

Challenge: Skills and Applications

For use with pages 174–179

For Exercises 1–4, solve the equation for x in terms of the other variables.

1. $p - \frac{6}{7}x = 2q$

2. $\frac{2}{3}ab - \frac{1}{5}x = 2$

3. $\frac{5}{2}(h - x) = \frac{k}{4}$

4. $-\frac{5}{8}x + r = 1 - \frac{t}{2}$

For Exercises 5–8, use the following information.

A men's clothing store decides to discount men's shirts by 14% and then give each customer a coupon for a further \$5 discount on each shirt.

- Write an equation that gives the fully discounted price d a customer would pay for a shirt as a function of the original price p . Then rewrite the function so that p is a function of d .
- Clara Marsten bought a shirt for \$8.12, before tax. What was the original price of the shirt?
- Suppose the store applied the \$5 discount coupon first and then took 14% off the price a customer with a coupon would pay for a shirt. Write an equation for the price d a customer would pay for a shirt as a function of the original price p . Then rewrite the function so that p is a function of d .
- Suppose Clara Marsten bought a shirt for \$8.12, before tax, under the discount plan in Exercise 7. What was the original price of the shirt?

For Exercises 9–11, use the table showing two of the tax brackets for a certain state. Round money amounts to the nearest dollar.

<i>For an annual income over . . .</i>	<i>but less than . . .</i>	<i>Your tax is . . .</i>
\$30,000	\$60,000	\$1200 + 5% of the excess over \$30,000
\$60,000	\$100,000	\$2700 + 7% of the excess over \$60,000

- For each bracket shown, write an equation that gives the amount of tax y a person in that bracket must pay as a function of his or her annual income x .
- Rewrite each function from Exercise 9 so x is a function of y .
- How much income would a taxpayer have who paid \$3050 in tax?