

QUESTION - 1

A. Missing terms

1. ~~2, 3, 6, 4, 5, 20, 3, 18~~

2. 1, 3, 9, 15, 25, _____, 49

To find the missing number, let's analyze the pattern of sequence. The alternate numbers follow the following pattern.

$$9 - 1 = 8$$

$$15 - 3 = 11$$

$$25 - 9 = 16$$

$$- 15 = 22$$

$$49 - 25 = 24$$



The difference of alternate numbers follow pattern of multiplications of 8

$$8 \times 2 = 16$$

$$8 \times 3 = 24$$

$$8 \times 4 = 32$$

Similarly, alternate numbers follow pattern of multiples of 11

$$11 \times 1 = 11$$

$$11 \times 2 = 22$$

$$11 \times 3 = 33$$

So, the missing number should be 26

$$26 - 15 = 22 -$$

Hence,

Final sequence is, 1, 3, 9, 15, 25, 26, 49

3. 2, 7, 10, 22, 18, 37, 26, _____

lets analyze the pattern, the difference of alternate number follows the common pattern

$$10 - 2 = 8$$

~~$$7 - 2 = 5$$~~

$$18 - 10 = 8$$

$$22 - 7 = 15$$

$$26 - 18 = 8$$

$$37 - 22 = 15$$

$$\underline{52 - 37 = 15}$$

By following the sequence the missing number should be 52

Final pattern,

2, 7, 10, 22, 18, 37, 26, 52

4. 34, 7, 37, 14, 40, 28, 43, _____

By analyzing the sequence, there is common pattern in alternate numbers

$$37 - 34 = 3$$

$$14 - 7 = 7 \quad (7 \times 1)$$

$$40 - 37 = 3$$

$$28 - 14 = 14 \quad (14 \times 2)$$

$$43 - 40 = 3$$

$$\underline{56 - 28 = 28} \quad (28 \times 2)$$

The final sequence should be
34, 7, 37, 14, 40, 28, 43, 56

5. 5, 7, 11, , 17, 19

The above sequence has common pattern
~~seq~~ of differences

$$7 - 5 = 2$$

$$11 - 7 = 4$$

$$13 - 11 = 2$$

$$17 - 13 = 4$$

$$19 - 17 = 2$$

$$23 - 19 = 4$$

By observing the above sequence, there
is alternate difference of 2 and 4

Hence, the missing number should be
13.

Final sequence,

5, 7, 11, 13, 17, 19

1. 2, 3, 6, 4, 5, 20, , 3, 18

The sequence shows that every two numbers
multiply to form third number

$$2 \times 3 = 6$$

$$4 \times 5 = 20$$

$$6 \times 3 = 18$$

Hence, the number should be 6

6

B.

Two number are given

$$\text{Ratio} = 2:3$$

$$\text{product of LCM \& HCF} = 294$$

let product be,

$$2x \times 3x = 6x^2$$

the product of number is equal to
product of their HCF & LCM

$$6x^2 = 294$$

$$x^2 = \frac{294}{6} = 49$$

$$x = 7$$

The numbers are:

$$2x = 2(7) = 14$$

$$3x = 3(7) = 21$$

C.

$$\text{Bricks} = 25 \text{ cm} \times 11.25 \text{ cm} \times 6 \text{ cm}$$

$$\text{wall} = 8 \text{ m} \times 6 \text{ m} \times 22.5 \text{ cm}$$

convert into "cm"

$$\text{wall} = 800 \text{ cm} \times 600 \text{ cm} \times 22.5 \text{ cm}$$

$$\begin{aligned} \text{The volume of wall} &= L \times b \times h \\ &= 800 \times 600 \times 22.5 \\ V_1 &= 10800000 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} \text{Volume of Bricks } (V_2) &= 25 \times 11.25 \times 6 \\ V_2 &= 1687.5 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} \text{The number of bricks} &= \frac{\text{Volume of wall}}{\text{Volume of bricks}} \end{aligned}$$

$$\begin{aligned} &= \frac{10800000}{1687.5} \\ &= 6400 \end{aligned}$$

Answers

The number of bricks needed are almost 6400.

D.

