

## Ratio and Proportion

Basic concept :- If  $a/b$  and  $c/d$  are ratios.

$$\textcircled{1} \quad 7 : 4 \text{ then } a = 7, b = 4 \quad a:b = 7:4$$

Compare      Antecedent      Consequent

$$\textcircled{2} \quad \text{Duplicate Ratio} = a^2 : b^2 \quad \Rightarrow (7)^2 : (4)^2 = 49 : 16$$

$$\text{Triplicate Ratio} = a^3 : b^3 \quad \Rightarrow (7)^3 : (4)^3 = 343 : 64$$

\textcircled{3} Multiply and Divide by same number

$$\frac{7 \times 3}{4 \times 3} = \left(\frac{7}{4}\right) \quad \left| \begin{array}{l} \frac{7/3}{4/3} = \left(\frac{7}{4}\right) \\ \dots \end{array} \right.$$

\textcircled{4} Add and Subtract by same number :-

$$\frac{7+3}{4+3} = \left(\frac{10}{7}\right) \quad \left| \begin{array}{l} \left(\frac{7-3}{4-3}\right) = \left(\frac{4}{1}\right) \\ \dots \end{array} \right.$$

Ques:-

Two numbers are in the ratio of 3:4. If 15 is subtracted from each, the new numbers are in the ratio of 9:17. The largest number is:-

Sol:-

Let the two numbers be  $x$  and  $y$ .

Then,

$$\frac{x}{y} = \frac{3}{4} \quad \text{(1)} \Rightarrow 4x = 3y$$

$$\frac{x-15}{y-15} = \frac{9}{17} \quad \text{(2)}$$

$$\Rightarrow 17(x-15) = 9(y-15)$$

$$\Rightarrow 17x - 255 = 9y - 135$$

$$\Rightarrow 17x - 9y = 255 - 135$$

$$\Rightarrow 17x - 9y = 120$$

From above we have  $17x - 9y = 120$

$$3 \times 4x - 3y = 0$$

$$17x - 9y = 120$$

$$- 12x + 9y = 0$$

$$5x = 120$$

$$x = 24$$

$$y = \frac{4}{3}(24) = 32$$

∴ The largest number is 32. Ans/1.

Ques- Three numbers are in the ratio 4:6:9. If the value of second number is 48. What is the difference between third number & first number?

Sol:- Let the 3 numbers be  $4x : 6x : 9x$

The second number  $6x = 48$

$$x = 8$$

Third number,  $9x = 9 \times 8 = 72$

First number,  $4x = 4 \times 8 = 32$

Difference between Third & first number

$$\Rightarrow (72 - 32) = 40 \text{ Ans.}$$

Ques 2020:- A sum of RS 2,500 is distributed among X, Y and Z in the two ratio  $1/2 : 3/4 : 5/6$ . What is the difference b/w the maximum & the minimum share?

$$\frac{a}{2} + \frac{3a}{4} + \frac{5a}{6} = 2,500$$

$$6a + 9a + 10a = 2500$$

$$25a = 30,000$$

$$a = 1,200$$

$$\text{First share} = \left(\frac{a}{2}\right) = \left(\frac{1200}{2}\right) = 600$$

$$\text{Second share} = \left(\frac{3a}{4}\right) = \left(\frac{3(1200)}{4}\right) = 900$$

$$\text{Third share} = \left(\frac{5a}{6}\right) = \left(\frac{5(1200)}{6}\right) = 1000$$

$$\text{maximum and minimum share} = (1000 - 600) \\ = 400$$

Ques:- If  $a:b = 4:5$  and  $b:c = 25:12$ , what is the value of  $a:c$ ?

Sol:-

$$a:b = 4:5 \times 5$$

$$= 20:25$$

$$b:c = 25:12 \times 1$$

$$a:b:c = 20:25:12$$

$$a:c = 20:12 = 5:3$$

(A)  $3/5$

(B)  $5/3$

(C)  $7/2$

(D)  $5/4$

Ques:- Trick to solve such questions :-

$$a:b = 4:5$$

$$b:c = 25:12$$

multiply

4	5	5
25	25	12
100 : 125 : 60		

a - 5	0
c - 3	0

Ques:- If  $a:b = 3:8$  and  $a:c = 7:5$ , what is the value of  $b:c$ ?

Sol:-

$$a:b = 3:8 \times 7$$

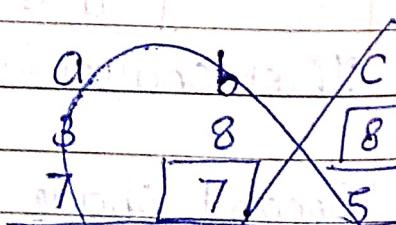
$$a:c = 7:5 \times 3$$

$$a:b = 21:56$$

$$a:c = 21:15$$

$$a:b:c = 21:56:15$$

$$b:c = \left(\frac{56}{15}\right) \text{ Ans}/.$$



6	0	c
8	3	3

7	0	5
56	21	15

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Ques: If  $A:B = (1/2):(1/5)$  and  $C:B = (1/3):(1/4)$  what is the value of  $A:B:C$ ?

Sol:- A : B : C are given in ratio  $\frac{1}{2}, \frac{1}{5}, \frac{1}{3}$

$$\begin{array}{c|c|c} 1/2 & 1/5 \\ \hline 1/4 & 1/4 \end{array}$$

$$\begin{array}{c|c|c} 1/8 & 1/20 & 1/15 \end{array}$$

$$2 \quad \underline{8, 20, 15}$$

$$2 \quad \underline{4, 10, 15}$$

$$2 \quad \underline{2, 5, 15}$$

$$5 \quad \underline{1, 5, 15}$$

$$3 \quad \underline{1, 1, 3}$$

$$1, 1, 1$$

$$\therefore A:B:C = \frac{1}{8} : \frac{1}{20} : \frac{1}{15}$$

$$A:B:C = \frac{15+6+8}{120} = \frac{29}{120} \left( \frac{1}{8} : \frac{1}{20} : \frac{1}{15} \right) 120$$

$$\therefore A:B:C = 15:6:8 \quad \text{Ans/}$$

Ques: Rs. 5100 is divided among A, B, C and D such that ratio of them is  $A:B = 2:3$ ,  $B:C = 4:3$  and  $C:D = 2:3$ .

The sum of shares of A & D is :-

Sol:-

$$\begin{array}{c|c|c|c|c} A & B & C & D \\ \hline 2 & 3 & 3 & 3 \end{array}$$

$$A:D = 16:27$$

$$\begin{array}{c|c|c|c|c} 4 & 4 & 3 & 3 \\ \hline 2 & 2 & 1 & 3 \end{array} \quad A = 16x = 16(60) = 960$$

$$\begin{array}{c|c|c|c|c} 16 & 24 & 18 & 27 \end{array}$$

$$D = 27x = 27(60) = 1620$$

$$16x + 24x + 18x + 27x = 5100$$

$$85x = 5100$$

$$x = 60$$

$$A+D$$

$$= 2580$$

Ans/.

Ques:- A bag contains Rs 630 in the denomination Rs 1, 50 paise and 25 paise in the ratio 7:16:24. What are the number of 50 paise coins in the bag?

Ans

Value

630

100 paise : 50 p : 25 p

Number  $\rightarrow$  7 : 16 : 24

Value  $\rightarrow$  7 : 8 : 6

$$7x + 8x + 6x = 630$$

$$21x = 630$$

$$\boxed{x = 30}$$

$$8x = 8 \times 30 = \text{Rs} 240$$

Ques:-

A bag contains 1890 coins in the denominations of Rs. 1, 50 paise and 25 paise. The ratio between their values is 5:7:11. What are the number of 25 paise coins in the bag?

