Chapter 2

Percentage and Simple Interest

Ex 2.1

Question 1.

In each of the following grid, find the numbers of coloured squares and express it as a fraction, decimal and percentage.



Solution:

Number of coloured square = 58 Total number of squares = 100 \therefore Fraction : 58100 Decimal : 0.58 Percentage : 58%

(ii) Number of coloured square = 53 Total number of squares = 100
∴ Fraction : 53100
Decimal : 0.53
Percentage : 53%

(iii) Number of coloured square = 25 Total number of squares = 50 \therefore Fraction : 2550

Decimal : 2550×22 = 50100 = 0.50

Percentage : 2550×100100 = $2550 \times 100\% = 50\%$

(iv) Number of coloured square = 17 Total number of squares = 25 \therefore Fraction : 1725 Decimal : 1725 × 44 = 68100 = 0.68Percentage : 1725 × 100100 = 1725 × 100% = 68%

(v) Number of coloured square = 15 Total number of squares = 30 \therefore Fraction : 1530 Decimal : 1530 = 12 × 5050 = 50100 = 0.50 Percentage : 1530 = 1530 × 100100 = 1530 × 100% = 50 %

Question 2.

A picture of chess board is given.

(i) Find the percentage of the white coloured squares

(ii) Find the percentage of gray coloured squares

(iii) Find the percentage of the squares that have the pieces and

(iv) The squares that do not have the pieces.



Solution:

(i) Total number of squares in the chess board = 64 Number of white coloured squares = 32Percentage = 3264×100100 = $3264 \times 100\%$ = 50%

(ii) Grey coloured squares = 64 Percentage = 3264 × 100100 = 3264 } [/latex] × 100 % = 50 % (iii) Number of squares having pieces = 20 Total number of squares = 64

Percentage =
$$\frac{20}{64} \times \frac{100}{100} = \frac{\frac{10}{20}}{\frac{64}{32}} \times \frac{100}{100} = \frac{125\%}{4} = 31\frac{1}{4}\%$$

(iv) Number of squares do not have pieces = 44

Percentage =
$$\frac{44}{64} \times \frac{100}{100} = \frac{\frac{44}{64}}{\frac{64}{16}} = 100\% = \frac{275\%}{4} = 68\frac{3}{4}\%$$

Question 3.

A picture of dart board is given. Find the percentage of white coloured portion and black coloured portion.



Solution: Total sector = 20 White coloured sector = 10 Black coloured sector = 10 Percentage of white : 1020×100100 Decimal : $1020 \times 100\%$ = 50 % Percentage of black colour : 1020×100100 Decimal : $1020 \times 100\%$ = 50 % Question 4.

Write each of the following fraction as percentage.

(i) $\frac{36}{50}$ (ii) $\frac{81}{30}$ (iii) $\frac{42}{56}$ (iv) 2 $\frac{1}{4}$ (v) 1 $\frac{3}{5}$ Solution: (i) $\frac{36}{50}$ $= \frac{36}{50} \times \frac{100}{100} \\ = \frac{36}{50} \times 100 \%$ = 72 % (ii) $\frac{81}{30}$ $=\frac{81}{30}\times\frac{100}{100}$ $= \frac{81}{30} \times 100 \%$ = 270 % (iii) $\frac{42}{56}$ $= \frac{42}{56} \times \frac{100}{100}$ $= \frac{42}{56} \times 100 \%$ $= \frac{21}{28} \times 100 \%$ = 75 % (iv) 2 $\frac{1}{4}$ $= \frac{9}{4} \\ = \frac{9}{4} \times \frac{100}{100} \\ = \frac{9}{4} \times 100 \%$ = 225 %



Question 5.

Anbu scored 436 marks out of 500 in his exams. What was the percentage he scored?

Answer:

Total marks = 500 Anbu's Score = 436 Percentage = 436/500 × 100/100 = 436/500 × 100 % = 87.2 % Anbu's Score = 87.2 %

Question 6.

