

Name: Anuj Sapkota

Class: 8 'G'

Subject: Maths

FIRST TERM EXAMINATION - 2077

Group A [5x1=5]

- 1) If $A = \{a, e, i\}$ & $B = \{l, o, u\}$. Find $A - B$.
- 2) If C.P = Rs. 450 and S.P = Rs. 480. Find profit or loss percent.
- 3) A shopkeeper purchased an article at Rs. 1560 & he sold it at 20% loss. Find the selling price of the article.
- 4) Find the simple interest for principal 'P' at the rate of R% for 'T' years.
- 5) Find the principal for:
 $I = \text{Rs. } 1080, T = 18 \text{ months}, R = 7.5\%$.

Group B' [8x2=16]

- 1) If $A = \{1, 2, 3, 4, 5\}$ and $B = \{4, 5, 6\}$ then find $A - B$ and $\overline{A \cap B}$.
- 2) If $X = \{a, e, i, o, u\}$ and $Y = \{e, t, g, h, i\}$ then find and show $X \cup Y$ in venn diagram.
- 3) If S.P = Rs. 880, Profit% = 10%, find C.P. and profit amount.
- 4) Robin purchased a mobile for Rs. 8000. He spent Rs. 400 for repairing it. If he sold the mobile at Rs. 7896. What will be his actual loss & loss%?
- 5) Binita bought a cupboard at Rs. 12,600. Due to old fashion, she sold it at a loss of 11%.
 - i) Find her actual loss.
 - ii) Find the selling price of the cupboard.
- 6) Kishor deposited Rs. 32,600 in a saving account at the rate of 6% p.a. in Rastriya Banijya Bank. How much

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interest will he get at the end of 2 years 6 months.

- 7) At what rate of interest will a sum of Rs. 1200 have Rs. 720 as interest in 10 years.
- 8) What sum must be deposited at the rate of 8% p.a. to get an interest of Rs. 1000 in 6 months.

Group 'C' [7x4=28]

- 1) In class VIII Gallica there are 35 students. 24 of them drink coke, 16 of them drink fanta and 10 of them take both of the drinks. Show the above information in Venn-diagram. Also:

(i) Find the number of students drinking at least one kind of drink.

(ii) Find the number of student who don't drink any of them.

- 2) Out of 300 students appeared in an examination 92% passed in English, 88% passed in Mathematics and 85% passed in both subjects.

(i) How many students are passed in at least one of the subject.

(ii) How many students are passed in Mathematics only.

(iii) How many students are passed in English only.

(iv) Represent the above information in Venn-diagram.

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- 3) Sahil sold a calculator for Rs. 1008 thereby gaining 12%. What is the cost price of the calculator?
- 4) Ram sold 12 kg of apples at Rs. 1950 at the loss of 25%. At what price per kg were the apples purchased?
- 5) A merchant mixes 40 kg of one kind of tea costing Rs. 700 per kg with 20 kg of another kind of tea costing Rs. 1000 per kg. If he sells the mixture of tea at Rs. 960 per kg, what percent does he gain or loss on the whole outlay?
- 6) In what time will the interest on Rs. 12,000 at the rate of 8% p.a. equal to half of the principal?
- 7) What sum lent out at 5% p.a. will produce in 4 years the same interest on Rs. 5600 lent out at 4% p.a. will produce in 3 years.

Answers: [Group A]

1)

