

CHAPTER 8

COMPARING QUANTITIES

1. Convert the given fractional numbers to percent:

(a) 18

Ans: A fractional number is given, 18

$$18 = 18 \times 100\%$$

$$= 252\% = 12.5\%$$

$$\Rightarrow 18 = 12.5\%$$

(b) 54

Ans: A fractional number is given, 54

$$54 = 54 \times 100\%$$

$$= 5 \times 25\%$$

$$= 125\%$$

$$\Rightarrow 54 = 125\%$$

(c) 340

Ans: A fractional number is given, 340

$$340 = 340 \times 100\%$$

$$= 152\%$$

$$= 7.5\%$$

$$\Rightarrow 340 = 7.5\%$$

(d) 27

Ans: A fractional number is given, 27

$$27 = 27 \times 100\%$$

$$= 2007\%$$

$$= 2847\%$$

$$\Rightarrow 27 = 2847\%$$

2. Convert the given decimal fractions to percents:

(a) 0.65

Ans: A decimal fraction is given, needed to convert it into percentage from

$$\Rightarrow 0.65 = 65100$$

$$\Rightarrow 0.65 = 65\%$$

(b) 2.1

Ans: A decimal fraction is given, needed to convert it into percentage from

$$\Rightarrow 2.1 = 2110 \times 100\%$$

$$\Rightarrow 2.1 = 210\%$$

(c) 0.02

Ans: A decimal fraction is given, needed to convert it into percentage from

$$\Rightarrow 0.02 = 2/100$$

$$\Rightarrow 0.02 = 2\%$$

(d) 12.35

Ans: A decimal fraction is given, needed to convert it into percentage from

$$\Rightarrow 12.35 = 1235/100 \times 100\%$$

$$\Rightarrow 12.35 = 1235\%$$

3. Estimate what part of the figure is colored and hence find the percent which is colored:

(i)



Ans: It is clear from the figure that the colored part is = 14

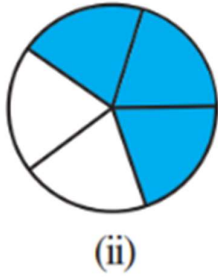
Therefore, the required percentage of colored parts,

$$\text{is} = 14 \times 25/100$$

$$= 35$$

$$= 35\%$$

(ii)



Ans: It is clear from the figure that the colored part is = 35
 Therefore, the required percentage of colored parts,

$$\begin{aligned} \text{is} &= 35 \times 2020 \\ &= 60100 \\ &= 60 \% \end{aligned}$$

(iii)



Ans: It is clear from the figure that the colored part is = 38
 Therefore, the required percentage of colored parts,

$$\begin{aligned} \text{is} &= 38 \times 100100 \\ &= 3008 \% \\ &= 37.5 \% \end{aligned}$$

4. Find:

(a) 15 % of 250

Ans: Needed to find the required percentage of the given number 250 i.e.,

$$\begin{aligned} 15 \% \text{ of } 250 &= 15100 \times 250 \\ &= 15 \times 2.5 \\ &= 37.5 \end{aligned}$$

