example 1 **Rewrite 6(8 + 10) using the Distributive Property. Then evaluate.**

$6(8 + 10) = 6 \cdot 8 + 6 \cdot 10$ Distributive Property

$= 48 + 60$ Multiply.

$= 108$ Add.

Example 2 **Rewrite $-2(3x^2 + 5x + 1)$ using the Distributive Property. Then simplify.**

$-2(3x^2 + 5x + 1) = -2(3x^2) + (-2)(5x) + (-2)(1)$ Distributive Property

$= -6x^2 + (-10x) + (-2)$ Multiply.

$= -6x^2 - 10x - 2$ Simplify.

Exercises

Rewrite each expression using the Distributive Property. Then simplify.

1. $2(10 - 5)$

2. $6(12 - t)$

3. $3(x - 1)$

4. $6(12 + 5)$

5. $(x - 4)3$

6. $-2(x + 3)$

7. $5(4x - 9)$

8. $3(8 - 2x)$

9. $12\left(6 - \frac{1}{2}x\right)$

10. $12\left(2 + \frac{1}{2}x\right)$

11. $\frac{1}{4}(12 - 4t)$

12. $3(2x - y)$

13. $2(3x + 2y - z)$

14. $(x - 2)y$

15. $2(3a - 2b + c)$

16. $\frac{1}{4}(16x - 12y + 4z)$

17. $(2 - 3x + x^2)3$

18. $-2(2x^2 + 3x + 1)$

Lesson 1-5

2-2 Study Guide and Intervention

Adding and Subtracting Rational Numbers

Add Rational Numbers

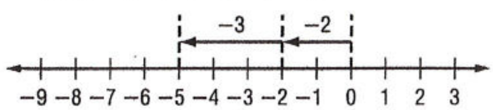
Adding Rational Numbers, Same Sign	Add the numbers. If both are positive, the sum is positive; if both are negative, the sum is negative.
Adding Rational Numbers, Different Signs	Subtract the number with the lesser absolute value from the number with the greater absolute value. The sign of the sum is the same as the sign of the number with the greater absolute value.

Example 1 **Use a number line to find the sum $-2 + (-3)$.**

Step 1 Draw an arrow from 0 to -2.

Step 2 From the tip of the first arrow, draw a second arrow 3 units to the left to represent adding -3.

Step 3 The second arrow ends at the sum -5. So $-2 + (-3) = -5$.



Example 2 **Find each sum.**

a. $-8 + 5$

$$-8 + 5 = -(|-8| - |5|)$$
$$= -(8 - 5)$$
$$= -3$$

b. $\frac{3}{4} + \left(-\frac{1}{2}\right)$

$$\frac{3}{4} + \left(-\frac{1}{2}\right) = \frac{3}{4} + \left(-\frac{2}{4}\right)$$
$$= +\left(\left|\frac{3}{4}\right| - \left|-\frac{2}{4}\right|\right)$$
$$= +\left(\frac{3}{4} - \frac{2}{4}\right)$$
$$= \frac{1}{4}$$

Exercises

Find each sum.

1. $12 + 24$ **2.** $-6 + 14$ **3.** $-12 + (-15)$

4. $-21.5 + 34.2$ **5.** $8.2 + (-3.5)$ **6.** $23.5 + (-15.2)$

7. $90 + (-105)$ **8.** $108 + (-62)$ **9.** $-84 + (-90)$

10. $\frac{5}{7} + \frac{1}{3}$ **11.** $\frac{3}{14} + \frac{6}{17}$ **12.** $-\frac{4}{9} + \frac{3}{5}$

13. $-\frac{2}{3} + \left(-\frac{1}{4}\right)$ **14.** $-\frac{1}{5} + \frac{7}{11}$ **15.** $-\frac{18}{40} + \left(-\frac{10}{20}\right)$

16. $-\frac{3}{5} + \left(-\frac{5}{6}\right)$ **17.** $-1.6 + (-1.8)$ **18.** $-0.008 + (-0.25)$

Lesson 2-2

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2-3 Study Guide and Intervention

Multiplying Rational Numbers

Multiply Integers You can use the rules below when multiplying integers and rational numbers.