Ans:

100 p

5

50 p

7

25 p

11

$$\text{Value} \rightarrow \frac{5}{100}x + \frac{7}{50}x + \frac{11}{25}x = \frac{35}{100}x + \frac{14}{100}x + \frac{44}{100}x = \frac{93}{100}x$$

$$\Rightarrow 5x + 7x + 11x = 45x$$

$$\Rightarrow \frac{(20x + 14x + 11x)}{4} = \frac{45x}{4}$$

$$\Rightarrow 25x \times 11.25 = 81.25$$

$$4) 45(11.25$$

$$-4$$

$$\cancel{x} 5$$

$$-1$$

$$\cancel{10}$$

$$8$$

$$20$$

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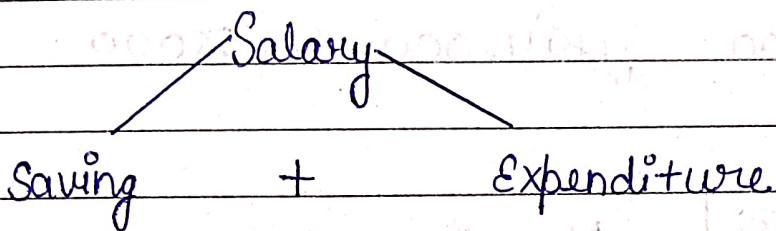
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$$5x + 14x + 44x = 1890$$

$$63x = 1890$$

$$x = 30$$

$$44x = 44 \times 30 = 1320$$



Ques:- 2015 :- The monthly incomes of Peter & Paul are in the ratio of 4:3. Their expenses are in the ratio of 3:2. If each saves Rs 6000 at end of the month, their monthly incomes respectively are :-

Sol:-

Peter :-

$$\text{Income} = \text{Saving} + \text{expenditure}$$

$$4x = 6000 + 3x \quad \textcircled{1}$$

$$x = 6000$$

$$\text{Income} = 4x = 4(6000) = 24000$$

Paul :-

$$\text{Income} = \text{Saving} + \text{expenditure}$$

$$3x = 6000 + 2x \quad \textcircled{2}$$

$$x = 6000$$

$$\text{Income} = 3x = 3(6000) = 18000$$

On solving 2 eq's

(A) 24000 and 18000 — Ans.

(B) 28000 and 21000

(C) 32000 and 24000

(D) 34000 and 26000

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Ques 2017: The monthly expenses of X and Y are in the ratio 3:2 and monthly incomes of X & Y are in the ratio of 4:3. However each saves Rs 6000 per month. What is their total monthly income?

Sol:

- (A) 28000      (B) 42000      (C) 56000      (d) 84000

Ques:

①	Water	$M = \frac{7}{3}W$
	Milk	

20 L

$$\Rightarrow 7x + 3x = 20$$

$$x = 2$$

$$\text{Milk} = 7x = 7(2) = 14$$

$$\text{Water} = 3x = 3(2) = 6$$

②

+ 2L water

- 2L Milk

20L

18L Milk

$$\frac{M}{W} = \left(\frac{18}{2}\right) = (9)$$

Milk

2L Water

$$\frac{\text{Milk}}{\text{Total mixture}} = \frac{18}{20} = \frac{9}{10}$$

$$\frac{\text{Water}}{\text{Total Mixture}} = \left(\frac{1}{10}\right)$$

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Ques- In a mixture of 90 litres, ratio of milk to that of water is 3:2. What is the amount of water that should be added so as to make the ratio 1:3?

Sol:

$$3x + 2x = 90$$

$$\text{milk} = 3x = 3(18) = 54$$

$$5x = 90$$

$$\text{Water} = 2x = 2(18) = 36$$

$$x = 18$$

$$\frac{\text{milk}}{\text{water}} = \frac{54}{36+y} = \frac{1}{3}$$

$$(54)(3) = 36 + y$$

$$162 - 36 = y$$

$$y = 126$$

- (a) 64 (b) 108 (c) 126 (d) 152

Ques- Type 2:

Two equal container

1	0	2
---	---	---

$$\textcircled{1} \rightarrow \frac{m}{w} = \frac{11}{5} \rightarrow \text{Total Quantity} = 16 \rightarrow \begin{array}{r} 33 \\ 45 \\ \hline 2 \end{array} \boxed{12, 16}$$

$$\textcircled{2} \rightarrow \frac{m}{w} = \frac{7}{5} \rightarrow \text{Total Quantity} = 12 \rightarrow \begin{array}{r} 28 \\ 20 \\ \hline 2 \end{array} \boxed{6, 8}$$

$$\frac{m}{w} = \frac{33 \text{ ltr} + 28 \text{ ltr}}{15 \text{ ltr} + 20 \text{ ltr}} = \frac{(61)}{35}$$

$$= 48$$

Ques-

Two vessels contain mixture of milk & water in the ratio 7:2 and 5:1. Both are mixed in the ratio 1:2 in larger vessel. Then find the ratio of mixture of milk & water in new vessel?

Sol:-

$$\text{Vessel 1} :- \frac{7}{2} \text{ Total Quantity} = 9$$

$$\Rightarrow \left(\frac{14}{4}\right) \times 1 = \left(\frac{14}{4}\right)$$

$$\text{Vessel 2} :- \frac{5}{1} \text{ Total Quantity} = 6 \rightarrow \left(\frac{15}{3}\right) = \left(\frac{15}{3}\right) \times 2$$

$$= \left(\frac{30}{6}\right)$$

$$\begin{aligned} \text{Milk} &= \frac{(14+30)}{(4+6)} = \left(\frac{44}{10}\right) - \left(\frac{22}{5}\right) \\ \text{water} &= \end{aligned} \text{Ans.//}$$

Ques:-

$$\text{Ratio} = \left(\frac{a}{b}\right)$$

 $a : b$ 

↓ consequent

antecedent

Ques 2015:- Two equal glasses of same type are respectively  $\frac{1}{3}$  and  $\frac{1}{4}$  full of milk. They are then filled up with water & the contents are mixed in a pot. What is the ratio of milk & water in a pot?

Sol:-

$$\text{Glass 1: Milk} \rightarrow \frac{1}{3}, \text{ Water} = \frac{2}{3} \rightarrow \frac{m}{w} = \left(\frac{1}{2}\right)$$

Quantity = 3

Glass 2 :- milk  $\rightarrow \frac{1}{4}$ ; water  $\rightarrow \frac{3}{4} \Rightarrow \left(\frac{m}{w}\right) = \left(\frac{1}{3}\right)$

Quantity = 4

Glass 1 :-  $\left(\frac{m}{w}\right) = \left(\frac{4}{8}\right)$

Glass 2 :-  $\left(\frac{m}{w}\right) = \left(\frac{3}{9}\right)$

$$\frac{m}{w} = \left(\frac{7}{17}\right)$$

- (a) 7:17 (b) 1:3 (c) 9:21 (d) 11:23

Ques- Two vessels contain mixture of milk and water in the ratio 7:2 and 5:1. Both are mixed in the ratio 1:2 in larger vessels, then find the ratio of mixture of milk and water in new vessel?

Sol:  $\left(\frac{M}{W}\right) = \left(\frac{7}{2}\right)$  Quantity  $\rightarrow 9 \times 2$

$$2 \overline{(9, 6)}$$

$\left(\frac{M}{W}\right) = \left(\frac{5}{1}\right)$  Quantity  $\rightarrow 6 \times 3$

$$3 \overline{(9, 3)}$$

$$3 \overline{(3, 1)}$$

$$V-1 \quad \left(\frac{m}{w}\right) = \left(\frac{14}{4}\right) \times 1 = \left(\frac{14}{4}\right)$$

$$= 18$$

$$V-2 \quad \left(\frac{m}{w}\right) = \left(\frac{15}{3}\right) \times 2 = \left(\frac{30}{6}\right)$$

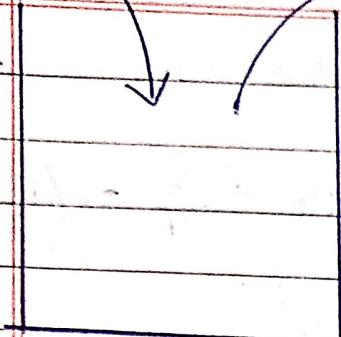
$$\frac{M}{W} = \frac{49}{10} = (22/5) \text{ Ans.}$$

10L Water

10L Milk

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Type - 2 :-



90 litre  $\rightarrow$  Milk

10 litre  $\rightarrow$  Water

$$\left(\frac{M}{W}\right) = \left(\frac{g}{l}\right)$$

100L Milk.

Shortcut: If we have 100 Ltr of milk & took out 10L 'n' times then  $\left(\frac{m}{T}\right) = \frac{90}{100} \times \frac{90}{100} \times \dots \times \frac{90}{100}$ , n times.

Ques-

A vessel is full of 44 litres of milk. 4 litres of milk is taken out & filled with water. The same process is repeated twice, what is the final ratio of milk to water in the vessel?