→ Solⁿ

Here,

$$A = \{e, i\}$$

$$B = \{i, o, u\}$$

$$A - B = ?$$

We have,

$$\begin{aligned} A - B &= \{e, i\} - \{i, o, u\} \\ &= \{e\} \end{aligned}$$

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2) $\rightarrow$ Soln,

Here,

$$C.P = \text{Rs. } 400$$

$$S.P = \text{Rs. } 480$$

$$\text{Profit} = S.P - C.P$$

$$= \text{Rs. } (480 - 400)$$

$$= \text{Rs. } 80$$

We have,

$$\text{Profit}\% = \frac{\text{Profit}}{C.P} \times 100\%$$

$$= \frac{\text{Rs. } 80}{\text{Rs. } 400} \times 100\%$$

$$= \frac{80}{400} \times 100\%$$

$$= 20\%$$

3) $\rightarrow$ Soln,

Here,

$$C.P = \text{Rs. } 1560$$

$$\text{Loss}\% = 20\%$$

$$S.P = ?$$

We have,

$$\text{Loss} = 20\% \text{ of Rs. } 1560$$

$$= \frac{20}{100} \times \text{Rs. } 1560$$

$$= \text{Rs. } 312$$

Now,

$$S.P = C.P - \text{Loss}$$

$$= \text{Rs. } 1560 - \text{Rs. } 312$$

$$= \text{Rs. } 1248$$

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∴ The selling price of the article is Rs. 1248

4 → Soln

Here,

principal [P] = P

rate [R] = R%

time [T] = T years

Simple Interest [I] = ?

We have,

$$I = \frac{PTR}{100}$$

$$\therefore I = \frac{P \times T \times R}{100}$$

5 → Soln

Here,

I = Rs. 1080

T = 18 months = $\frac{18}{12}$ year = 1.5 years

R = 7.5%

P = ?

We have,

$$P = \frac{I \times 100}{T \times R}$$

$$= \frac{\text{Rs. } 1080 \times 100}{1.5 \times 7.5}$$

$$= \text{Rs. } 9600$$

∴ The principal is Rs. 9600.

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Group B

1) $\rightarrow$ Soln

Here,

$$A = \{1, 2, 3, 4, 5\}$$

$$B = \{4, 5, 6\}$$

$$A - B = ?$$

$$A \cap B = ?$$

We have,

$$(i) A - B = \{1, 2, 3, 4, 5\} - \{4, 5, 6\}$$

$$\therefore A - B = \{1, 2, 3\}$$

$$(ii) A \cap B = \{1, 2, 3, 4, 5\} \cap \{4, 5, 6\}$$

$$\therefore A \cap B = \{4, 5\}$$

2) $\rightarrow$ Soln

Here,

$$X = \{a, e, i, o, u\}$$

$$Y = \{e, t, g, h, i\}$$

$$X \cup Y = ?$$

We have,

$$X \cup Y = \{a, e, i, o, u\} \cup \{e, t, g, h, i\}$$

$$= \{a, e, t, g, h, i, o, u\}$$

In venn-diagram,

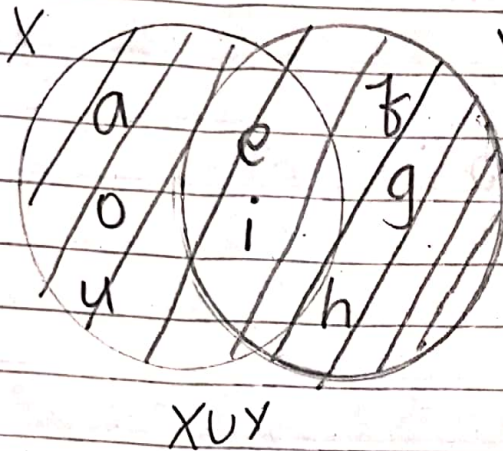
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3) $\rightarrow$ Soln

Here,

$$SP = \text{Rs. } 880$$

$$\text{Profit \%} = 10\%$$

$$C.P. = ?$$

$$\text{Profit amount} = ?$$

We have,

Let CP be x .

$$CP = SP - \text{profit}$$

$$\text{or, } x = \text{Rs. } 880 - 10\% \text{ of } x$$

$$\text{or, } x = \text{Rs. } 880 - \frac{10}{100} \times x$$

$$\text{or, } x = \text{Rs. } 880 - \frac{x}{10}$$

$$\text{or, } \frac{x}{1} + \frac{x}{10} = \text{Rs. } 880$$

$$\text{or, } \frac{10x + x}{10} = \text{Rs. } 880$$

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$$\text{or, } \frac{11x}{10} = \text{Rs. } 880$$

$$\text{or, } 11x = \text{Rs. } 880 \times 10$$

$$\text{or, } x = \frac{\text{Rs. } 880 \times 10}{11}$$

$$\therefore x = \text{Rs. } 800$$

So, C.P is Rs. 800.