Multiplying Numbers with the Same Sign	The product of two numbers having the same sign is positive.
Multiplying Numbers with Different Signs	The product of two numbers having different signs is negative.

Example 1 **Find each product.**

a. $\mathbf{-7(6)}$

The signs are different, so the product is negative.

$-7(6) = -42$

b. $\mathbf{-18(-10)}$

The signs are the same, so the product is positive.

$-18(-10) = 180$

Example 2 **Simplify the expression** $\mathbf{(-2x)5y}$.

$(-2x)5y = (-2)(5)x \cdot y$ Commutative Property (×)

$= (-2 \cdot 5)xy$ Associative Property

$= -10xy$ Simplify.

Exercises

Find each product.

1. $11(4)$ **2.** $-5(-3)$ **3.** $(-24)(-2)$

4. $(60)(-3)$ **5.** $(-2)(-3)(-4)$ **6.** $8(-15)$

7. $-15(3)$ **8.** $(12)(-10)$ **9.** $(-22)(-3)(2)$

10. $(5)(-5)(0)(4)$ **11.** $(-15)(45)$ **12.** $(-12)(-23)$

Simplify each expression.

13. $4(-2x) - 8x$ **14.** $6(-2n) - 10n$ **15.** $6(3y - y)$

16. $-3(3d + 2d)$ **17.** $-2x(2) + 2x(3y)$ **18.** $4m(-2n) + 2d(-4e)$

19. $-5(2x + x) - 3(-xy)$ **20.** $(2)(-4x + 2x)$ **21.** $(-3)(-8n - 6m)$

Lesson 2-3

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2-4 Study Guide and Intervention

Dividing Rational Numbers

Divide Integers The rules for finding the sign of a quotient are similar to the rules for finding the sign of a product.

Dividing Two Numbers with the Same Sign	The quotient of two numbers having the same sign is positive.
Dividing Two Numbers with Different Signs	The quotient of two numbers having different signs is negative.

Example 1 **Find each quotient.**

a. $-88 \div (-4)$

$-88 \div (-4) = 22$ same signs → positive quotient

b. $\frac{-64}{8}$

$\frac{-64}{8} = -8$ different signs → negative quotient

Example 2 **Simplify** $\frac{-4(-10 + 2)}{-3 + (-1)}$.

$$\frac{-4(-10 + 2)}{-3 + (-1)} = \frac{-4(-8)}{-3 + (-1)}$$
$$= \frac{32}{-3 + (-1)}$$
$$= \frac{32}{-4}$$
$$= -8$$

Exercises

Find each quotient.

1. $-80 \div (-10)$

2. $-32 \div 16$

3. $80 \div 5$

4. $18 \div (-3)$

5. $-12 \div (-3)$

6. $8 \div (-2)$

7. $-15 \div (-3)$

8. $121 \div (-11)$

9. $-24 \div 1.5$

10. $0 \div (-8)$

11. $-125 \div (-25)$

12. $-104 \div 4$

Simplify.

13. $\frac{-2 + (-4)}{(-2) + (-1)}$

14. $\frac{5(-10 + (-2))}{-2 + 1}$

15. $\frac{-6(-6 + 2)}{-10 + (-2)}$

16. $\frac{-12(2 + (-3))}{-4 + 1}$

17. $\frac{-4(-8 + (-4))}{-3 + (-3)}$

18. $\frac{4(-12 + 4)}{-2(8)}$

Chapter 2

Lesson 2-4

3-2 Study Guide and Intervention *(continued)*

Solving Equations by Using Addition and Subtraction

Solve Using Subtraction If the same number is subtracted from each side of an equation, the resulting equation is equivalent to the original one. In general if the original equation involves addition, this property will help you solve the equation.

Subtraction Property of Equality	For any numbers a, b, and c, if $a = b$, then $a - c = b - c$.