Write each of the following percentage as fraction, (i) 21% (ii) 93.1 %

(iii) 151 % (iv) 65 % (v) 0.64 %

Solution:

(i) 21% = 21100

(ii) 93.1 %

 $= \frac{93.1}{100} \\ = \frac{93.1 \times 10}{100 \times 10} \\ = \frac{931}{1000}$

(iii) 151 % = $\frac{151}{100}$

(iv) 65 %
=	$ \begin{array}{r} \underline{65} \\ \underline{100} \\ \underline{13} \\ \underline{20} \end{array} $
(v)	0.64 %
=	$\frac{0.64}{100}$
=	$\frac{0.64\times100}{100\times100}$
=	$\frac{64}{10000}$
=	$\frac{4}{625}$

Question 7.

Iniyan bought 5 dozen eggs. Out of that 5 dozen eggs, 10 eggs are rotten. Express the number of good eggs as percentage.

Solution:

1 dozen eggs = 12 5 dozen = 5×12 Total eggs = 60 eggs Rotten eggs = 10 Good eggs = 60 - 10 = 50Fraction of good eggs = 50/60Percentage of good eggs = $50/60 \times 100/100$ = $50/60 \times 100 \%$ = $5/6 \times 100 \%$ = 83.33 %Percentage of good eggs = 83.33 %

Question 8.

In an election, Candidate X secured 48% of votes. What fraction will represent his votes?

Solution: Percentage of votes x secured = 48% = 48/100Fraction of votes x secured = 12/25

Question 9. Ranjith total income was ₹ 7,500. He saved 25% of his total income. Find the amount saved by him.

Solution:

Total income of Ranjith = ₹ 7500 His savings = 25 % of 7500 = 25/100 of 7500 = 25/100 × 7500 = ₹ 1,875 \therefore Amount saved by Ranjith = ₹ 1,875

Objective Type Questions

Question 1. Thendral saved one fourth of her salary. Her savings percentage is (i) 3/4(ii) 1/4 %(iii) 25 %(iv) 1 %Hint: $14 \times 100/100$ $= 14 \times 100 \%$ = 25 %

Answer:

(iii) 25 %

Question 2.

Kavin scored 15 out of 25 in a test. The percentage of his marks is (i) 60% (ii) 15% (iii) 25% (iv) 15/25

Hint: $15/25 \times 100/100$ = $1525 \times 100 \%$ = 60 %

Answer:

(i) 60%

Question 3. 0.07% is (i) $\frac{7}{10}$ (ii) $\frac{7}{100}$ (iii) $\frac{7}{1000}$ (iv) $\frac{7}{10,000}$ Hint: 0.07 % = 0.07% $\frac{0.07}{100}$ = $=\frac{7}{100}$ ¹⁰⁰7 $=\frac{100\times100}{100\times100}$ 7 $=\frac{10,000}{10,000}$ Answer: (iv) $\frac{7}{10,000}$

Ex 2.2

Question 1. Write each of the following percentage as decimal. (i) 21 % (ii) 93.1 % (iii) 151 % (iv) 65 % (v) 0.64 % Solution: (i) 21 %

(i) 21 % = 21/100 = 0.21

(ii) 93.1 % = 93.1/100 = 0.931

(iii) 151 % = 151/100 = 1.51

(iv) 65 % = 65/100 = 0.65 (v) 0.64 % = 0.64/100 = 0.0064

Question 2.

Convert each of the following decimal as percentage (i) 0.282 (ii) 1.51 (iii) 1.09 (iv) 0.71 (v) 0.858 Solution: (i) 0.282 $= 0.282 \times 100\% = 282/1000 \times 100\%$ = 28.2 % (ii) 1.51 $= 151/100 \times 100 \%$ = 151 %(iii) 1.09 $= 109/100 \times 100 \%$ = 109 %(iv) 0.71 $= 71/100 \times 100 \%$ = 71 % (v) 0.858

= 858/1000 × 100 % = 85.8 %

Question 3.

