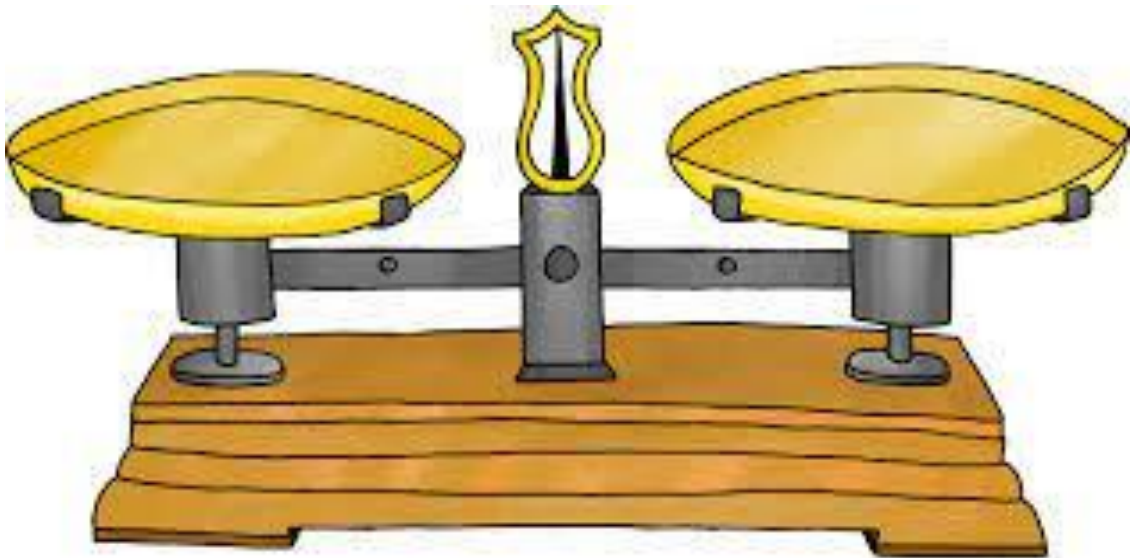


Solving Linear Equations with one variable



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Objective:
solve linear equations with one variable.



①

$$x + 4 = 6$$

$$\begin{array}{r} x + 4 = 6 \\ -4 \quad \textcircled{-4} \\ \hline x = 2 \end{array}$$

different signs

→ Subtract...

إشارات مختلفة
← نضع
← نضع إشارة الأكبر

②

$$x - 6 = -10$$

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

different signs
(subtract)

$$x = -4$$

3

$$4x = -20$$

$$\frac{\cancel{4}x}{\cancel{4}} = \frac{-20}{4}$$

$$x = -5$$

Remember :

$\frac{-}{+}$

4

$$\frac{x}{5} = -9$$

OR

$$\cancel{\frac{x}{5}} = \cancel{\frac{-9}{1}}$$

$$x \times 1 = -9 \times 5$$

$$x = -45$$

$$\frac{x}{5} = -9$$

$$5 \times \frac{x}{5} = -9 \times 5$$

$$x = -45$$

5

$$\frac{2}{3}x = -20$$

الضرب بالمقلوب

$$\frac{3}{2} * \frac{2}{3}x = \frac{-20}{1} * \frac{3}{2}$$

$$x = \frac{-10}{1} * \frac{3}{2}$$

$$x = \frac{-30}{1} = \boxed{-30}$$

6

$$3(3x + 2) = 42$$

Use distributive Law

قانون التوزيع

$$9x + 6 = 42$$
$$\begin{array}{r} 9x + 6 = 42 \\ -6 \quad -6 \\ \hline \end{array}$$

$$\frac{9x}{9} = \frac{36}{9} \Rightarrow$$

$$x = 4$$



7

$$7(5 - x) = 56$$

$$\begin{array}{r} \cancel{35} - 7x = 56 \\ \cancel{-35} \qquad \qquad -35 \\ \hline -7x = 21 \\ \cancel{\div 7} \qquad \qquad \underline{\div 7} \end{array}$$

$$x = -3$$



9

$$-2(5x - 12) = 60$$

$$\begin{array}{r} -10x + 24 = 60 \\ \quad \cancel{+24} \quad \quad \quad \cancel{-24} \\ \hline \end{array}$$

$$\begin{array}{r} -10x = 36 \\ \hline \quad \quad \quad -10 \\ \hline \end{array}$$

$$\Rightarrow x = -3.6$$



$$\frac{7x - 1}{3} = 9$$

$$\frac{(7x - 1)}{3} \Rightarrow \frac{9}{1}$$

$$(7x - 1) \times 1 = 9 \times 3$$

$$\begin{array}{r} 7x - 1 = 27 \\ \times 1 \quad + 1 \end{array}$$

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

$$x = 4$$



13

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

$$\frac{2}{3} * \frac{(x - 5)}{1} = -5 - x$$

$$\frac{2x - 10}{3} = (-5 - x)$$

$$2x - 10 = 3(-5 - x)$$

$$2x - 10 = -15 - 3x$$

$$\begin{array}{r} 2x - 10 = -15 - 3x \\ + 3x \end{array}$$

$$\begin{array}{r} \hline 5x - 10 = -15 \\ +10 \quad +10 \end{array}$$

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

$$\boxed{x = -1}$$



1 $2(3x-4) = 4x+17$

$= \frac{6x-4x}{2x}$

$6x - 8 = 4x + 17$
 $-4x$

$+2x - 8 = 17$

$2x - 8 = 17$
 $+8 \quad +8$

 $2x = 25$
 $\frac{2x}{2} = \frac{25}{2}$

$x = \left[12 \frac{1}{2}\right] = \boxed{12.5}$ ✓

نتخدم قانون التوزيع

Distributive Law

تخلص من x من أحد الطرفين
 يعقل التخلص من x الأقل

$$2) \quad \frac{3}{4}(6+x) = -2(x-5)$$

$$\frac{3}{4} \times \frac{(6+x)}{1} = -2(x-5)$$

$$\frac{(18 + 3x)}{4} = \frac{-2(x-5)}{1}$$

$$18 + 3x = -8(x-5)$$

$$18 + 3x = -8x + 40$$

$$\begin{array}{r} + 8x \quad + 8x \\ \hline 18 + 11x = 40 \end{array}$$

قانون التوزيع

نضرب ضرب تبادلي

Cross Multiplication X

قانون التوزيع

يفضل التخلص من x بأقل

$-8x$ أقل

← نضيف $+8x$ للطرفين

$$18 + 11x = 40$$

$$-18$$

$$-18$$

$$\frac{11x}{11} = \frac{22}{11}$$

$$x = 2$$

$$\textcircled{1} x - 2 = -18 - 9x$$

$$\textcircled{+9}x \qquad \qquad \qquad +9x$$

$$10x - 2 = \textcircled{-18}$$

~~+2~~ $\textcircled{+2}$

different
Signs
(Subtract)

$$\frac{10x}{10} = \frac{-16}{10}$$

$$\textcircled{x = -1.6}$$

Note :

$$\underline{1}x + \underline{9}x = 10x$$

1x تعني x

3

$$\frac{x+4}{5} = \frac{9-7x}{1}$$

Cross Multiplication

$$x+4 = 5(9-7x)$$

Distributive Law

$$\begin{array}{r}
 \textcircled{1} x + 4 = 45 - 35x \\
 + 35x + 35x \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 36x + 4 = 45 \\
 - 4 - 4 \\
 \hline
 \end{array}$$

$$\frac{36x}{36} = \frac{41}{36} \implies$$

$$x = \frac{41}{36} = 1 \frac{5}{36}$$