Sol:-

~~$$\left(\frac{m}{T}\right) = \left(\frac{40}{44} \times \frac{40}{44} \times \dots \times \frac{40}{44}\right) = \left(\frac{1600}{1936}\right) \times \frac{40}{44} \times \frac{44}{44}$$~~

~~$$\left(\frac{w}{T}\right) = \left(\frac{4}{44} \times \frac{4}{44} \times \dots \times \frac{4}{44}\right) = \left(\frac{16}{1936}\right) \times \frac{40}{44} \times \frac{176}{1936}$$~~

~~$$\left(\frac{m}{T}\right) = \frac{64000}{1936 \times 44}$$~~

$$\left(\frac{M}{T}\right) = \left(\frac{40}{44}\right)^3 = \frac{10}{11} \times \frac{10}{11} \times \frac{10}{11} = \left(\frac{1000}{1331}\right)$$

$$\left(\frac{W}{T}\right) = \frac{331}{1331}$$

$$\therefore \left(\frac{m}{w}\right) = \left(\frac{1000}{331}\right)$$

Ques 2020:- A bottle contains 20 litres of liquid A. 4 litres of liquid A is taken out of its and replaced by same quantity of liquid B. Again 4 litres of the mixture is taken out and replaced by same quantity of liquid B. What is the ratio of quantity of liquid A to that of liquid B in the final mixture?

Sol:-

$$\frac{(A)}{(T)} = \left( \frac{16}{20} \times \frac{16}{20} \right) = \frac{16}{25}$$

$$\frac{(L)}{(T)} = \left( \frac{4}{20} \times \frac{4}{20} \right) = \frac{4}{25}$$

$$\therefore \frac{(A)}{(B)} = \frac{16}{9} \text{ Ans/}.$$

Formula:-

$$\left( \frac{(1 - \text{Quantity taken out})^n}{\text{Total quantity}} \right)$$

$n \rightarrow$  No. of times process repeated.

Ques- A vessel is full of 30 litres of milk. 10 litres of milk is taken out & filled with water. The same process is repeated twice, what is the final ratio of milk to water in the vessel?

Ans:-  $\frac{(M)}{(T)} = \frac{20}{30} = \left( 2 \times \frac{2}{3} \times \frac{2}{3} \right) = \left( \frac{8}{27} \right)$

$$\frac{(W)}{(T)} = \left( \frac{19}{27} \right)$$

$$\therefore \frac{(M)}{(W)} = \frac{8}{19} = \text{Ans/}.$$

Ques:- The ratio of the total amount distributed in all the males and females as salary is 8:5. The ratio of the salary of each male & female is 2:7. Find the ratio of the number of males & females.

Sol:-

$$m_1(2x) + (7x)m_2 = 8x + 5x$$

$$12x = 9x \times (m_1 + m_2)$$

$$9x = (m_1 + m_2)$$

$$(m_1 + m_2)^2 = (m_1 + m_2)^2 - 4m_1m_2$$

$$= 9x^2 -$$

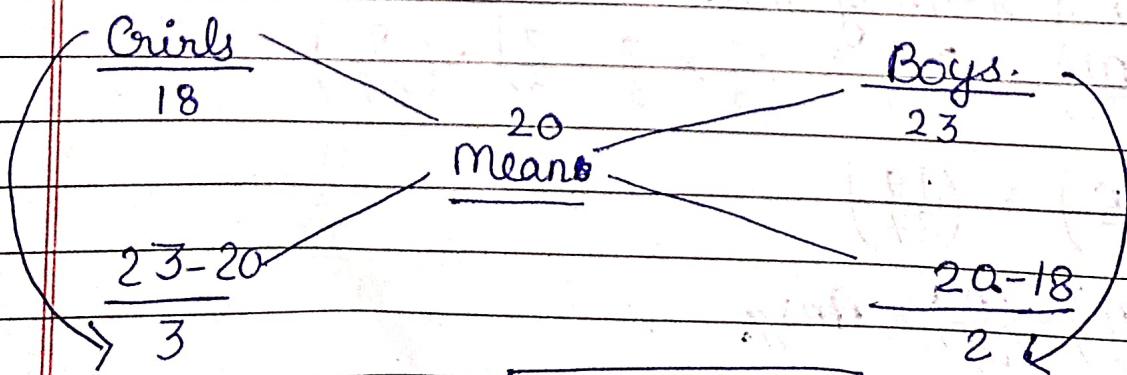
Total amount = Salary  $\times$  No. of people.

Number of people =  $\left(\frac{\text{Total amount}}{\text{Salary}}\right) - \left(\frac{8/5}{2/7}\right)$

$$\text{Number of people.} = \frac{8}{5} \times \frac{7}{2} = \frac{56}{10} \frac{28}{5} = 28:5$$

Ques:- The average age of students of a class is 20 years. The average age of girls of class is 18 years while that of boys is 23 years. Find the ratio of number of boys to that of girls.

Sol:-



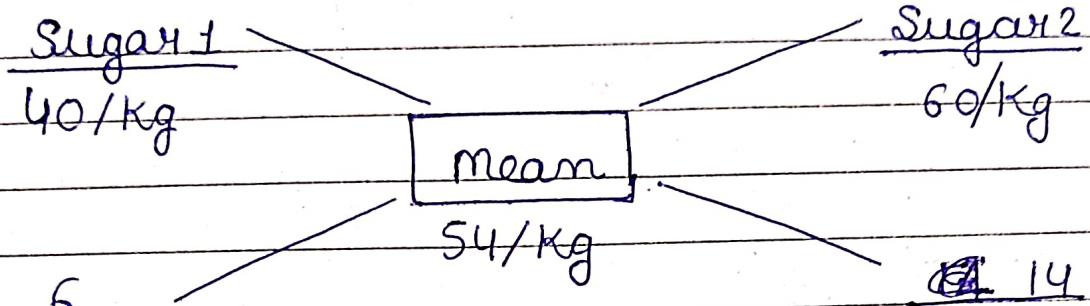
$$\therefore G:B = 3:2 \Rightarrow B:G = 2:3 \quad \boxed{\text{Ans //}}$$

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Ques- In what ratio should a shopkeeper mix two variety of sugar costing Rs 40/kg and Rs 60/kg to get a mixture of Rs 54/kg?

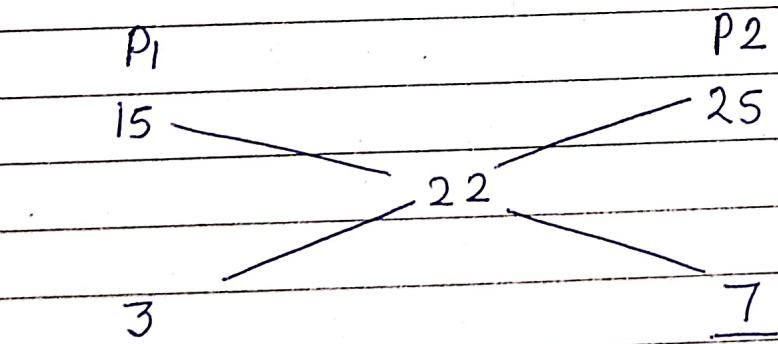
Sol:-



$$\frac{\text{Sugar 1}}{\text{Sugar 2}} = \frac{6}{14} = 3 : 7$$

Ques- A shopkeeper has 600 kg sugar. He sells some part of it at 15% profit, another remaining part at 25%. He incurs an overall profit of 22%. What is the amount of sugar he sold at 25% profit?

