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SUGGESTED SOLUTION

SYJC

SUBJECT- MATHS AND STATS

Test Code - SYJ 6063 A

BRANCH - () (Date :)

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Ans. : 1

1. Let x kg of zinc be added.

∴ From the given condition we get

$$\frac{\frac{37}{100}(400)+x}{400+x} = \frac{70}{100}$$

$$\therefore \frac{148+x}{400+x} = \frac{7}{10}$$

$$\therefore 10(148+x) = 7(400+x)$$

$$\therefore 1480 + 10x = 2800 + 7x$$

$$\therefore 3x = 2800 - 1480$$

$$\therefore 3x = 1320$$

$$\therefore x = 440$$

∴ 440 kg of zinc is added.

(02)

2. Since capital invested are same for all the 3 partners, hence profits will be distributed in proportion of the time period for which capitals are invested. Since periods are 12 months, 9 months and 5 months respectively.

∴ Profit will be divided in the ratio 12 : 9 : 5.

$$\text{Also } 12 + 9 + 5 = 26$$

Share of Ameena in the profit

$$= \frac{12}{26} \times 23,400 = \text{Rs. } 10,800$$

Share of Yasmin in the profit

$$= \frac{9}{26} \times 23,400 = \text{Rs. } 8,100.$$

Share of Shabana in the profit

$$= \frac{5}{26} \times 23,400 = \text{Rs. } 4,500.$$

∴ Ameena's profit, Yasmin's profit and Shabana's profit are Rs. 10,800, Rs. 8,100 and Rs. 4,500 respectively.

(02)

3. Let the initial value of the business be Rs. 100

∴ Original income of the agent = Rs. 5

Let the new value of the business be Rs. x.

$$\therefore \text{New income of the agent} = x \times \frac{6.25}{100}$$

$$= \frac{x}{100} \times \frac{625}{100}$$

$$= \frac{x}{16}$$

Now original income = new income (Given)

$$\therefore 5 = \frac{x}{16}$$

$$\therefore x = 80$$

\therefore New value of the business = Rs. 80

\therefore There is 20% reduction in the value of the business.

(02)

4. S.D. = 5830, P.W. = 5500, $n = \frac{9}{12}$

Now T.D. = S.D. – P.W.

$$= 5830 - 5500$$

$$= \text{Rs. } 330.$$

$$\text{T.D.} = \frac{\text{P.W.} \times n \times r}{100}$$

$$\therefore 330 = \frac{5500 \times \frac{9}{12} \times r}{100}$$

$$\therefore 330 = 55 \times \frac{3}{4} \times r$$

$$\therefore r = \frac{330 \times 4}{55 \times 3} = 8.$$

\therefore Rate of interest is 8%.

(02)

5. The period of investment is same for all three partners.

\therefore profit will be shared in the proportion to their investments.

i.e., in the proportion to

$$12000 : 18000 : 30000 \Rightarrow 2 : 3 : 5$$

Now, total share is $2 + 3 + 5 = 10$ and profit earned is Rs. 15200

$$\therefore \text{Ajay's share in the profit} = \frac{2}{10} \times 15200 = \text{Rs. } 3040$$

$$\text{Atul's share in the profit} = \frac{3}{10} \times 15200 = \text{Rs. } 4560$$

$$\text{Anil's share in the profit} = \frac{5}{10} \times 15200 = \text{Rs. } 7600$$

Hence, the shares of profit are Rs. 3040, Rs. 4560 and Rs. 7600 respectively.

6. The commission paid to an agent at 12.5% is Rs. 58500

Let the total sales of computers be Rs. x .

$$\therefore 58500 = x \times \frac{12.5}{100}$$

$$\therefore x = 58500 \times \frac{100}{12.5} = 58500 \times \frac{1000}{125}$$

$$= 58500 \times 8 = \text{Rs. } 468000$$

Hence, total sales of computers is Rs. 4,68,000.

Now, the price of each computer is Rs. 18,000.

$$\therefore \text{number of computers sold} = \frac{468000}{18000} = 26.$$

(02)

Ans.: 2

1. Since ratio of prices of two cycles was 16 : 23.

\therefore Their original prices be Rs. $16x$ and Rs. $23x$ respectively.

