Exercise 12.2

Q.1 Find

(i) 22% of 120

(ii) 25% of 10 kg

(v) 135% of 80 cm

(ii) 25% of Rs 1000

(iv) 16.5% of 5000 metre

(vi) 2.5% of 10000 ml

Sol: (1) 22% of $120 = \frac{22}{\cancel{100}_{5}} \times \cancel{120}^{6} = \frac{132}{5} = 26.40$

(ii) 25% of Rs $1000 = \frac{25}{100} \times 1000 = 250$ Rupees.

(iii) 25% of $10\ kg = \frac{25}{100} \times 10 = 2.5\ kg$

(iv) 16.5% of 5000 metre $= \frac{16.5}{100} \times 5000$

$= \frac{165}{1000} \times 5000 = 825$ metre.

(v) 135% of $80\ cm = \frac{135}{100} \times 80 = 108\ cm$

$= \frac{108}{100}\ m = 1.08$ metre

(vi) 2.5% of $10000\ ml = \frac{2.5}{100} \times 10000$

$= \frac{25}{1000} \times 10000 = 250\ ml$

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Q.2 Find the number a, if

(i) 8.4 y. of a is 42

(ii) 0.5 y. of a is 3

(iii) $\frac{1}{2}$ y. of a is 50

(iv) 100 y. of a is 100

Sol: (i) 8.4 y. of a = 42

$= \frac{8.4}{100} \times a = 42$

$\Rightarrow a = \frac{42 \times 100}{8.4} = 500$

(ii) 0.5 y. of a is 3

$\Rightarrow$ 0.5 y. of a = 3

$\Rightarrow \frac{0.5}{100} \times a = 3$

$\Rightarrow a = \frac{3 \times 100}{0.5} = \frac{3 \times 1000}{5} = 600$

(iii) $\frac{1}{2}$ y. of a = 50

$\Rightarrow \frac{1}{2} \times \frac{1}{100} \times a = 50$

$\Rightarrow a = 50 \times 100 \times 2$

$\Rightarrow a = 10000$

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(iv) 100 % of a = 100

$\Rightarrow \frac{100}{100} \times a = 100$

$\Rightarrow a = 100$

Q.3 x is 5 % of y, y is 24 % of z. If x = 480, find the values of y and z.

Sol: here $x = 5\%$ of y ; $y = 24\%$ of z.

$\Rightarrow 480 = \frac{5}{100} \times y$

$\Rightarrow y = \frac{480 \times 100}{5}$

$\Rightarrow y = 9600$

also $y = 24\%$ of z

$\Rightarrow 9600 = \frac{24}{100} \times z$

$\Rightarrow z = \frac{9600 \times 100}{24} = 40000$

Q4 A coolie deposites Rs 150 per month in his post office saving bank account. If this is 15 % of his monthly income, find his monthly income.

Sol: Monthly deposite in bank = Rs 150

Let monthly Income = Rs x

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$\therefore$ 15% of $x = 150$

$\Rightarrow \frac{15}{100} \times x = 150$

$\Rightarrow x = \frac{150 \times 100}{15}$

$x =$ Rs. 1000.

Q.5 Asha got 86.875% marks in the annual examination. If she got 695 marks, find the total number of marks of the examination?

Solution: Let total number of Marks $= x$

Asha got Marks $= 695$ Marks

$\therefore$ 86.875% of $x = 695$

$\Rightarrow \frac{86.875}{100} \times x = 695$

$\Rightarrow x = \frac{695 \times 100}{86.875} = \frac{\cancel{695} \times \cancel{100}^{4} \times \cancel{1000}^{200}}{\cancel{86875}_{\cancel{125}_{5}}}$

$= 800$ Marks

Q.6 Deepti went to school for 216 days in a full year. If her attendence is 90%, find the number of days on which the school was opened.

Sol: Let the total no. of days school opened $= x$

$\therefore$ 90% of $x = 216$.

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$\Rightarrow \frac{90}{100} \times x = 216$

$\Rightarrow x = \frac{\overset{24}{\cancel{216} \times 100}}{\cancel{90}} = 240$ days.