Sol:-



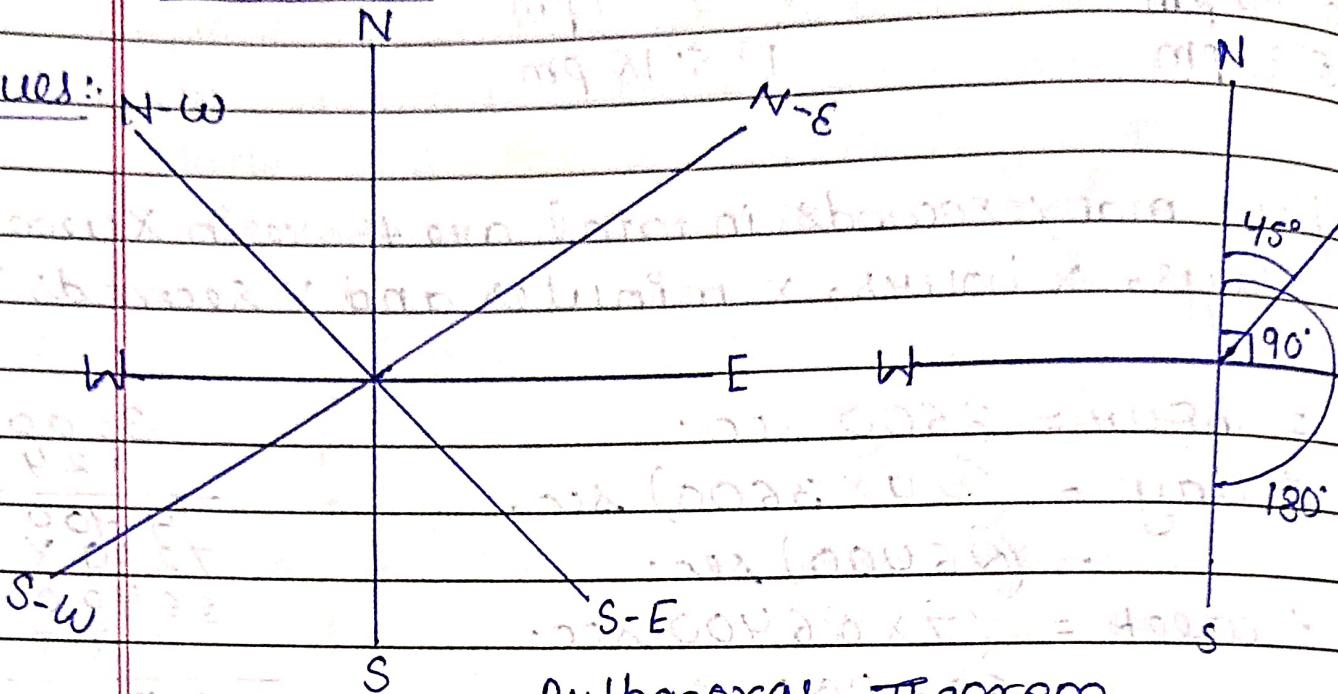
$$P_2 = \frac{7}{16} \times 60\phi \quad P_1 = \left(\frac{3}{16}\right) \times 60\phi$$

$$P_2 = 420 \quad P_1 = 180$$

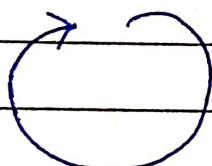
$$\text{Part 2} = 420 \text{ kg //}$$

# Direction

Ques:

Pythagoras Theorem

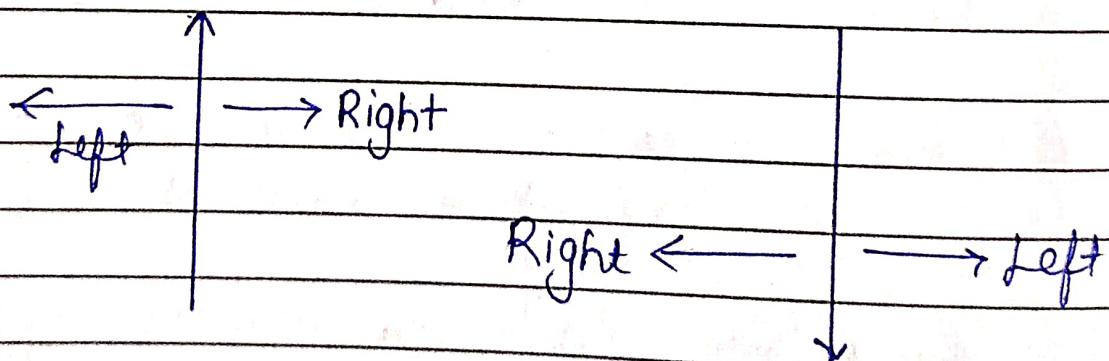
$$H^2 = P^2 + B^2$$



clockwise



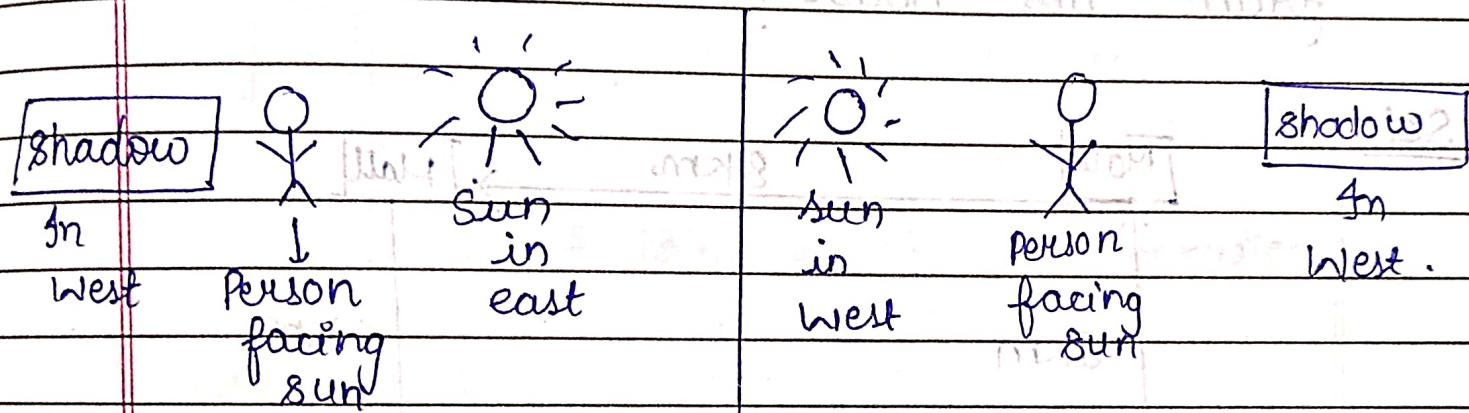
Anti-clockwise



A person taking 4 turns from any direction returns to the same direction  
 And after taking 2 turns it comes in exactly opposite direction.

## Pythagorean Triplet :-

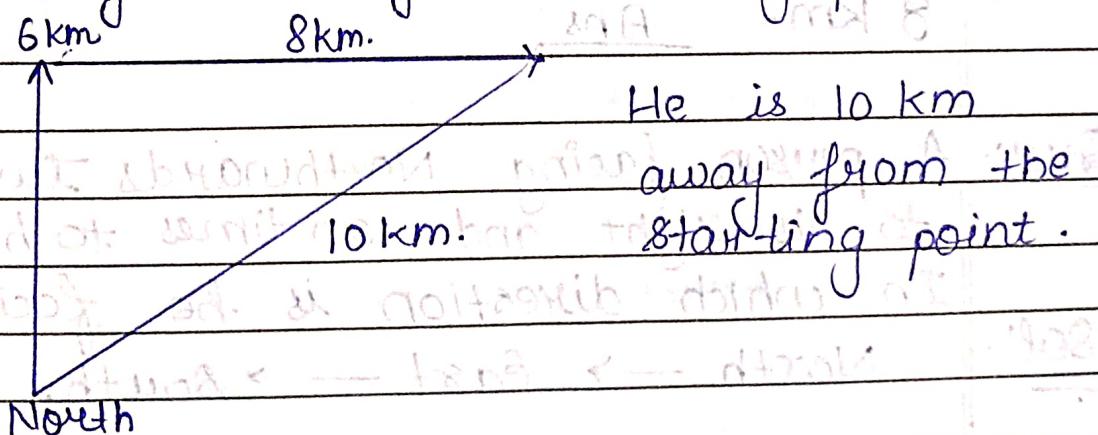
- (1)  $(3, 4, 5)$  from  $\downarrow$   $(5, 12, 13)$   $\downarrow$   $(7, 24, 25)$
- $(6, 8, 10)$   $\downarrow$   $(8, 15, 17)$   $\downarrow$   $(9, 40, 41)$
- $(9, 12, 15)$   $\downarrow$   $\text{Person facing sun}$



Ques: A person travels 6 km Northwards.

From there, he takes a right turn and walks 8 km. How far is he from starting point?