\therefore By given condition we get

$$\frac{16x + 10\% \text{ of } 16x}{23x + 477} = \frac{11}{20}$$

$$\therefore \frac{16x + 1.6x}{23x + 477} = \frac{11}{20}$$

$$\text{Since } 10\% \text{ of } 16x = \frac{10}{100} \times 16x = 1.6x$$

$$\therefore 20(16x + 1.6x) = 11(23x + 477)$$

$$\therefore 320x + 32x = 253x + 5247$$

$$\therefore 352x = 253x + 5247$$

$$\therefore 352x - 253x = 5247$$

$$\therefore 99x = 5247$$

$$\therefore x = 53$$

\therefore Original prices of two cycles are

$$16x = 16 \times 53 = \text{Rs. } 848 \text{ and}$$

$$23x = 23 \times 53 = \text{Rs. } 1219 \text{ respectively.}$$

(03)

2. Let the fixed monthly salary of the salesman = Rs. x and the rate of commission = r %.

Now, the receipt on the first month's sale of Rs. 64000 is Rs. 10650.

$$\therefore 10650 = x + 64000 \times \frac{r}{100}$$

$$\therefore 10650 = x + 640r$$

The receipt on the second month's sales of Rs. 72,000 is Rs. 11450.

$$\therefore 11450 = x + 72000 \times \frac{r}{100}$$

$$\therefore 11450 = x + 720r$$

Subtracting (1) from (2), we get

$$800 = 80r$$

$$\therefore r = \frac{800}{80} \quad \therefore r = 10\%$$

Putting $r = 10$ in (1), we get

$$10650 = x + 640 \times 10$$

$$\therefore 10650 - 6400 = x$$

$$\therefore x = 4250$$

Hence, the fixed monthly salary of the salesman is Rs. 4,250 and the rate of commission is 10%.

(03)

3. F.V. = Rs. 5050, C.V. = Rs. 4,974.25

Banker's discount (B.D.) = F.V. - C.V.

$$= 5050 - 4974.25$$

$$= \text{Rs. } 75.75$$

Date of drawing = 14th January

Period = 5 months

Nominal due date = 14th June

Legal due date = 17th June

Date of discounting = 26th March

No. of days from date of discounting to legal due date

Ans.: 3

1. The incomes of X, Y and Z are in the ratio 3 : 5 : 4.

Let their incomes be Rs. 3x, Rs. 5x, Rs. 4x respectively.

X saves 40% of his income.

$$\therefore \text{X saves } 3x \times \frac{40}{100} = \text{Rs. } \frac{6x}{5}$$

$$\therefore \text{X spends } 3x - \frac{6x}{5} = \frac{15x - 6x}{5} = \text{Rs. } \frac{9x}{5}$$

Now, their expenditures are in the ratio 2 : 1 : 3.

Let their expenditures be Rs. 2x, Rs. x and Rs. 3x respectively.

Thus if X spends Rs. 2x, Y spends Rs. x,

$$\therefore \text{if X spends Rs. } \frac{9x}{5}, \text{ Y spends } \frac{x}{2x} \times \frac{9x}{5} = \frac{9x}{10}$$

Similarly, if Y spends Rs. x, Z spends Rs. 3x.

$$\therefore \text{If Y spends Rs. } \frac{9x}{10}, \text{ Z spends } \frac{3x}{x} \times \frac{9x}{10} = \frac{27x}{10}$$

Now, we list their income and expenditure and find saving as follows :

	X	Y	Z
Income	3x	5x	4x
Expenditure	$\frac{9x}{5}$	$\frac{9x}{10}$	$\frac{27x}{10}$
Savings = Income – Expenditure	$3x - \frac{9x}{5}$ $= \frac{15x - 9x}{5}$ $= \frac{6x}{5} = \frac{12x}{10}$	$5x - \frac{9x}{10}$ $= \frac{50x - 9x}{10}$ $= \frac{41x}{10}$	$4x - \frac{27x}{10}$ $= \frac{40x - 27x}{10}$ $= \frac{13x}{10}$

\therefore ratio of their savings is

$$\frac{12x}{10} : \frac{41x}{10} : \frac{13x}{10}$$

$$\Rightarrow 12 : 41 : 13$$

2. Let the sale value of the car = Rs. 100.

3% commission is charged on the sale value.

