
Question 1

- A) In an election, candidate *A* got 75% of the total valid votes. If 15% of the total votes were declared invalid and the total numbers of votes is 560000, find the number of valid vote polled in favor of candidate. (5)
- B) A crow travels 5km due North, 3km due West, 4km due North and 2km towards South East. How far is crow from starting position? (5)
- C) The sum of two numbers is 48. If the smaller number is one fifth of the larger number, find the two numbers. (5)
- D) If a quantity is divided in the ratio 5:7, the larger part is 84. Find the quantity. (5)

①) Ratio = 5:7 = $\frac{5}{7}$
 larger part is 84
 let quantity = $x = ?$

Sol

$$\frac{5}{7} = \frac{84}{x} \cdot \frac{x}{84}$$

~~$$5x = 84 \cdot 7$$~~

$$5 \times 84 = 7x$$

$$\frac{5 \times 84}{7} = x$$

$$5 \times 12 = x$$

$$60 = x$$

②) let (smaller) 1st no. = x
 (larger) 2nd no. = y

$$x + y = 48 \rightarrow \textcircled{A}$$

Acc to given conditions

$$x = \frac{1}{5}y \rightarrow \textcircled{B}$$

hence eq \textcircled{A} becomes

$$\frac{1}{5}y + y = 48$$

$$\frac{6}{5}y = 48$$

$$6y = 5 \times 48$$

$$6y = 240$$

$$\boxed{y = 40}$$

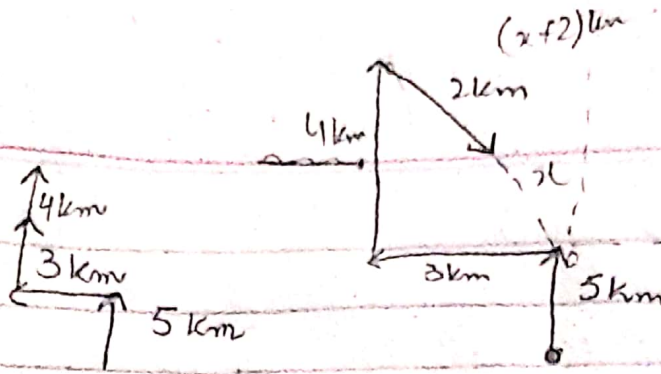
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$$x = \frac{1}{5} \times 40$$

$$\boxed{x = 8}$$

$$\text{Sol. Set} = \{8, 40\}$$

(B)



by pythagoras theorem

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

$$x^2 + 4x + 4 = 16 + 9$$

$$x^2 + 4x = 25 - 4$$

$$x^2 + 4x = 21$$

$$x^2 + 4x - 21 = 0$$

$$x^2 + 7x - 3x - 21 = 0$$

$$x(x+7) - 3(x+7) = 0$$

$$(x+7)(x-3) = 0$$

$$x = -7$$

$$x = 3$$

as, distance cannot be negative

so,

$$x = 3 \text{ km}$$

(A)

candidate A = 75% x x

let x valid votes = x

Invalid votes = y = 15% of total votes

total no. of votes = 560,000

find x (No. of valid) votes = ?

Sol:-

$$\text{No. of Invalid votes} = 15\% \times 560000$$

$$= 560000 \times \frac{15}{100}$$

$$= 5600 \times 15$$

$$\begin{array}{r} 5600 \\ \times 15 \\ \hline 28000 \\ 56000 \\ \hline 84000 \end{array}$$

Nb. of invalid votes = 24000

so, the number of valid votes are = 26

$$\begin{aligned} \text{No. of valid votes} &= 560,000 - 84,000 \\ &= 476,000 \end{aligned}$$

$$\begin{array}{r} 560 \\ - 84 \\ \hline 476 \end{array}$$