

General Science and Ability

Question 6

Part (a)

$$\text{Total amount} = \$370 \quad x \Rightarrow \$370$$

$$\text{First part \& third part} \Rightarrow 3:5$$

$$1^{\text{st}} \text{ part} = 3x$$

$$2^{\text{nd}} \text{ part} = y$$

$$\text{Third part} = 5x$$

$$2^{\text{nd}} \Rightarrow y = \frac{1}{4}(5x) \quad y = \frac{5x}{4}$$

$$3x : 5x \Rightarrow 3:5$$

$$\frac{3x}{8} : \frac{5x}{8} \quad \frac{3(\$370)}{8} : \frac{5(\$370)}{8}$$

$$\$138.75 : \$231.25$$

$$1^{\text{st}} \text{ part} = \$138.75$$

$$3^{\text{rd}} \text{ part} = \$231.25$$

$$2^{\text{nd}} \text{ part} = \frac{5}{4} \left(\frac{3^{\text{rd}} \text{ part}}{5} \right)$$

$$2^{\text{nd}} = \frac{5}{4} \left(\frac{\$231.25}{5} \right)$$

$$2^{\text{nd}} \text{ part} = \$57.8125$$

\Rightarrow Three parts are $\$138.75$, $\$57.8125$ and $\$231.25$

Part b

Kashif required = Rs 800

He had = Rs 200 (in bank)

He borrowed = 20% (from brother)

He borrowed = 30% (from mother)

How much does he needs more = ?

Borrowed 20% from brother \Rightarrow

$$\frac{\text{Rs } 800 \times 20}{100} = \text{Rs } 160$$

Remaining = $\text{Rs } 800 - 160 = \text{Rs } 640$

Funded by his mother = $\frac{\text{Rs } 640 \times 30}{100} = \text{Rs } 192$

Bank balance = Rs 200

Funds now available = $160 + 192 + 200 = \text{Rs } 552$

Amount still need = $\text{Rs } 800 - 552 = \boxed{\text{Rs } 248}$

Part c

1st bag = 3 red, 7 black

2nd bag = 8 red, 2 black

3rd bag = 4 red, 6 black

$$P(\text{bag 1}) = \frac{1}{3}$$

$$P(\text{bag 2}) = \frac{1}{3}$$

$$P(\text{bag 3}) = \frac{1}{3}$$

$$P(\text{red} | \text{bag 1}) = \frac{3}{10}$$

$$P(\text{red} | \text{bag 2}) = \frac{8}{10}$$

$$P(\text{red} | \text{bag 3}) = \frac{4}{10}$$

$$P(\text{red} | \text{bag 3}) = \frac{\frac{1}{3} \times \frac{4}{10}}{\frac{1}{3} \times \frac{3}{10} + \frac{1}{3} \times \frac{8}{10} + \frac{1}{3} \times \frac{4}{10}} = \frac{4}{15}$$

$$P(\text{red} | \text{from 3rd bag}) = \frac{4}{15}$$

Part d

Road lights change at = 24, 36 & 72 seconds
Simultaneous change at = 8:20:00 hrs
change again = ?

Interval of change = (24, 36, 72) \Rightarrow LCM = 72 sec
change after 72 sec \Rightarrow 1 minute 12 second

8:20:00

00:01:12

8:21:12 hrs

Question 8

Part a

~~Speed = 40 km/h~~

Speed $\Rightarrow S_1 = 40 \text{ km/h}$

Speed $\Rightarrow S_2 = 60 \text{ km/h}$

~~average speed = ?~~

~~average = $\frac{40 \text{ km/h} + 60 \text{ km/h}}{2}$~~

time = $\frac{\text{distance}}{\text{speed}}$

1st half = $\frac{d}{40}$

2nd = $\frac{d}{60}$

distance = $\frac{2d}{a}$ (average)

$\frac{1}{40 \text{ km/h}} + \frac{1}{60 \text{ km/h}} = \frac{2}{a}$

$\frac{3 + 2}{120 \text{ km/h}} = \frac{2}{a}$

$\frac{5}{120 \text{ km/h}} = \frac{2}{a}$

$\frac{5}{120 \times 2} = \frac{1}{a}$

$5a = 240 \text{ km/h}$

$a = \frac{240 \text{ km/h}}{5}$

$a = 48 \text{ km/h}$

Part b

ROSE 6821
CHAIR 73456
PREACH 961473
SEARCH ?

~~ROSE~~

R O S E
6 8 2 1

C H A I R
7 3 4 5 6

P R E A C H
9 6 1 4 7 3

same digits

all alphabetical same have

S E A R C H
2 1 4 6 7 3

Part c

brother

sister

A is the brother of B.