In an examination a student scored 75% of marks. Represent the given the percentage in decimal form?

Solution: Student's Score = 75% = 75/100 = 0.75

Question 4. In a village 70.5% people are literate. Express it as a decimal.

Solution: Percentage of literate people = 70.5%

= 70.5/100 = 0.705

Question 5. Scoring rate of a batsman is 86%. Write his strike rate as decimal.

Solution:

Scoring rate of the batsman = 86% = 86/100 = 0.86

Question 6. The height of a flag pole in school is 6.75m. Write it as percentage.

Solution:

Height of flag pole = 6.75m= 675100= 6.75%

Question 7. The weights of two chemical substances are 20.34 g and 18.78 g. Write the difference in percentage?

Solution: Weight of substance 1 = 20.34gPercentage of substance 1 = 2034/100 = 2034%Weight of substance 2 = 18.78gPercentage of substance 2 = 1878/100 = 1878%Their difference = 2034 - 1878 = 156%

Question 8. Find the percentage of shaded region in the following figure.



Solution: Total region = 4 parts Shaded region = 1 part Fraction of shaded region = 14 Percentage of shaded region = $14 \times 100/100$ = $1/4 \times 100 \%$ = 25 %

Objective Type Questions

Question 1.

Decimal value of 142.5% is (i) 1.425 (ii) 0.1425 (iii) 142.5 (iv) 14.25 Hint: 142.5 % = 1425/10 % $= 1425/10 \times 1/100$ = 1.425

Answer:

(i) 1.425

Question 2.

The percentage of 0.005 is (i) 0.005 %(ii) 5 %(iii) 0.5 %(iv) 0.05 %Hint: 0.005 = 5/1000 $= 5/1000 \times 100/100$ = 0.5 %

Answer:

(iii) 0.5 %

Question 3.

The percentage of 4.7 is (i) 0.47 %(ii) 4.7 %(iii) 47 %(iv) 470 %Hint: 4.7 = 47/10 $= 47/10 \times 100/100$ = 470 %

Answer:

(iv) 470 %

Ex 2.3

Question 1.

14 out of the 70 magazines at the bookstore are comedy magazines. What percentage of the magazines at the bookstore are comedy magazines?

Solution:

Total number of magazines in the bookstore = 100 mNumber of comedy magazines = 14Percentage of comedy magzines = $1470 \times 100\% = 20\%$ 20% of the magazines are comedy magazines.

Question 2.

A tank can hold 50 litres of water. At present, it is only 30% full. How many litres of water will fill the tank, so that it is 50% full?

Solution:

Capacity of the tank = 50 litres Amount of water filled = 30% of 50 litres = $30100 \times 50 = 15$ litres Amount of water to be filled = 50 - 15 = 35 litres

Question 3.

Karun bought a pair of shoes at a sale of 25%. If the amount he paid was ₹ 1000, then find the marked price.

Solution:

Let the marked price of the raincoat be $\gtrless P$ Amount he paid at a discount of $25\% = \gtrless 1000$ (Marked Price) - (25% of P) = 1000P - $(25100 \times P) = 1000$ P - $14 \times P = 1000$ P (1 - 14) = 1000 34 P = 1000 P = 1000×43 = 40003P = 1333.33 \therefore Marked price of the shoes = $\gtrless 1333$

Question 4.

An agent of an insurance company gets a commission of 5% on the basic

premium he collects. What will be the commission earned by him if he collects ₹ 4800?

Solution:

Premium collected = ₹ 4800Commission earned = 5% of basic premium Commission earned for ₹ 4800 = 5% of 4800 = 5100×4800 = ₹ 240Commission earned = ₹ 240

Question 5.

A biology class examined some flowers in a local Grass land. Out of the 40 flowers they saw, 30 were perennials. What percentage of the flowers were perennials?

