

Do you know HOW?

Solve each equation. Check your answer.

1. $38 = 2a + 54$
2. $t + 18.1 = 23.9$
3. $18.9 = 2.1x$
4. $\frac{1}{2}(b - 3) = \frac{5}{2}$

Solve each equation. Justify your steps.

5. $9 - 3r = 14$
6. $3 = \frac{1}{2}b + 11$

Solve each equation. If the equation is an identity, write *identity*. If it has no solution, write *no solution*.

7. $8(h - 1) = 6h + 4 + 2h$
8. $\frac{1}{7}(14 - 7p) - 2 = -2\left(\frac{1}{2}p + 3\right) + 6$
9. $\frac{c + 3}{5} = 15$
10. $\frac{2}{3}(x - 4) = \frac{1}{3}(2x - 6)$
11. $1.7m = 10.2$
12. $2 + \frac{1}{3}t = 1 + \frac{1}{4}t$
13. **Geometry** The formula for the area of a triangle is $A = \frac{1}{2}bh$. Solve the formula for h . A triangle has a base of 7 cm and an area of 28 cm^2 . What is its height?
14. **Menus** A new pizza shop is going to print new menus. Each menu costs \$.50 to produce. The owners have a total budget of \$2500 for the new menus. How many menus can the pizza shop print?
15. **Guitars** You paid \$600 for a new guitar. Your guitar cost \$40 more than twice the cost of your friend's guitar. How much did your friend's guitar cost?

Define a variable and write an equation to model each situation. Then solve.

16. **Concerts** Concert tickets cost \$25 each. A college student ordered some tickets online. There was a service charge of \$3 per ticket. The total came to \$252. How many tickets did the student order?
17. **Gyms** Membership for the Alpine rock-climbing gym costs \$25 per month plus a \$125 sign-up fee. Membership for Rocco's rock-climbing gym costs \$30 per month plus a \$50 sign-up fee.
 - a. After how many months will the memberships cost the same?
 - b. If you only wanted a one-year membership, which gym would you join?

Do you UNDERSTAND?

18. **Vocabulary** Complete: You can use subtraction to undo addition. Subtraction is called the of addition.
19. **Reasoning** The equation $\frac{5}{x} = \frac{2}{x} + \frac{3}{x}$ is true for all values of x where $x \neq 0$. Is the equation an identity?
20. **Writing** Would you solve the equation $10 = 4(y - 1)$ by using the Distributive Property or by dividing each side by 4? Explain.
21. **Reasoning** In the process of solving an equation, a student noticed that the variable was eliminated. The student concluded that the equation must be an identity. Is the student correct? Explain.
22. **Reasoning** You are solving the equation $0.02x - 0.004 = 0.028$. Your first step is to multiply both sides by 1000 to clear the decimals. Your classmate starts by dividing both sides by 0.02. Is there any disadvantage to your classmate's method? Explain.