B is the sister of C^{father}

C is the father of D.

How D related to A?

D being a male member?

A is brother B is sister

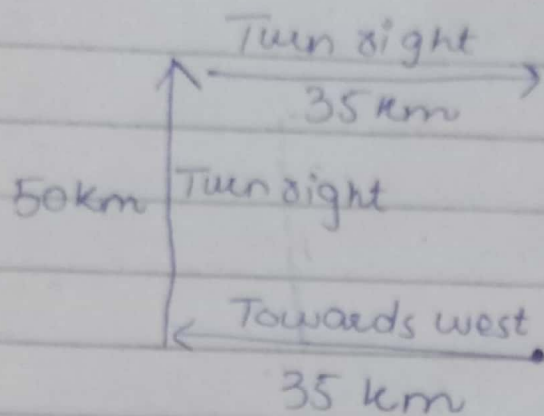
C is brother & father to D.

A, B & C are three siblings.

→ A is the paternal uncle of D.

→ D is a nephew or niece depend on gender.

Part d



Distance from her original and final destination is \Rightarrow 50km

Question 7

Part a

$I_1 =$ Ishag time = 6 hours

$A =$ Abbas time = 4 hours

$I_2 =$ Irfan = 8 hours

$I_1 = \frac{1}{6}$ after 1 hour

$A = \frac{1}{4}$ after 1 hour

$I_2 = \frac{1}{8}$ after 1 hour

I_1 and A start work together for 2 hours.

$$\left(\frac{1}{6} + \frac{1}{6}\right) + \left(\frac{1}{4} + \frac{1}{4}\right)$$

$$= \frac{12}{36} + \frac{21}{42} = \frac{1}{3} + \frac{1}{2}$$

$$= \frac{2+3}{6} = \frac{5}{6}$$

completed $\frac{5}{6}$ of total work.

Abbas (A) leave after 2 hours
Isfan and Ishaq working now
They need to complete $\Rightarrow \frac{1}{6}$ work now

$$I_1 + I_2 = \frac{1}{6} + \frac{1}{8}$$

$$\frac{4+3}{24} = \frac{7}{24}$$

They both complete $= \frac{7}{24}$ work after every hour.

need to complete $\Rightarrow \frac{4}{24}$ work.

$$\text{hour} = \frac{\text{Progress}}{\text{Progress/hour}} = \frac{4/24}{7/24/\text{hour}}$$

$$\frac{4}{24} \times \frac{24}{7} \quad t = \frac{4}{7} \text{ hours}$$

$$t = 0.57 \text{ hours}$$

$$t = 0.57 \times 60 \text{ minutes}$$

$$t = 34.2 \text{ minutes}$$

It will take approx 0.57 hours where Abbas left.

Initial time = 2 hours

Total time \Rightarrow 2 hours + 0.57 hours

= 2.57 hours or 2 hour 34.2 minutes

Part b

$$\text{Area of the farm} = 576 \text{ m}^2$$

$$4 \text{ sides of wall} \quad 1 \text{ side} = 24 \text{ meter}$$

$$\text{So for 3 sides of Area of wall} = 24 \times 2 \times 3 \\ = ~~144~~ 144 \text{ Sq meter}$$

$$~~1 \text{ side} = 24 \text{ meter}~~$$

$$1 \text{ side} = 24 \text{ sq meter}$$

$$3 \text{ sides} = 24 \times 3 = ~~432 \text{ m}^2~~ 72 \text{ m}^2$$

$$\text{Total} = 72 \text{ m}^2 + 144 \text{ m}^2$$

$$= 216 \text{ m}^2$$

$$n = \text{Total students} = 7$$

$$18, 18, 19, 19, 19, 21, 21$$

$$\text{sum} = 135$$

$$\text{Mean} = \frac{\text{Sum of observations}}{n}$$

$$\frac{135}{7} \quad \boxed{\text{Mean} = 117}$$

$$\text{Median} =$$

$$\left[\frac{(n+1)}{2} \right]^{\text{th}} \text{ term}$$

$$\frac{7+1}{2} = \left(\frac{8}{2} \right) = 4^{\text{th}} \text{ term}$$

$$\boxed{\text{Median} = 19}$$

Mode - Maximum number repeated

$$\boxed{\text{Mode} = 19}$$

- 1) Mean is the average of any numbers.
- 2) Median is the middle value from numbers given, without arranging.
- 3) Mode is most repeated number from data set or with more frequency.

Part d

IQ (Intelligence Quotient)

IQ test measures statistically how intelligent a person is.