Q7 A garden has 2000 trees. 12% of these are mango trees, 18% lemon and the rest are orange trees Find the number of orange trees?

Sol: Total no. of trees = 2000

mango tree = 12%

lemon tree = 18%

$\therefore$ orange trees = $100 - (12+18)\%$

$= 100\% - 30\%$

$= 70\%$

$\therefore$ No. of orange trees = 70% of 2000

$= \frac{70}{100} \times 2000 = 1400$

Q8 Balchand diet should Contain 12% of proteins, 25% of fats and 63% of Carbohydrates. If a child needs 2600 calories in this food daily, find the Calories the amount of each of these in his daily food intake.

Sol: Daily Calories needed = 2600

proteins = 12% of 2600

$= \frac{12}{100} \times 2600 =$ 312 Calories.

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Fats = 25% of 2600

$= \frac{25}{100} \times 2600 = 25 \times 26 = 650$

Carbohydrates = 63% of 2600

$= \frac{63}{100} \times 2600 = 1638$

Q9 A cricketer scored a total of 62 runs in 96 balls. He hit 3 sixes, 8 fours, 2 twos and 8 singles what percetage of total runs came in

(i) sixes (ii) fours (iii) twos (iv) singles.

Sol: Total runs scored = 62

runs scored by 3 sixes = $3 \times 6 = 18$.

runs scored by 8 fours = $4 \times 8 = 32$

runs scored by 2, twos = $2 \times 2 = 4$

8 singles = $8 \times 1 = 8$

Thus

(i) % runs scored by sixes = $\frac{18}{62} \times 100$

$= \frac{900}{31} = 29.03\%$

(ii) % runs scored by fours = $\frac{32}{62} \times 100 = \frac{1600}{31}$

$= 51.61\%$

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(iii) % runs scored by two's $= \frac{4}{62} \times 100 = \frac{200}{31}$

$= 6.45\%$

(iv) % runs scored by singles $= \frac{8}{62} \times 100 = \frac{400}{31}$

$= 12.9\%$

Q.10 A cricketer hit 120 runs in 150 balls during a test match. 20% of the runs came in 6's, 30% in 4's, 25% in 2's and the rest in 1's. How many runs did he scored in

(i) 6's (ii) 4's (iii) 2's (iv) Singles.

Solution: We are given.

Total runs scored = 120 runs.

(i) runs scored by 6's = 20% of 120

$= \frac{20}{100} \times 120 = 24$ runs.

(ii) By 4's = 30% of 120

$= \frac{30}{100} \times 120 = 36$

(iii) By 2's = 25% of 120

$= \frac{25}{100} \times 120 = 30$ runs.

(iv) By Singles = $100 - (30+20+25)\%$

$= 100 - 75 = 25\%$

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$\therefore$ runs scored by singles = 25% of 120

$= \frac{25}{100} \times 120 = 30$ runs.

Q.11 Radha earns 22% of her investment. If she earns Rs 187. then how much she did invest.

Sol: let Radha's investmet = Rs. x

$\therefore$ 22% of $x = 187$

$\Rightarrow \frac{22}{100} \times x = 187 \Rightarrow x = \frac{187 \times 100}{22}$

$\frac{17}{2}$ $\frac{50}{}$

$= Rs\ 850$

Q.12 Rohit deposits 12% of his income in a bank. He deposited Rs 1440 in the bank during 1997. what was his total income for the year 1997?

Sol: let total income of Rohit = Rs. x

Income deposited in 1997 = Rs 1440

i.e 12% of $x = 1440$

$\Rightarrow \frac{12}{100} \times x = 1440$

$\Rightarrow x = \frac{1440 \times 100}{12}$

$= Rs\ 12000$

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Q.13 Gunpowder contains 75% nitre and 10% sulphur. Find the amount of gunpowder which carries 9 kg nitre, what amount of gunpowder would contain 2.3 kg of sulphur.

Sol: % of nitre in gunpowder = 75%.