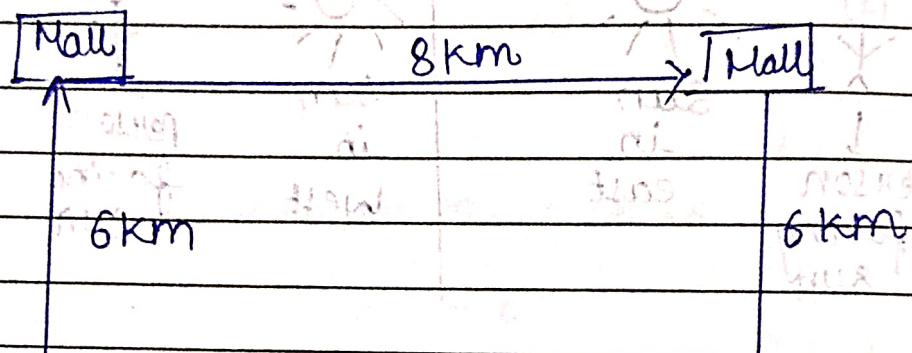
Sol:



$\therefore 10\text{ km}$  Ans/.

Ques: Siddharth goes to a mall which is 6 km North to his by bus. Thereafter, he decides to go to another mall. So he turns right and reaches the second mall which is 8 km away. From there he goes to the third mall which is 6 km away, taking a right turn. How far is Siddharth from his house?

Sol:



House  $\xrightarrow{8 \text{ km}}$  Mall  $\xrightarrow{8 \text{ km}}$  Mall  $\xrightarrow{6 \text{ km}}$  Total distance =  $8 + 8 + 6 = 22 \text{ km}$

Ques: A person facing Northwards turns 130 times to his right and 120 times to his left. In which direction is he facing now?

Sol:

North  $\rightarrow$  East  $\rightarrow$  South.

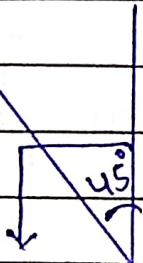
Ques: A person facing Eastwards turns 272 times to his left and 190 times to his right. In which direction is he facing now?

Sol:

$\frac{272 - 190}{4} = 20$  West.

Ques A person is walking Northwards. He takes a turn  $45^\circ$  clockwise. Then he takes a turn  $135^\circ$  clockwise and lastly he takes a turn  $180^\circ$  anticlockwise. In which direction is he facing now?

Sol:



Anticlockwise :-

$$180 + 45 = 225$$

clockwise :-

135

$$(225 - 135) \text{ i.e. } 90^\circ \text{ anticlockwise}$$

West. Ans. / A. West

Westwards i.e. moving back towards the west

Ques: A man is performing Yoga with his head down and legs up. His face is towards the west. In which direction will his left hand be? (A) North  
(B) South  
(C) East  
(D) West.

Ans: North

(A) North

(B) South

(C) East

(D) West.

Ques:- A man is performing yoga with his head down and legs up. His face is towards the south-east. In which direction will his left hand be?

Ans:- North-East

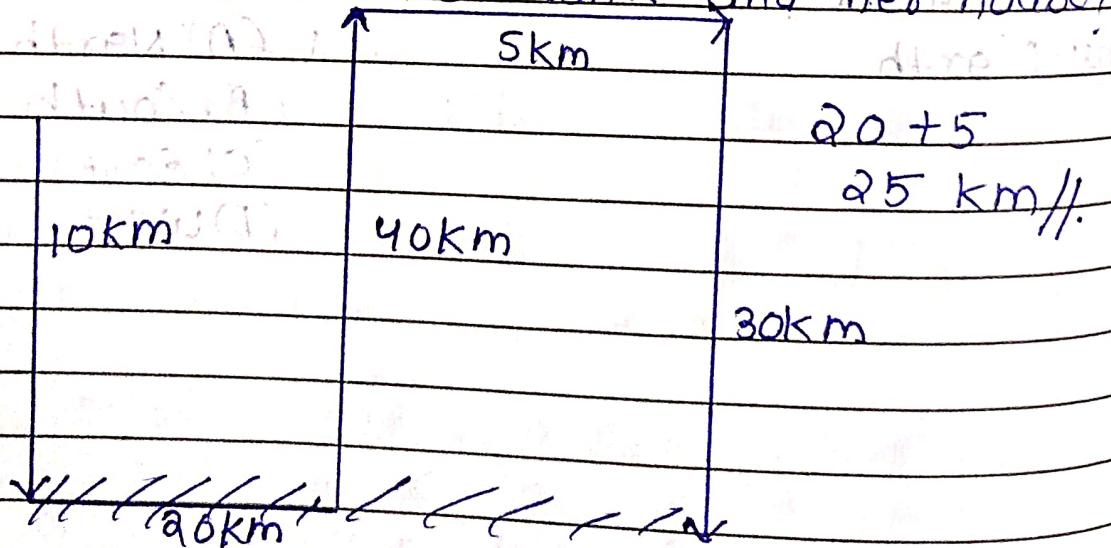
South-East

North-West

South-West. () Ans.

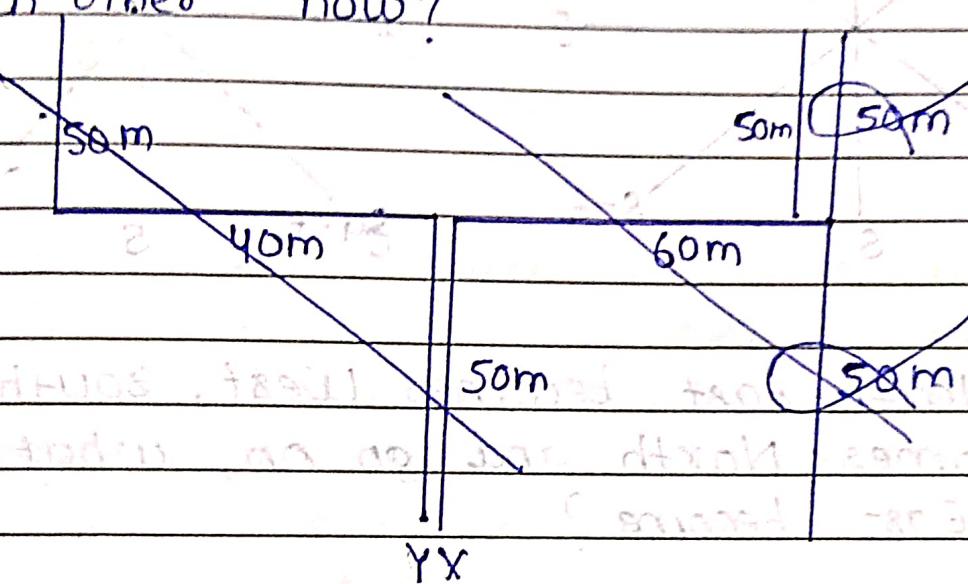
Ques:- A bank employee drives 10 km towards South from her house and turns to her left and drives another 20 km. She again turns left and drives 40 km, then she turns to her right and drives for another 5 km. She again turns to her right and drives another 30 km to reach her bank where she works. What is the shortest distance between her bank and her house?

Ans:-

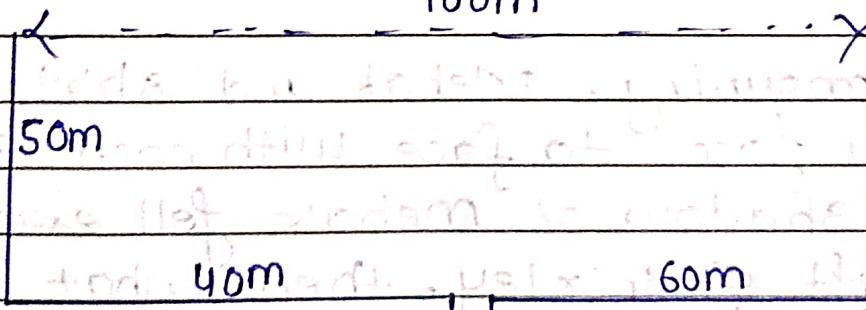


Ques: Two friends X and Y start running and they run together for 50m in the same direction and reach a point. X turns right and runs 60m, while Y turns right left and runs 40m. Then X turns left and runs 50m and stops, while Y turns right and runs 50m and then stops. How far are the two friends from each other now?

