Name _____ Date _____ Class _____

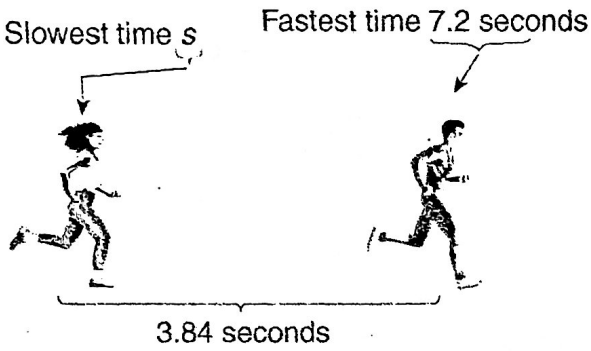
LESSON 6-2

# One-Step Equations with Rational Coefficients

***Success for English Learners***

## Problem 1

What is the slowest time $s$?




The difference between the fastest and slowest time is 3.84 seconds.

The slowest time is $s$.

The fastest time is 7.2 seconds.

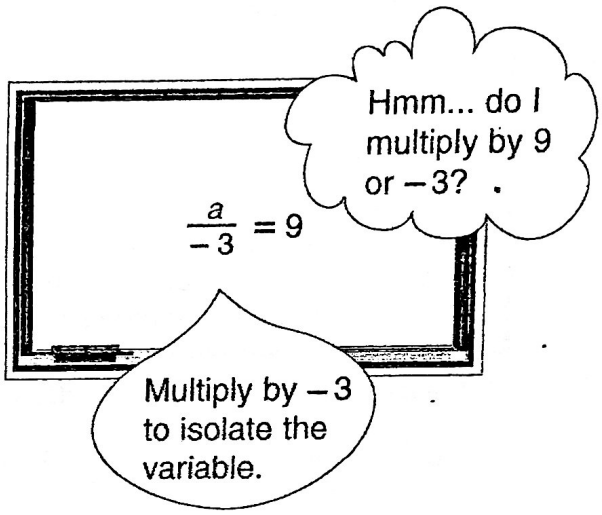
$s - 3.84 = 7.2$

$+3.84 \quad +3.84$

$s \quad = 11.04$

## Problem 2

Sometimes you need to multiply both sides by a number in order to isolate the variable.




The solution to the equation is $a = -27$.

## Problem 3

A fraction-and-a-whole-number problem: $\frac{1}{4}x = 9 \longrightarrow 4\left(\frac{1}{4}\right)x = 4(9) = 36$

How is this problem like Problem 2? How is it different from Problem 2?
Both deal with rational numbers. One is written with the variable divided by a number, and the other shows the variable multiplied by a fraction.

1. In Problem 1, how do you get the result "11.04" by adding "7.2" and "3.84" since they have different numbers of decimal places?

   _____

2. In Problem 2, what rational number is a coefficient of $a$?

   _____

3. What is another way to write $\frac{1}{4}x$ in Problem 3? _____

Name _____ Date _____ Class _____

LESSON 6-2

# One-Step Equations with Rational Coefficients

## *Reteach*

### Using Addition to Undo Subtraction

Addition "undoes" subtraction. Adding the same number to both sides of an equation keeps the equation balanced.

$$x - 5 = -6.3$$
$$x - 5 + \mathbf{5} = -6.3 + \mathbf{5}$$
$$x = -1.3$$

### Using Subtraction to Undo Addition

Subtraction "undoes" addition. Subtracting a number from both sides of an equation keeps the equation balanced.

$$n + \frac{3}{4} = -15$$
$$n + \frac{3}{4} - \frac{3}{4} = -15 - \frac{3}{4}$$
$$n = -15\frac{3}{4}$$

Be careful to identify the correct number that is to be added or subtracted from both sides of an equation. The numbers and variables can move around, as the problems show.

**Solve using addition or subtraction.**

1. $6 = m - \frac{7}{8}$ _____

2. $3.9 + t = 4.5$ _____

3. $10 = -3.1 + j$ _____

### Multiplication Undoes Division

To "undo" division, multiply both sides of an equation by the number in the denominator of a problem like this one.

$$\frac{m}{3} = 6$$
$$3 \times \frac{m}{3} = 3 \times 6$$
$$m = 18$$

### Division Undoes Multiplication

To "undo" multiplication, divide both sides of an equation by the number that is multiplied by the variable as shown in this problem.

$$4.5p = 18$$
$$\frac{4.5p}{4.5} = \frac{18}{4.5} = 4$$

Notice that decimals and fractions can be handled this way, too.

**Solve using division or multiplication.**

4. $\frac{y}{2.4} = 5$ _____

5. $0.35w = -7$ _____

6. $-\frac{a}{6} = 1$ _____

Name _____ Date _____ Class _____

LESSON 6-2

# One-Step Equations with Rational Coefficients

## *Practice and Problem Solving: A/B*

**Solve.**

1. $\frac{1}{3}n = 4$

_____

$n =$ _____

2. $y + 0.4 = 2$

_____

$y =$ _____

3. $12 = 0.5a$

_____

$a =$ _____

4. $-1 = \frac{1}{3}v$

_____

$v =$ _____

5. $15.5z = -77.5$

_____

$z =$ _____

6. $\frac{t}{-11} = 11$

_____

$t =$ _____

7. $0.5m = 0.75$

_____

$m =$ _____

8. $\frac{r}{4} = 250$

_____

$r =$ _____

**Write each sentence as an equation.**

9. Eight less than $\frac{1}{3}$ a number $n$ is $-13$.

_____

10. A number $f$ multiplied by $-12.3$ is $-73.8$.

_____

**Write an equation. Then, solve.**

11. During unusually cold weather, the temperature in Miami Beach was 10°C. This was 12 degrees more than in Tallahassee. What is the temperature in Tallahassee?

_____

12. A swimmer swam 48 kilometers in $d$ days. What is the value of $d$ if the swimmer swam an average of 3.2 kilometers daily?

_____

13. Fifteen tickets cost $193.75. What is the average cost of each ticket?

_____

14. A student walks $\frac{1}{4}$ mile from her home to the store on her way to a friend's house. If the store is $\frac{1}{3}$ of the way to her friend's house, how far is her friend's house from her home?

_____

Name _____ Date _____ Class _____

LESSON 8-2

# One-Step Equations with Rational Coefficients

## *Practice and Problem Solving: C*

**Solve using addition, subtraction, multiplication, or division.**

1. $0.6x = 3.2$

2. $m + 2.3 = 9.4$

3. $\frac{y}{0.23} = 12$

4. $z - 2.3 = 0.46$

5. $s + \frac{3}{7} = 6$

6. $\frac{5}{6}r = 4\frac{3}{5}$

7. $f - \frac{3}{4} = 1\frac{1}{2}$

8. $\frac{3m}{\frac{2}{3}} = 7$

**Answer the questions.**

9. a. A painter works 37.5 hours one week. If she worked 5 days, how many hours did she work on average per day?

   b. At $15.75 per hour, how much did she make per day?

10. A recipe calls for $3\frac{2}{3}$ cups of flour. Earl used $7\frac{1}{3}$ cups. By how much did he increase the recipe?

11. Explain how you could use either of two operations to solve Exercise 10.

12. A bottle of fruit juice holds 1.89L. If Shakira bought almost 6L of fruit juice, how many bottles did she buy?

13. Eric had 15.3 feet of fishing line. He cut off a piece and had 38.4 inches left. How long was the piece he cut?