

THINK AND DISCUSS

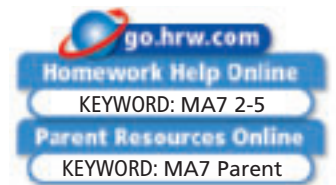
- Describe a situation in which a formula could be used more easily if it were “rearranged.” Include the formula in your description.
- Explain how to solve $P = 2\ell + 2w$ for w .
- GET ORGANIZED** Copy and complete the graphic organizer. Write a formula that is used in each subject. Then solve the formula for each of its variables.

| Common Formulas | |
|------------------|---------|
| Subject | Formula |
| Geometry | |
| Physical science | |
| Earth science | |



2-5

Exercises



GUIDED PRACTICE

SEE EXAMPLE 1

p. 107

- Vocabulary** Explain why a *formula* is a type of *literal equation*.
- Construction** The formula $a = 46c$ gives the floor area a in square meters that can be wired using c circuits.
 - Solve $a = 46c$ for c .
 - If a room is 322 square meters, how many circuits are required to wire this room?

SEE EXAMPLE 2

p. 108

- The formula for the volume of a rectangular prism with length ℓ , width w , and height h is $V = \ell wh$. Solve this formula for w .

SEE EXAMPLE 3

p. 108

- Solve $st + 3t = 6$ for s .
- Solve $m - 4n = 8$ for m .
- Solve $\frac{f+4}{g} = 6$ for f .
- Solve $b + c = \frac{10}{a}$ for a .

PRACTICE AND PROBLEM SOLVING

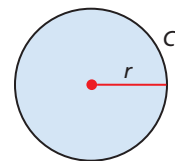
Independent Practice

| For Exercises | See Example |
|---------------|-------------|
| 8 | 1 |
| 9 | 2 |
| 10–13 | 3 |

Extra Practice

Skills Practice p. S7
Application Practice p. S29

- Geometry** The formula $C = 2\pi r$ relates the circumference C of a circle to its radius r . (Recall that π is the constant ratio of circumference to diameter.)
 - Solve $C = 2\pi r$ for r .
 - If a circle's circumference is 15 inches, what is its radius? Leave the symbol π in your answer.
- Finance** The formula $A = P + I$ shows that the total amount of money A received from an investment equals the principal P (the original amount of money invested) plus the interest I . Solve this formula for I .



C is the distance around the circle.

r is the distance from the center of the circle to a point on the circle.

- Solve $-2 = 4r + s$ for s .
- Solve $xy - 5 = k$ for x .
- Solve $\frac{m}{n} = p - 6$ for n .
- Solve $\frac{x-2}{y} = z$ for y .

Solve for the indicated variable.

14. $S = 180n - 360$ for n 15. $\frac{x}{5} - g = a$ for x 16. $A = \frac{1}{2}bh$ for b
 17. $y = mx + b$ for x 18. $a = 3n + 1$ for n 19. $PV = nRT$ for T
 20. $T + M = R$ for T 21. $M = T - R$ for T 22. $PV = nRT$ for R
 23. $2a + 2b = c$ for b 24. $5p + 9c = p$ for c 25. $ax + r = 7$ for r
 26. $3x + 7y = 2$ for y 27. $4y + 3x = 5$ for x 28. $y = 3x + 3b$ for b

29. **Estimation** The table shows the flying time and distance traveled for five flights on a certain airplane.
- Use the data in the table to write a rule that *estimates* the relationship between flying time t and distance traveled d .
 - Use your rule from part **a** to estimate the time that it takes the airplane to fly 1300 miles.
 - Solve your rule for d .
 - Use your rule from part **c** to estimate the distance the airplane can fly in 8 hours.

| Flying Times | | |
|--------------|----------|---------------|
| Flight | Time (h) | Distance (mi) |
| A | 2 | 1018 |
| B | 3 | 1485 |
| C | 4 | 2103 |
| D | 5 | 2516 |
| E | 6 | 2886 |

30. **Sports** To find a baseball pitcher's earned run average (ERA), you can use the formula $Ei = 9r$, where E represents ERA, i represents number of innings pitched, and r represents number of earned runs allowed. Solve the equation for E . What is a pitcher's ERA if he allows 5 earned runs in 18 innings pitched?



31. **Meteorology** For altitudes up to 36,000 feet, the relationship between temperature and altitude can be described by the formula $t = -0.0035a + g$, where t is the temperature in degrees Fahrenheit, a is the altitude in feet, and g is the ground temperature in degrees Fahrenheit. Solve this formula for a .



32. **Write About It** In your own words, explain how to solve a literal equation for one of the variables.
33. **Critical Thinking** How is solving $a - ab = c$ for a different from the problems in this lesson? How might you solve this equation for a ?

**MULTI-STEP
TEST PREP**



34. This problem will prepare you for the Multi-Step Test Prep on page 112.
- Suppose firefighters can extinguish a wildfire at a rate of 60 acres per day. Use this information to complete the table.
 - Use the last row in the table to write an equation for acres A extinguished in terms of the number of days d .
 - Graph the points in the table with *Days* on the horizontal axis and *Acres* on the vertical axis. Describe the graph.

| Days | Acres |
|------|-------|
| 1 | 60 |
| 2 | ■ |
| 3 | 180 |
| 4 | ■ |
| 5 | ■ |
| d | ■ |