

Grade VII

Lesson: 8 Comparing Quantities

Objective Type Questions

I. Multiple choice questions

- When 35% is expressed in fraction, it is equal to :
a) $\frac{8}{15}$ b) $\frac{7}{20}$ c) $\frac{3}{4}$ d) $\frac{7}{10}$
- $\frac{5}{20}$ is equal to :
a) 40% b) 45% c) 25% d) 20%
- If 25% of a number is 40, the number is :
a) 100 b) 140 c) 160 d) None of these
- The ratio of 3 kg and 1 kg 500 g is
a) 1:5 b) 2:1 c) 2:3 d) 3:2
- The simple interest for Rs.2000 at the rate of 5% p.a. for 3 years is :
a) Rs. 400 b) Rs. 150 c) Rs. 250 d) Rs.300
- Which of the following is the ratio of 3 km to 300 m?
a) 10:1 b) 1:10 c) 100:1 d) 1: 100
- If $5:x = 3:4$, what will be the value of 'x'?
a) $\frac{3}{20}$ b) $\frac{15}{4}$ c) $\frac{20}{3}$ d) $\frac{4}{15}$
- Ram saves Rs.400 from his salary . If this is 10% of his salary, what is his salary?
a. 40000 b) 9000 c) 4000 d) 10000
- An article purchased for Rs.1000 is sold for Rs.1100.What is his gain percentage?
a) 40% b) 30% c) 20% d) 10%
- You have Rs.2400 in your account & the interest rate is 5% per annum. After how many years would you earn Rs.240 as interest?
a.) 1Yrs b) 2 Yrs. c) 4 Yrs. d) 1%
- The population of a city decreased from 25000 to 24500. Find the percentage decrease on population.?
a) 4% b) 3% c) 2% d) 1%

12. What are gives Rs.280 as interest on a sum of Rs.56000 in 2 years?
- a) 2.5% b) 0.25% c) 25% d) 0.025%
13. The ratio of the heights 1.50 m and 75 cm of two persons can be written as :
- a) 1:50 b) 1 : 5 c) 2 : 1 d) 1: 2
14. Out of 50 children in a class, 20 are boys. Then the percentage of girls is :
- a) 60 b) 30 c) 50 d) $66\frac{2}{3}$
15. The interest on Rs.5000 at the rate of 15% per annum for one month is :
- a) Rs.750 b) Rs.75 c) Rs.625 d) Rs.62.50
16. 20% of 700 m is :
- a) 560 m b) 70m c) 210 m d) 140m
17. Gayatri's income is Rs.1,60,000 per year. She pays 15% of this as house rent and 10% of the remainder on her child's education. The money left with her is :
- a) Rs.136000 b) 120000 c) 122400 d) Rs.14000
18. The ratio of Fathima's income to her savings is 4:1 . The percentage of money saved by her is
- a) 20% b) 25% c) 40% d) 80%
19. 0.07 is equal to
- a) 70% b) 7% c) 0.7% d) 0.07%
20. In a scout camp.40% of the scouts were from Gujarat State and 20% of these were from Ahmadabad is :
- a) 25 b) 32.5 c) 8 d) 1%
21. What percent of Rs.4500 is Rs.9000?
- a) 200 b) $\frac{1}{2}$ c) 2 d) 50
22. 5: 2 is equal to :
- a) 52% b) 5.2% c) 520% d) 0.52%
23. The ratio 3: 8 is equal to
- a) 3.75% b) 37.5% c) 0.375% d) 267%
24. 225% is equal to :
- a) 9:4 b) 4:9 c) 3:2 d) 2:3
- 25) a bicycle is purchased for Rs.1800 and is sold at a profit of 12%. It selling Price is :
- a) Rs. 1584 b) Rs.2016 c) Rs. 1788 d) Rs. 1812

26. A cricket bat was purchased for Rs.800 and was sold for Rs.1600. Then profit earned is :
 a) 100% b) 64% c) 50% d) 60%
27. A farmer bought a buffalo for Rs.44000 and a cow for RS.18000. He sold the buffalo at a loss of 5% but made a profit of 10% on the cow. The net result of the transaction is :
 a) loss of Rs.200 b) Profit of Rs.400 c) loss of Rs.400 D) Profit of Rs.200.
28. If Mohan's income is 25% more than Raman's income, then Raman's income is less than Mohan's income by :
 a) 25% b) 80% c) 20% d) 75%
29. The interest on Rs.30000 for 3 years at the rate of 15% per annum is :
 a) Rs. b) Rs. 9000 c) Rs. 18000 d) Rs. 13500
30. Amount received on Rs3000 for 2 years at the rate of 11% per annum is :
 a) Rs. 2340 b) Rs. 3660 c) Rs. 4320 d) Rs. 3330
31. Interest on Rs.12000 for 1 month at the rate of 10% per annum is :
 a) Rs. 1200 b) Rs. 600 c) Rs. 100 d) Rs. 12100
32. Rajni and Mohini deposited Rs.3000 and Rs.4000 in a company at the rate of 10% per annum for 3 years and $2\frac{1}{2}$ years respectively. The difference of the amounts received by them will be:
 a) Rs. 100 b) 1000 c) 900 d) 1100
33. If 90% of x is 315 cm, then the value of x is :
 a) 325 cm b) 350 cm c) 405 cm d) 340 cm
34. On selling an article for Rs.329, a dealer lost 6%. The cost price of the article is :
 a) 325 cm b) 350 cm c) 405 cm d) 340 cm
35. $\frac{25\% \text{ of } 50\% \text{ of } 100\%}{25 \times 50}$ is equal to :
 a) 1.1% b) 0.1% c) 0.01% d) 1%
36. The sum which will earn a simple interest of Rs.126 in 2 years at 14% per annum is :
 a) Rs.394 b) Rs.395 c) Rs.450 d) Rs.540