Solution:

Number of flowers examined = 40Number of perennials = 30Percentage = $3040 \times 100\%$ = 75%75% of the flowers were perennials.

Question 6.

Ismail ordered a collection of beads. He received 50 beads in all. Out of that 15 beads were brown. Find the percentage of brown beads?

Solution: Number of beads received = 50 Number of brown beads = 5 Percentage of brown beads = $1550 \times 100 \%$ = 10 % 10% of the beads was brown

Question 7. Ramu scored 20 out of 25 marks in English, 30 out of 40 marks in Science and 68 out of 80 marks in mathematics. In which subject his percentage of marks is best?

Solution: Ramu's score in English = 20 out of 25 Percentage scored in English = $2025 \times 100 \% = 80 \%$ Ramu's Score in Science = 30 out of 40 Percentage scored in Science = $3040 \times 100 \% = 75\%$ Ramu's score in Mathematics = 68 out of 80Percentage scored in Maths = $6880 \times 100 \% = 85 \%$ 85% > 80% > 75%. \therefore In Mathematics his percentage of marks is the best.

Question 8.

Peter requires 50% to pass. If he gets 280 marks and falls short by 20 marks, what would have been the maximum marks of the exam?

Solution:

Peters score = 280 marks Marks needed for a pass = 20 \therefore Total marks required to get a pass = 280 + 20 = 300 i.e. 50% of total marks = 300 50100 × Total marks = 300 12 × Total Marks = 300 Total Marks = 300 × 2 = 600 Total marks of the exam = 600

Question 9.

Kayal scored 225 marks out of 500 in revision test 1 and 265 out of 500 marks in revision test 2. Find the percentage of increase in her score.

Solution:

Marks scored in revision I = 225Marks scored in revision II = 265Change in marks = 265 - 225 = 40

Percentage of increase =
$$\frac{\text{Change in marks}}{\text{Original marks}} \times 100 = \frac{40}{500} \times 100 = 8\%$$

Percentage of increase in marks = 8%

Question 10.

Roja earned ₹ 18,000 per month. She utilized her salary in the ratio 2 : 1 : 3 for education, savings and other expenses respectively. Express her usage of income in percentage.

Solution: Amount of Salary = ₹ 18,000 (i) Total number of parts of salary = 2 + 1 + 3 = 6 Salary is divided into 3 portions as 26,16 and 36 Portion of salary used for education = 26 Salary used for education = 26 × 18,000 = ₹ 6,000 Percentage for Education = 600018000 × 100 = 33.33% (ii) Usage of salary for savings = $16 \times 18,000 = ₹3,000$ Percentage for savings = $300018000 \times 100 = 16.67 \%$

(iii) Usage of salary for other expenses = $36 \times 18,000 = ₹9,000$ Percentage for other expenses = $900018000 \times 100 = 50\%$

Ex 2.4

Question 1. Find the simple interest on ₹ 35,000 at 9% per annum for 2 years?

Solution:

Principal P = ₹ 35,000 Rate of interest r = 9 % Per annum Time (n) = 2 years Simple Interest I = Pnr100 = 35000×2×9100 = ₹ 6300 Simple intrest I = ₹ 6300

Question 2.

Aravind borrowed a sum of \gtrless 8,000 from Akash at 7% per annum. Find the interest and amount to be paid at the end of two years.

Solution:

Here Principal P = ₹ 8,000 Rate of interest r = 7% Per annum Time (n) = 2 Years Simple Interest (I) = Pnr100 = $8000 \times 2 \times 7100$ I = ₹ 1120 Amount = P + I I = ₹ 8000 + 1120 = 9120 Interest to be paid = ₹ 1,120 Amount to be paid = ₹ 9,120

Question 3.

Sheela has paid simple interest on a certain sum for 4 years at 9.5% per

annum is ₹ 21,280. Find the sum.

