

4-1D Solving One-Step Equations by Adding & Subtracting

Algebraic Expression – includes numbers, variables, and operations.

Algebraic Equation – includes numbers, variables, operations, AND an equal sign.

Solution – the value of the variable that makes the equation true.

To Solve Equations:

1. Use inverse operations to isolate the variable.
2. Whatever you do to one side of the equation, you must do to the other side. (Properties of Equality)
3. Always check & graph your answer!!!

Notes: *plus/minus signs also indicate whether a number or variable is positive/negative!!!

*add, subtract, and divide below the problem (use fraction bar instead of division symbol); multiply to the side of the problem

Graphing on a number line:

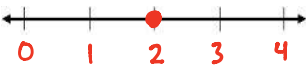
1. Draw, label number line using arrows and five values – all values are integers with solution placed in the middle.
2. Plot a filled in dot on the number line above the solution.

REMEMBER: Integer Rules

1. Add:
 - a. Same signs → Add the numbers, keep the sign
 - b. Different signs → Subtract (larger number - smaller number), keep sign of larger number
2. Subtract: Keep (1st number the same) → Change (subtraction to addition) → Change (2nd number); follow addition rules

Ex. 1: Graph each solution on a number line.

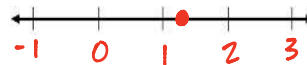
A. $x = 2$



B. $x = -4$



C. $x = 1.2$



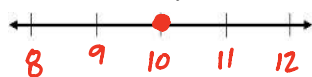
D. $x = -3.5$



Ex. 2: Solve each equation and check your solution. Graph the solution on a number line.

A. $x + 5 = 15$

$$\begin{array}{r} x + 5 = 15 \\ -5 \quad -5 \\ \hline x = 10 \end{array}$$



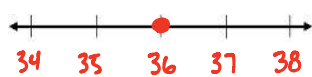
B. $6 + y = -4$

$$\begin{array}{r} 6 + y = -4 \\ -6 \quad -6 \\ \hline y = -10 \end{array}$$



C. $-21 + a = 15$

$$\begin{array}{r} -21 + a = 15 \\ +21 \quad +21 \\ \hline a = 36 \end{array}$$



D. $-13 = -24 + r$

$$\begin{array}{r} -13 = -24 + r \\ +24 \quad +24 \\ \hline 11 = r \\ r = 11 \end{array}$$



E. $n - 9 = -4$

$$\begin{array}{r} n - 9 = -4 \\ +9 \quad +9 \\ \hline n = 5 \end{array}$$



F. $3 = x - 52$

$$\begin{array}{r} 3 = x - 52 \\ +52 \quad +52 \\ \hline 55 = x \\ x = 55 \end{array}$$

