**SPECIAL EQUATIONS** Solve the equation. If there is no solution, write *no solution*. If the equation is always true, write *all real numbers*.

**63.** $5(x - 4) = 5x + 12$

**64.** $3(x + 5) = 3x + 15$

**65.** $5(2 - x) = 3 - 2x + 7 - 3x$

**66.** $-2(4 - 3x) + 7 = 6(x + 1)$

**67. CHALLENGE** Solve the equation $ax + b = cx + d$ for $x$ in terms of $a$, $b$, $c$, and $d$. Under what conditions is there no solution? Under what conditions are all real numbers solutions?

## PROBLEM SOLVING

**68. CATALOG PURCHASE** You are ordering T-shirts from a catalog. Each T-shirt costs $15. The cost of shipping is $6 no matter how many you order. The total cost is $111. How many T-shirts did you order?

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**69. BICYCLE REPAIR** The bill for the repair of your bicycle was $180. The cost of parts was $105. The cost of labor was $25 per hour. How many hours did the repair work take?

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**70. CAR SALES** A salesperson at a car dealership has a base salary of $25,000 per year and earns a 5% commission on total sales. How much must the salesperson sell to earn $50,000 in one year?

**71. SUMMER JOBS** You have two summer jobs. In the first job, you work 25 hours per week and earn $7.75 per hour. In the second job, you earn $6.25 per hour and can work as many hours as you want. You want to earn $250 per week. How many hours must you work at the second job?

**72. SHORT RESPONSE** Your friend bought a total of 10 CDs and DVDs as gifts for $199. The price per CD was $15 and the price per DVD was $22. Write and solve an equation to find how many CDs and how many DVDs your friend bought. How would your answer change if the total cost of the CDs and DVDs was $185? *Explain.*

**73. MULTI-STEP PROBLEM** You are working on the layout of a yearbook. The page is 9 inches wide, has $\frac{1}{2}$ inch margins, and has three columns of equal width.

   **a.** Write and simplify an equation that relates the column width $c$ and the gap $g$ between columns to the total width of the page.

   **b.** Copy and complete the table by substituting the given value into your equation from part (a) and solving to find the unknown value.

| Gap, $g$ (in.) | $\frac{5}{8}$ | ? | $\frac{3}{8}$ | ? |
|---|---|---|---|---|
| Column width, $c$ (in.) | ? | $2\frac{1}{3}$ | ? | $2\frac{1}{2}$ |



9 in.

Caption

$\frac{1}{2}$ in.   $\frac{1}{2}$ in.

$g$   $g$

$c$   $c$   $c$