Solution:

Let the Principal be ₹ P Rate of interest r = 9.5% per annum Time (n) = 4 years Simple Interest I = Pnr100 Given I = ₹ 21,280 $\frac{Pnr}{100} = ₹21,280$ $\frac{P \times 4 \times 9.5}{100} = ₹21,280$ $\frac{P \times 4 \times 95}{1000} = ₹21,280$ $P = \frac{21280 \times 1000}{4 \times 95} = ₹56,000$

∴ Sum of money Sheela bought = ₹ 56,000

Question 4.

Basha borrowed \gtrless 8,500 from a bank at a particular rate of simple interest. After 3 years, he paid \gtrless 11,050 to settle his debt. At what rate of interest he borrowed the money?

Solution: Let the rate of interest be r% per annum Here Principal P = ₹ 8,500 Time n = 3 years Total amount paid = ₹ 11,050 A = P + 1 = ₹ 11,050 i.e. 8,500 + 1 = ₹ 11,050 I = ₹ 11,050 - ₹ 8,500 = ₹ 2,550 Also we know that I = $\frac{Pnr}{100} = ₹2,550$ $\frac{8,500 \times 3 \times r}{100} = ₹2,550$ $r = \frac{2550 \times 100}{8500 \times 3}$ r = 10%Rate of interest r = 10%

Question 5. In What time will ₹ 16,500 amount to ₹ 22,935 at 13% per annum?

Solution:

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Rate of interest r = 13\% per annum
Here Amount A = ₹ 22,935
Principal P = ₹ 16,500
A = P + I
22935 = 16,500 + I
∴ Interest I = 22935 – 16,500 = ₹ 6,435
Simple Interest I = pnr100
   3
  39
 WÍ
 1287
 6435 ×100
 16600 × 13
6435 = 16500 \times n \times 13100
n =6435×10016500×13
n = 3 years
Required time n = 3 years
Question 6.
In what time will ₹ 17800 amount to ₹ 19936 at 6% per annum?
Solution:
Let the require time be n years
Here Principal P = ₹ 17,800
Rate of interest r = 6\% per annum
Amount A = ₹ 19,936
A = P + I
19936 = 17800 + 1
19936 - 17800 = I
2136 = I
Simple Interest (I) = pnr100
2136 = 17800 \times n \times 6100
n = 2136 \times 10017800 \times 6
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n = 2 Years Required time = 2 years

Question 7.

A sum of ₹ 48,000 was lent out at simple interest and at the end of 2 years and 3 months the total amount was ₹ 55,560. Find the rate of interest per year.

Solution:

Given Principal P = ₹ 48,000 Time n = 2 years 3 months = 2 + 312 years = 2 + 14 years = 84 + 14 years = 94 years Amount A = ₹ 55,660 A = p + 1 55660 = 48000 + I I = 55660 - 48000 = ₹ 7660 ∴ Interest for 94 years = ₹ 7660 Simple intrest = pnr100 7660 = 48000 × 94 × r100 r = 7660×4×1009×48000 = 7.09 % = 7 % Rate of interest = 7 % Per annum

Question 8. A principal becomes ₹ 17,000 at the rate of 12% in 3 years. Find the principal.

Solution:

Given the Principal becomes $\gtrless 17,000$ Let the principle initially be P Rate of Interest r Time = 12 % Per annum Time n = 3 years According to the problem given I = 17000 - P = P×3×12100 17000 = 36100 p + p 17000 = p(36100 + 1) 17000 = p(136100) p = 17000×100136 = 12,500 \therefore Principal P = $\gtrless 12,500$

Objective Type Questions

Question 9. The interest for a principle of? 4,500 which gives an amount of? 5,000 at end of certain period is (i) ₹ 500 (ii) ₹ 200 (iii) 20%
(iv) 15%
Hint: Interest = Amount - Principle = ₹ 5000 - ₹ 4500 = ₹ 500

Answer:

(i) ₹ 500

Question 10.

Which among the following is the simple interest for the principle of \gtrless 1,000 for one year at the rate of 10% interest per annum?

