

4-2D Solving One-Step Equations with Rational Numbers

REMEMBER:

1. Decimals:

- a. Add or Subtract – must line up decimal point
- b. Multiply – add up all decimal places in both numbers & place that many decimal places in answer
- c. Divide – cannot divide by decimal, must move decimal point behind last digit, then move decimal point inside same number of places

2. Fractions:

- a. Add or Subtract – must have a common denominator
- b. Multiply – change mixed numbers to improper fractions, cross cancel, then multiply across
- c. Divide – change mixed numbers to improper fractions, “keep (1st fraction the same) → change (division to multiplication) → flip (2nd fraction)” cross cancel, then multiply across

Note: 1. Always follow INTEGER RULES.
 2. Cannot cross cancel across the equal sign.

Ex. 1: Solve each equation. Graph your solution on a number line.

A. $x + 15.2 = -9.278$

$$\begin{array}{r} -15.2 \\ \hline -15.200 \end{array}$$

-26 -25 -24 -23 -22

$x = -24.478$

B. $y - 9.25 = -21.75$

$$\begin{array}{r} +9.25 \\ \hline +9.25 \end{array}$$

-14 -13 -12 -11 -10

$y = -12.50$

$y = -12.5$

C. $\frac{0.6x}{0.6} = \frac{54}{0.6}$

$x = 90$

88 89 90 91 92

D. $\left(\frac{x}{-2.13}\right)^{(-2.13)} = (-4.16)(-2.13)$

$x = 8.8608$

6 7 8 9 10

E. $4 = -\frac{2}{3}y$ ↖ multiply by reciprocal

$$\frac{3}{-2} \cdot \frac{4}{1} = \left(-\frac{2}{3}\right)y \cdot \frac{3}{-2}$$

$$\frac{12}{-2} = y$$

$y = -6$

-8 -7 -6 -5 -4

F. $x - \frac{7}{9} = \frac{5}{7} \rightarrow \frac{45}{63}$

$$+ \frac{7}{9} \quad + \frac{7}{9} \rightarrow \frac{49}{63}$$

$x = \frac{94}{63}$ or $1 \frac{31}{63}$

0 1 2 3 4

4-3B: Solve Two-Step Equations

Two-Step Equation: contains two operations which requires two steps to isolate the variable.

* Add/subtract first, then multiply/divide

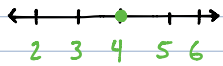
Ex. 1: Solve each equation. Graph solution on number line.

A) $4x + 3 = 19$

$$\begin{array}{r} -3 \quad -3 \\ \hline 4x = 16 \end{array}$$

$$\begin{array}{r} 4 \quad 4 \\ \hline x = 4 \end{array}$$

$$\boxed{x = 4}$$



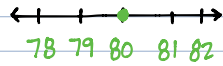
B) $-4y = -8 - \frac{1}{2}$

$$\begin{array}{r} +8 \quad +8 \\ \hline -2(-40) = (-\frac{1}{2}) - 2 \end{array}$$

$$80 = y$$

$$\boxed{y = 80}$$

$$\boxed{y = 80}$$



C) $9 + \frac{1}{3}x = -2$

$$\begin{array}{r} -9 \quad -9 \\ \hline 3(\frac{1}{3}x) = (-11)3 \end{array}$$

$$3(\frac{1}{3}x) = (-11)3$$

$$\boxed{x = -33}$$