1) b	2) c	3) c	4) b	5) d	6) a	7) c	8) c	9) d	10) b
11) c	12) b	13) c	14) a	15) d	16) d	17) c	18) a	19) b	20) c
21) a	22) c	23) b	24) a	25) b	26) d	27) c	28) c	29) d	30) b
31) c	32) d	33) b	34) d	35) d	36) c				

II. Multiple choice questions

All in oswal book (xam idea)

I. Fill in the Blanks

- $18\frac{3}{4}\%$ =
- 30% of Rs.360 =
- 120% of 50 km =
- 2.5 =%
- $5\frac{8}{5}\%$ =%
- A with its denominator 100 is called a percent
- 15 kg is % 50 kg.
- Weight of Nikhil increased from 60 kg to 66 kg. Then, the increase in weight is%
- In a class of 30 students 8% were absent on one day. The number of students present on that day was
- Savitri obtained 440 marks out of 500 in an examination. She secured% marks in the examination.
- Out of a total deposit of Rs.1500 in her bank account. Abida withdraw 40% of the deposit. Now the balance in her account is
- is 50% more than 60
- John sells a bat for Rs.75 and suffers a loss of Rs.8. The cost price of the bat is
- If the price of sugar is decreased by 20% , then the new price of 3 kg sugar originally costing Rs.120 will be
- Mohini bought a cow for Rs.9000 and sold it at a loss of Rs.900. The selling price of the cost is
- Devangi buys a chair for Rs.700 and sells it for Rs.750. She earns a profit of% in the transaction.

17. Sonal bought a best sheet for Rs.400 and sold it for Rs.440. Her
18. Sonal bought a best sheet for Rs.400 and sold it for Rs.440. Her % is
19. Aahuti purchased a house for Rs.50,59,700 and spent Rs.40,300 on its repair to make a profit of 5%. She should sell the house for Rs.
20. If 20 lemons are bought for Rs.10 and sold at 5 for three rupees, then
21. In the transaction is %
22. A fruit seller purchased 20 kg of apples at Rs.50 per kg. Out of these, 5% of the apples were found to be rotten, If he sells the remaining apples at Rs.60 per kg then his is%
23. Interest on Rs.3000 at 10% per annum for a period of 3 years is
24. Amount obtained by depositing Rs.20,000 at 8% per annum for six months is
25. Interest on Rs.12500 at 18% per annum for a period of 2 years and 4 months is
26. 25 ml is percent of 5 litres.
27. If A is increased by 20% it equals B. If B is decreased by 50% , it equals C. Then % of A is equal to C
28. Interest = $\frac{P \times R \times T}{100}$. Where T is R% and P is
29. The differences of interest for 2 years and 3 years on a sum of Rs.2100 at 8% per annum is.....
30. To convert a fraction into a percent we
It by 100
31. To convert a decimal into a percent, we shift the decimal point two places to the
32. The interest on a sum of Rs.2000 at the rate of 6% per annum for $1\frac{1}{2}$ years is Rs.420
33. When converted into percentage, the value of 6.5 is
Than 100%

1) 3:16	2) 108	3) 60km	4) 250	5) 160	6) fraction	7) 30
8) 10	9) 46	10) 88	11) 900	12) 90	13) 83	14) 96
15) 8100	16) $\frac{50}{7}$	17) Profit 50%	18) loss 10%	19) 53,55,100	20) Profit, 20%	21) Profit 10%
22) Profit, 20%	23) Rs.900	24) Rs.20,800	25) Rs.5,250	26) 0.5%	27) 60	28) Time, rate, percent, Principal
29) Rs.168	30) Multiply	31) right	32) sum addition	33) more		

I. Very Short Answer Questions

1. Find the mean proportion between 9 and 16

$$\text{Mean proportion} = \sqrt{9 \times 16} = 12$$

2. If $2:3 : x : 18$, find x

$$\frac{2}{3} = \frac{x}{18}$$

$$\Rightarrow 3x = 36$$

$$\Rightarrow x = 12$$

3. If $50 : 11 : x : 66$ find x

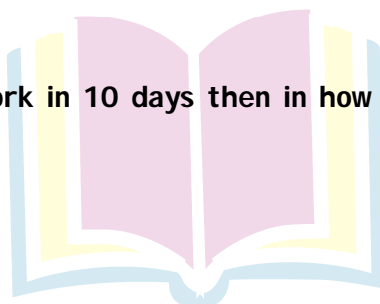
$$\frac{50}{11} = \frac{x}{66}$$

$$\Rightarrow x = \frac{50 \times 66}{11}$$

$$\Rightarrow x = 300$$

4. If 6 man can complete the work in 10 days then in how many days 1 man can finish the same work.

60 Days



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II. Very Short Answer Questions

1. When are four quantities said to be in proportion?

If two ratios are equivalent

2. When does one earn profit in any transaction?

When cost price is less than selling price.