The greater number is twice the less
so it will be "2x"

lesser number will be "x"

$$\text{Sum of the two} = 96$$

$$2x + x = 96$$

$$3x = 96$$

$$x = 32$$

The numbers are $x = 32$

$$2x = 2(32) = 64$$

QUESTION. 2

A. mixture contains 60 Litre
in the Ratio = 2:1

$$\text{The water in } 60L = \frac{60 \times 1}{3} = 20L$$

$$\text{The milk in } 60L = \frac{60 \times 2}{3} = 40L.$$

To make the ratio of milk: water = 1:2
water should be doubled than milk.

$$\text{Initial milk is } 40L \times 2 = 80L \rightarrow \text{Double, this}$$

quantity of water should be present to
change the ratio.

The current amount of water in the
mixture is 20L

Hence,

the required amount to be added
should be

$$80 - 20L = 60L.$$

To change the ratio to 1:2, 60L
of water should be added in the
mixture.

B.

10, year ago

Age of father = x Age of son = $3y$ $\rightarrow (x-10) = 3(y-10) \rightarrow \textcircled{i}$

After 10 years

Father's age = x Son's age = $2y$ $\rightarrow x+10 = 2(y+10) \rightarrow \textcircled{ii}$ From eq \textcircled{i}

$$x-10 = 3y-30$$

$$x = 3y-20 \rightarrow \textcircled{iii}$$

From eq \textcircled{ii}

$$x+10 = 2(y+10)$$

$$x = 2y+20-10$$

$$x = 2y+10 \rightarrow \textcircled{iv}$$

equating equation \textcircled{iii} & \textcircled{iv}

$$2y+10 = 3y-20$$

$$10+20 = 3y-2y$$

$$y = 30 \text{ years.}$$

From eq \textcircled{iii}

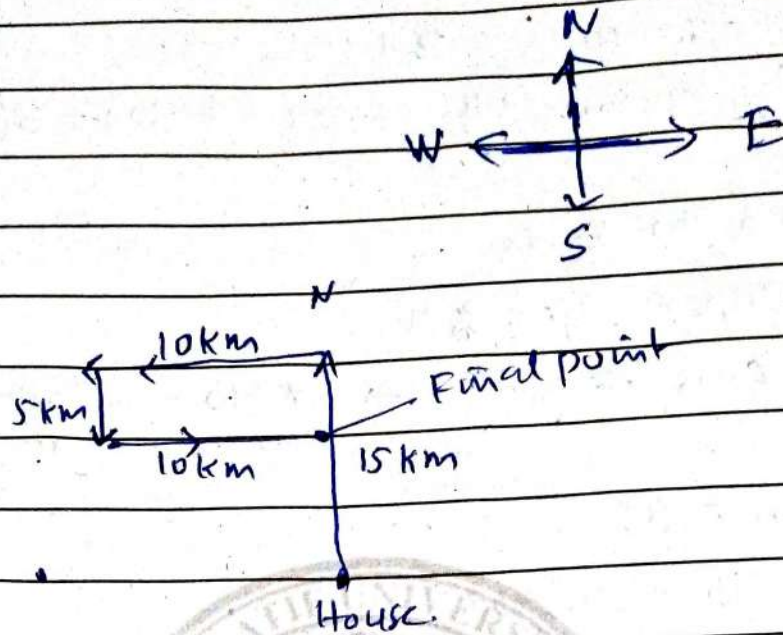
$$x = 3y-20$$

$$x = 3(30)-20 = 90-20$$

$$\boxed{x = 70}$$

The ratio of the ages = $70:30$ 7:3 Answer.

c.



1. The above path show that Rehman is in ~~at~~ the North direction from his house.

2. The above diagram shows that he is 10 km away from his house.

3. The total distance traveled by Rehman =

$$15 + 10 + 5 + 10 = 40 \text{ km.}$$

The net distance away from house covered by Rehman is only 10 km.

D.

Ratio of speed of trains = 7:8

Second train covers distance of
400 km in 4 hours.

Speed of first train = ?

We will find the velocity of second train
(v_2)

$$v_2 = \frac{d}{t} = \frac{400}{4} = 100 \text{ km/hour}$$

The ratio of speed is

$$7:8$$

$$7x : 8 \times 100$$

By multiplying both extremes.

$$7x \times 100 = 8x$$

$$x = \frac{700}{8}$$

$$x = 87.7 \text{ km/h}$$

The speed of first train is 87.7 km/h