Mock 4 19/Aug

SECTION II

Q6 A primary school had an enrollment of 850 pupil in January 2022. In Jan 2023, the enrollment was 1120. What was the increase percentage for the enrollment.

Ans A primary school had an enrollment of 850 pupil in Jan 2022.

In Jan 2023, the total enrollment was 1120 pupil.

So what was the increase percentage for the enrollment?

First find the difference of enrollment of pupil in two years

$= 1120 - 850 = 270$ pupil.

Now find the percentage of 270,

$\frac{270}{1120} \times 100 = 24.1\%$.

The increase in the enrollment.

Ans

(b) A man is 5 times as old as his son, two years ago the sum of squares of their ages was 114, find the present age of his son?

Sol Let the age of son = x

A man is 5 times as old as his son = 5x

Two years ago the sum of squares of their ages was 114 i.e

$$(x-2)^2 + (5x-2)^2 = 114 \quad \text{--- (1)}$$

& Use formula here

$(a+b)^2 = (a+b)(a+b)$ $a^2 + b^2 = 2ab$

Now expand each square

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

$(5x-2)^2 = 25x^2 + 4 - 20x$

Now add the expressions

$x^2 + 25x^2 - 4x - 20x + 4 + 4 = 114$

$26x^2 - 24x + 8 = 114$

$\therefore 26x^2 - 24x + 8 - 114 = 0$

Simplify the equation, so divide it by 2 on Both sides

Q) A man has some hens and cows if the no of heads be 48 and no of feet is equal to 140, find the no of hens.

Let each head will have at least two legs = 48×2

$= 96$ legs

Remaining $140 - 96 = 44$

Total no of heads = $x + y = 48$ → ①

Total no of feets = $2x + 4y = 140$ → ②

Solving the equations

$x + y = 48$ (x with 2)

$2x + 2y = 96$ → ③

$\pm 2x \pm 4y = \pm 140$

$\mp 2y = \mp 44$

$y = \frac{44}{2} = 22$ cows

put $y = 22$ in eq ①

$x + y = 48$

$x + 22 = 48$

$x = 48 - 22 = 26$ so $x = 26$ hens

d) A car runs at a speeds of 40km/h during first half of the journey and at the speed of 60km/h the 2nd half of journey. What is the average speed of a car?

Ans: A car runs at a speeds of 40 km/h during first half of the journey and 60 km/h at the 2nd half of journey.

What is the average speed of a car?

Formula of average =

$$\frac{x+y}{2}$$

$$= \frac{40+60}{2} = \frac{100}{2}$$

Average = 50 km/h

Speed after of car

$13x^2 - 12x - 53 = 0$

Solve the quadratic eq
using the quadratic formula.

$$x = \frac{-(b) \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-(-12) \pm \sqrt{(-12)^2 - 4(13)(-53)}}{2(13)}$$

$$= \frac{12 \pm \sqrt{144 + 2756}}{26}$$

$$= \frac{12 \pm \sqrt{2900}}{26} = \frac{12 \pm 53.85}{26}$$

1. $\frac{65.85}{26} \approx 2.53$

2. $-\frac{41.85}{26} \approx -1.61$ (age is never negative)

So the present age of the son is ≈ 2.53 yrs

Q7 A number is divided by 6 and 50 is added. If the total is 60, what is that number

Ans Lets represent the unknown no = x

The problem states:

① The number is divided by 6 = $\frac{x}{6}$

② Then 50 is added = $\frac{x}{6} + 50$

③ the result is 60 $\Rightarrow \frac{x}{6} + 50 = 60$

Now Subtract 50 from B.Sides

$\frac{x}{6} = 60 - 50 = 10$

$\frac{x}{6} = 10$

$x = 60$

So the number is

60 Ans

(b) Find the odd one out.

8, 16, 24, 34, 40, 48.

Ans 8, 16, 24, 34, 40, 48.

The odd one in above is 34 because 34 is not divisible by 8 or not multiple of 8, and all other numbers are divisible by 8.
& all others all the multiples of 8.

