# Solving Linear Equations Worksheet Answer Key PDF

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## Part 1: Building a Foundation

**What is the general form of a linear equation?**

undefined.  A) $ax^2 + bx + c = 0$

**undefined.  B) $ax + b = c$ ✔**

undefined.  C) $a^2 + b^2 = c^2$

undefined.  D) $x^2 + y^2 = r^2$

The general form of a linear equation is $ax + b = c$.

**Which of the following are properties of linear equations? (Select all that apply)**

**undefined.  A) They graph as straight lines. ✔**

**undefined.  B) They have a constant rate of change. ✔**

undefined.  C) They can have multiple variables squared.

undefined.  D) They always pass through the origin.

Linear equations graph as straight lines and have a constant rate of change.

**Explain what a one-step linear equation is and provide an example.**

**A one-step linear equation is an equation that can be solved by performing one operation, such as addition or subtraction. An example is $x + 5 = 10$.**

**List two inverse operations used in solving linear equations and give an example of each.**

1. Inverse Operation 1

**Addition (e.g., $x + 3 = 7$)**

2. Inverse Operation 2

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**Subtraction (e.g., x - 5 = 10)**

Two inverse operations are addition and subtraction, for example, adding 3 and subtract 3.

## Part 2: Understanding and Interpretation

**If you have the equation 3x + 5 = 11, what is the first step to solve for x?**

undefined. A) Add 5 to both sides

**undefined. B) Subtract 5 from both sides ✓**

undefined. C) Divide both sides by 3

undefined. D) Multiply both sides by 3

The first step is to subtract 5 from both sides.

**Which of the following equations have no solution? (Select all that apply)**

**undefined. A) 2x + 3 = 2x + 5 ✓**

undefined. B) 4x - 4 = 4x - 4

undefined. C) x + 2 = x + 2

**undefined. D) 5x + 1 = 5x + 2 ✓**

Equations A and D have no solution because they lead to contradictions.

**Describe the process of checking a solution to a linear equation.**

**To check a solution, substitute the value back into the original equation to see if both sides are equal.**

## Part 3: Application and Analysis

**Solve the equation 4x - 7 = 5. What is the value of x?**

undefined. A) 1

undefined. B) 2

**undefined. C) 3 ✓**

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undefined.  D) 4

The value of x is 3.

**Which of the following steps are necessary to solve the equation 2(x - 3) = 4? (Select all that apply)**

**undefined.  A) Distribute the 2 ✓**

undefined.  B) Add 3 to both sides
undefined.  C) Divide both sides by 2
undefined.  D) Subtract 3 from both sides

You need to distribute the 2 and then solve for x.

**A train travels at a constant speed. If it covers 150 miles in 3 hours, write a linear equation representing the distance d traveled in t hours.**

**The linear equation is d = 50*t, where 50 is the speed in miles per hour.**

**Which equation represents a line parallel to y = 2x + 3?**

**undefined.  A) y = 2x - 4 ✓**

undefined.  B) y = -2x + 3
undefined.  C) y = 1/2x + 3
undefined.  D) y = 3x + 2

The equation y = 2x - 4 represents a line parallel to y = 2x + 3.

**Analyze the following equations and determine which have infinite solutions. (Select all that apply)**

**undefined.  A) x + 2 = x + 2 ✓**

undefined.  B) 3x + 4 = 3x + 5
**undefined.  C) 5x - 5 = 5x - 5 ✓**
undefined.  D) 2x + 3 = 2x + 4

Equations A and C have infinite solutions because they are identical.

**Explain why the equation 3(x - 2) = 3x - 6 has infinite solutions.**

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**The equation simplifies to 0 = 0, which is true for all values of x, indicating infinite solutions.**

## Part 4: Evaluation and Creation

**Which of the following scenarios can be modeled by a linear equation?**

undefined. A) The area of a circle as a function of its radius

**undefined. B) The total cost of apples if each apple costs $1 ✓**

undefined. C) The volume of a cube as a function of its side length

undefined. D) The distance traveled by a car accelerating from rest

The total cost of apples if each apple costs $1 can be modeled by a linear equation.

**Evaluate the following statements and identify which are true about linear equations. (Select all that apply)**

**undefined. A) They can model relationships with a constant rate of change. ✓**

undefined. B) They are always quadratic.

**undefined. C) They can have no solution, one solution, or infinite solutions. ✓**

undefined. D) They are represented graphically by a parabola.

Statements A and C are true about linear equations.

**Create a real-world problem that can be solved using a linear equation, and provide the solution.**

**An example problem could be calculating the cost of gas for a road trip based on miles driven and gas price per gallon.**

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