\therefore The owner receives Rs. $(100 - 3) = 97$

(04)

When the owner of the car receives Rs. 97, the sale value of the car is Rs. 100, then

When the owner of the car receives Rs. 48500, the sale value of the car

$$= \frac{100 \times 48500}{97}$$

$$= 100 \times 500 = \text{Rs. } 50,000$$

Hence, the sale value of the car is Rs. 50,000

Agent charged 2% to the buyer on Rs. 50,000

$$\therefore \text{agent's charge} = 50000 \times \frac{2}{100} = \text{Rs. } 1,000$$

Agent's commission at the rate of 3% of Rs. 50,000

$$= 50,000 \times \frac{3}{100} = \text{Rs. } 1500$$

\therefore agent's total remuneration

$$= (\text{Commission from buyer}) + (\text{Commission from seller})$$

$$= \text{Rs. } (1000 + 1500) = \text{Rs. } 2,500$$

(04)

3. The capital invested by Rohit and Rohan are in the ratio 4 : 3.

Let the initial capital invested by Rohit be Rs. 4x and by Rohan be Rs. 3x. The periods of investment for both is 4 months.

Rohit withdrew 25% of his investment, i.e., $4x \times \frac{25}{100} = \text{Rs. } x$ and invested Rs. $(4x - x) = 3x$ for next 8 months.

Rohan added Rs. x to his earlier investment Rs. 3x and invested Rs. $(3x + x) = 4x$ for next 8 months.

Since the investments and periods of investment are different, the profit of Rs. 42,000 is distributed in the ratio $(4x \times 4) + (3x \times 8) : (3x \times 4) + (4x \times 8)$

$$\Rightarrow 16x + 24x : 12x + 32x$$

$$\Rightarrow 40x : 44x$$

$$\Rightarrow 40 : 44$$

$$\Rightarrow 10 : 11$$

$$\text{Also, total share} = 10 + 11 = 21$$

Now, given that total profit earned is Rs. 42,000.

$$\therefore \text{Rohit's share in the profit} = \frac{10}{21} \times 42,000$$

$$= 20,000$$

$$\text{Now, Rohan's share in the profit} = \frac{11}{21} \times 42,000$$

$$= \text{Rs. } 22,000$$

Hence, Rohan's share in the profit is Rs. 22,000

(04)

4. Let list price is = Rs. 100.

Discount at 35% on Rs. 100 = Rs. 35.

$$\therefore \text{selling price} = 100 - 35 = \text{Rs. } 65$$

Profit at 30% on Rs. 100 = Rs. 30.

$$\therefore \text{selling price} = 100 + 30 = \text{Rs. } 130$$

When selling price is Rs. 130, the list price = Rs. 100

then if the selling price is Rs. 65,

$$\text{the list price} = \frac{100 \times 65}{130} = \text{Rs. } 50$$

If the production cost rises by 20%, then the list price will be $\text{Rs. } 50 + 50 \times \frac{20}{100}$

$$= \text{Rs. } (50 + 10) = \text{Rs. } 60$$

To make the profit at 30% on Rs. 60, the list price

$$= \text{Rs. } 60 + 60 \times \frac{30}{100}$$

$$= \text{Rs. } (60 + 18) = \text{Rs. } 78$$

The list price is unaltered, i.e., it should remain Rs. 100, but the new list price is Rs. 78.

$$\therefore \text{discount} = 100 - 78 = \text{Rs. } 22, \text{ i.e. } 22\% \text{ discount is allowed on the list price.}$$

Now, 35% discount was allowed on the list price.

$$\therefore \text{reduction in the rate of discount}$$

$$= 35 - 22 = 13\%$$

Hence, the percentage reduction in the rate of discount is 13%.

(04)