

# Solving 1 and 2-Step Equations

**A.REI.3** Solve linear equations and inequalities in one variable including equations with coefficients represented by letters.

*For example, given  $ax + 3 = 7$ , solve for  $x$ .*

**What am I learning today?**

How to solve a 1-step equation

**How will I show that I learned it?**

Solve a simple equation by isolating the variable

*get alone*

To isolate a variable, we use INVERSE OPERATIONS.

SUBTRACTION is the inverse of addition.

DIVISION is the inverse of multiplication.

$$1) \ x + 7 = 20$$

~~-7~~     -7

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$$x = 13$$

$$2) \quad x - \cancel{3} = 12$$

$+3 \quad +3$

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$$x = 15$$

$$3) \begin{array}{r} -9 + x = -2 \\ +9 \quad \quad +9 \\ \hline x = 7 \end{array}$$

$$4) \frac{5x}{5} = \frac{-35}{5}$$

$$x = -7$$

$$5) x \div 2 = 8$$

$$\cancel{2} \left( \frac{x}{\cancel{2}} = \cancel{8} \right) 2$$
$$x = 16$$



$$2) \frac{x}{-3} = (3) - 3$$

$$x = -9$$

$$1) \quad 5x + 3 = 20$$

~~-3~~     ~~-3~~

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$$\frac{5x}{5} = \frac{17}{5}$$

$$x = 17/5 = 3\frac{2}{5} = 3.4$$

PEMDAS

←

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

~~+2~~     +2

$$5 \left( \frac{x}{5} \right) = (5) 5$$
$$x = 25$$

$$\frac{25}{5} - 2$$
$$5 - 2 = 3$$

✓

$$3) \quad \underline{7(x - 6)} = -49$$

$$7x - 42 = -49$$
$$+ 42 \quad + 42$$

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$$\cancel{7}x = \cancel{-7}$$

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$$\cancel{7} \quad \cancel{7}$$
$$x = -1$$

$$\cancel{7}(x - 6) = \cancel{-49}$$

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$$\cancel{7} \quad \cancel{7}$$

$$x - \cancel{6} = \cancel{-7}$$
$$+ \cancel{6} \quad + \cancel{6}$$

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$$x = -1$$

$$4) \cancel{2} \left( \frac{(x + 6)}{\cancel{-2}} \right) = (5) - 2$$

move  
1st

$$x + \cancel{6} = -10$$
$$\begin{array}{r} -6 \\ -6 \end{array}$$

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$$(x = -16)$$

Try these problems

$$1. \quad 3x - 7 = 4$$

$$\quad \quad \quad +7 \quad +7$$

$$\hline 3x = 11$$

$$\frac{3x}{3} = \frac{11}{3}$$

$$3. \quad -2(7 - x) = 12$$

$$\cancel{-14} + 2x = 12$$

$$\cancel{+14} \quad \quad \quad +14$$

$$\hline 2x = 26$$

$$\frac{2x}{2} = \frac{26}{2}$$

$$x = 13$$

~~3. 666666~~

$$2. \quad 8 - 2x = -18$$

$$\quad \quad \quad -8 \quad \quad \quad -8$$

$$\hline -2x = -26$$

$$\frac{-2x}{-2} = \frac{-26}{-2}$$

$$x = 13$$

$$\cancel{4}(-6 + x) = -4 \cdot 3$$

$$\quad \quad \quad 3$$

$$\cancel{-6} + x = -12$$

$$\cancel{+6} \quad \quad \quad +6$$

$$\hline x = -6$$

On the left page, try these problems

1.  $x + c = 12$

2.  $3x - b = 9$

3.  $ax + y = -5$

4.  $\frac{k + x}{m} = z$