Sol:



100m

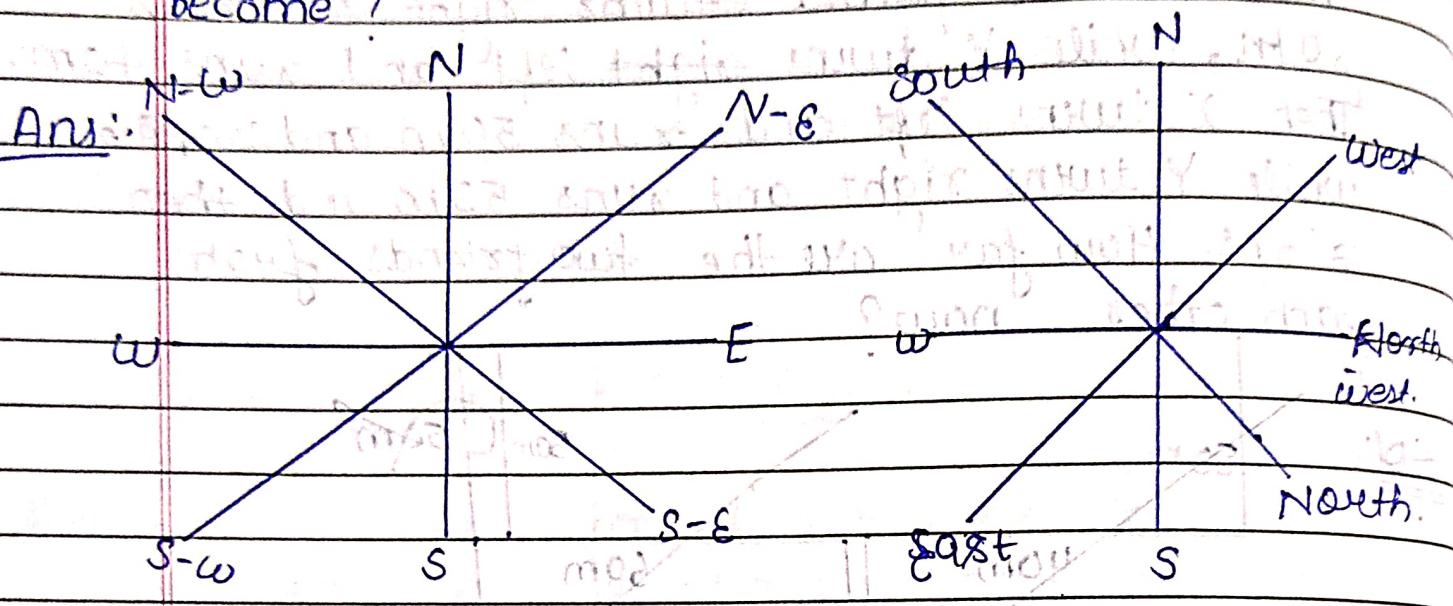


50m      som

⇒ 100m Ans/

Y X

Ques: If North-East becomes West, South-East becomes North and so on, what will East become?

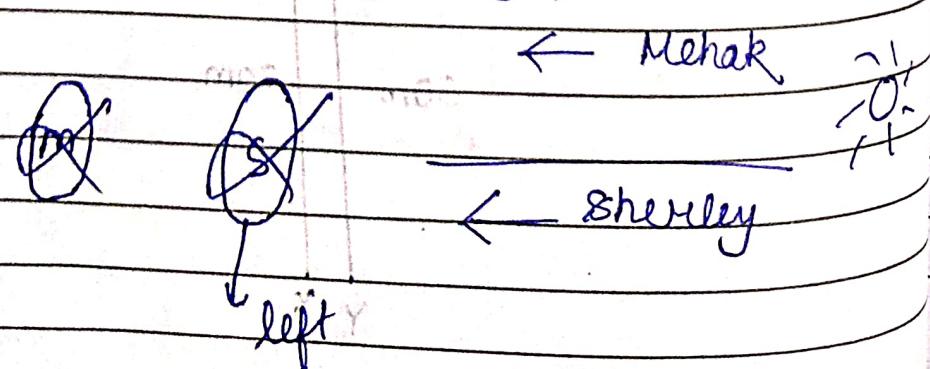


Ques: If North-East becomes West, South-East becomes North and go on, what will East become?

Sol: North-West

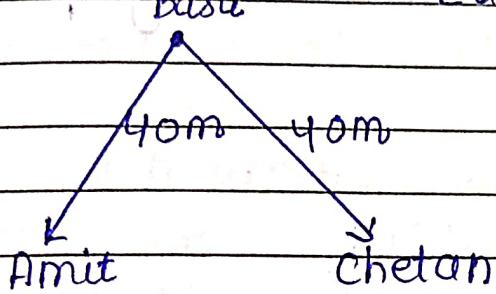
Ques: During morning, Mehak and Shirley were standing face to face with each other. If the shadow of Mehak fell exactly to the left of Shirley, then what direction is Mehak facing?

Ans: South



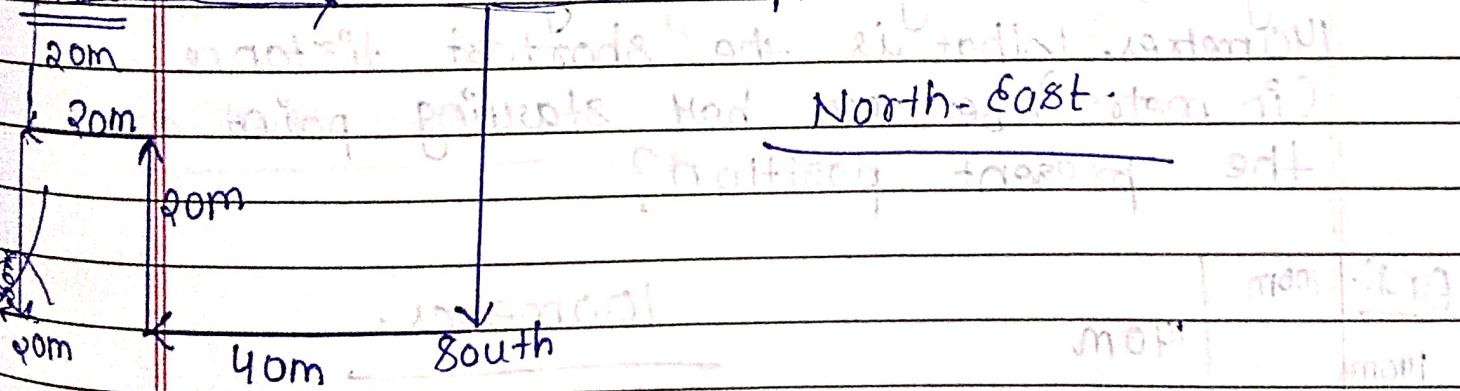
Ques. Amit is 40m south-west of Basu. Chetan is 40m south-east of Basu. Then, Chetan is in which direction of Amit?

Sol: Basu East



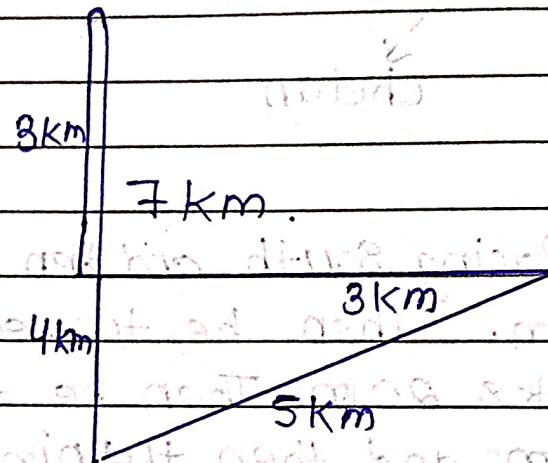
Ques. Rahul is facing South and then he turned right & walk 40m. Then he turned right again and walks 20m. Then he turned left and walks 20m and then turning right walk 20m. Then he turned right again & walks 80m. In which direction is Rahul from the starting point?

Ans:  $\rightarrow$  80m  $\leftarrow$  20m  $\downarrow$  20m  $\uparrow$  20m

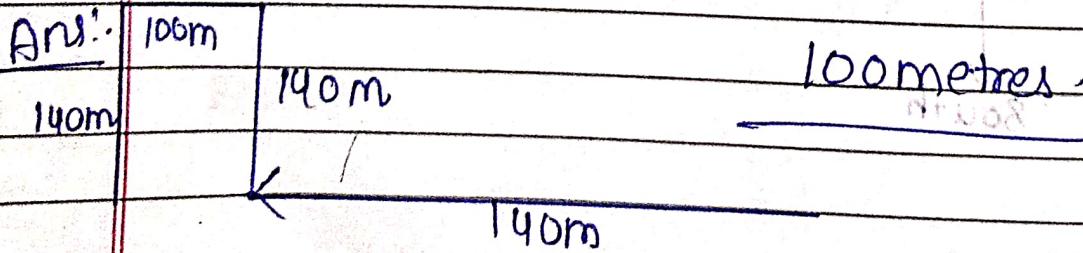


Ques: Sahil walks 7 kilometers towards North. From there, he walks 3 km towards South. Then he walks 3 km towards East. How far and in which direction is he with reference to his starting point?