3. Write $12\frac{1}{2}$ % in decimal and fraction.

In decimal - 0.125

In fraction - $\frac{1}{8}$

4. How many hours is 50% OF 4 DAYS?

48 Hours

5. How will you calculate percent increase?

The formula for percent increase is

$$\% \text{ of increase} = \frac{\text{amount of increase}}{\text{original number}} \times 100$$

6. What is 50% and 200% of 10?

50% of 10 means half of it i.e. $\frac{10}{2} = 5$ while

200% of means double of it i.e. $10 \times 2 = 20$

I. Short Answer Questions

1. (a). What is 90% of 9.9?

(b). What percent of one hour is 36 seconds?

(a). 90% of 9.9

$$= \frac{90}{100} \times 9.9 = \frac{891}{100} = 8.91$$

(b). let $x\%$ of 1 hour = 36 seconds

$$\frac{x}{100} = \frac{3600}{3600} = 1$$

$$\Rightarrow x \times 36 = 36$$

$$\Rightarrow x = 1$$

$$\Rightarrow x\% = 1\%$$

2. If $3a = 2b$ and $6b = 5c$, find $a : c$

Since, $3a = 2b$

$$\Rightarrow \frac{a}{b} = \frac{2}{3}$$

And $6b = 5c$

$$\Rightarrow \frac{b}{c} = \frac{5}{6}$$

$$\frac{a}{b} \times \frac{b}{c} = \frac{2}{3} \times \frac{5}{6}$$

$$\Rightarrow \frac{a}{c} = \frac{5}{9}$$

$$a:c = 5:9$$

3. If $\frac{A}{3} = \frac{B}{4} = \frac{C}{5}$, find $A : B : C$

$$\frac{A}{3} = \frac{B}{4} = \frac{C}{5} = k$$

$$A = 3k$$

$$B = 4k$$

$$C = 5k$$

$$A:B:C = 3k : 4k : 5k$$

$$= 3 : 4 : 5$$

4. Mahesh takes a loan of RS.50,000 at the rate of interest 12% p.a., find the simple interest, which he has to pay after two years.

$$\begin{aligned} \text{S.L} &= \frac{P \times R \times T}{100} \\ &= \frac{50,000 \times 12 \times 2}{100} \end{aligned}$$

$$\text{S.L} = \text{Rs. } 12,000$$

5. A shopkeeper sold an article at the profit of 10%. If

C.P. = 240, find S.P.

Sol. C.P. = Rs.240

Profit = 10%

S.P. = ?

$$\text{Profit} = \frac{10 \times 240}{100} = \text{Rs. } 24$$

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

$$= 240 + 24$$

$$= \text{Rs. } 264$$

6. Convert each part of ration 3 : 1 to percentage.

Sol. Total parts = 3 + 1 = 4

$$\text{Percentage of 1}^{\text{st}} \text{ part} = \frac{3}{4} \times 100$$

$$= 3 \times 25$$

$$= 75\%$$

$$\text{Percentage of 2}^{\text{nd}} \text{ part} = \frac{1}{4} \times 100$$

$$= 1 \times 25$$

$$= 25\%$$

7. If Meena gives an interest of Rs.45 for the one year at 9% rate p.a., what is the sum she has borrowed?

Meena gives interest Rs.45

Time = 1 year

Rate = 9%

Let principal be x , then

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

$$45 = \frac{x \times 9 \times 1}{100}$$

$$\Rightarrow \frac{45 \times 100}{9} = x$$

$$\Rightarrow 5 \times 100 = x$$

$$\therefore x = 500$$

Hence sum she has borrowed is Rs.500

8. What is the rate of interest which gives an interest of Rs.280 on a sum of Rs.56000 for 2 years?

Principal = Rs.56000

Time = 2 years

Interest = Rs. 280 p.a.

Let rate of interest be x

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

$$x = \frac{100 \times 280}{56000 \times 2}$$

$$\Rightarrow x = \frac{1}{4}$$

$$x = 0.25\%$$

Hence, rate of interest for 2 years = 0.25%

9. 6 bowls cost Rs.90. what would be the cost of 10 such bowls?

Sol. Cost of 6 bowls is Rs.90

$$\text{Cost of 1 bowls} = \text{Rs.} \frac{90}{6}$$

$$\text{Hence cost of 10 bowls} = \text{Rs.} \frac{90}{6} \times 10 = \text{Rs.}150.$$