Example **Solve $22 + p = -12$.**

$22 + p = -12$	Original equation
$22 + p - 22 = -12 - 22$	Subtract 22 from each side.
$p = -34$	Simplify.

The solution is -34.

Exercises

Solve each equation. Then check your solution.

1. $x + 12 = 6$

2. $z + 2 = -13$

3. $-17 = b + 4$

4. $s + (-9) = 7$

5. $-3.2 = \ell + (-0.2)$

6. $-\frac{3}{8} + x = \frac{5}{8}$

7. $19 + h = -4$

8. $-12 = k + 24$

9. $j + 1.2 = 2.8$

10. $b + 80 = -80$

11. $m + (-8) = 2$

12. $w + \frac{3}{2} = \frac{5}{8}$

Write an equation for each problem. Then solve the equation and check the solution.

13. Twelve added to a number equals 18. Find the number.

14. What number increased by 20 equals -10?

15. The sum of a number and fifty equals eighty. Find the number.

16. What number plus one-half is equal to four?

17. The sum of a number and 3 is equal to -15. What is the number?

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3-3 Study Guide and Intervention

Solving Equations by Using Multiplication and Division

Solve Using Multiplication If each side of an equation is multiplied by the same number, the resulting equation is equivalent to the given one. You can use the property to solve equations involving multiplication and division.

Multiplication Property of Equality	For any numbers *a*, *b*, and *c*, if $a = b$, then $ac = bc$.

Example 1 **Solve $3\frac{1}{2}p = 1\frac{1}{2}$.**

$3\frac{1}{2}p = 1\frac{1}{2}$	Original equation
$\frac{7}{2}p = \frac{3}{2}$	Rewrite each mixed number as an improper fraction.
$\frac{2}{7}\left(\frac{7}{2}p\right) = \frac{2}{7}\left(\frac{3}{2}\right)$	Multiply each side by $\frac{2}{7}$.
$p = \frac{3}{7}$	Simplify.

The solution is $\frac{3}{7}$.

Example 2 **Solve $-\frac{1}{4}n = 16$.**

$-\frac{1}{4}n = 16$	Original equation
$-4\left(-\frac{1}{4}n\right) = -4(16)$	Multiply each side by -4.
$n = -64$	Simplify.

The solution is -64.

Exercises

Solve each equation. Then check your solution.

1. $\frac{h}{3} = -2$

2. $\frac{1}{8}m = 6$

3. $\frac{1}{5}p = \frac{3}{5}$

4. $5 = \frac{y}{12}$

5. $-\frac{1}{4}k = -2.5$

6. $-\frac{m}{8} = \frac{5}{8}$

7. $-1\frac{1}{2}h = 4$

8. $-12 = -\frac{3}{2}k$

9. $\frac{j}{3} = \frac{2}{5}$

10. $-3\frac{1}{3}b = 5$

11. $\frac{7}{10}m = 10$

12. $\frac{p}{5} = -\frac{1}{4}$

Write an equation for each problem. Then solve the equation.

13. One-fifth of a number equals 25. Find the number.

14. What number divided by 2 equals -18?

15. A number divided by eight equals 3. Find the number.

16. One and a half times a number equals 6. Find the number.

Lesson 3-3

3-4 Study Guide and Intervention *(continued)*

Solving Multi-Step Equations

Solve Multi-Step Equations To solve equations with more than one operation, often called **multi-step equations**, undo operations by working backward. Reverse the usual order of operations as you work.

Example **Solve $5x + 3 = 23$.**

$5x + 3 = 23$	Original equation.
$5x + 3 - 3 = 23 - 3$	Subtract 3 from each side.
$5x = 20$	Simplify.
$\frac{5x}{5} = \frac{20}{5}$	Divide each side by 5.
$x = 4$	Simplify.

Exercises

Solve each equation. Then check your solution.

