

2.0 Solving Linear Equations

one and two-step



$$5x - 7 = 18$$

$$\begin{array}{r} 5x = 25 \\ \hline \end{array}$$

$$x = 5$$

$$\star 2(4x + 10) = 12x$$

$$\begin{array}{r} 8x + 20 = 12x \\ -8x \quad -8x \end{array}$$

$$\begin{array}{r} 20 = 4x \\ \hline \end{array}$$

$$5 = x$$

$$\star 7 = \frac{2x}{5} + 1$$

$$\begin{array}{r} (5) 6 = \frac{2x}{5} \end{array}$$

$$\begin{array}{r} 30 = 2x \\ \hline \end{array}$$

$$15 = x$$



Can you solve the $\star$ 'ed questions using a different strategy?

$$\begin{array}{r} 2(4x + 10) = 12x \\ \hline 2 \end{array}$$

$$4x + 10 = 6x$$

$$10 = 2x$$

$$5 = x$$

$$\begin{array}{r} 7 = \frac{2x}{5} + 1 \\ (5) \end{array}$$

$$5(7) = 5\left(\frac{2x}{5} + 1\right)$$

$$35 = 2x + 5$$

$$30 = 2x$$

$$15 = x$$

Ex. 1 Solve for "x" in each of the following. The sum of the answers in each set is provided **SUM** so you can tell if you are getting them right. Be sure to show your work.

**SET 1** **102**

- a) $x - 13 = 43$
 b) $4x = 16$
 c) $15 - x = 6$
 d) $\frac{x}{3} = 11$

SET 2 **56**

- a) $3x + 5 = 2$
 b) $2x - 4 = 6$
 c) $3(x + 2) = 12$
 d) $-7 + \frac{x}{5} = 3$

SET 3 **15**

- a) $4x - 7 = 2x + 3$
 b) $10 - 5x = 3x - 6$
 c) $6x = 2(x + 10)$
 d) $9x - 11 = 4(x + 1)$



Can you solve the 'ed questions using a different strategy?

Set 1

$$\begin{aligned} \text{a) } x - 13 &= 43 \\ x &= 56 \end{aligned}$$

$$\begin{aligned} \text{b) } 4x &= 16 \\ x &= 4 \end{aligned}$$

$$\begin{aligned} \text{c) } 15 - x &= 6 \\ 15 - 6 &= x \\ 9 &= x \end{aligned}$$

$$\begin{aligned} \text{d) } \frac{x}{3} &= 11 \\ x &= 33 \end{aligned}$$

Set 2

$$\begin{aligned} \text{a) } 3x + 5 &= 2 \\ 3x &= -3 \\ x &= -1 \end{aligned}$$

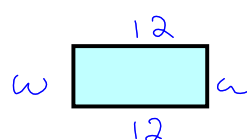
$$\begin{aligned} \text{b) } 2x - 4 &= 6 \\ 2x &= 10 \\ x &= 5 \end{aligned}$$

$$\begin{aligned} \text{c) } 3(x + 2) &= 12 \\ 3x + 6 &= 12 \\ 3x &= 6 \\ x &= 2 \end{aligned}$$

$$\begin{aligned} \text{d) } -7 + \frac{x}{5} &= 3 \\ \frac{x}{5} &= 10 \\ x &= 50 \end{aligned}$$

Ex. 2 Find the width of a rectangle if its perimeter is 42 m and its length is 12 m. Set up the equation and then solve.

Let w be the width



$$\text{perimeter} = 12 + w + 12 + w$$

$$42 = 24 + 2w$$

$$18 = 2w$$

$$9 = w$$

$\therefore$ The width is 9m

working with fractions

$$\star \frac{2x+1}{3} = \frac{x+4}{2}$$

(3)

(3)

$$(2) \quad 2x+1 = (3) \left(\frac{x+4}{2} \right) (2)$$

$$(2)(2x+1) = (3)(x+4)$$

$$\begin{array}{rcl} 4x+2 & = & 3x+12 \\ -3x & & -3x \\ -2 & & -2 \end{array} \quad x = 10$$

$$\star \frac{5x-2}{3} + 3 = \frac{3(2x+7)}{5}$$

$$3 \left(\frac{5x-2}{3} + 3 \right) = 3 \left(\frac{3(2x+7)}{5} \right)$$

$$5x-2+9 = 9(2x+7)$$

$$5(5x+7) = 9(2x+7)$$

$$25x+35 = 18x+63$$

$$25x-18x = 63-35$$

$$\frac{7x}{7} = \frac{28}{7}$$

$$x = 4$$



Can you solve the $\star$ ed questions using a different strategy?

Ex. 1 Solve for "x" in each of the following. The sum of the answers in each set is provided **SUM** so you can tell if you are getting them right. Be sure to show your work.



SET 1 **11**

a) $\frac{z}{5} + \frac{z}{4} = \frac{9}{20}$

b) $\frac{5t - 3}{4} = \frac{t}{2}$

★ c) $\frac{2b + 3}{3} = \frac{2(5b - 3)}{12}$

SET 2 **8**

a) $\frac{3y - 1}{5} - 1 = \frac{2y - 4}{3}$

b) $\frac{x - 3}{4} + \frac{x}{8} = \frac{3}{4}$

★ c) $\frac{x - 2}{5} - \frac{x - 4}{4} = \frac{x - 3}{10}$



Can you solve the ★ed questions using a different strategy?

Ex. 2 If there is time complete the posted "Math Mistakes" handout.

Practice on the handout