Date: Day:

Name: Urooba Shafique

Roll no: 32625 (Batch 59)

Subject: ~~English~~ GSA

Date: 20-August-2024

MOCK EXAM

SECTION II: ABILITY PORTION

QUESTION No 6

PART A)

A primary school had an enrollment of 850 pupils in January 2022. In February 2023, the enrollment was 1120. What was the increase percentage for the enrollment?

~~ANSWE~~ SOLUTION

Original value = 850

Increase in value = New value - Original value

= 1120 - 850

Increase in value = 270

1120
850
270

To find the percentage increase:

Percentage Increase = $\frac{\text{Increase in value} \times 100}{\text{Original value}}$

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$$= \frac{\cancel{270}^{54}}{\cancel{850}_{17}} \times 100$$

$$\frac{54 \times 100}{17}$$

$$\frac{5400}{17}$$

$= \boxed{31.76}$ answer

R.W

```
17 ) 5400 ( 317.6
     51
     ---
      30
      17
     ---
     130
     119
     ---
     110
```

$47 + 3 = 51$

$17 \times 7 = 119$

$17 \times 6 = 102$

Hence, the increase in percentage = 31.76

PART B)

A man is five 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

ANSWER

Let the age of son $= x$ } present age
Age of father $= 5x$

2 years ago $=$ ~~x-5~~ $x-2$

$5x-2$

The sum of squares of ages $=$
$(x-2)^2$ and $(5x-2)^2$

$$(x-2)^2 + (5x-2)^2 = 114$$

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

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

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

$26x^2 - 24x = 106$

$26x^2 - 24x - 106 = 0$ (Quadratic equation)

$a = 26$

$b = -24$

$c = -106$

Quadratic formula $= \boxed{\dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}}$

$= \dfrac{-(-24) \pm \sqrt{(-24)^2 - 4(26)(-106)}}{2(26)}$

$= \dfrac{24 \pm \sqrt{576 + 11024}}{52}$

$= \dfrac{24 \pm \sqrt{11600}}{52}$

$= \dfrac{24 \pm 108}{52}$

$= \dfrac{24 + 108}{52}$ and $\dfrac{24 - 108}{52}$

$\dfrac{132}{52}$ (cancelled to $\dfrac{33}{13}$) and $\dfrac{-132}{52}$

$108 + 24 = 132$

$13 \overline{)33}$ 2.5; 26; 70; 65

$13 \times 5 = 65$

$\boxed{x = 2.5}$ $\boxed{x = -2.5}$

Hence age of son is 2.5 years

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PART C)

A man has some hens and cows if the number of heads be 48 and the number of feet is equal to 140, find the number of hens

SOLUTION

Hens = x

Cows = y

Number of heads = $x + y = 48$
(Both hens & cows)

Number of feet = $2x + 4y = 140$ (Hen has 2 legs) (Cow has 4)
(Both)

$x + y = 48 \rightarrow Eq(i)$

$2x + 4y = 140 \rightarrow Eq(ii)$

To solve x, multiply eq(i) by 2

$2x + 2y = 96 \rightarrow Eq(iii)$

Minus Eq(iii) from Eq(ii)

$2x + 4y = 140$

$-\ 2x + 2y = 96$

$2y = 44$

$y = 44/2$

$\boxed{y = 22}$ → Number of cows

R.W

148
2
96
3
146
96
44

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To find number of Hens

$x + y = 48$

$x + 22 = 48$

$x = 48 - 22$

$48 - 22 = 26$

$x = 26$ → Number of hens

Hence, the number of hens are 26

PART D)

A car runs at a speed of 40km/h during first half of the journey and at the speed of 60km/h in the 2ND half of journey. What is the average speed of a car

SOLUTION

Speed during th first half of journey = $V_1 = 40 km/h$

Speed during second half = $V_2 = 60 km/h$

$$\text{Average speed} = \frac{2V_2V_1}{V_1 + V_2}$$

$$V = \frac{2(40)(60)}{40+60}$$

$$V = \frac{80 \times 60}{100}$$

$$V = \frac{4800}{100}$$

$$V = 48 km/h$$

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Hence, the average speed is 48km/h

QUESTION 8 PART B)

In a mixture of 60 litres, the ratio of milk and water is 2:1. If this ratio is to be 1:2, then what is the quantity of water to be further added?

SOLUTION

~~Quantity of milk~~ =

Total mixture = 60 litres

Milk : Water = 2:1

Sum of ratio = 2+1 = 3

$$\text{Quantity of milk} = \frac{60}{3} \times 2$$

$$= 20 \times 2$$

$$= 40 \text{ litres}$$

While, quantity of water = Total mixture - Quantity of milk

$$60 - 40$$

$$= 20 \text{ litres}$$

Lets suppose quantity of water to be added is x when new ratio is 1:2

~~The~~ Then quantity of water will be found through new ratio

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Milk : Water $= \frac{40}{20+x} = \frac{1}{2}$

$40 \times 2 = 20 + x$

$80 = 20 + x$

$80 - 20 = x$

$60 = x$

$x = 60$ litres

Hence, the ~~new~~ quantity of water to be further added is 60 litres.

PART C)

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

SOLUTION

Solving the blood relation through reading the statement in a reverse order:

C is the father of D

B is the sister of C means

B and C are siblings.

A is the brother of B implies that A is brother of both B and C, hence A, B and C are siblings. If D, the son of C is a male then D is nephew to A

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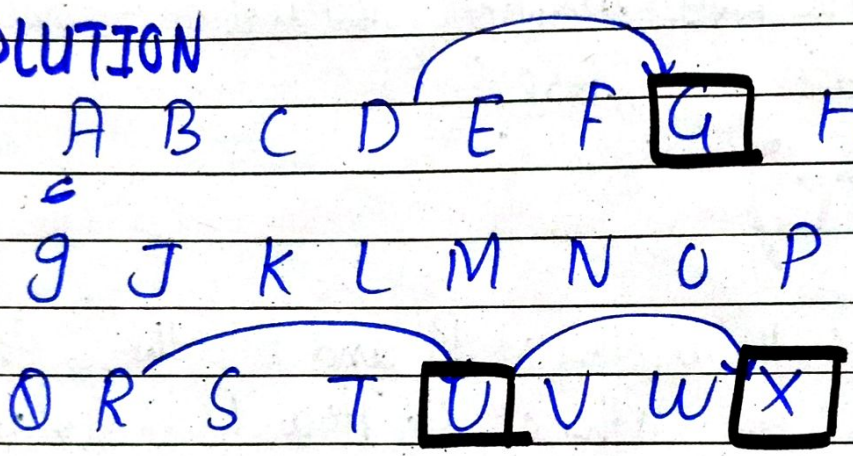
Therefore A and D are related as Uncle and nephew.
Hence, D is the nephew of A

PART D)

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

SOLUTION



ROAR as URDU is three steps forward method.
URDU will be written by finding the three steps forwards ~~dic~~ alphabets to the given code which is

U R D U
as X U G X answer

Hence, URDU will be written as XUGX