1. $5x + 2 = 27$

2. $6x + 9 = 27$

3. $5x + 16 = 51$

4. $14n - 8 = 34$

5. $0.6x - 1.5 = 1.8$

6. $\frac{7}{8}p - 4 = 10$

7. $16 = \frac{d - 12}{14}$

8. $8 + \frac{3n}{12} = 13$

9. $\frac{g}{-5} + 3 = -13$

10. $\frac{4b + 8}{-2} = 10$

11. $0.2x - 8 = -2$

12. $3.2y - 1.8 = 3$

13. $-4 = \frac{7x - (-1)}{-8}$

14. $8 = -12 + \frac{k}{-4}$

15. $0 = 10y - 40$

Write an equation and solve each problem.

16. Find three consecutive integers whose sum is 96.

17. Find two consecutive odd integers whose sum is 176.

18. Find three consecutive integers whose sum is -93.

6-2 Study Guide and Intervention *(continued)*

Solving Inequalities by Multiplication and Division

Solve Inequalities by Division If each side of a true inequality is divided by the same positive number, the resulting inequality is also true. However, if each side of an inequality is divided by the same negative number, the direction of the inequality symbol must be reversed for the resulting inequality to be true.

Division Property of Inequalities	For all numbers a, b, and c with $c \neq 0$, 1. if c is positive and $a > b$, then $\frac{a}{c} > \frac{b}{c}$; if c is positive and $a < b$, then $\frac{a}{c} < \frac{b}{c}$; 2. if c is negative and $a > b$, then $\frac{a}{c} < \frac{b}{c}$; if c is negative and $a < b$, then $\frac{a}{c} > \frac{b}{c}$.

The property is also true when $>$ and $<$ are replaced with $\geq$ and $\leq$.

Example **Solve $-12y \geq 48$.**

$-12y \geq 48$ Original inequality

$\frac{-12y}{-12} \leq \frac{48}{-12}$ Divide each side by -12 and change $\geq$ to $\leq$.

$y \leq -4$ Simplify.

The solution is $\{y \mid y \leq -4\}$.

Exercises

Solve each inequality. Then check your solution.

1. $25g \geq -100$ **2.** $-2x \geq 9$ **3.** $-5c > 2$ **4.** $-8m < -64$

5. $-6k < \frac{1}{5}$ **6.** $18 < -3b$ **7.** $30 < -3n$ **8.** $-0.24 < 0.6w$

9. $25 \geq -2m$ **10.** $-30 > -5p$ **11.** $-2n \geq 6.2$ **12.** $-35 < 0.05h$

13. $-40 > 10h$ **14.** $-\frac{2}{3}n \geq 6$ **15.** $-3 < \frac{p}{4}$

Define a variable, write an inequality, and solve each problem. Then check your solution.

16. Four times a number is no more than 108.

17. The opposite of three times a number is greater than 12.

18. Negative five times a number is at most 100.

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8-1 Study Guide and Intervention

Multiplying Monomials

Multiply Monomials A **monomial** is a number, a variable, or a product of a number and one or more variables. An expression of the form x^n is called a **power** and represents the product you obtain when x is used as a factor n times. To multiply two powers that have the same base, add the exponents.

Product of Powers	For any number a and all integers m and n, $a^m \cdot a^n = a^{m+n}$.

Example 1 **Simplify $(3x^6)(5x^2)$.**

$(3x^6)(5x^2) = (3)(5)(x^6 \cdot x^2)$ Associative Property

$= (3 \cdot 5)(x^{6+2})$ Product of Powers

$= 15x^8$ Simplify.

The product is $15x^8$.

Example 2 **Simplify $(-4a^3b)(3a^2b^5)$.**

$(-4a^3b)(3a^2b^5) = (-4)(3)(a^3 \cdot a^2)(b \cdot b^5)$

$= -12(a^{3+2})(b^{1+5})$

$= -12a^5b^6$

The product is $-12a^5b^6$.

Lesson 8-1

Exercises

Simplify.