Ans: 5 km North-East.



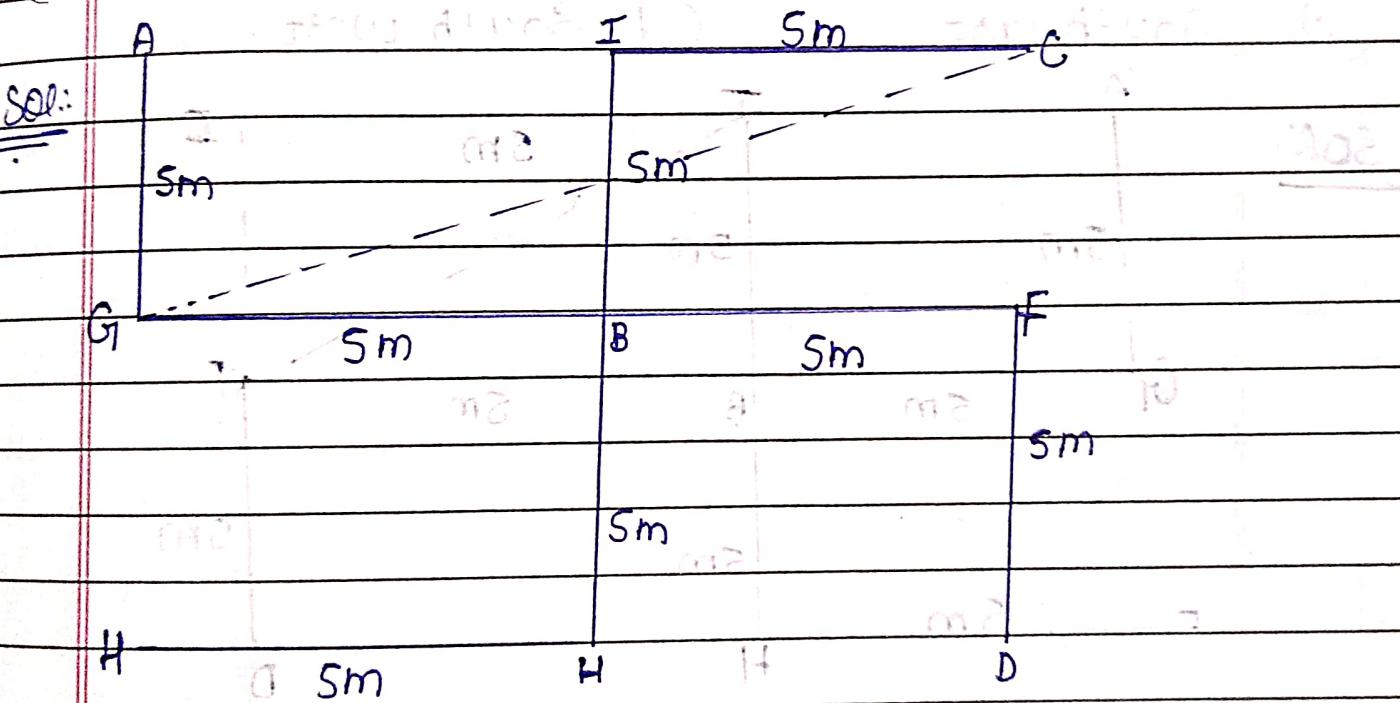
Ques: Vaishali walks 140 metres towards west, then turns to her right and walks 140 metres and then turns to her left and walks 100m. Again, turning to her left, she walks 140 metres. What is the shortest distance (in metres) between her starting point & the present position?



Ques:- Vertical line is drawn from H to I; I is in north of H. Horizontal line is drawn from G to F; F is in east of G. B is midpoint of both the lines. A is 5m north to G. E is 5m west to H. D is 5m south to F. C is 5m east to I. Length of GI and HI is some. i.e., 10m.

In which direction is point G with respect to C?

- (a) North east      (b) North - West
- (c) South-east      (d) South - West



South-West

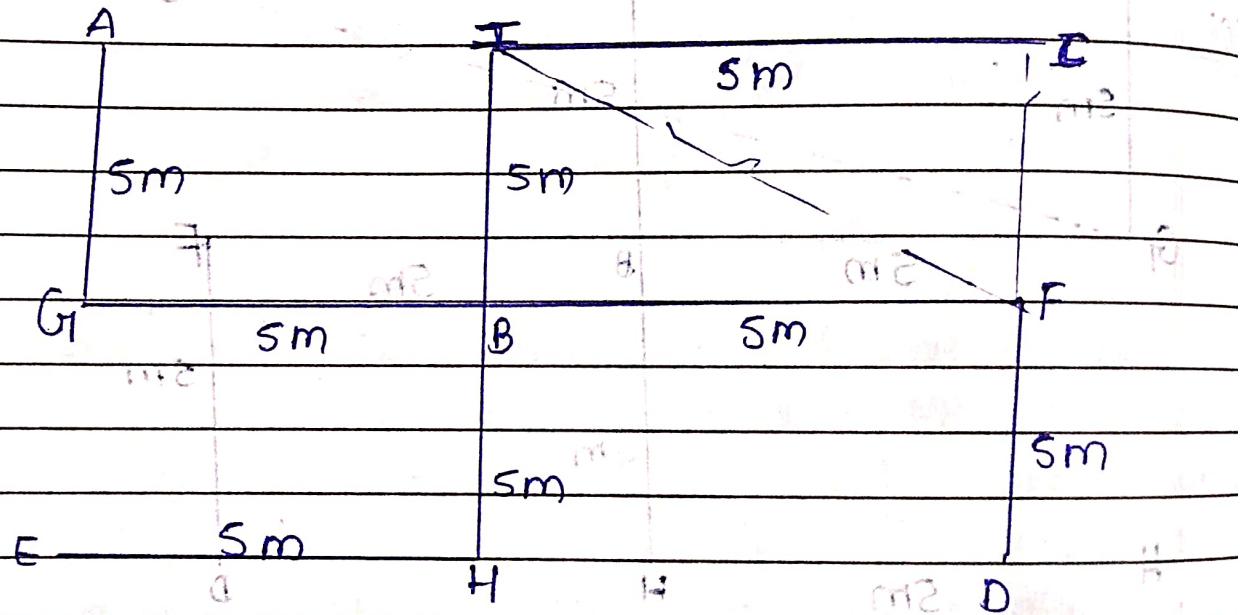
Ans//.

DPP

Ques:6 Vertical line is drawn from H to I; I is in the north of H. Horizontal line is drawn from G to F; F is in east of G. B is the mid point of both the lines. A is 5m north to G. E is 5m west to H. D is 5m south to F. C is 5m east to I. Length to GF and HI is same. i.e. 10m.

In which direction is point I with respect to F?

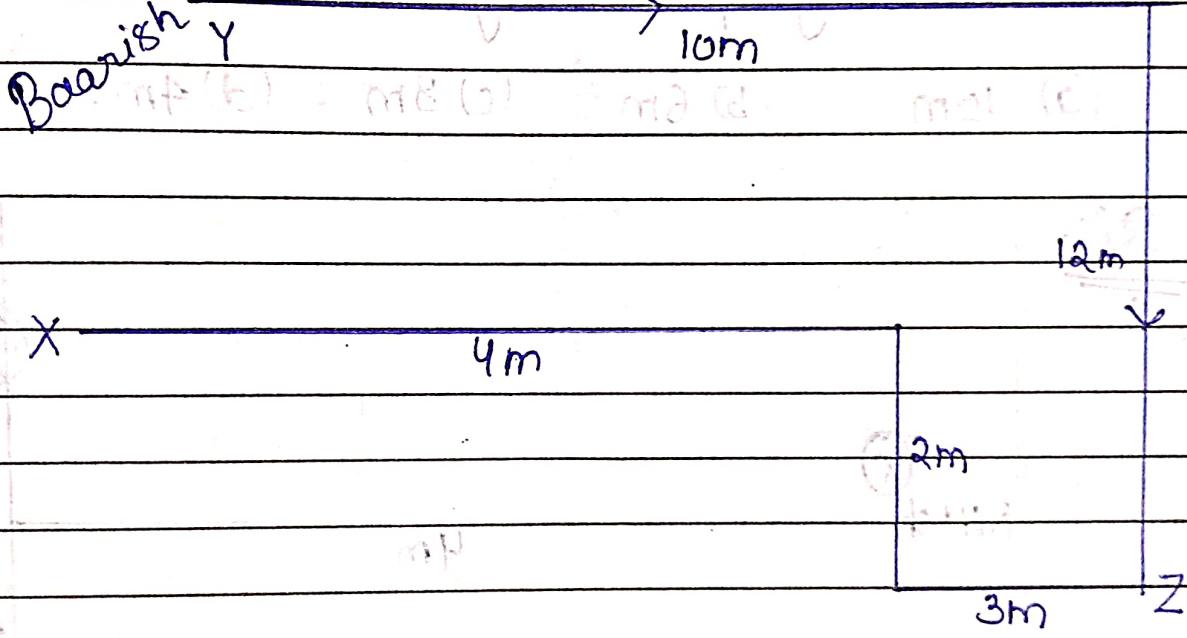
- (a) Northeast      (b) North-West  
 (c) Southeast      (d) South West.