(i) ₹ 200
(ii) ₹ 10
(iii) ₹ 100
(iv) ₹ 1,000
Hint: Intrest = pnr100 = 1000×1×10100 = ₹ 100

Answer:

(iii) ₹ 100

Question 11.

Which among the following rate of interest yields an interest of \gtrless 200 for the principle of \gtrless 2,000 for one year.

(i) 10% (ii) 20% (iii) 5% (iv) 15% Hint: r = I×100P×n = 200×1002000×1 = 10 %

Answer:

(i) 10%

Ex 2.5

Miscellaneous Practice Problems

Question 1. When Mathi was buying her flat she had to put down a deposit of 110 of the value of the flat. What percentage was this?

Solution:

Percentage of $110 = 110 \times 100 \% = 10 \%$ Mathi has to put down a deposit of 10 % of the value of the flat. Question 2. Yazhini scored 15 out of 25 in a test. Express the marks scored by her in percentage. Solution: Yazhini's score = 15 out of 25 = 1525

Score in percentage = $1525 \times 100\% = 60\%$

Question 3.

Out of total 120 teachers of a school 70 were male. Express the number of male teachers as percentage.

Solution:

Total teachers of the school = 120 Number of male teachers = 70 \therefore Percentage of male teacher = 70120 × 100 % = 70012 % Score in percentage = 58.33% Percentage of male teachers = 58.33%

Question 4.

A cricket team won 70 matches during a year and lost 28 matches and no results for two matches. Find the percentage of matches they won.

Solution: Number of Matches won = 70 Number of Matches lost = 28 "No result" Matches = 2 Total Matches = 70 + 28 + 2 = 100Percentage of Matches won = $70100 \times 100 \% = 70 \%$ The won 70% of the matches

Question 5. There are 500 students in a rural school. If 370 of them can swim, what percentage of them can swim and what percentage cannot?

Solution:

Total number of students = 500 Number of students who can swim = 370 Percentage of students who can swim = $370500 \times 100 \% = 74 \%$ Number of students who cannot swim = 500 - 370 = 130Percentage of students who cannot swim = $130500 \times 100 \% = 26 \%$ i.e. 74% can swim and 26% cannot swim

Question 6.

The ratio of Saral's income to her savings is 4 : 1. What is the percentage of

money saved by her?

Solution: Total parts of money = 4 + 1 = 5Part of money saved = 1 \therefore Percentage of money saved = $15 \times 100\% = 20\%$ $\therefore 20\%$ of money is saved by Saral

Question 7. A salesman is on a commission rate of 5%. How much commission does he make on sales worth ₹ 1,500?

Solution: Total amount on sale = \gtrless 1,500 Commission rate = 5 % Commission received = 5 % of \gtrless 1,500 = 5100 × 1500 = \gtrless 75 \therefore Commission received = \gtrless 75

Question 8. In the year 2015 ticket to the world cup cricket match was ₹ 1,500. This year the price has been increased by 18%. What is the price of a ticket this year?

Solution. Price of a ticket in 2015 = 1500Increased price this year = 18% of price in 2015 = 18% of $1500 = 18100 \times 1500$ = 270Price of ticket this year = last year price + increased price = 1500 + 270 = 1770Price of ticket this year = 1770

Question 9. 2 is what percentage of 50? Solution: Let the required percentage be x x% of 50 = 2 $x100 \times 50 = 2$ $x = 2 \times 10050 = 4\%$ $\therefore 4\%$ of 50 is 2

Question 10. What percentage of 8 is 64?

Solution:

Let the required percentage be x So x % of 8 = 64x100 × 8 = 64 x = 64×1008 = 800 \therefore 800 % of 8 is 64

Question 11.

Stephen invested \gtrless 10,000 in a savings bank account that earned 2% simple interest. Find the interest earned if the amount was kept in the bank for 4 years.

Solution:

Principal (P) = ₹ 10,000 Rate of interest (r) = 2% Time (n) = 4 years \therefore Simple Interest I = pnr100 = 10000×4×2100 = ₹ 800 Stephen will earn ₹ 800

Question 12.

