

Study Guide for Unit Test #1

Define the following using your own words:

- a. One Solution: $x = a \#$, 1 value of x make statement true
- b. No Solutions: no values of x makes equation true
- c. Infinite Solutions: all values of x makes the statement true

Solve for x and determine whether the equation has **one solution**, **no solutions**, or **infinite solutions**.

$$1. \frac{-5x-5}{-5} = 6 \cdot -5$$

$$-5x-5 = -30$$

$$+5 \quad +5$$

$$-5x = -25$$

$$\frac{-5x}{-5} = \frac{-25}{-5}$$

$$x = 5$$

$$2. 6x - 14 = 3(2x - 3) - 5$$

$$6x - 14 = 6x - 9 - 5$$

$$6x - 14 = 6x - 14$$

$$\frac{-6x}{-6x} \quad \frac{-6x}{-6x}$$

$$-14 = -14$$

∞ infinitely many solutions

$$3. 5x - 1 + 3x = 4(2x - 1)$$

$$5x - 1 + 3x = 8x - 4$$

$$8x - 1 = 8x - 4$$

$$\frac{-8x}{-8x} \quad \frac{-8x}{-8x}$$

$$-1 = -4$$

no solution

Creating Equations:

Multiple answers

One Solution:

$$2x + 5 = x + 5 \quad \text{or} \quad x - 4$$

No Solutions:

$$2x + 5 = 2x - 4, \quad x + x + 5$$

Infinite Solutions:

$$2x + 5 = 2x + 5 \quad \text{or} \quad x + x + 3 + 2$$

Word Problem: Mr. Ta wants to order tickets to a movie for his family members. Mr. Ta buys 3 child tickets and 5 adult tickets. A child ticket costs x dollars and an adult ticket costs 4 more dollars than a child ticket. Mr. Ta spends 100 dollars for the movie tickets.

Write an equation to represent the word problem

$$\frac{3(x)}{\#(\text{cost of child ticket})} + \frac{5(x+4)}{\#(\text{cost of adult ticket})} = \frac{100}{\text{total cost of tickets}}$$

Using the equation you created above, how much does a child ticket cost? How much for an adult ticket?

$$3x + 5(x+4) = 100$$

$$3x + 5x + 20 = 100$$

$$8x + 20 = 100$$

$$\frac{-20}{-20} \quad \frac{-20}{-20}$$

$$8x = 80$$

$$\frac{8x}{8} = \frac{80}{8}$$

$$x = 10$$

Check work

$$3(10) + 5(14) = 100$$

$$30 + 70 = 100$$

$$100 = 100 \quad \checkmark$$

Cost of child ticket: \$ 10

Cost of adult ticket: \$ 14