CSS: 2024

Q6 a) If the sum of four numbers is 105. When 03 is added to a number, twice to another number, five times of third number and fourth number becomes equal to each other. What are these number in ascending order?

Sol:-

Sum of four numbers = 105

Let numbers are

a, b, c, d

. if 03 is added to a number = a+3

. twice of another = 2b

. five times of third number = 5c

. fourth number becomes equal to each other

$a+3 = 2b = 5c = d$

$a+3 = 2b \Rightarrow \boxed{\frac{a+3}{2} = b}$

$a+3 = 5c \Rightarrow \boxed{\frac{a+3}{5} = c}$

$\boxed{a+3 = d}$

$a+b+c+d = 105$

$$a + \frac{a+3}{2} + \frac{a+3}{5} + a+3 = 105$$

$$\frac{a \times 10}{1 \times 10} + \frac{(a+3)B}{2 \times 5} + \frac{(a+3)^2}{5 \times 2} + \frac{(a+3)10}{1 \times 10}$$

$$\frac{10a}{10} + \frac{5a+15}{10} + \frac{2a+6}{10} + \frac{10a+30}{10} = 105$$

$$\frac{10a + 5a + 15 + 2a + 6 + 10a + 30}{10} = 105$$

$$= \frac{27a + 51}{10} = 105$$

$$= 27a + 51 = 105 \times 10$$

$$= 27a + 51 = 1050$$

$$= 27a = 1050 - 51$$

$$27a = 999$$

$$a = \frac{999}{27}$$

$$\boxed{a = 37}$$

$$B = \frac{a+3}{2}$$

$$= \frac{37+3}{2}$$

$$\boxed{B = 20}$$

$$c = \frac{a+3}{5}$$

$$c = \frac{37+3}{5}$$

$$\boxed{c = 8}$$

$$d = a + 3$$

$$37 + 3$$

$$\boxed{d = 40}$$

a, b, c, d

37, 20, 8, 40

8, 20, 37, 40 ← ascending

b) Jumbled spelling

(i) UCTREUTRS
Structure

(ii) LOVONAC
Volcano

(iii) CIHPROSTATAC
CATASTROPHE

(iv) YNTIAUMH
Huminity

(v) NINTHORER
NORTHERN

c) Series

(i) 121, 11, 81, 9, ?, 7

11^2 9^2 7^2

49

(ii) 100, 50, 25, ?, 6.25

50×2 ×2 ×2

11.5

(iii) 4, 9, 64, 125, 1296, ?

2^2, 3^3, 4^3, 5^3, 6^4, 7^4

2401

(iv) 2, 5, 12, 24, 48, ?

×2 ×2

96

v) 44, 22, 66, 33, 132, ?

÷2 ÷2 ×2

66

d) If the Sum of three digit is 15 and Sum of 10th and unit digit is 12. The difference of unit digit from 10th digit is equal to 02. What is the digit number.

Sol:-

Sum of three digit = 15

Three digit

$a+b+c = 15$

Sum of 10th and unit digit = 12

a b c
↑ ↑ ↑
hundredth tenth unit digit

$B + c = 12 \quad -(1)$

$B - c = 2 \quad -(2)$

$2B = 14$

$\boxed{B = 7}$

Putting value of B

$7 + c = 12$

$c = 12 - 7$

$\boxed{c = 5}$

Putting value of B and c in equation

$a + b + c = 15$

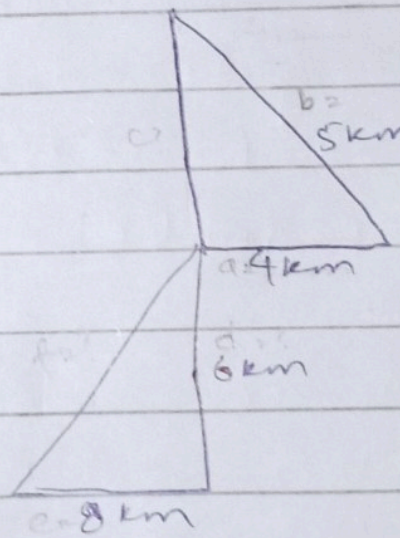
$a + 7 + 5 = 15 \qquad \boxed{a = 3}$

a, b, c

3, 7, 5

Three digit is 3.

Q7.(a) A man travels over the path of a right angle triangle having base and hypotenuse 4 and 5 kilometers, respectively. After a complete round he continues in the same direction for 6 Km and then turns at 90 degree and continue for another 8 Km, How long he has travelled and how far he is from his starting point?