$$\Rightarrow 15 \% \text{ of } 250 = 37.5$$

(b). 1 % of 1 hour

Ans: Needed to find the required percentage i.e.,

$$1 \% \text{ of } 1 \text{ hour} = 1 \% \text{ of } 60 \text{ minutes}$$

$$= 1 \% \text{ of } 60 \times 60 \text{ seconds}$$

$$= 1100 \times 60 \times 60 \text{ seconds}$$

$$= 36 \text{ seconds}$$

$$\Rightarrow 1 \% \text{ of } 1 \text{ hour} = 36 \text{ seconds}$$

(c). 20 % of Rs2500

Ans: Needed to find the required percentage of the given currency Rs2500 i.e.,

$$20 \% \text{ of Rs}2500 = 20100 \times 2500$$

$$= 20 \times 25$$

$$= \text{Rs } 500$$

$$\Rightarrow 20 \% \text{ of Rs}2500 = \text{Rs}500$$

(d). 75 % of 1 kg

Ans: Needed to find the required percentage of the given quantity 1 kg i.e.,

$$75 \% \text{ of } 1 \text{ kg} = 75100 \times 1 \text{ kg}$$

$$= 0.75 \text{ kg}$$

$$\Rightarrow 75 \% \text{ of } 1 \text{ kg} = 0.75 \text{ kg}$$

5. Find the whole quantity if:

(a). 5 % of it is 600

Ans: Let the required whole quantity be x

Therefore, 5 % of x = 600

$$\Rightarrow 5100 \times x = 600$$

$$\Rightarrow x = 600 \times 1005$$

$$\Rightarrow x = 12000$$

(b). 12 % of it is Rs1080

Ans: Let the required whole quantity be x

Therefore, 12 % of x = Rs 1080

$$\Rightarrow 12100 \times x = 1080$$

$$\Rightarrow x = 1080 \times 10012$$

$$\Rightarrow x = \text{Rs } 9000$$

(c). 40 % of it is 500 km

Ans: Let the required whole quantity be x

Therefore, 40 % of x = 500km

$$\Rightarrow 40100 \times x = 500$$

$$\Rightarrow x = 500 \times 10040$$

$$\Rightarrow x = 1250\text{km}$$

(d). 70 % of it is 14 minutes

Ans: Let the required whole quantity be x

Therefore, 70 % of x = 14minutes

$$\Rightarrow 70100 \times x = 14$$

$$\Rightarrow x = 14 \times 10070$$

$$\Rightarrow x = 20 \text{ minutes}$$

(e). 8 % of it is 40 liters

Ans: Let the required whole quantity be x

Therefore, 8 % of x = 40liters

$$\Rightarrow 8100 \times x = 40$$

$$\Rightarrow x = 40 \times 1008$$

$$\Rightarrow x = 500 \text{ liters}$$

6. Convert given percents to decimal fraction and also fraction to simplest form:

(a). 25 %

Ans: We have given a percent 25 %

Fraction form= $\frac{25}{100}$

Simplest fractional form = $\frac{1}{4}$

Decimal form = 0.25

(b). 150 %

Ans: We have given a percent 150 %

Fraction form = $\frac{150}{100}$

Simplest fractional form = $\frac{3}{2}$

Decimal form = 1.5

(c). 20 %

Ans: We have given a percent 20 %

Fraction form = $\frac{20}{100}$

Simplest fractional form = $\frac{1}{5}$

Decimal form = 0.2

(d). 5 %

Ans: We have given a percent 5 %

Fraction form = $\frac{5}{100}$

Simplest fractional form = $\frac{1}{20}$

Decimal form = 0.05

7. In a city, 30 % are females, 40 % are males and remaining are children. What percent are children?

Ans: Let the percentage of children be $x\%$

It is given that the percentage of females and males are 30 % and 40 % respectively.

And, the total percentage = 100 % = Percentage of males and Percentage of females and Percentage of children

$$\Rightarrow 100\% = 30\% + 40\% + x\%$$

$$\Rightarrow 100\% = 70\% + x\%$$

$$\Rightarrow x\% = 100\% - 70\%$$

$$\Rightarrow x\% = 30\%$$

Thus 30 % is the population of children in the city.

8. Out of 15,000 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?

Ans: The total number of voters = 15,000

The percentage of people who voted = 60 %

So, the percentage of people who didn't vote = 100 % - 60 %
= 40 %

And, the number of actual candidates, who didn't vote = 40% of 15000
= 6000

Thus, 6,000 people out of 15,000 did not vote.

9. Meeta saves Rs 400 from her salary. If this is 10 % of her salary. What is her salary?

Ans: Let x be the salary of Meeta.

Since 10 % of her salary = Rs 400

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

$$\Rightarrow 10\% \times x = 400$$

$$\Rightarrow 10100x = 400$$

$$\Rightarrow x = \text{Rs } 4,000$$

Therefore, the salary of Meeta is Rs 4,000.

10. A local cricket team played 20 matches in one season. It won 25 % of them. How many matches did they win?

Ans: The local cricket team played 20 matches.

They won 25 % of matches out of 20

Therefore, the number of matches the cricket team won = 25 % of 20

$$= 25100 \times 20$$

$$= 5 \text{ matches}$$

So, the local cricket team won 5 matches out of 20.

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

(a). Gardening shears bought for Rs 250 and sold for Rs 325.

Ans: Here, the Cost price of the gardening shears = Rs 250

Also, the Selling price of gardening shears = Rs 325

Since, the Selling Price (S.P.) is greater than Cost Price (C.P.)