Now,

$$\begin{aligned}\text{Profit} &= \text{S.P} - \text{C.P} \\ &= \text{Rs. } (880 - 800) \\ &= \text{Rs. } 80\end{aligned}$$

$\therefore$ The profit amount is Rs. 80.

4) $\rightarrow$ Soln

Here,

$$\text{C.P.} = \text{Rs. } 8000$$

$$\text{For repairing} = \text{Rs. } 400$$

$$\text{Total C.P.} = \text{Rs. } 8400$$

$$\text{S.P.} = \text{Rs. } 7896$$

$$\text{Loss} = ?$$

$$\text{Loss \%} = ?$$

We have,

$$\begin{aligned}\text{① Loss} &= \text{C.P} - \text{S.P} \\ &= \text{Rs. } (8400 - 7896) \\ &= \text{Rs. } 504\end{aligned}$$

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$$\begin{aligned}\textcircled{i} \text{ Loss\%} &= \frac{\text{Loss}}{\text{C.P.}} \times 100\% \\ &= \frac{\text{Rs. } 504}{\text{Rs. } 8400} \times 100\% \\ &= 6\%\end{aligned}$$

$\therefore$ The actual loss is Rs 504 and loss% is 6%.

5) $\rightarrow$ Soln
Here,

$$\begin{aligned}\text{C.P.} &= \text{Rs. } 12,600 \\ \text{Loss\%} &= 11\% \\ \text{Actual loss} &= ? \\ \text{S.P.} &= ?\end{aligned}$$

We have,

$$\begin{aligned}\textcircled{i} \text{ Actual loss} &= \text{Loss\% of C.P.} \\ &= 11\% \times \text{Rs. } 12,600 \\ &= \frac{11}{100} \times \text{Rs. } 12,600 \\ &= \text{Rs. } 1386\end{aligned}$$

$$\begin{aligned}\textcircled{ii} \text{ S.P.} &= \text{C.P.} - \text{Loss} \\ &= \text{Rs. } (12,600 - 1386) \\ &= \text{Rs. } 11,214\end{aligned}$$

$\therefore$ The actual loss is Rs. 1386 and the S.P. is Rs. 11,214.

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6) $\rightarrow$ Soln

Here,

$$\text{Principal [P]} = \text{Rs. } 32600$$

$$\text{Rate [R]} = 6\% \text{ p.a.}$$

$$\begin{aligned}\text{Time [T]} &= 2 \text{ years } 6 \text{ months} \\ &= \left(2 + \frac{6}{12}\right) \text{ years}\end{aligned}$$

$$\text{Interest [I]} = ? \quad 2.5 \text{ years}$$

We have,

$$I = \frac{PTR}{100}$$

$$= \frac{\text{Rs. } 32600 \times 6 \times 2.5}{100}$$

$$= \text{Rs. } 4890$$

$\therefore$ Kishor will get Rs. 4890 interest.

7) $\rightarrow$ Soln

Here,

$$\text{Principal [P]} = \text{Rs. } 1200$$

$$\text{Interest [I]} = \text{Rs. } 720$$

$$\text{Time [T]} = 10 \text{ years}$$

$$\text{Rate [R]} = ?$$

We have,

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$$R = \frac{I \times 100}{P \times T}$$
$$= \frac{\text{Rs. } 720 \times 100}{\text{Rs. } 1200 \times 10}$$
$$= 6\%$$

∴ The rate is 6%.

8) → Soln,

Here,

Interest [I] = Rs. 1000

Time [T] = 6 months = $\frac{6}{12}$ years = 0.5 years

Rate [R] = 8%

Principal [P] = ?

We have,

$$P = \frac{I \times 100}{T \times R}$$
$$= \frac{\text{Rs. } 1000 \times 100}{0.5 \times 8}$$
$$= \text{Rs. } 25,000$$

∴ The principal is Rs. 25,000.