Amount of nitre = 9 kg

Let the amount of gunpowder = x kg

$\therefore$ 75% of $x = 9$

$= \frac{75}{100} \times x = 9 \Rightarrow x = \frac{9 \times 100}{75}$

$= 12$ kg

% of sulphur = 10%.

Amount of sulphur = 2.3 kg

Let amount of gunpowder = x kg

So, 10% of $x = 2.3$

$\Rightarrow \frac{10}{100} \times x = 2.3$

$\Rightarrow x = \frac{2.3 \times 100}{10} = 23$ kg

Q.14 An alloy of tin and copper consists of 15 parts of tin and 105 parts of copper. Find the percentage of copper in the alloy?

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Sol: Amount of tin in an alloy = 15 parts
Amount of copper = 105 parts

∴ Total parts = 15 + 105
= 120 parts.

Now % of copper = $\frac{105}{120} \times 100$
= $\frac{525}{6} = 87.5\%$

Q.15 An alloy contains 32% copper, 40% nickel and rest zinc. Find the mass of the zinc in 1 kg of alloy?

Sol: An alloy contains, copper = 32%
nickel = 40%
zinc = 100 − (32+40)
= 28%

Mass of alloy = 1 kg = 1000 g.

∴ Mass of zinc = 28% of 1000
= $\frac{28}{100} \times 1000 = 280$ g.

Q.16 A Motorist travelled 122 Kilometres before his first stop. If he had 10% of his journey to complete at this point. How long was the total ride?

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Solution:

Distance travelled before first stop = 122 km

Journey Completed = 10%.

Let total ride to be travelled = x km,

then.

10% of x = 122

$\Rightarrow \frac{10}{100} \times x = 122$

$\Rightarrow x = 1220$ Km.

Q.17 A certain school has 300 students, 142 of whom are boys. It has 30 teachers, 12 of whom are men. what percent of total number of students and teachers in the school are female.

Sol: Total no. of Students = 300

No. of Boys = 142

∴ No. of girls = 300 − 142

= 158.

Total no. of teachers = 30.

No. of Men = 12

∴ No. of women = 30 − 12 = 18

Now Total no. of Students and Teacher = 300 + 30

= 330.

Total female = 158 + 18

= 176

% of female = $\frac{176}{330} \times 100 = \frac{160}{3}$ %.

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Q.18 Aman's income is 20% less than that of Anil. How much percent is Anil's income more than Aman's income?

Sol: Let Anil's income = Rs 100

$\therefore$ Aman's income = 100 − 20% of 100

$= 100 - \frac{20}{100} \times 100 = 100 - 20$

$= Rs\ 80$

then

% Anil's income more than Aman's $= \frac{20}{80} \times 100$

$= 25\%$

Q.19 The value of machine depreciates every year by 5%. If the present value of the machine is Rs 100000, what will be its value after 2 year?

Sol: Present value of machine = Rs 100000

Value depreciates in 1st year = 5% of 100000

$= \frac{5}{100} \times 100000$

$= Rs\ 5000$

$\therefore$ Value of Machine after 1 year = 100000 − 5000

$= Rs.\ 95000$

Again value depreciates in 2nd year

$= 5\%$ of 95000

$= \frac{5}{100} \times 95000 = 4750$

$\therefore$ Value of Machine after 2 year = 95000 − 4750 = 90250

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Q.20 The population of town increases by 10% Annually. If the preset population is 60000, what will be its population after 2 years?

Sol: ∵ Preset population of town = 60000

population increases = 10% of 60000

$= \frac{10}{100} \times 60000$

$= 6000$

∴ population after 1 year = 60000 + 6000

= 66000

Increase in 2nd year = 10% of 66000

$= \frac{10}{100} \times 66000$

$= 6600$

Hence, population of town after 2 year

= 66000 + 6600

= 72600

Q.21 The population of a town increases 10% annually. If the preset population is 22000, find its population a year ago.

