

Solving Equations: Guided Notes

One-Step Equations	Two-Step Equations
<p>6x MEANS MULTIPLY, SO DIVIDE TO CANCEL!</p> $\frac{2x}{2} = \frac{-18}{2}$ <p>DO THE OPPOSITE OPERATION</p> $x = -9$ <p>$\frac{x}{3}$ MEANS DIVIDE SO MULTIPLY TO CANCEL</p> $3 \cdot \frac{x}{3} = 5 \cdot 3$ $x = 15$ $1 = x + 4$ $\begin{array}{r} -4 \\ -4 \end{array}$ $-3 = x$	$2x - 3 = 9$ $\begin{array}{r} +3 \\ +3 \end{array}$ $\frac{2x}{2} = \frac{12}{2}$ $x = 6$ $\frac{3}{4} = \frac{2x}{8}$ <p>PROPORTIONS (RATIOS AND AN EQUAL SIGN) CROSS MULTIPLY!</p> $\frac{24}{8} = \frac{8x}{8}$ $x = 3$

Distribute and combine like terms:

$-7(x - 6) + 7 = 105$ $-7x + 42 + 7 = 105$ $-7x + 49 = 105$ $\begin{array}{r} -49 \\ -49 \end{array}$ $-7x = 56$ $\frac{-7x}{-7} = \frac{56}{-7}$ $x = -8$	<p>DISTRIBUTE THE -7</p> <p>COMBINE LIKE TERMS ON SAME SIDE!</p> <p>← NOW IT IS A 2-STEP EQUATION!</p>
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$123 = 8(4x - 4) - x$ $123 = 32x - 32 - x$ <p>LIKE TERMS!</p> $123 = 31x - 32$ $\begin{array}{r} +32 \\ +32 \end{array}$ $155 = 31x$ $\frac{155}{31} = \frac{31x}{31}$ $x = 5$	$-3x + 5(7x + 3) = 271$ $-3x + 35x + 15 = 271$ $32x + 15 = 271$ $32x = 256$ $x = 8$
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Variables on same side (combine like terms first)

$3x + 2 - 6x = 14$ $3x + 2 = 14$ $\begin{array}{r} -2 \\ -2 \end{array}$ $3x = 12$ $\frac{3x}{3} = \frac{12}{3}$ $x = 4$
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$$11 = \underbrace{3x + 4} - \underbrace{5x + 3x}$$

$$11 = 4 + x$$

$$-4 \quad -4$$

$$\textcircled{7 = x}$$

$$\underbrace{-6 + 8 + 4} = \underbrace{2p - 3p} + 3$$

$$6 = -p + 3$$

$$-3 \quad -3$$

$$\underline{\underline{3}} = \underline{\underline{-p}}$$

$$\underline{\underline{-1}} \quad \underline{\underline{-1}}$$

$$\textcircled{p = -3}$$

Variables on opposite sides

$$-4 - 5x = 5 - 2x$$

$$+2x \quad +2x$$

$$-4 - 3x = 5$$

$$+4 \quad +4$$

$$-3x = 9$$

$$\underline{\underline{-3}} \quad \underline{\underline{-3}}$$

$$\textcircled{x = -3}$$

MOVE ALL VARIABLES TO ONE SIDE
(DOESN'T MATTER WHICH SIDE)

$$3x - 4 = 2x - 3$$

$$-2x \quad -2x$$

$$x - 4 = -3$$

$$+4 \quad +4$$

$$\textcircled{x = 1}$$

$$x - 3 = 2 - 4x$$

$$+4x \quad +4x$$

$$5x - 3 = 2$$

$$+3 \quad +3$$

$$\underline{\underline{5x}} = \underline{\underline{5}}$$

$$\textcircled{x = 1}$$

$$3x + 9 = 7x - 7$$

$$-7x \quad -7x$$

$$-4x + 9 = -7$$

$$-9 \quad -9$$

$$-4x = -16$$

$$\underline{\underline{-4}} \quad \underline{\underline{-4}}$$

$$\textcircled{x = 4}$$

$$-3x - 10 = x + 2$$

$$-x \quad -x$$

$$-4x - 10 = 2$$

$$+10 \quad +10$$

$$-4x = 12$$

$$\underline{\underline{-4}} \quad \underline{\underline{-4}}$$

$$\textcircled{x = -3}$$