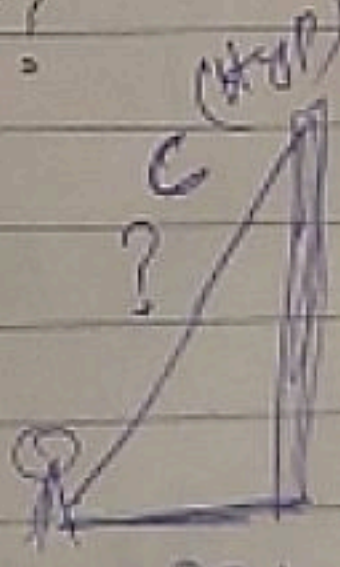
(c) A tower is 15m tall. If I am standing 20m from the base of the tower. What is my aerial distance from the top of the tower?

Ans Height of tower = 15m

Distance of 20m from the base.

To find hypotenuse use pythagoras theorem

$c^2 = h^2 + d^2$ = $\sqrt{}$



Date

$$\text{OR} \quad C = \sqrt{b^2 + d^2}$$

$$C = \sqrt{(15)^2 + (20)^2}$$

$$= \sqrt{225 + 400}$$

$$= \sqrt{625} = 25 \text{ m}$$

Ans

(8) In a hotel, the tariff for every odd dates is Rs 1000 and for even dates is Rs 900. If the man paid total of 30000 in all. For how many days did he stay in the Hotel Given that the first day is 5th date of the month.

Tarif for every odd dates is Rs 1000

" " " even dates is Rs 2000.

If the man paid total of 30000 in all

And the first day is 5th date of the month

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Odd days are 5, 7, 9, 11, 13, 15

17, 19, 21, 23

= Total 10,000 Rs

1080 x 10

Even days are 6, 8, 10, 12, 14,

16, 18, 20, 22, 24

= Total 20,000 Rs

2000 x 10 =

So 10,000 + 20,000

= 30,000 Rs

So the total days he

spent in hotel was

20 days.

Mock 4

Q8

(a) Faisal mosque in Islamabad constructed by a Turkish architect with worship halls of a certain geometrical shape. Write the formula for the area of this shape used as an outer view of worship halls.

The main prayer hall of Faisal Mosque is shaped like an eight sided shell with a triangular structure when viewed from outside. The geometric shape that dominates the outer view is a series of equilateral triangles.

The formula for the area of an equilateral triangle is:

$$\text{Area} = \frac{\sqrt{3}}{4} \times a^2$$

where "a" is the length of a side of the equilateral triangle.

It is the Area of one Triangular shell.

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* Total surface Area (for four Triangular faces) are;

If all four shells are congruent equilateral triangles:

Total Surface Area

$= 4\left(\frac{\sqrt{3}}{4} \times a^2\right)$

Total surface area $= \sqrt{3} \times a^2$

This gives the total surface area of the four triangular shells forming the outer structure.

⟷

(b) In a mixture of 60 liters, the ratio of milk and water is 2:1. If the ratio is to be 1:2, then what is the quantity of water to be further added.

Sol:

Quantity of milk = $\left(60 \times \frac{2}{3}\right)$ liters

= 40 liters

Quantity of water in it = (60 − 40) liters

= 20 liters

New ratio = 1 : 2

Let the quantity of water to be added further be x liters

Then milk : water = $\left(\frac{40}{20+x}\right)$

Now, $\left(\frac{40}{20+x}\right) = \frac{1}{2}$

$\Rightarrow$ 20 + x = 80

$\Rightarrow$ 80 − 20 = x

$\boxed{x = 60}$

$\therefore$ Quantity of water to be added = 60 liters.

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Q If A is the brother of B and B is the sister of C, C is the father of D. How D is related to A, D being a male member.

Ans

A —Brother of→ B
(Male) (Female)

B —Sister of→ C
Female (male)

C —Father of→ D
(Male) (male)

So the Relation of D with A is that the D is the Nephew of A.

Q. If a certain code ROAR is written as URDU. How will be written in that code?

Ans As ROAR = URDU

R → U
O → R
A → D
R → U

Now

A, B, C D E F G H I J
K L M N O P Q R S T

A B C D E F G H I J

K L M N

O P Q R S T U V W X Y Z

3 3 3

URDU

U → X
R → U So XUGX
D → G
U → X

Is Ans