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Group 'c'

Q) → Soln

Here,

~~Total students = 35~~

Let the total students, students who drink coke, and students who drink fanta be U , C and F respectively.

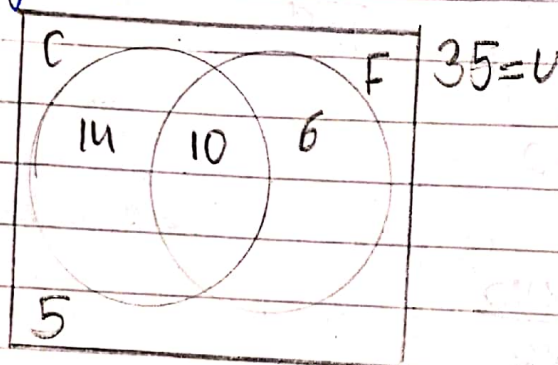
$$n(U) = 35$$

$$n(C) = 24$$

$$n(F) = 16$$

$$n(C \cap F) = 10$$

In venn diagram,



We have,

$$\begin{aligned} \textcircled{i} \quad n(C \cup F) &= n(C) + n(F) - n(C \cap F) \\ &= 24 + 16 - 10 \\ &= 30 \end{aligned}$$

$\textcircled{ii}$ The number of students who drink none of them = Total students - Students who drink at least one of the drinks.

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$$= 35 - 30$$

$$\checkmark \underline{\underline{= 5}}$$

∴ The ^{no. of} students who drink at least one kind of drink is 30 and who don't drink any of them is 5.

2) → Soln

Here,

Let the total students, students who passed in English, students who passed in maths and be U , E and M respectively.

$$n(U) = 300$$

$$n(E) = \frac{92}{100} \times 300 = 276$$

$$n(M) = \frac{88}{100} \times 300 = 264$$

$$n(ENM) = \frac{85}{100} \times 300 = 255$$

We have,

$$\begin{aligned} \textcircled{i} \quad n(E \cup M) &= n(E) + n(M) - n(ENM) \\ &= 276 + 264 - 255 \\ &= 285 \end{aligned}$$

$$\begin{aligned} \textcircled{ii} \quad n_o(M) &= n(M) - n(ENM) \\ &= 264 - 255 \\ &= 9 \end{aligned}$$

$$\textcircled{iii} \quad n_o(E) = n(E) - n(ENM)$$

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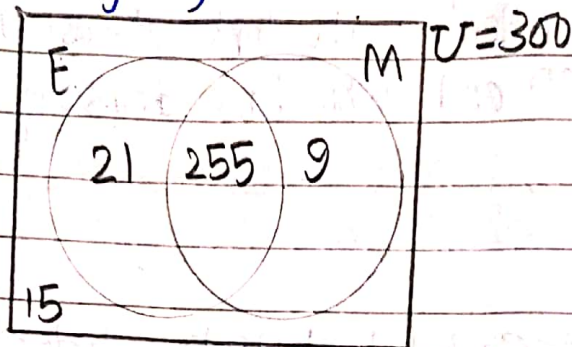
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$$= 276 - 255$$
$$= \underline{21}$$

(iv) In venn-diagram,



3) $\rightarrow$ Soln,

Here,

$$S.P = \text{Rs. } 1008$$

$$\text{Profit \%} = 12\%$$

$$C.P = ?$$

We have,

Let C.P be x .

$$C.P = S.P - \text{Profit}$$

$$\text{or, } x = \text{Rs. } 1008 - 12\% \text{ of } x$$

$$\text{or, } x = \text{Rs. } 1008 - \frac{12}{100} \times x$$

$$\text{or, } x = \text{Rs. } 1008 - \frac{3x}{25}$$

$$\text{or, } \frac{x}{1} + \frac{3x}{25} = \text{Rs. } 1008$$

$$\text{or, } \frac{25x + 3x}{25} = \text{Rs. } 1008$$

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$$\text{or, } \frac{28x}{5} = \text{Rs. } 1008$$

$$\text{or, } x = \frac{\text{Rs. } 1008 \times 5}{28}$$

$$\therefore x = \text{Rs. } 180$$

CP is Rs. 180

4) $\rightarrow$ Soln
Here,

$$\text{SD} = 12 \text{ kg}$$

$$\text{S.P.} = \text{Rs. } 1950$$

$$\text{Loss \%} = 25\%$$

We have,

Let C.P. be x .