10. The car that can go 150km with 25 litres of petrol. How can it go with 30 liters of petrol?

With 25 litres of petrol the car goes 150km

$$\text{With 1 litres the car will go} = \frac{150}{25} \text{ km}$$

With 30 litre of petrol the car will go

$$= \frac{150}{25} \times 30 = 180 \text{ km}$$

11. The cost of a flower vase is Rs.120, if the shopkeeper sells it at a loss of 10% find the price at which it is sold?

$$\text{The cost of a flower vase} = \text{Rs.}120$$

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

$$\text{Price at which it is sold} = ?$$

$$= \frac{10}{100} \times 120$$

$$= \text{Rs.}12$$

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

$$= \text{Rs.} 120 - \text{Rs.}12$$

$$= \text{Rs.} 108$$

12. Selling price of a toy car is Rs. 540 if the profit made by shopkeeper is 20% what is the cost price of this item?

$$\text{S.P.} = \text{Rs.}540$$

$$\text{P\%} = \text{Rs.}20\%$$

Let C.P. be Rs.100

$$\text{Profit} = \text{Rs.}20$$

$$\text{S.P.} = 100 + 20 = 120$$

Now when S.P. is Rs.120 the C.P. is Rs.100

∴ when S.P. is Rs. 540

$$\text{C.P} = \frac{100}{120} \times 540$$

$$= \text{Rs.}450$$

II. Short Answer Questions

1. Rs.90,000 borrowed at 5.5% p.a. for 3 years. Find the amount to be paid at the end of third year.

$$\begin{aligned}
 P &= \text{Rs.}90,000 \\
 R &= 5.5 \\
 T &= 3 \text{ years} \\
 \text{S.I.} &= \frac{P \times R \times T}{100} \\
 &= \frac{90000 \times 5.5}{100} \times 3 \\
 &= 90 \times 55 \times 3 \\
 &= \text{Rs.}14850
 \end{aligned}$$

$$\begin{aligned}
 \text{Amount } A &= P + \text{S.I.} \\
 &= 90000 + 14850 \\
 &= 104850 \\
 \text{Amount } A &= \text{Rs.}104850
 \end{aligned}$$

2. An item was sold for Rs.540 at a loss of 5%. What was its cost price?

Let the C.P. be x

$$\begin{aligned}
 \text{S.P.} &= \text{Rs.}540 \quad \text{Loss} = 5\% \\
 \text{S.P.} &= \text{C.P.} - \text{Loss} \\
 &= \text{C.P.} - 5\% \text{ of C.P.} \\
 540 &= x - \frac{5}{100}x \\
 \Rightarrow 540 &= x - \frac{x}{20} \\
 \Rightarrow 540 &= \frac{20x - x}{20} \\
 \Rightarrow 540 &= \frac{19x}{20} \\
 \Rightarrow 19x &= 540 \times 20 \\
 \text{Thus } x &= \frac{540 \times 20}{19} \\
 &= \frac{10800}{19} \\
 &= 568.42
 \end{aligned}$$

Hence, C.P. of an item = Rs. 568.42

3. An article was sold for Rs.280 with a profit of 5% what was its C.P.?

Let C.P. be x

$$\text{S.P} = \text{Rs.280}$$

$$\text{Profit} = 5\%$$

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

$$\Rightarrow 280 = x + 5\% \text{ of } x$$

$$\Rightarrow 280 = x + \frac{5}{100} x$$

$$= x + \frac{x}{20}$$

$$\Rightarrow 280 = \frac{21x}{20}$$

$$\text{Thus } x = \frac{280 \times 20}{21} = \frac{800}{3}$$

$$= 266.66$$

$$\therefore \text{C.P of article} = \text{Rs.266.66}$$

4. If the angles of a triangle are in the ration 2 : 3 : 4 find the value of each angle

Sol. Let the angles be $2x$, $3x$, and $4x$

$$\Rightarrow 2x + 3x + 4x = 180^\circ$$

[Angle sum property]

$$\Rightarrow 9x = 180^\circ$$

$$\Rightarrow x = \frac{180^\circ}{9}$$

$$\Rightarrow x = 20^\circ$$

Angles are

$$2x = 2 \times 20^\circ = 40^\circ$$

$$3x = 3 \times 20^\circ = 60^\circ$$

$$4x = 4 \times 20^\circ = 80^\circ$$

5. If a father gave 3 parts of his property to his son and 2 parts of it to his daughter what are the percentages of his property which were given to his son and daughter?

$$\text{Total of parts} = 3 + 2 = 5$$

$$\Rightarrow \text{Son got} = \frac{3}{5} \text{ part}$$

$$\Rightarrow \text{so his percentage share} = \frac{3}{5} \times 100 = 60\%$$

$$\text{His daughter got} = \frac{2}{5} \text{ part}$$

$$\text{So her percentage share} = \frac{2}{5} \times 100 = 40\%$$

6. To make idlis, Reena's mother said you must take 2 parts rice and 1 part urad dal. Could you say what, percent of such a mixture would be rice or what percent of it would be urad dal?

In ratio, we would write this as

$$\begin{aligned} \text{Rice : Urad Dal} &= 2 : 1 \\ &= 2 + 1 = 3 \text{ total parts} \end{aligned}$$

Now, this means $\frac{2}{3}$ part is rice and $\frac{1}{3}$ part is urad

$$\begin{aligned} \text{Then, rice in \% would be} &= \frac{2}{3} \times 100 \\ &= \frac{200}{3} = 66\frac{2}{3}\% \end{aligned}$$

$$\text{And urad dal in \%} = \frac{1}{3} \times 100\% = 33\frac{1}{3}\%$$

7. If Rs.250 is to be divided amongst Ravi, Raju and Roy so that Ravi gets 2 parts, Raju 3 parts and Roy 5 parts. How much money will each get ? what will it be in percent?