Riya bought ₹ 15,000 from a bank to buy a car at 10% simple interest. If she paid ₹ 9,000 as interest while clearing the loan, find the time for which the loan was given. Solution: Here Principal (P) = ₹ 15,000 Rate of interest (r) = 10 % Simple Interest (I) = ₹ 9000 I = pnr100 9000 = $15000 \times n \times 10100$ n = $9000 \times 10015000 \times 10$ n = 6 years \therefore The loan was given for 6 years

Question 13. In how much time will the simple interest on ₹ 3,000 at the rate of 8% per annum be the same as simple interest on ?4,000 at 12% per annum for 4 years?

Solution: Let the required number of years be x Simple Interest I = pnr100 Principal $P_1 = ₹ 3000$ Rate of interest (r) = 8 %

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Time (n_1) = n_1 years

Simple Interest I_1 = 3000 \times 8 \times n1100 = 240 n_1

Principal (P_2) = ₹ 4000

Rate of interest (r) = 12 \%

Time n_2 = 4 years

Simple Interest I_2 = 4000 \times 12 \times 4100

I_2 = 1920

If I_1 = I_2

240 n_1 = 1920

n_1 = 1920240 = 8

\therefore The required time = 8 years
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Challenge Problems

Question 14.

A man travelled 80 km by car and 320 km by train to reach his destination. Find what percent of total journey did he travel by car and what per cent by train?

Solution:

Distance travelled by car = 80 km. Distance travelled by train = 320 km Total distance = 80 + 320 km = 400 km Percentage of distance travelled by car = $80400 \times 100 \% = 20 \%$ Percentage of distance travelled by train = $320800 \times 100 \% = 40 \%$

Question 15.

Lalitha took a math test and got 35 correct and 10 incorrect answers. What was the percentage of correct answers?

Solution:

Number of correct answers = 35Number of incorrect answers = 10Total number of answers = 35 + 10 = 45Percentage of correct answers = $3545 \times 100 \%$ = 77.777 % = 77.78 %

Question 16.

The population of a village is 8000. Out of these, 80% are literate and of these literate people, 40% are women. Find the percentage of literate women to the total population?

Solution: Population of the village = 8000 people

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literate people = 80 \% of population
= 80 \% of 8000 = 80100 \times 8000
literate people = 6400
Percentage of women = 40 \%
Number of women = 40 \% of literate people
= 40100 \times 6400 = 2560
\therefore literate women : Total population
= 8000 : 2560
= 25 : 8
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Question 17.

A student earned a grade of 80% on a math test that had 20 problems. How many problems on this test did the student answer correctly? Solution: Total number of problems in the test = 20 Students score = 80 %Number of problem answered = $80100 \times 20 = 16$

Question 18. A metal bar weighs 8.5 kg. 85% of the bar is silver. How many kilograms of silver are in the bar?

Solution: Total weight of the metal = 8.5 kgPercentage of silver in the metal = 85%Weight of silver in the metal = 85% of total weight = $85100 \times 8.5 \text{ kg}$ = 7.225 kg7.225 kg of silver are in the bar.

Question 19. Concession card holders pay ₹ 120 for a train ticket. Full fare is ₹ 230. What is the percentage of discount for concession card holders?

Solution: Train ticket fare = ₹ 230 Ticket fare on concession = ₹ 120 Discount = Ticket fare - concession fare = 230 - 120 = ₹ 110 Percentage of discount = $\frac{\text{Discount}}{\text{Original rate}} \times 100\% = \frac{110}{230} \times 100 = 47.826\% = 47.83\%$ Percentage of discount = 47.83%

Question 21. A tank can hold 200 litres of water. At present, it is only 40% full. How many

litres of water to fill in the tank, so that it is 75 % full?

