



Name: \_\_\_\_\_

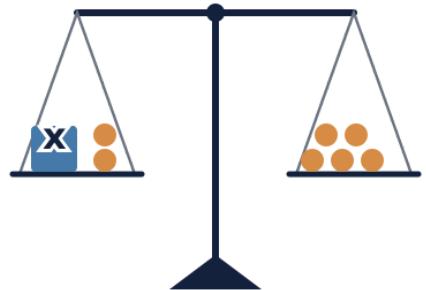
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## Algebra Homework: One & Two-Step Equations

### 1. Quick Review: Keeping the Balance

Solving an equation is like balancing a scale. Whatever you do to one side of the equal sign (=), you must do to the other.

To isolate the variable (get the letter by itself), we use **Inverse Operations**. These are operations that "undo" each other.



#### Memory Check:

- The inverse of **Addition (+)** is **Subtraction (-)** The inverse of **Multiplication (x)** is **Division (÷)**

### 2. Warm-Up: One-Step Equations

Start by isolating the variable using a single inverse operation. Be careful with negative numbers!

1. <b>Solve for x:</b> $x + 8 = 20$	a) $x = 28$ b) $x = 12$ c) $x = 160$ d) $x = 2.5$
2. <b>Solve for y:</b> $y - 5 = -2$	a) $y = 3$ b) $y = -7$ c) $y = 7$ d) $y = -3$
3. <b>Solve for m:</b> $4m = 24$	a) $m = 20$ b) $m = 96$ c) $m = 6$

	d) $m = 28$
4. Solve for $k$ : $k \div 3 = 5$	a) $k = 15$ b) $k = 5/3$ c) $k = 2$ d) $k = 8$

### 3. Two-Step Equations

When solving two-step equations, order matters. Think of it as **Reverse BEDMAS**.

1. First, undo the addition or subtraction. Second, undo the multiplication or division.

Equation	Show Your Work	Final Solution
$2x + 3 = 13$		$x =$
$x/4 - 2 = 1$		$x =$
$-3n + 5 = -4$		$n =$

### 4. Detective Work: Spot the Error 🕵️



A student tried to solve the equation  $2x + 4 = 12$ , but they made a mistake in their steps.

#### Student's Incorrect Work:

$$1. \quad 2x + 4 = 12 \quad 2x = 12 + 4 \quad 2x = 16 \quad x = 8$$

**Explain what the student did wrong and provide the correct solution.**

## 5. From Words to Math

Translate these real-world scenarios into algebraic equations and solve them.

- Let  $x$  represent the unknown value.

1. **Scenario 1:** A hockey team scored a total of 7 goals. They scored 3 goals in the first period, and an equal number of goals in the second and third periods. Which equation represents this?

- a)  $2x + 3 = 7$
- b)  $3x + 2 = 7$
- c)  $x + 3 = 7$
- d)  $2x - 3 = 7$



**Scenario 2:** It costs \$15 to enter the local fair, plus \$3 for every ride you go on. You spent a total of \$33. How many rides did you go on? (Write the equation and solve).

Equation:

Solution:

## 6. Challenge: The Storyteller

Look at the equation below. Write your own word problem that would require this equation to solve it.

**Equation:  $5x + 10 = 35$**

# Answer Key

## 2. Warm-Up: One-Step Equations

### Multiple Choice:

1.  $x = 12$
2.  $y = 3$
3.  $m = 6$
4.  $k = 15$

## 3. Two-Step Equations

1.  $x=5$ ; 2.  $x=12$ ; 3.  $n=3$

## 4. Detective Work: Spot the Error

The student added 4 instead of subtracting 4 in the first step. Correct:  $2x = 12 - 4$ , so  $2x = 8$ , and  $x = 4$ .

## 5. From Words to Math

### Multiple Choice:

1.  $2x + 3 = 7$

Equation:  $3x + 15 = 33$ . Solution:  $3x = 18$ , so  $x = 6$  rides.

## 6. Challenge: The Storyteller

Answers will vary. Example: 'I bought 5 binders and a \$10 pen. The total was \$35. How much did each binder cost?'