The parts which the 3 boys are getting is 2 : 3 : 5

total of their parts = 2 + 3 + 5 = 10

To get %

$$\text{Ravi gets} = \frac{2}{10} \times 100\% = 20\%$$

$$\text{Raju gets} = \frac{3}{10} \times 100\% = 30\%$$

$$\text{Roy gets} = \frac{5}{10} \times 100\% = 50\%$$

To get amounts

$$\text{Ravi gets} = \frac{2}{10} \times 250 = \text{Rs. } 50$$

$$\text{Raju gets} = \frac{3}{10} \times 250 = \text{Rs. } 75$$

$$\text{Roy gets} = \frac{5}{10} \times 250 = \text{Rs. } 125$$

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III. Short Answer Questions

1. Find the ration of :

i) 9m to 27 cm

ii) 36 days to 36 hours

i) $\because 1\text{m} = 100\text{ cm}$

$\therefore 9\text{m} = 900\text{ cm}$

Now ratio = $\frac{900}{27} = \frac{100}{3} = 100:3$

ii) 1 day = 24 hours

36 days = $36 \times 24 = 864$ hours

Now ratio = $\frac{864}{36} = 24:1$

2. Population of Rajasthan = 570 lakh and polulation of UP = 1660 lakh, area of Rajastha = 3 lakh km^2 and area of UP = 2 Lakh km^2 .

i) How many people are there per km^2 in both these states?

ii) Which state is less populated?

i) Number of people per km^2 area in Rajasthan

$$= \frac{\text{Total Populatin of Rajasthan}}{\text{Area of Rajasthan}}$$

$$= \frac{570}{3} = 190 \text{ people}/\text{km}^2$$

Similarly, number of people per km^2 in UP

$$= \frac{1660}{2} = 830 \text{ people}/\text{km}^2$$

ii) Rajasthan is less populated because number of people leaving per km^2 area is less

3. Convert the given fractional numbers to per cents.

i) $\frac{5}{4}$

ii) $\frac{2}{7}$

To convert into percent you multiply the fraction by 100

i) $\frac{5}{4}$ for changing in to % = $\frac{5}{4} \times 100 = 125\%$

ii) $\frac{2}{7}$ the % value is = $\frac{2}{7} \times 100 = \frac{200}{7} = 28\frac{4}{7}\%$

4. Convert the given decimal fraction to per cents

i. 0.02

ii. 12.35

$$i. 0.02 = \frac{2}{100} \times 100 = 2\%$$

$$ii. 12.35 = \frac{1235}{100} \times 100 = 1235\%$$

5. Estimate what part of the figures is coloured and hence find the per cent which is coloured.

$$i. \text{ part covered} = \frac{\text{Number of parts covered}}{\text{total number of parts}} = \frac{1}{4}$$

$$\text{Now the \% value is} = \frac{1}{4} \times 100 = 25\%$$

$$ii. \text{ part covered} = \frac{3}{5}$$

$$\text{The \% value is} = \frac{3}{5} \times 100 = 60\%$$

$$iii. \text{ part covered} = \frac{3}{8}$$

$$\text{The \% value is} = \frac{3}{8} \times 100 = 37.5\% \text{ or } 37\frac{1}{2}\%$$

6. Find

i. 1% of 1 Hours

ii. 20% of Rs.2500

Sol. i. to find percentage of any quantity, you divide the given value by 100

$$1 \text{ hour} = 60 \text{ min}$$

$$1\% \text{ of } 60 \text{ min} = \frac{1 \times 60}{100} = \frac{3}{5} \text{ min or } 36 \text{ seconds}$$

$$ii.. 20\% \text{ of Rs.2500} = \frac{20}{100} \times 2500 = \text{Rs. } 500$$

7. Covert given per cents to decimal fractions and also to fractions in simplest forms:

i. 150%

ii. 5%

To convert percentage to decimal divide it by 100

$$i. 150\% = \frac{150}{100} = 1.5$$

$$\text{its simplest fraction part is} = \frac{15}{10} = \frac{3}{2}$$

$$ii. 5\% = \frac{5}{100} = 0.05$$

$$\text{its simplest fraction form is} = \frac{5}{100} = \frac{1}{20}$$

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8. Meeta saved Rs.400 from her salary. If this is 10% of her salary, what is her salary?

Let Meeta's salary be Rs. x

According to Question

$$10\% \text{ of } x = 400$$

$$\frac{10}{100} \times x = 400 \Rightarrow x = \frac{400 \times 100}{10} = \text{Rs. } 4,000$$

Hence the salary of Meeta is Rs.4000

S.I. = Rs.280, P = Rs.56,000 T = 2 years ; R=?

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

$$280 = \frac{56000 \times R \times 2}{100} \Rightarrow R = \frac{280 \times 100}{156000 \times 20} = 0.25\%$$

9. S.I. = Rs.45 , T=1 year, R=9% p.a. , P=?

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

$$45 = \frac{P \times 9 \times 1}{100} \Rightarrow P = \frac{45 \times 100}{9} = \text{Rs. } 500$$

10. Express $\frac{9}{40}$ as a per cent.

To convert a fraction to percent, multiply it by 100

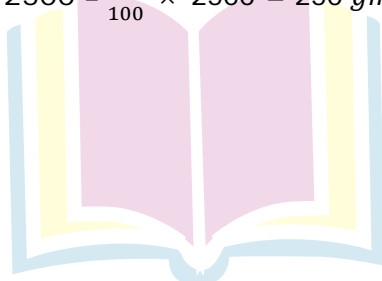
$$\frac{9}{40} \times 100 = \frac{45}{2} = 22\frac{1}{2}\%$$

11. Chalk contains 10% calcium, 3% carbon and 12% oxygen. Find the amount of carbon and calcium (in grams) in $2\frac{1}{2}$ kg of chalk

$$\text{Total weight of chalk} = 2\frac{1}{2} \text{ kg} = 2.500 \text{ gms}$$

$$\text{Amount of carbon} = 3\% \text{ of } 2500 = \frac{3}{100} \times 2500 = 75 \text{ gm}$$

$$\text{Amount of calcium} = 10\% \text{ of } 2500 = \frac{10}{100} \times 2500 = 250 \text{ gm}$$



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Long Answer Questions I

1. Out of his total monthly income, Mr. Saxena spends 30% on house rent and 60% of the rest on house hold expenses. If he saves Rs.6300 per month, what is his total monthly income?

