

RULES FOR SOLVING

We can add or subtract same number on both side
 $x + 7 = 8$
 $x + 7 - 7 = 8 - 7$
 $x = 1$

We can multiply or divide both side by non zero number
 $3x = 6$
 $\frac{3x}{3} = \frac{6}{3}$
 $x = 2$

Keep the variable on one side and constant on other side
 $3x + 7 = 2x + 10$
 $3x - 2x = 10 - 7$
 $x = 3$

Chart

SOLUTION

Value of variable which satisfy equation
 $x = 3$ is solution of $3x + 1 = 10$ because
 $3(3) + 1 = 10$
 $9 + 1 = 10$
 $10 = 10$

LINEAR EQUATION IN ONE VARIABLE

A linear equation which has only one variable is called linear equation in one variable. For example : $x + 3 = 5$.

SOME PROBLEM

Solve: $\frac{2x+1}{3x-5} = \frac{7}{3}$

Sol. $\frac{2x+1}{3x-5} = \frac{7}{3}$

By cross Multiplication

$$\begin{aligned} 3(2x+1) &= 7(3x-5) \\ 3 \times (2x) + 3 \times (1) &= 7 \times (3x) - 7 \times (5) \\ 6x + 3 &= 21x - 35 \\ 21x - 6x &= 3 + 35 \\ 15x &= 38 \\ x &= 38/15 \end{aligned}$$

Solve: $\frac{x}{2} - \frac{3x+1}{5}$

Sol. $\frac{x}{2} - \frac{3x+1}{5}$
 $\frac{5(x) - 2(3x+1)}{10} = 6$
 $\frac{5x - 2(3x) - 2(1)}{10} = 6$
 $\frac{5x - 6x - 2}{10} = 6$
 $-x - 2 = 60$
 $x = -62$

English word

Mathematical meaning

More than, exceeds older than,	+
Less than, decreased, younger than	-
Times, of, product	\times
Divided by, quotient, per, for	\div
What, how many, etc.	x (or some other variable)

APPLICATION

Fraction	Money	Geometry	Age
Dr. of fraction is 5 more than Nr Nr. = x , Dr. = $x + 5$ Fraction = $\frac{x}{x+5}$	No. of 2 Rs. Coin is 3 times the No. of 5 Rs. Coin No. of 5 Rs. Coin = x , No. of 2 Rs. Coin = $3x$ Total money = $5 \times (x) + 2 \times (3x)$	Length of Rectangle is 5 less than twice the breadth. $b = x$ $l = 2x - 5$	My present age = x yr. After 2 yr. my age will be $(x+2)$ yr. Before 3 yr. my age was $(x-3)$ yr.