

Chapter 04

LINEAR EQUATIONS IN TWO VARIABLES

Example:

Six years hence a man's age will be 3 times his son's age, and 3 years ago he was nine times as old as his son. Find their present ages.

Solution:

Let the man's age be 'x' years.

Let the son's age be 'y' years.

	MAN	SON
Present age	x	y
6- years hence	$x + 6$	$y + 6$
3- years ago	$x - 3$	$y - 3$

According to the data,

$$x - 3 = 9(y - 3)$$

$$\Rightarrow x - 3 = 9y - 27$$

$$\Rightarrow x - 9y = 3 - 27$$

$$\Rightarrow x - 9y = -24 \rightarrow (1)$$

$$x + 6 = 3(y + 6)$$

$$\Rightarrow x + 6 = 3y + 18$$

$$\Rightarrow x - 3y = 18 - 6$$

$$\Rightarrow x - 3y = 12 \rightarrow (2)$$

Solve eq (1) – (2),

$$x - 9y = -24$$

$$x - 3y = 12$$

$$\begin{array}{r} (-) \quad (+) \quad (-) \\ \hline \end{array}$$

$$\underline{-6y = -36}$$

$$\Rightarrow y = \frac{36}{6} = 6$$

Substitute value of 'y' in eq (2),

$$x - 3(6) = 12$$

$$\Rightarrow x - 18 = 12$$

$$\Rightarrow x = 12 + 18 \Rightarrow x = 30$$

$\therefore$ The present age of man = $x = 30$ yr .

$\therefore$ The present age of son = $y = 6$ yr .