Let Mr. Saxena's income be = Rs.100
 Money spent on house rent = 30
 Rest of income = $100 - 30 = 70$

Now 60% of 70 is spent of house hold expenses.

House hold expenses = 60% of 70
 = $\frac{60}{100} \times 70$
 = 42
 Savings = $70 - 42$
 = Rs. 28

\therefore if he saves Rs. 28 his monthly income = Rs. 100

\therefore if he saves Rs. 6300 his monthly income
 = $6300 \times \frac{100}{28}$
 = 22,500

2. Find

(a) 9% of Rs.700

(b) $6\frac{2}{3}\%$ of 75m

(c) 7.5% of 80kg

(d) 8% of 5 litres

a. 9% of Rs.700 = $\frac{9}{100} \times 700$
 = 9×7
 = Rs.63

b. $6\frac{2}{3}\%$ of 75m = $\frac{20}{3} \% \text{ of } 75m$
 = $\frac{20}{300} \times 75m$
 = $\frac{1}{15} \times 75m$
 = 5m

c. 7.5 % of 80kg = $\frac{7.5}{100} \times 80kg$
 = $\frac{3}{40} \times 80 = 6kg$

$$\begin{aligned} \text{d. } 8\% \text{ of } 5 \text{ litres} &= \frac{8}{100} \times 5 \text{ litres} \\ &= \frac{40}{100} = 0.4 \text{ litres} \end{aligned}$$

3. Nikhil's income is 20% less than that of Akhil. How much percent is Akhil's income more than that of Nikhil's

Let Akhil's income be Rs.100

$$\begin{aligned} \Rightarrow \text{Nikhil's income} &= 100 - 20 \\ &= \text{Rs.80} \end{aligned}$$

Now Nikhil's income be Rs.80

\Rightarrow Akhil's income is Rs. 20 more than that of Nikhil

\therefore when Nikhil's income is Rs. 80, then Akhil's income is Rs. 20 more

When Nikhil's income is Rs.80, then Akhil's income is Rs.20 more

When Nikhil's income is Rs.100, then Akhil's income

$$\begin{aligned} &= \frac{20}{80} \times 100 \\ &= 25\% \text{ more} \end{aligned}$$

Hence Akhil's income is 25% more than Nikhil's income.

4. 3% commission on the sale of property amount to is Rs.42600. what is the total value of the property?

Let the cost of property be RS.100

\Rightarrow Commission is Rs. 3

\Rightarrow when commission is Rs.3 then cost of property

$$= \text{Rs.100}$$

\therefore when commission is Rs. 42600, then cost of property

$$\begin{aligned} &= \frac{100}{3} \times 42600 \\ &= 100 \times 14220 \\ &= \text{Rs. } 14,22,000 \end{aligned}$$

Hence the cost of property is Rs. 14,22,000.

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5. In an examination 72% of the total examinees passed. If the number of failures is 392, find the total number of examinees.

$$\begin{aligned} \text{Let the number of students} &= 100 \\ \text{Passed students} &= 72 \\ \text{Hence, failed students} &= \frac{100 - 72}{100} \times 100 \\ &= 28 \end{aligned}$$

\therefore when failed are 28, then total no of students

$$= 100$$

\therefore when failed are 392, then total no. of students

$$\begin{aligned} &= \frac{100}{28} \times 392 \\ &= 1400. \end{aligned}$$

6. The value of a machine depreciates 5% every year. If the present value of the machine is Rs.1,00,000, what will its value after 2 years?

$$\begin{aligned} \text{Present value of machine} &= \text{Rs. } 1,00,000 \\ \text{After 1 year value of machine} &= 100000 - 5\% \text{ of } 100000 \\ &= 100000 - \frac{5}{100} \times 100000 \\ &= 100000 - 5000 \\ &= 95000 \end{aligned}$$

Again after 2 years value of machine

$$\begin{aligned} &= 95000 - 5\% \text{ of } 95000 \\ &= 95000 - \frac{5}{100} \times 95000 \\ &= 95000 - 4750 \\ &= \text{Rs. } 90250 \end{aligned}$$

Hence value of machine after 2 years = Rs.90250

7. A vendor purchased 720 lemons at Rs.120 per hundred. 10% of the lemons were found rotten, which he sold at Rs.50 per hundred. If he sells the remaining in lemons at Rs.125 per hundred, then his profit or loss percentage will be ?