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

$$H^2 = (8)^2 + (6)^2$$

$$H^2 = 64 + 36$$

$$H^2 = 100$$

$$\sqrt{H^2} = \sqrt{100}$$

$$H = 10$$

(b) Hassan, Ali, Akbar, Nasir, and Shehbaz, are classmates having different pocket money Hassan's pocket money is one third

as much as of Ali and Ali has five times as much as Akbar. Akbar has thrice as much as Nasir and Shehbaz gets equal to Nasir and that of Ali. If they get Rs. 8000 then find the pocket money of each.

Sol:-

Let

Nasir = x

Akbar gets thrice of Nasir

Akbar = $3x$

Ali gets 5 times of Akbar

Ali = $3x \times 5$ $\Rightarrow 15x$

Hassan pocket money is $\frac{1}{3}$ of Ali

$= \frac{1}{3} \times 15x$

Hassan $= 5x$

Shehbaz = Nasir + Ali

$= x + 15x$

Shehbaz = $16x$

$x + 3x + 15x + 5x + 16x = 8000$

$40x = 8000$

$x = 200$

Nasir = 200

- Akbar = $3x \Rightarrow 3(200)$

  Akbar = 600

- Hassan = $5x$

  $= 1000$

- Shehbaz = $16x$

  $= 3200$

- Ali = $15x$

  $= 3000$

Q8.

a. A man purchases a car in an amount of Rs. 2400,000 in which he pays one-fourth extra as profit. Find the original amount of car and the amount of Profit.

Sol:-

Let original amount = x

He pays one-fourth of profit = $\frac{1}{4}x$

$$x + \frac{1}{4}x = 2400,000$$

$$x + \frac{x}{4} = 2400,000$$

$$\frac{4x + x}{4} = 2400,000$$

$$\frac{5x}{4} = 2400,000$$

$$5x = 2400,000 \times 4$$

$$5x = 9600000$$

$$x = \frac{9600000}{5}$$

$$x = 1920000$$

Profit = 2400000 - 1920000

= 480,000

Q7(c) What will be the Surface area and volume of a sphere. If it has radius of 7m?

Sol:-

Radius = 7m

volume of Surface = $\frac{4}{3}\pi r^2$

$= \frac{4}{3} \times \frac{22}{7} (7)^2$

$= \frac{4}{3} \times \frac{22}{7} \times 49$

V = 1437.3

Surface area = $4\pi r^2$

$= 4 \times \frac{22}{7} (7)^2$

$= 4 \times \frac{22}{7} \times 49$

$= 616 m^2$

d) Distribute Rs 4320 among Zain, Aslam and Ashraf in such a way that if Zain get 2 parts then Aslam gets 3 parts, whereas Ashraf gets seven part

Sol:-

Zain	Aslam	Ashraf
2	3	7

Total amount = Rs 4320

Total = 2+3+7 = 12

$$\text{Zain's amount} = \frac{2}{12} \times 4320^{360}$$

$$= \text{Rs } 720$$

$$\text{Aslam's amount} = \frac{3}{12} \times 4320^{360}$$

$$= \text{Rs } 1080$$

$$\text{Ashraf's amount} = \frac{7}{12} \times 4320^{360}$$

$$= \text{Rs } 2520$$

Q8 (b) Twelve men can complete a job in twenty four days. After four days, four person quit. In how many days this job will be completed by the remaining persons.

