LESSON 7-4

Equations with Many Solutions or No Solution

Tell whether each equation has one, zero, or infinitely many solutions. If the equation has one solution, solve the equation.

1. \(4(x - 2) = 4x + 10\)

2. \(\frac{1}{2}n + 7 = \frac{n + 14}{2}\)

3. \(6(x - 1) = 6x - 1\)

4. \(6n + 7 - 2n - 14 = 5n + 1\)

5. \(4x + 5 = 9 + 4x\)

6. \(\frac{1}{2}(8 - x) = \frac{8 - x}{2}\)

7. \(8(y + 4) = 7y + 38\)

8. \(4(-8x + 12) = -26 - 32x\)

9. \(2(x + 12) = 3x + 24 - x\)

10. \(3x - 14 + 2(x - 9) = 2x - 2\)

Solve.

11. Cell phone company A charges $20 per month plus $0.05 per text message. Cell phone company B charges $10 per month plus $0.07 per text message. Is there any number of text messages that will result in the exact same charge from both companies?

12. Lisa’s pet shop has 2 fish tanks. Tank A contains smaller fish who are fed 1 gram of food each per day. Tank B contains larger fish who are fed 2 grams of food each per day. If Tank B contains \(\frac{2}{3}\) the number of fish that Tank A contains, will Lisa ever feed both tanks the same amount of food?
Practice and Problem Solving: C
1. \( x = 6 \)
2. \( n = 2 \)
3. \( y = 3 \)
4. \( k = 9 \)
5. \( m = \frac{1}{4} \)
6. \( x = -6 \)
7. 11 oz
8. 137 mi
9. Benjamin: 13; Kevan: 17
10. 11 mi
11. 19 quarters, 23 dimes

Practice and Problem Solving: D
1. \( x = 10 \)
2. \( n = 15 \)
3. \( s = 2 \)
4. \( p = \frac{1}{2} \)
5. \( y = -6 \)
6. \( k = -1 \)
7. \( m = 11 \)
8. \( x = 6 \)
9. a. \( k = 6 \)
   b. \( 2(k - 6) \)
   c. \( 2(k - 6) = 18 \)
   d. Kevan is 9 and Katie is 15.

Reteach
1. \( i = -3 \)
2. \( n = 4 \)
3. \( y = \frac{2}{3} \)
4. \( x = 14 \)

Reading Strategies
1. \( -4(j + z) - 3j = 6 \)
   \(-4j - 8 - 3j = 6 \)
   \(-7j - 8 = 6 \)
   \(-7j = 1 \)
   \( j = -2 \)
2. \( 4n + 6 - 2n = 3(n + 3) - 11 \)
   \( 4n + 6 - 2n = 3n + 9 - 11 \)
   \( 2n + 6 = 3n - 2 \)
   \( 8 = n \)
3. \( 5(r - 1) = 2(r - 4) - 6 \)
   \( 5r - 5 = 2r - 8 - 6 \)
   \( 5r - 5 = 2r - 14 \)
   \( 3r = -9 \)
   \( r = -3 \)
4. \( 2\left(n + \frac{1}{3}\right) = \frac{3}{2}n + 1 \)
   \( 2n + \frac{2}{3} = \frac{3}{2}n + 1 \)
   \( n = \frac{2}{3} \)

Success for English Learners
1. \( x = 5 \)
2. 11 quarters; 20 pennies

LESSON 7-4

Practice and Problem Solving: A/B
1. zero solutions
2. infinitely many solutions
3. zero solutions
4. \( n = -8 \); one solution
5. zero solutions
6. infinitely many solutions
7. \( y = 6 \); one solution
8. zero solutions
9. infinitely many solutions
10. \( x = 10 \); one solution
11. Yes; 500 text messages will cost exactly the same from both companies.
12. No, the two tanks will never need the exact same amount of food.

Practice and Problem Solving: C
1. zero solutions
2. one solution; \( m = 7 \)
3. infinitely many solutions
4. one solution; \( n = -8 \)
5. one solution; \( r = 14 \)