1. $y(y^5)$

2. $n^2 \cdot n^7$

3. $(-7x^2)(x^4)$

4. $x(x^2)(x^4)$

5. $m \cdot m^5$

6. $(-x^3)(-x^4)$

7. $(2a^2)(8a)$

8. $(rs)(rs^3)(s^2)$

9. $(x^2y)(4xy^3)$

10. $\frac{1}{3}(2a^3b)(6b^3)$

11. $(-4x^3)(-5x^7)$

12. $(-3j^2k^4)(2jk^6)$

13. $(5a^2bc^3)\left(\frac{1}{5}abc^4\right)$

14. $(-5xy)(4x^2)(y^4)$

15. $(10x^3yz^2)(-2xy^5z)$

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8-2 Study Guide and Intervention

Dividing Monomials

Quotients of Monomials To divide two powers with the same base, subtract the exponents.

Quotient of Powers	For all integers m and n and any nonzero number a, $\frac{a^m}{a^n} = a^{m-n}$.
Power of a Quotient	For any integer m and any real numbers a and b, $b \neq 0$, $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$.

Example 1 **Simplify $\frac{a^4b^7}{ab^2}$. Assume neither a nor b is equal to zero.**

$\frac{a^4b^7}{ab^2} = \left(\frac{a^4}{a}\right)\left(\frac{b^7}{b^2}\right)$ Group powers with the same base.

$= (a^{4-1})(b^{7-2})$ Quotient of Powers

$= a^3b^5$ Simplify.

The quotient is a^3b^5 .

Example 2 **Simplify $\left(\frac{2a^3b^5}{3b^2}\right)^3$. Assume that b is not equal to zero.**

$\left(\frac{2a^3b^5}{3b^2}\right)^3 = \frac{(2a^3b^5)^3}{(3b^2)^3}$ Power of a Quotient

$= \frac{2^3(a^3)^3(b^5)^3}{(3)^3(b^2)^3}$ Power of a Product

$= \frac{8a^9b^{15}}{27b^6}$ Power of a Power

$= \frac{8a^9b^9}{27}$ Quotient of Powers

The quotient is $\frac{8a^9b^9}{27}$.

Exercises

Simplify. Assume that no denominator is equal to zero.

1. $\frac{5^5}{5^2}$

2. $\frac{m^6}{m^4}$

3. $\frac{p^5n^4}{p^2n}$

4. $\frac{a^2}{a}$

5. $\frac{x^5y^3}{x^5y^2}$

6. $\frac{-2y^7}{14y^5}$

7. $\frac{xy^6}{y^4x}$

8. $\left(\frac{2a^2b}{a}\right)^3$

9. $\left(\frac{4p^4q^4}{3p^2q^2}\right)^3$

10. $\left(\frac{2v^5w^3}{v^4w^3}\right)^4$

11. $\left(\frac{3r^6s^3}{2r^5s}\right)^4$

12. $\frac{r^7s^7t^2}{s^3r^3t^2}$

Lesson 8-2

8-5 Study Guide and Intervention

Adding and Subtracting Polynomials

Add Polynomials To add polynomials, you can group like terms horizontally or write them in column form, aligning like terms vertically. **Like terms** are monomial terms that are either identical or differ only in their coefficients, such as $3p$ and $-5p$ or $2x^2y$ and $8x^2y$.

Example 1 **Find $(2x^2 + x - 8) + (3x - 4x^2 + 2)$.**

Horizontal Method

Group like terms.

$(2x^2 + x - 8) + (3x - 4x^2 + 2)$
$= [(2x^2 + (-4x^2)] + (x + 3x) + [(-8) + 2)]$
$= -2x^2 + 4x - 6.$

The sum is $-2x^2 + 4x - 6$.

Example 2 **Find $(3x^2 + 5xy) + (xy + 2x^2)$.**

Vertical Method

Align like terms in columns and add.

$$\begin{array}{rr} & 3x^2 + 5xy \\ (+) & 2x^2 + xy \\ \hline & 5x^2 + 6xy \end{array}$$

Put the terms in descending order.