Solution:-

Men		Days	
12	↓	24	↑
8		x	

Four person left $= 12 - 4 = 8$

جب لوگ کم ہو جائیں گے تو دن زیادہ لگیں گے۔

$$\frac{x}{24} = \frac{12}{8}$$

$$x = \frac{12}{8} \times 24$$

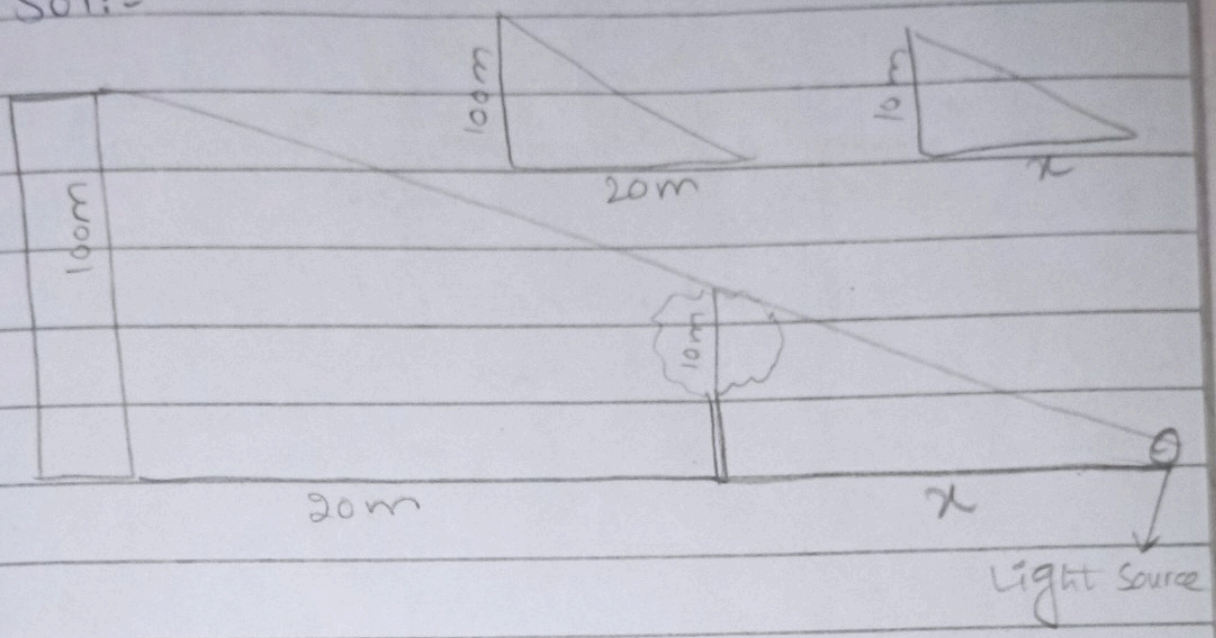
$$x = 36$$

Days $= 36$

c) The shadow of a 10m tall tree is falling on a high rise building and its night is 100m. If a tree is 20m

away from the wall, at what distance from the wall is the light source?

Sol:-



In two identical triangle the ratio of two corresponding side is equal

$$\frac{100}{20+x} = \frac{10}{x}$$

$$100x = (20+x)10$$

$$100x = 200 + 10x$$

$$100 - 10x = 200$$

$$90x = 200$$

$$x = \frac{200}{90}$$

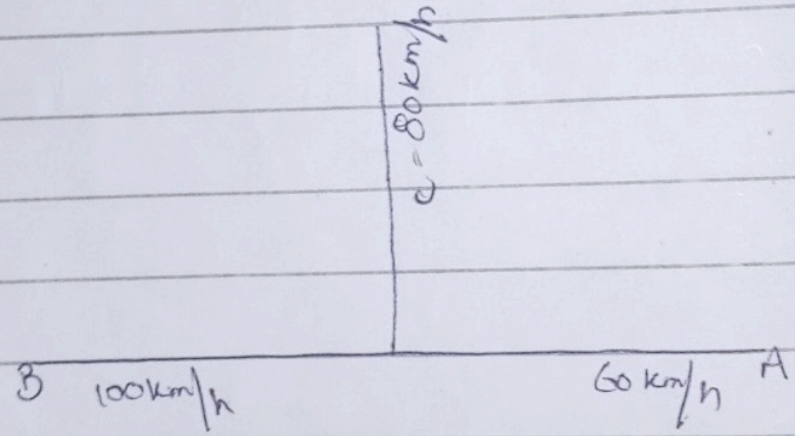
$$x = 2.22m$$

$$= 20 + 2.22$$

$$= 22.22m$$

d) There are three cars and Start moving in such a way that car A and B are moving opposites with speed 60 and 100 km/h. Car C is moving perpendicularly to both with speed 80km/h. What is the distance after 15 minutes between (i) A and B (ii) A and C (iii) B and C?

Solution:-



Time = 15min

$= \frac{15}{60} h$

Distance = Speed × Time

Car A will cover a distance = $60 \times \frac{15}{60}$

= 15 km

Car B will cover a distance = $\frac{100}{4} \times \frac{15}{60}$

$= 25\,km$

Car C will cover a distance = $\frac{80}{4} \times \frac{15}{60}$

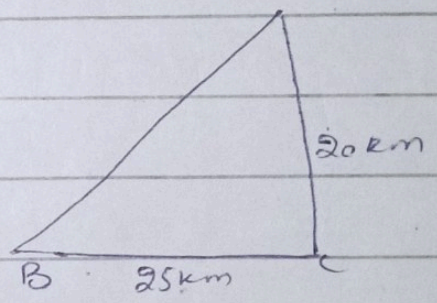
$= 20\,km$

(i) A and B

15km + 25km

= 40km

(iii) B and C



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

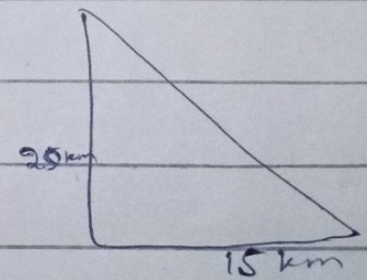
$H^2 = (25)^2 + (20)^2$

$H^2 = 625 + 400$

$\sqrt{H^2} = \sqrt{1025}$

$H = 32.01\ km$

(ii) A and C



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

$H^2 = (15)^2 + (20)^2$

$H^2 = 225 + 400$

$\sqrt{H^2} = \sqrt{625}$

$H = 25$