Sol.:

Ques Nitish walks for 4m from point X in the east direction. He then takes a right and a left turn and walks for 2m and 3m respectively. and finally reaches point Z. Baavish starts walking from point Y and walks for 10m in east direction, she then takes 3 consecutive right turns and walks 12m, 3m and 4m respectively and reaches point Z. In which direction is point Z with respect to point Y?

- (a) Southwest (b) Northeast (c) Southeast  
(d) North West.

Ans.  
=

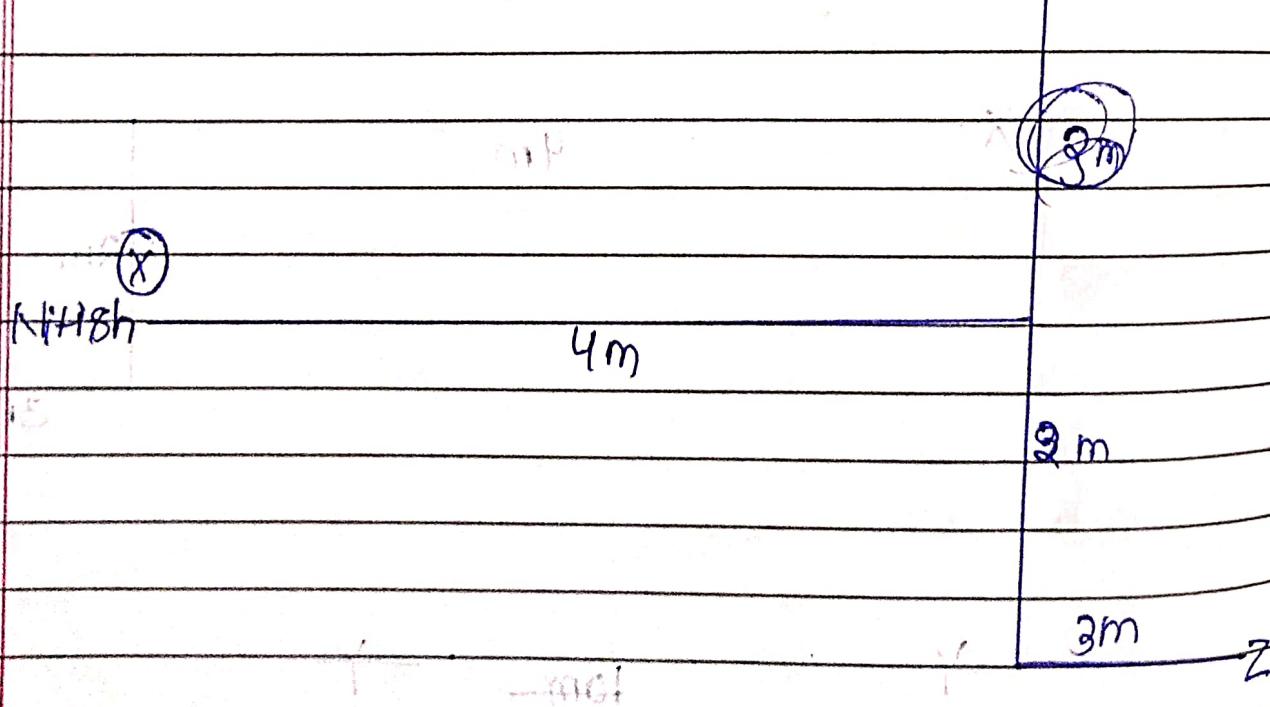


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Ques: Nitish walks for 4m p from point X in the east direction. He then takes a right and a left turn and walks for 2m and 3m respectively and finally reaches point Z. Baavish starts walking from point Y and walks for 10m in east direction, she then takes 3 consecutive right turns and walks 12m, 3m and 4m respectively and reaches point Z. What is the shortest distance between starting point of Nitish and starting point of Baavish?

- (a) 10m (b) 6m (c) 8m (d) 4m

Sol:-

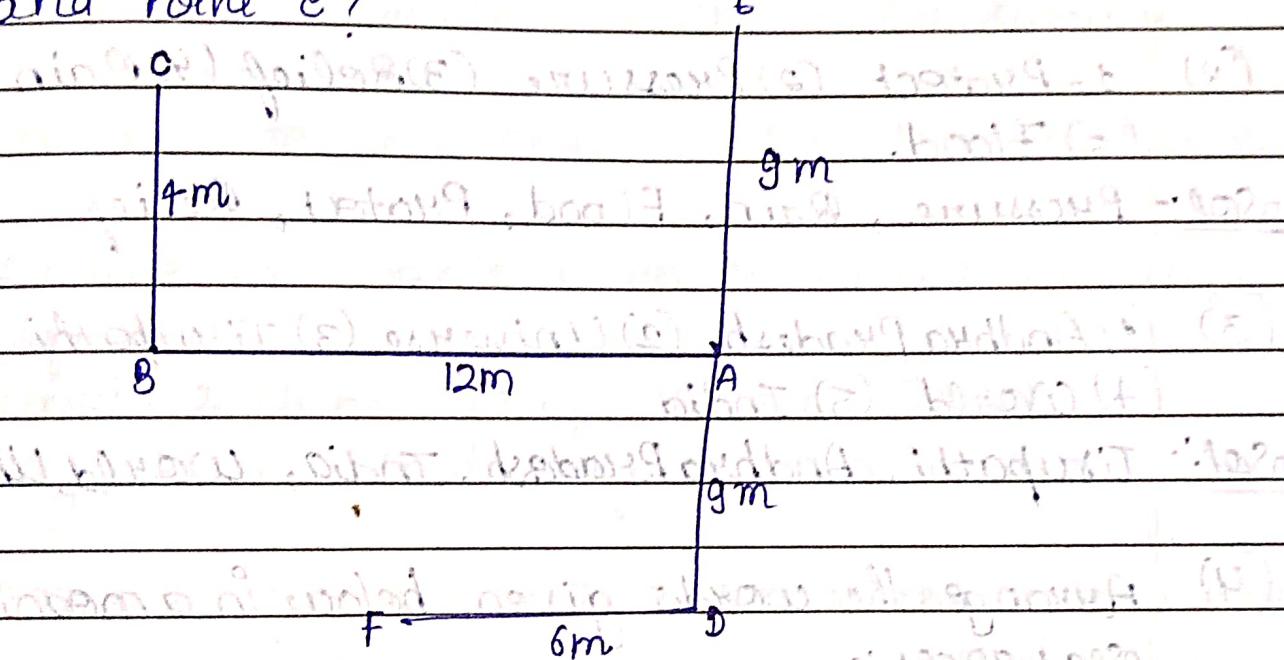


What is the direction of Nitish w.r.t Baavish?

Ques. Point B is 12m to the west of point A. Point C is 4m to the north of point B. Point D is 18m to the south of point E. Point F is 6m to the west of point D. Point A lies exactly between Point E and Point D.

What is the shortest distance between point B and point E?

Ans.



$$\begin{aligned} \text{Using Pythagoras theorem, } (BE)^2 &= (BA)^2 + (AE)^2 \\ &= (12)^2 + (9)^2 \\ &= 144 + 81 = 225 \\ BE &= 15 \text{ m.} \end{aligned}$$