

DAY 7

1. The difference between two numbers is 26 and one number is three times the other.
Find the numbers. [NCERT Ex. 3.3, Q 3(i)]

Sol :- Let the two numbers be x and y

First Equation Given **Difference between two numbers = 26**

$$x - y = 26 \dots\dots\dots i)$$

Second Equation **One number = three times (other number)**

$$x = 3y \quad \text{Put in i)}$$

$$i) \Rightarrow 3y - y = 26 \quad \Rightarrow 2y = 26 \quad \Rightarrow y = \frac{26}{2} = 13$$

Put this value of y in i), we get

$$i) \Rightarrow x - 13 = 26 \quad \Rightarrow x = 26 + 13 = 39$$

So required numbers are 13, 39

2. Baldev tells his daughter, "Seven years ago, I was seven times as old as you were then." Also, three years from now, I shall be three times as old as you will be." Find present ages of both. [NCERT Ex. 3.1, Q1]

Sol:- Given **Seven years ago, Baldev's age = $7 \times$ (his daughter's age)**

and **three years after, Baldev's age = $3 \times$ (his daughter's age)**

Suppose Present age of Baldev = x years and Present age of his daughter = y years

First Equation: 7 years ago Baldev's age was $(x - 7)$ years and his daughter's age was $(y - 7)$ years

$$\Rightarrow x - 7 = 7(y - 7) \quad \Rightarrow x - 7 = 7y - 49$$

$$\Rightarrow x - 7y = -49 + 7 = -42 \dots\dots\dots i)$$

Second Equation: 3 years after Baldev's age shall be $(x + 3)$ years and his daughter's age shall be $(y + 3)$ years

$$\Rightarrow x + 3 = 3(y + 3) \quad \Rightarrow x + 3 = 3y + 9$$

$$\Rightarrow x - 3y = 9 - 3 = 6 \dots\dots\dots ii)$$

As in both equations coefficients of x are same so subtracting ii) from i), we get

$$(x - 7y) - (x - 3y) = -42 - 6 \quad \Rightarrow x - 7y - x + 3y = -48$$

$$\Rightarrow -4y = -48 \quad \Rightarrow y = \frac{-48}{-4} = 12$$

Put value of y in i), we get

$$i) \Rightarrow x - 7y = -42 \quad \Rightarrow x - 7(12) = -42$$

$$\Rightarrow x = -42 + 84 = 42$$

\therefore Present age of Baldev = 42 years & daughter = 12 years

3. Five years hence, the age of Jacob will be three times that of his son. Five years ago, his age was seven times that of his son. What are their present ages?

[NCERT Ex. 3.3, Q3(vi)]

Sol:- Given **Five years hence (after), Jacob's age = $3 \times$ (his son's age)**

and **Five years ago, Jacob's age = $7 \times$ (his son's age)**

Suppose Present age of Jacob = x years and Present age of his son = y years

First Equation: 5 years after Jacob's age shall be $(x + 5)$ years and his son's age shall be $(y + 5)$ years

$$\Rightarrow x + 5 = 3(y + 5) \quad \Rightarrow x + 5 = 3y + 15$$

$$\Rightarrow x - 3y = 15 - 5 = 10 \dots \dots \dots \text{i)}$$

Second Equation: 5 years ago Jacob's age was $(x - 5)$ years and his son's age was $(y - 5)$ years

$$\Rightarrow x - 5 = 7(y - 5) \quad \Rightarrow x - 5 = 7y - 35$$

$$\Rightarrow x - 7y = -35 + 5 = -30 \dots \dots \dots \text{ii)}$$

As in both equations coefficients of x are same so subtracting ii) from i), we get

$$(x - 3y) - (x - 7y) = 10 - (-30) \quad \Rightarrow x - 3y - x + 7y = 10 + 30$$

$$\Rightarrow 4y = 40 \quad \Rightarrow y = \frac{40}{4} = \mathbf{10}$$

Put value of y in i), we get

$$\text{i)} \Rightarrow x - 3y = 10 \quad \Rightarrow x - 3(\mathbf{10}) = 10$$

$$\Rightarrow x = 10 + 30 = \mathbf{40}$$

\therefore Present age of Jacob = 40 years & his son = 10 years

EXERCISE

1. Exercise 3.2, Q 1(i), 5
2. Exercise 3.3, Q 3(ii)
3. Exercise 3.4, Q 2(ii)