Given, C.P. of 100 lemons = Rs120

Then C.P. of lemon = $\frac{120}{100}$

\therefore C.P. of 720 lemons = Rs. $\frac{120}{100} \times 720 = \text{Rs. } 864$

∴ 10% of the lemons were rotten.

$$\therefore \text{Rotten lemons} = 10\% \text{ of } 720 = \frac{10}{100} \times 720 = 72$$

Now, S.P. of 100 rotten lemons = Rs.50

$$\text{S.P. of 1 rotten lemons} = \text{Rs. } \frac{50}{100} \times 72 = \text{Rs. } 36$$

$$\therefore \text{Remaining lemons} = 720 - 72 = 648$$

∴ S.P. of Remaining 100 lemons = Rs.125

$$\therefore \text{S.P. of Remaining 1 lemon} = \text{Rs. } \frac{125}{100} \times 648 = \text{Rs. } 810$$

$$\begin{aligned} \text{Total S.P.} &= \text{S.P. of rotten lemons} + \text{S.P. of remaining lemons} \\ &= \text{Rs. } (36 + 810) = \text{Rs. } 846. \end{aligned}$$

∴ Total C.P. > Total S.P.

So, there is loss

$$\text{Loss} = \text{C.P.} - \text{S.P.} = \text{Rs. } (864 - 846) = \text{Rs. } 18$$

$$\text{Loss \%} = \frac{\text{Loss}}{\text{C.P.}} \times 100 = \frac{18}{864} \times 100 = 2.08\%$$

Hence, vendor bears 2.08% loss.

8. Divide Rs.1000 in two parts so that the simple interest on the first part for 4 years at 12 percent per annum may be equal to the simple interest on the second part for 4.5 years at 16 per cent annum.

Given money = Rs.10000

Divide Rs.10000 in two parts such that S.I. on first part for 4 years at 12% per annum may be equal to the S.I. on second part for 4.5 years at 16%

Let first part = Rs. x

Second part = Rs.(10000 - x)

For first part (x) $P_1 = \text{Rs. } x$ $T_1 = 4 \text{ yrs.}$ $R_1 = 12\%$

$$\text{S.I.}_1 = \frac{P_1 \times R_1 \times T_1}{100} = \frac{x \times 12 \times 4}{100}$$

For second part (10000 - x)

$P_2 = (10000 - x)$, T_2

= 4.5 yr, $R_2 = 16\%$

$$\text{S.I.}_2 = \frac{P_2 \times R_2 \times T_3}{100} = \frac{(10000 - x) \times 16 \times 4.5}{100}$$

According to question,

$$\frac{48x}{100} = \frac{72(10000 - x)}{100}$$

$$2x = (10,000 - x)$$

$$5x = 30000$$

$$x = 6000$$

$$10000 - x = 4000$$

9. In a debate competition, the judges decided that 20% of the total marks would be given for accent and presentation. 60% of the rest are reserved for the subject matter and the rest are for rebuttal. If this means 8 marks for rebuttal, then find the total marks.

Let the total marks = x Then, marks for accent and presentation = 20% of x

$$= \frac{20}{100} \times x = \frac{x}{5}$$

$$\text{Remaining marks} = x - \frac{x}{5} = \frac{5x - x}{5} = \frac{4x}{5}$$

Now marks for subject matter = 60% of $\frac{4x}{5}$

$$= \frac{60}{100} \times \frac{4x}{5} = \frac{12x}{25}$$

$$\text{Remaining marks} = \frac{4x}{5} - \frac{12x}{25} = \frac{5 \times 4x - 12x}{25}$$

$$\frac{20x - 12x}{25} = \frac{8x}{25}$$

According to the question, there are 8 marks for rebuttal.

$$\text{So, } \frac{8x}{25} = 8 = 8x = 25 \times 8$$

$$= x = \frac{25 \times 8}{8} = 25$$

10. Imagine that a 10 x 10 grid has value 300 and that this value is divided evenly among the small squares. In other words, each small square is worth 3. Use a new grid for each part of this problem. And label each grid "Value : 300,"

a. shade 25% of the grid, what is 25% of 300? Compare the two answers

b. what is the value of 25 squares.

c. shade 17% of the grid ? what is 17% of 300? Compare the two answers.

d. what is the value of 1/10 of the grid?

Given side of grid = 10 x 10

Value of a grid = 300

And also, worth of one square = 3

a. Shade 25% of the grid = $\frac{25}{100} \times 10 \times 10$

$$= 25 = 5 \times 5$$

\therefore worth of one square = 3

Worth of 25 square = $25 \times 3 = 75$

Now 25% of 300 = $\frac{300 \times 25}{100}$

$$= 3 \times 25 = 75$$

Hence both conditions are satisfied

b. Given value of one square = 3

Value of 25 square = $3 \times 25 = 75$

c. Shade 17% of the grid = $\frac{17}{100} \times 10 \times 10 = 17$

Value of one square = 3

Value of 17 square = $17 \times 3 = 51$

Now 17% of 300 = $\frac{17}{100} \times 300 = 17 \times 3 = 51$

Hence both conditions are satisfied.

d. Value of the grid = 300

Value of $\frac{1}{10}$ of the grid = $\frac{300}{10} = 30$

Long Answer Questions II

1. Find the whole quantity of

- i. 40% of it is 500km
- ii. 8% of it is 40 litres
- iii. 70% of it is 14 minutes

i. 40% of it is 500km

Let the whole quantity be x

According to question

$$40\% \text{ of } x = 500$$

$$\text{Or } \frac{40}{100} x = 500$$

$$\text{Or } x = \frac{500 \times 10}{4} = 1250 \text{ km}$$

Hence, the whole quantity is 1250 km

i. Let the whole time be x minute



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According to question

$$70\% \text{ of } x = 14 \Rightarrow \frac{70}{100}x = 14$$

$$x = \frac{14 \times 10}{7} = 20$$

Hence, the whole time is 20 minutes

ii. Let the whole quantity be x litre

According to question

$$8\% \text{ of } x = 40 \Rightarrow \frac{8}{100}x = 40$$

$$\text{Or } \frac{40 \times 100}{8} = x \Rightarrow x = 500 \text{ litres}$$

2. Out of 15000 voters in a constituency, 60% voted. Find the percentage of voters who did not vote. Can you now find how many actually did not vote?