Therefore, here we have is the profit.

$$\therefore \text{Profit} = \text{S.P.} - \text{C.P.} = 325 - 250$$

$$\Rightarrow \text{Profit} = \text{Rs } 75$$

$$\text{So, the profit percentage} = \frac{\text{Profit}}{\text{C.P.}} \times 100$$

$$\Rightarrow \text{Profit \%} = \frac{75}{250} \times 100$$

$$\Rightarrow \text{Profit \%} = 30 \%$$

(b). A refrigerator bought for Rs 12,000 and sold at Rs 13,500.

Ans: Here, the Cost price of the refrigerator = Rs 12,000

Also, the Selling price of the refrigerator = Rs 13,500

Since, the Selling Price (S.P.) is greater than Cost Price (C.P.)

Therefore, here we have is the profit.

$$\therefore \text{Profit} = \text{S.P.} - \text{C.P.} = 13,500 - 12,000$$

$$\Rightarrow \text{Profit} = \text{Rs } 1,500$$

$$\text{So, the profit percentage} = \frac{\text{Profit}}{\text{C.P.}} \times 100$$

$$\Rightarrow \text{Profit \%} = \frac{1500}{12000} \times 100$$

$$\Rightarrow \text{Profit \%} = 12.5 \%$$

(c). A cupboard bought for Rs 2,500 and sold at Rs 3,000.

Ans: Here, the Cost price of the cupboard = Rs 2,500

Also, the Selling price of the cupboard = Rs 3,000

Since, Selling Price (S.P.) is greater than Cost Price (C.P.)

Therefore, here we have is the profit.

$$\therefore \text{Profit} = \text{S.P.} - \text{C.P.} = 3,000 - 2,500$$

$$\Rightarrow \text{Profit} = \text{Rs } 500$$

$$\text{So, the profit percentage} = \frac{\text{Profit}}{\text{C.P.}} \times 100$$

$$\Rightarrow \text{Profit \%} = \frac{500}{2500} \times 100$$

$$\Rightarrow \text{Profit \%} = 20 \%$$

(d). A skirt bought for Rs 250 and sold at Rs 150.

Ans: Here, the Cost price of the skirt = Rs 250

Also, the Selling price of the skirt = Rs 150

Since, Selling Price (S.P.) is lower than Cost Price (C.P.)

Therefore, here we have is the loss.

$$\therefore \text{Loss} = \text{C.P.} - \text{S.P.} = 250 - 150$$

$$\Rightarrow \text{Loss} = \text{Rs } 100$$

$$\text{So, the loss percentage} = \frac{\text{Loss}}{\text{C.P.}} \times 100$$

$$\Rightarrow \text{Loss \%} = \frac{100}{250} \times 100$$

$$\Rightarrow \text{Loss \%} = 40 \%$$

12. Convert each part of the ratio to percentage:

(a). 3 : 1

Ans: The given ratio is 3 : 1

The total of the parts of the given ratio is $3 + 1 = 4$

So, the fractional part of the given ratio is $\frac{3}{4} : \frac{1}{4}$

$$\begin{aligned} \text{Therefore, the percentage of the parts is} &= \frac{3}{4} \times 100 : \frac{1}{4} \times 100 \\ &= 75 \% : 25 \% \end{aligned}$$

Thus, the percentage of the parts of given ratio is = 75 % : 25 %

(b). 2 : 3 : 5

Ans: The given ratio is 2 : 3 : 5

The total of the parts of the given ratio is $2 + 3 + 5 = 10$

So, the fractional part of the given ratio is $\frac{2}{10} : \frac{3}{10} : \frac{5}{10}$

$$\begin{aligned} \text{Therefore, the percentage of the parts is} &= \frac{2}{10} \times 100 : \frac{3}{10} \times 100 : \frac{5}{10} \times 100 \\ &= 20 \% : 30 \% : 50 \% \end{aligned}$$

Thus, the percentage of the parts of given ratio is = 20 % : 30 % : 50 %

(c). 1 : 4

Ans: The given ratio is 1 : 4

The total of the parts of the given ratio is $1 + 4 = 5$

So, the fractional part of the given ratio is $\frac{1}{5} : \frac{4}{5}$

$$\begin{aligned} \text{Therefore, the percentage of the parts is} &= \frac{1}{5} \times 100 : \frac{4}{5} \times 100 \\ &= 20 \% : 80 \% \end{aligned}$$