$$\text{C.P.} = \text{S.P.} + \text{loss}$$

$$\text{or, } x = \text{Rs. } 1950 + \frac{25\%}{100} \times x$$

$$\text{or, } x = \text{Rs. } 1950 + \frac{25}{100} \times x$$

$$\text{or, } x = \text{Rs. } 1950 + \frac{x}{4}$$

$$\text{or, } \frac{x}{1} - \frac{x}{4} = \text{Rs. } 1950$$

$$\text{or, } \frac{4x - x}{4} = \text{Rs. } 1950$$

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$$\text{Loss} = \text{C.P.} - \text{S.P.}$$

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$$\text{or, } \frac{3x}{4} = \text{Rs. } 1950$$

$$\text{or, } x = \frac{\text{Rs. } 1950 \times 4}{3}$$

$$\therefore x = \text{Rs. } 2600$$

$$\therefore \text{C.P is Rs. } 2600.$$

Now,
C.P per kg = $\text{Rs. } \left(\frac{2600}{12} \right)$
 $= \text{Rs. } 216.667$

5) $\rightarrow$ Solⁿ

Here,

1st case kind,

$$1 \text{ kg} = \text{Rs } 700$$

$$40 \text{ kg} = \text{Rs. } 700 \times 40 = \text{Rs. } 28,000$$

2nd kind,

$$1 \text{ kg,} = \text{Rs. } 1000$$

$$20 \text{ kg} = \text{Rs. } 20,000$$

After mixed,

$$\text{Total [Kg.]} = (40 + 20) \text{ kg} = 60 \text{ kg.}$$

$$\text{S.P} = \text{Rs. } 960 \text{ per kg.}$$

~~Now~~ Now,

$$1 \text{ kg} = \text{Rs. } 960$$

$$60 \text{ kg} = \text{Rs. } 960 \times 60 = \text{Rs. } 57,600$$

S.P $\rightarrow$ C.P

$$\text{C.P} = \text{Rs. } 28,000 + \text{Rs. } 20,000 = \text{Rs. } 48,000$$

$$\text{S.P} = \text{Rs. } 57,600$$

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So, $S.P > C.P = \text{Profit}$

$$\text{Profit} = \text{Rs}(57600 - \text{Rs}48,000) \\ = \text{Rs. } 9600$$

$$\text{Profit \%} = \frac{\text{Rs. } 9600}{\text{Rs. } 48000} \times 100 \\ = \underline{\underline{20\%}}$$

Gain % is 20%.

7) $\rightarrow$ Soln

Here,

1st case,

$$P = \text{Rs. } 5,600$$

$$T = 3 \text{ years}$$

$$R = 4\%$$

$$I = \frac{PTR}{100} = \frac{\text{Rs. } 5600 \times 3 \times 4}{100} = \text{Rs. } 672$$

2nd case,

$$T = 4 \text{ yrs.}$$

$$R = 5\%$$

$$I = \text{Rs. } 672$$

$$\therefore P = \frac{I \times 100}{T \times R} = \frac{\text{Rs. } 672 \times 100}{4 \times 5} = \text{Rs. } 3360$$

The principal is Rs. 3360.

Gno. at last
 $\rightarrow$

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6) $\rightarrow$ Soln,

Here,

$$P = \text{Rs. } 12,000$$

$$R = 8\%$$

$$I = \text{Rs. } 6,000$$

$$T = ?$$

We have

$$T = \frac{I \times 100}{P \times R}$$

$$= \frac{\text{Rs. } 6,000 \times 100}{\text{Rs. } 12,000 \times 8}$$

$$= 6.25 \text{ years.}$$

The time is 6.25 years.