No. of voters in a constituency	=	15000
Percentage of voters who voted	=	60%
Then percentage of voters who did not vote	=	$(100 - 60) = 40\%$
Number of people who did not vote	=	$= \frac{40}{100} \times 15000 = 6000$

Hence 6000 voters didn't vote.

3. Tell what is the profit or loss in the following transactions. Also find profit per cent or loss per cent in each case.

i. A refrigerator bought for Rs.12000 and sold at Rs.13500

ii. a skirt bought for Rs.250 and sold at Rs.150

i. CP = Rs.12000 and SP = Rs.13500

Here $SP > CP$, hence profit will occur in the transaction

$$\text{So profit} = SP - CP = 13500 - 12000 = 1500$$

$$\text{Now Profit \%} = \frac{\text{Profit}}{CP} \times 100$$

$$= \frac{1500}{12000} \times 100 = 12\frac{1}{2}\%$$

Hence, the profit = Rs.1500 and profit per cent = $12\frac{1}{2}\%$

ii. CP = Rs.250 and SP = Rs.150

Here $CP > SP$, hence LOSS will occur in the transaction

$$\text{So loss} = CP - SP = 250 - 150 = 100$$

$$\text{Now LOSS\%} = \frac{L}{CP} \times 100 = \frac{100}{250} \times 100 = 40\%$$

Hence, the loss = Rs.100 and loss per cent = 40%

4. The population of a city decreased from 25000 to 24500. Find the percentage decrease.

$$\begin{aligned} \text{Initial population} &= 25000 \\ \text{Decreased population} &= 24500 \\ \text{Decrease in population} &= 25000 - 24500 = 500 \\ \text{\% decrease} &= \frac{\text{decrease in population}}{\text{initial population}} \times 100 \\ &= \frac{500}{25000} \times 100 = 2\% \end{aligned}$$

Hence, the % decrease in population is = 2%

5. S.P. = Rs.13500, Loss = 20% CP=?

Let the cost price be Rs. x

According to question

$$\text{Loss} = 20\% \text{ of } x \Rightarrow \frac{20}{100} x = \text{Rs. } \frac{x}{5}$$

Now CP = SP + Loss

$$x = 13500 + \frac{x}{5}$$

$$\Rightarrow x - \frac{x}{5} = 13500 \Rightarrow \frac{x}{5} = 13500$$

$$\Rightarrow x = \frac{13500 \times 5}{4} = \text{Rs. } 16875$$

Hence CP = Rs.16875.

6. Find the amount to be paid at the end of 3 years when principal is Rs.7500 at 5% p. a.

P = Rs.7500 R = 5% T = 3 years

$$\begin{aligned} \text{S.I.} &= \frac{P \times R \times T}{100} \\ &= \frac{7500 \times 5 \times 3}{100} = \text{Rs. } 1125 \end{aligned}$$

Now amount = principal + interest

$$= \text{Rs. } 7500 + \text{Rs. } 1125 = \text{Rs. } 8625$$

Hence the amount to be paid = Rs. 8625

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7. Find the value of x if

i. 32% of x kg is 400kg

ii. 35% of Rs. x is Rs.280

Sol. i. 32% of x kg is 400kg

$$= \frac{32}{100} \times x = 400$$

$$x = \frac{400 \times 100}{32} = 1250$$

Hence, $x = 1250$ kg

ii. 35% of Rs. x is Rs.280

$$= \frac{35}{100} \times x = 280$$

$$x = \frac{280 \times 100}{35} = 800$$

8. In an examination, there are three papers each of 100 marks. A candidate obtained 53 marks in the first and 75 marks in the second paper, how many marks must the candidate obtain in the third paper to get an overall of 70 per cent marks?

Each paper contains 100 marks

A candidate scored in 1st paper = 53 marks

He scored in II nd paper = 75 marks

Let he score x marks in III rd paper then

According to question

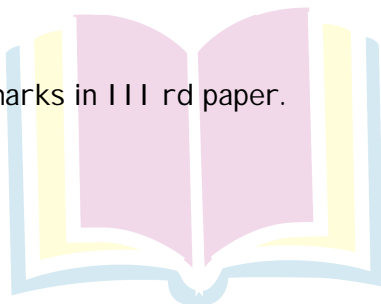
$$53 + 75 + x = 70\% \text{ of } 300$$

$$\text{Or } 128 + x = \frac{70}{100} \times 300$$

$$\text{Or } 128 + x = 210$$

$$\text{Or } x = 210 - 128 = 82$$

Hence he should score 82 marks in III rd paper.



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