Sol: Let the population of a city a year ago = x

Increase = 10% of x

$= \frac{10x}{100} = \frac{x}{10}$

∴ Preset population $= x + \frac{x}{10} = \frac{11x}{10}$

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$$\therefore \quad \frac{11x}{10} = 22000$$

$$\Rightarrow x = \frac{220000}{11}$$

$$\Rightarrow x = 20000$$

$\therefore$ Population of a city a year age = 20000

Q.22 Ankit was given an increment of 10% on his salary. His new salary is Rs 3575. What was his salary before increment?

Sol: Let salary before increment = Rs x.

$$\text{Increment} = 10\% \text{ of } x = \frac{10x}{100} = \frac{x}{10}$$

$$\therefore \text{New Salary} = x + \frac{x}{10} = \frac{11x}{10}$$

$$\therefore \frac{11x}{10} = 3575$$

$$\Rightarrow x = \frac{3575 \times 10}{11}$$

$$\Rightarrow x = 325 \times 10 = \text{Rs } 3250$$

Q.23 In the new budget, the price of petrol rose by 10%. By how much % must one reduce the consumption so that the expenditure does not increase

Sol:

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Sol: given that

Increase in petrol price = 10%.

Reduction in consumption while having same

expenditure = $\frac{\text{Increase \%}}{100 + \text{Increase \%}} \times 100$

$= \frac{10}{100+10} \times 100 = \frac{1000}{110} = \frac{100}{11} = 9\frac{1}{11}\%$

Q.24 Mohan's income is Rs 15500 per month. He saves 11% of his income. If his income increases by 10%. then he reduces his savings by 1%. How much does he save now?

Sol: Mohan Monthly Income = Rs 15500

Mohan savings = 11% of 15500

$= 15500 \times \frac{11}{100}$

= Rs 1705

Monthly income increases by = 10%

New monthly income = Rs $15500 + \frac{10}{100} \times 15500$

$= 15500 + 1550 =$ Rs 17050

When savings reduced by 1% will result in = 11-1

= 10% of 17050

$= \frac{10}{100} \times 17050 = 1705$

∴ savings is Rs 1705, which remains the same, even after increment.

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Q.25 Shikha's Income is 60% More than that of Shalu. What Percent is Shalu's Income less than Shikha's?

Sol: Let Shalu's Income = Rs 100

$\therefore$ Shikha's Income = 100 + 60% of 100

$= 100 + \frac{60}{100} \times 100$

$= 100 + 60 = Rs\ 160$

Difference Income = Rs 160 − Rs 100

= Rs 60

Then % of Shalu's Income less than Shikha's Income

$= \frac{60}{160} \times 100 = \frac{300}{8}$

$= 37\frac{1}{2}\%$

Q.26 Rs 3500 is to be shared among three people so that the first person gets 50% of the second, who in turn gets 50% of the third. How much will each of them get?

Solution: Let us consider third person get = Rs x.

So, Second Person gets = 50% of $x = \frac{50}{100} \times x = \frac{x}{2}$

Now, first person gets = 50% of $\frac{x}{2}$

$= \frac{50}{100} \times \frac{x}{2} = Rs\ \frac{x}{4}$

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$\therefore \quad \frac{x}{4} + \frac{x}{2} + x = 3500$

$\Rightarrow \quad \frac{x+2x+4x}{4} = 3500 \Rightarrow 7x = 4 \times 3500$

$\Rightarrow x = \frac{4 \times 3500}{7}$

$x = \text{Rs } 2000.$

$\therefore$ First person gets $= \frac{x}{4} = \frac{2000}{4} = \text{Rs } 500$

Second person gets $= \frac{x}{2} = \text{Rs } \frac{2000}{2} = \text{Rs. } 1000$

Q.27 After a 20% hike, the cost of chinese vase is Rs 2000. What was the original price of the object?

Sol: Let cp of vase before hike = Rs x

hike = 20% of $x = \frac{20}{100} x = \frac{x}{5}$

$\therefore \quad x + \frac{x}{5} = 2000$

$\Rightarrow \quad \frac{6x}{5} = 2000$

$\Rightarrow \quad x = \frac{2000 \times 5}{6} = 1666.667$

$\therefore$ Final price of chinese vase = Rs 1666.67.

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