The sum is $5x^2 + 6xy$.

Exercises

Find each sum.

1. $(4a - 5) + (3a + 6)$

2. $(6x + 9) + (4x^2 - 7)$

3. $(6xy + 2y + 6x) + (4xy - x)$

4. $(x^2 + y^2) + (-x^2 + y^2)$

5. $(3p^2 - 2p + 3) + (p^2 - 7p + 7)$

6. $(2x^2 + 5xy + 4y^2) + (-xy - 6x^2 + 2y^2)$

7. $(5p + 2q) + (2p^2 - 8q + 1)$

8. $(4x^2 - x + 4) + (5x + 2x^2 + 2)$

9. $(6x^2 + 3x) + (x^2 - 4x - 3)$

10. $(x^2 + 2xy + y^2) + (x^2 - xy - 2y^2)$

11. $(2a - 4b - c) + (-2a - b - 4c)$

12. $(6xy^2 + 4xy) + (2xy - 10xy^2 + y^2)$

13. $(2p - 5q) + (3p + 6q) + (p - q)$

14. $(2x^2 - 6) + (5x^2 + 2) + (-x^2 - 7)$

15. $(3z^2 + 5z) + (z^2 + 2z) + (z - 4)$

16. $(8x^2 + 4x + 3y^2 + y) + (6x^2 - x + 4y)$

Chapter 8

Lesson 8-5

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8-6 Study Guide and Intervention

Multiplying a Polynomial by a Monomial

Lesson 8-6

Product of Monomial and Polynomial The Distributive Property can be used to multiply a polynomial by a monomial. You can multiply horizontally or vertically. Sometimes multiplying results in like terms. The products can be simplified by combining like terms.

Example 1 **Find $-3x^2(4x^2 + 6x - 8)$.**

Horizontal Method

$-3x^2(4x^2 + 6x - 8)$

$= -3x^2(4x^2) + (-3x^2)(6x) - (-3x^2)(8)$

$= -12x^4 + (-18x^3) - (-24x^2)$

$= -12x^4 - 18x^3 + 24x^2$

Vertical Method

$$\begin{array}{r} 4x^2 + 6x - 8 \\ (\times) \qquad\qquad -3x^2 \\ \hline -12x^4 - 18x^3 + 24x^2 \end{array}$$

The product is $-12x^4 - 18x^3 + 24x^2$.

Example 2 **Simplify $-2(4x^2 + 5x) - x(x^2 + 6x)$.**

$-2(4x^2 + 5x) - x(x^2 + 6x)$

$= -2(4x^2) + (-2)(5x) + (-x)(x^2) + (-x)(6x)$

$= -8x^2 + (-10x) + (-x^3) + (-6x^2)$

$= (-x^3) + [-8x^2 + (-6x^2)] + (-10x)$

$= -x^3 - 14x^2 - 10x$

Exercises

Find each product.

1. $x(5x + x^2)$

2. $x(4x^2 + 3x + 2)$

3. $-2xy(2y + 4x^2)$

4. $-2g(g^2 - 2g + 2)$

5. $3x(x^4 + x^3 + x^2)$

6. $-4x(2x^3 - 2x + 3)$

7. $-4cx(10 + 3x)$

8. $3y(-4x - 6x^3 - 2y)$

9. $2x^2y^2(3xy + 2y + 5x)$

Simplify.

10. $x(3x - 4) - 5x$

11. $-x(2x^2 - 4x) - 6x^2$

12. $6a(2a - b) + 2a(-4a + 5b)$

13. $4r(2r^2 - 3r + 5) + 6r(4r^2 + 2r + 8)$

14. $4n(3n^2 + n - 4) - n(3 - n)$

15. $2b(b^2 + 4b + 8) - 3b(3b^2 + 9b - 18)$

16. $-2z(4z^2 - 3z + 1) - z(3z^2 + 2z - 1)$

17. $2(4x^2 - 2x) - 3(-6x^2 + 4) + 2x(x - 1)$

Chapter 8