

1-3 Skills Practice

Solving Equations

Write an algebraic expression to represent each verbal expression.

1. 4 times a number, increased by 7

$$4n + 7$$

2. 8 less than 5 times a number

$$5n - 8$$

3. 6 times the sum of a number and 5

$$6(n + 5)$$

4. the product of 3 and a number, divided by 9

$$\frac{3n}{9}$$

5. 3 times the difference of 4 and a number $3(4 - n)$

6. the product of -11 and the square of a number $-11n^2$

Write a verbal sentence to represent each equation. 7–10. Sample answers are given.

7. $n - 8 = 16$

The difference of a number and 8 is 16.

8. $8 + 3x = 5$

The sum of 8 and 3 times a number is 5.

9. $b + 3 = b^2$

Three added to a number is the square of the number.

10. $\frac{y}{3} = 2 - 2y$

A number divided by 3 is the difference of 2 and twice the number.

Name the property illustrated by each statement.

11. If $a = 0.5b$, and $0.5b = 10$, then $a = 10$.

Transitive (=)

12. If $d + 1 = f$, then $d = f - 1$.

Subtraction (=)

13. If $-7x = 14$, then $14 = -7x$.

Symmetric (=)

14. If $(8 + 7)r = 30$, then $15r = 30$.

Substitution (=)

Solve each equation. Check your solution.

15. $4m + 2 = 18$ 4

16. $x + 4 = 5x + 2$ $\frac{1}{2}$

17. $3t = 2t + 5$ 5

18. $-3b + 7 = -15 + 2b$ $\frac{22}{5}$

19. $-5x = 3x - 24$ 3

20. $4v + 20 - 6 = 34$ 5

21. $a - \frac{2a}{5} = 3$ 5

22. $2.2n + 0.8n + 5 = 4n$ 5

Solve each equation or formula for the specified variable.

23. $I = prt$, for p $p = \frac{I}{rt}$

24. $y = \frac{1}{4}x - 12$, for x $x = 4y + 48$

25. $A = \frac{x+y}{2}$, for y $y = 2A - x$

26. $A = 2\pi r^2 + 2\pi rh$, for h $h = \frac{A - 2\pi r^2}{2\pi r}$

1-3 Word Problem Practice

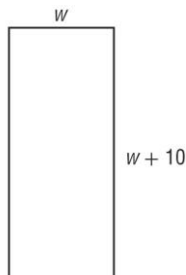
Solving Equations

1. **AGES** Robert's father is 5 years older than 3 times Robert's age. Let Robert's age be denoted by R and let Robert's father's age be denoted by F . Write an equation that relates Robert's age and his father's age.
 $F = 3R + 5$.

2. **AIRPLANES** The Citation Sovereign is a small jet that can carry up to 2650 pounds. The number of passengers p and the number of suitcases c that the airplane can carry are estimated by the equation $180p + 60c = 2650$. If 10 people board the aircraft, how many suitcases can the airplane carry?

14 suitcases

3. **GEOMETRY** The length of a rectangle is 10 units longer than its width. If the total perimeter of the rectangle is 44 units, what is the width?

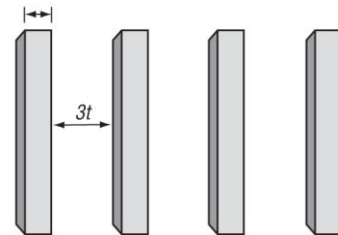


$w = 6$ units

4. **SAVINGS** Jason started with d dollars in his piggy bank. One week later, Jason doubled the amount in his piggy bank. Another week later, Jason was able to add \$20 to his piggy bank. At this point, the piggy bank had \$50 in it. What is d ?

15

5. **DOMINOES** Nancy is setting up a train of dominoes from the front entrance straight down the hall to the kitchen entrance. The thickness of each domino is t . Nancy places the dominoes so that the space separating consecutive dominoes is $3t$. The total distance that N dominoes takes up is given by $d = t(4N + 1)$.



- a. Nancy measures her dominoes and finds that $t = 1$ centimeter. She measures the distance of her hallway and finds that $d = 321$ centimeters. Rewrite the equation that relates d , t , and N with the given values substituted for t and d .

$321 = 4N + 1$

- b. How many dominoes did Nancy have in her hallway?

80 dominoes