

3 Chapter Review



Review Key Vocabulary

algebraic expression, p. 112
terms, p. 112
variable, p. 112

coefficient, p. 112
constant, p. 112
equivalent expressions, p. 128

like terms, p. 136
factoring an expression,
p. 140

Review Examples and Exercises

3.1 Algebraic Expressions (pp. 110–117)

- a. Evaluate $a \div b$ when $a = 48$ and $b = 8$.

$$\begin{aligned} a \div b &= 48 \div 8 \\ &= 6 \end{aligned}$$

Substitute 48 for a and 8 for b .

Divide 48 by 8.

- b. Evaluate $y^2 - 14$ when $y = 5$.

$$\begin{aligned} y^2 - 14 &= 5^2 - 14 \\ &= 25 - 14 \\ &= 11 \end{aligned}$$

Substitute 5 for y .

Using order of operations, evaluate 5^2 .

Subtract 14 from 25.

Exercises

Evaluate the expression when $x = 20$ and $y = 4$.

1. $x \div 5$

2. $y + x$

3. $8y - x$

4. **GAMING** In a video game, you score p game points and b triple bonus points. An expression for your score is $p + 3b$. What is your score when you earn 245 game points and 20 triple bonus points? _____

3.2 Writing Expressions (pp. 118–123)

Write the phrase as an expression.

- a. a number z decreased by 18

$$z - 18$$

The phrase *decreased by* means *subtraction*.

- b. the sum of 7 and the product of a number x and 12

$$7 + 12x$$

The phrase *sum of* means *addition*.

The phrase *product of* means *multiplication*.

Exercises

Write the phrase as an expression.

5. 11 fewer than a number b _____

6. the product of a number d and 32 _____

7. 18 added to a number n _____

8. a number t decreased by 17 _____

9. **BASKETBALL** Your basketball team scored 4 fewer than twice as many points as the other team.

a. Write an expression for the number of points your team scored.

b. The other team scored 24 points. How many points did your team score?

3.3 Properties of Addition and Multiplication (pp. 126–131)

a. Simplify the expression $(x + 18) + 4$.

$$\begin{aligned}(x + 18) + 4 &= x + (18 + 4) \\ &= x + 22\end{aligned}$$

Associative Property of Addition

Add 18 and 4.

b. Simplify the expression $(5.2 + a) + 0$.

$$\begin{aligned}(5.2 + a) + 0 &= 5.2 + (a + 0) \\ &= 5.2 + a\end{aligned}$$

Associative Property of Addition

Addition Property of Zero

c. Simplify the expression $36 \cdot r \cdot 1$.

$$\begin{aligned}36 \cdot r \cdot 1 &= 36 \cdot (r \cdot 1) \\ &= 36 \cdot r \\ &= 36r\end{aligned}$$

Associative Property of Multiplication

Multiplication Property of One

Exercises

Simplify the expression. Explain each step.

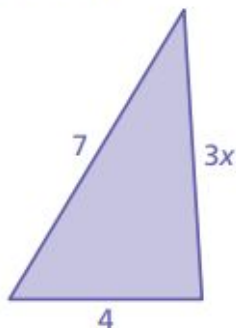
10. $10 + (2 + y)$

12. $3(7x)$

14. $5.3 + (w + 1.2)$

15. $(0 + t) + 9$

16. **GEOMETRY** The expression $7 + 3x + 4$ represents the perimeter of the triangle. Simplify the expression.



3.4 The Distributive Property (pp. 132–141)

- a. Use the Distributive Property to simplify $3(n + 9)$.

$$\begin{aligned} 3(n + 9) &= 3(n) + 3(9) && \text{Distributive Property} \\ &= 3n + 27 && \text{Multiply.} \end{aligned}$$

- b. Simplify $5x + 7 + 3x - 2$.

$$\begin{aligned} 5x + 7 + 3x - 2 &= 5x + 3x + 7 - 2 && \text{Commutative Property of Addition} \\ &= (5 + 3)x + 7 - 2 && \text{Distributive Property} \\ &= 8x + 5 && \text{Simplify.} \end{aligned}$$

c. Factor $14x - 49$ using the GCF.

Find the GCF of $14x$ and 49 by writing their prime factorizations.

$$14x = 2 \cdot 7 \cdot x$$

Circle the common prime factor.

$$49 = 7 \cdot 7$$

So, the GCF of $14x$ and 49 is 7 . Use the GCF to factor the expression.

$$14x - 49 = 7(2x) - 7(7)$$

Rewrite using GCF.

$$= 7(2x - 7)$$

Distributive Property

Exercises

Use the Distributive Property to find the product.

17. $\frac{3}{4} \times 2\frac{1}{3}$

18. $\frac{4}{7} \times 4\frac{5}{8}$

19. $\frac{1}{5} \times 5\frac{10}{11}$

Use the Distributive Property to simplify the expression.

20. $2(x + 12)$

21. $11(b - 3)$

23. $6(6 + y)$

24. $25(z - 4)$

26. **HAIRCUT** A family of four goes to a salon for haircuts. The cost of each haircut is \$13. Use the Distributive Property and mental math to find the product 4×13 for the total cost.
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Simplify the expression.

27. $5(n + 3) + 4n$

28. $t + 2 + 6t$

29. $3z + 4 + 5z - 9$

Factor the expression using the GCF.

30. $15 + 35$

31. $36x - 28$

32. $16x + 56y$