Solution:

Capacity of the water tank = 200 litres Percentage of water in the tank = 40% Percentage of water to fill = Upto 75% Difference in percentage = 75 % - 40 % = 35 % \therefore Volume of water to be filled = Percentage of difference × total capacity = 35100 × 200 = 70 l 70 l of water to be filled

Question 20. Which is greater 16 23 or 25 or 0.17?

Solution:

16 23 = 5030= 5030 × 100 % = 1666.67 % $\Rightarrow 25$ = 25 × 100 = 40 % 0.17 = 17100 = 17 % \therefore 1666.67 is greater \therefore 16 23 is greater

Question 21.

The value of a machine depreciates at 10% per year. If the present value is ₹ 1,62,000, what is the worth of the machine after two years.

Solution: Present value of the machine = ₹ 1,67,000 Rate of depreciation = 10 % Per annum Time (n) = 2 years For 1 year depreciation amount = 1,62,000×1×10100 = ₹ 16,200 Worth of the machine after one year = Worth of Machine – Depreciation = 1,67,000 – 16,200 = 1,45,800 Depreciation of the machine for 2nd year = 145800 × 1 × 10100 = 14580 Worth of the machine after 2 years = 1,45,800 – 14,580 = 1,31,220 ∴ Worth of the machine after 2 years = ₹ 1,31,220

Question 22.

In simple interest, a sum of money amounts to \mathbb{R} 6,200 in 2 years and \mathbb{R} 6,800 in 3 years. Find the principal and rate of interest.

Solution: Let the principal P = 3100

If A = 6200 ⇒ Principal + Interest for 2 years = 6200 A = ₹ 7400 ⇒ Principal + Interest for 3 years = 7400 ∴ Difference gives the Interest for 1 year ∴ Interest for 1 year = 7400 - 6200 I = 1200 pnr100 = 1200 ⇒ P×1×r100 = 1200 If the Principal = 10,000 then 10,000×1×r100 = 1200 ⇒ r = 12 % Rate of interest = 12 % Per month

Question 23.

A sum of ₹ 46,900 was lent out at simple interest and at the end of 2 years, the total amount was ₹ 53,466.Find the rate of interest per year.

Solution:

Here principal P = \gtrless 46900 Time n = 2 years Amount A = \gtrless 53466 Let r n be the rate of interest per year p Intrest I = pnr100 A = P + I 53466 = 46900 + 46900×2×r100 53466 - 46900 = 46900×2×r100 6566 = 469 × 2 × r r = 65662×469 % = 7 % Rate of interest = 7 % Per Year

Question 24.

Arun lent ₹ 5,000 to Balaji for 2 years and ₹ 3,000 to Charles for 4 years on simple interest at the same rate of interest and received ₹ 2,200 in all from both of them as interest. Find the rate of interest per year.

Solution: Principal lent to Balaji $P_1 = 3000$ Time $n_1 = 2$ years Let r be the rate of interest per year Simple interest got from Balaji = pnr $100 \Rightarrow I_1 = 5000 \times 25 \times r100$ Again principal let to Charles $P_2 = 3000$ Time $(n_2) = 4$ years Simple interest got from Charles $(I_2) = 3000 \times 4 \times r100$ Altogether Arun got 3200 as interest. $\therefore I_1 + I_2 = 2200$ $5000 \times 2 \times r100 + 3000 \times 4 \times r100 = 2200$ 100r + 120r = 2200 220r = 2200 = 2200220 r = 10 %Rate of interest per year = 10 %

Question 25.

If a principal is getting doubled after 4 years, then calculate the rate of interest. (Hint: Let P = ₹ 100)

Solution:

Let the principal P = 3100Given it is doubled after 4 years i.e. Time n = 4 years After 4 years A = 3200 $\therefore A = P + I$ A - P = I200 - 100 = IAfter 4 years interest I = 100 $I = pnr100 \Rightarrow 100 = 100 \times 4 \times r100$ $4r = 100 \Rightarrow r = 25\%$ Rate of interest r = 25%