

Solving Equations (8.1)

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Expressions → can be simplified by grouping or cancelling like terms $4x^2 + 2x - 5$

Equations → contain an EQUAL sign so you are solving to find the value of the variable $3x - 4 = 7$

Steps for Solving Equations:

① Think of the equal sign as a line that divides the Left (LS) from the Right (RS)

② Perform the opposite operation using SAME DEB! ★ This action is done on Both LS and RS ★.

③ After you find a value for your variable 'check' your answer by substituting your answer into the original equation. (BEDMAS)

4 is a coefficient
4 multiplies to x

Solve and check the following:

1.
$$\begin{array}{ccc} \text{LS} & & \text{RS} \\ 4x & = & 12 \\ \div 4 & & \div 4 \\ \hline x & = & 3 \end{array}$$

$$\begin{array}{l} (3) \\ \downarrow \\ 4x = 12 \\ 4(3) \\ 12 = 12 \end{array}$$

$$\begin{array}{l}
 \text{LS} \qquad \qquad \text{RS} \\
 2. \quad 2x = -\frac{3}{4} \\
 \quad \quad \div 2 \qquad \quad \div 2 \\
 \quad \quad \hline \\
 \quad \quad x = -\frac{3}{8}
 \end{array}$$

$$\begin{array}{l}
 \text{LS} \qquad \qquad \text{RS} \\
 2x = -\frac{3}{4} \\
 2\left(-\frac{3}{8}\right) \\
 \hline \\
 -\frac{3}{4} = -\frac{3}{4}
 \end{array}$$

$$\begin{array}{l}
 -\frac{3}{4} \div \frac{2}{1} \\
 \hline \\
 -\frac{3}{4} \times \frac{1}{2} = -\frac{3}{8}
 \end{array}$$

$$\begin{array}{l}
 \text{LS} \qquad \qquad \text{RS} \\
 3. \quad \frac{2}{5} = 5x \\
 \quad \quad \div 5 \qquad \quad \div 5 \\
 \quad \quad \hline \\
 \quad \quad \frac{2}{25} = x
 \end{array}$$

$$\begin{array}{l}
 \text{LS} \qquad \qquad \text{RS} \\
 \frac{2}{5} = 5x \\
 \quad \quad \div 5 \qquad \quad \div 5 \\
 \quad \quad \hline \\
 \quad \quad \frac{2}{25} = x
 \end{array}$$

★ Note ★ $\frac{x}{4}$ same as $\frac{1}{4}x$ $\frac{x+2}{3}$ same as $\frac{1}{3}(x+2)$

$\frac{1}{3}$ is coefficient

$$\begin{array}{l}
 \text{LS} \qquad \qquad \text{RS} \\
 4. \quad \frac{1}{3}m = -\frac{2}{5} \\
 \quad \quad \div \frac{1}{3} \qquad \quad \div \frac{1}{3} \\
 \quad \quad \hline \\
 \quad \quad m = -\frac{6}{5} \\
 \quad \quad m = -1\frac{1}{5}
 \end{array}$$

$$\begin{array}{l}
 \frac{1}{3}m = -\frac{2}{5} \\
 \frac{1}{3}\left(-\frac{6}{5}\right) \\
 \hline \\
 -\frac{2}{5} = -\frac{2}{5} \quad \checkmark
 \end{array}$$

$$5. \quad -3\frac{1}{2} = -2\frac{1}{2}x$$