Thus, the percentage of the parts of given ratio is = 20 % : 80 %

(d). 1 : 2 : 5

Ans: The given ratio is 1 : 2 : 5

The total of the parts of the given ratio is $1 + 2 + 5 = 8$

So, the fractional part of the given ratio is $\frac{1}{8} : \frac{2}{8} : \frac{5}{8}$

$$\begin{aligned} \text{Therefore, the percentage of the parts is} &= \frac{1}{8} \times 100 : \frac{2}{8} \times 100 : \frac{5}{8} \times 100 \\ &= 12.5 \% : 25 \% : 62.5 \% \end{aligned}$$

Thus, the percentage of the parts of given ratio is = 12.5 % : 25 % : 62.5 %

13. The population of a city decreased from 25,000 to 24,500. Find the percentage decrease.

Ans: The population of a city got decreased from 25,000 to 24,500

The decreased population = 25,000 - 24,500 = 500

$$\begin{aligned}\text{Decreased Percentage} &= \frac{\text{Decreased Population}}{\text{Original Population}} \times 100 \\ &= \frac{500}{25000} \times 100 \\ &= 2\%\end{aligned}$$

Thus, the required percentage decrease is 2.

14. Arun bought a car for Rs 3,50,000. The next year, the price went up to Rs 3,70,000. What was the percentage of price increase?

Ans: The price of the car got increased from Rs 3,50,000 to Rs 3,70,000

So, the change in the price of the car = 3,70,000 - 3,50,000 = Rs 20,000

Therefore, Increased percentage = $\frac{\text{Change in Amount}}{\text{Original Amount}} \times 100$

$$\begin{aligned}&= \frac{20000}{350000} \times 100 \\ &= 5.7\%\end{aligned}$$

Thus, the percentage of the increased price is 5.7 %

15. I buy a T.V. for Rs 10,000 and sell it at a profit of 20 %. How much money do I get for it?

Ans: The money I got by selling the T.V. is known as the selling price.

Since, I bought it at Rs 10,000, therefore

The Cost Price of T.V. = Rs 10,000

We know that, S.P. = C.P. + Profit (1)

As, I sell it at 20 % profit.

Then, the Profit = 20 % of C.P.

$$\Rightarrow \text{Profit} = \frac{20}{100} \times 10000$$

$$\Rightarrow \text{Profit} = \text{Rs } 2,000$$

Now, from equation (1) we get,

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

$$\Rightarrow \text{S.P.} = 10,000 + 2,000$$

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

Hence, I sold the T.V. at a price of Rs 12,000

16. Juhi sells a washing machine for Rs 13,500. She loses 20 % in the bargain. What was the price at which she bought it?

Ans: Juhi sells the washing machine for $\text{Rs } 13,500$

Therefore, the selling price of the washing machine = Rs 13,500

As, she loses 20 % in the bargain,

Therefore, the loss percent = 20 %

Loss = 20 % of C.P.

$\Rightarrow \text{Loss} = 20/100 \times \text{C.P.}$

$\Rightarrow \text{Loss} = \text{C.P.}/5$

We know that, $\text{S.P.} = \text{C.P.} - \text{Loss}$

$\Rightarrow \text{S.P.} = \text{C.P.} - \text{C.P.}/5$

$\Rightarrow 13500 = 4 \text{ C.P.}/5$

$\Rightarrow \text{C.P.} = 13500 \times 5/4$

$\Rightarrow \text{C.P.} = \text{Rs } 16,875$

Hence, the price at which Juhi bought the washing machine is Rs 16,875.

17. (i) Chalk contains Calcium, Carbon, and Oxygen in the ratio 10 : 3 : 12. Find the percentage of Carbon in chalk.

Ans: We have given the ratio of the component present in a Chalk, i.e., the ratio of Calcium, Carbon, and Oxygen as 10 : 3 : 12

Therefore, the total parts $10 + 3 + 12 = 25$

Thus, the part of the carbon = 3

$\Rightarrow \text{The percentage of Carbon in the chalk is} = 3/25 \times 100 = 12 \%$

(ii) If in a stick of chalk, Carbon is 3 g, what is the weight of the chalk stick?

Ans: 3g Carbon is present in the chalk.

Let the weight of the chalk is x g.

Then from part (i) 12 % of x = 3

$\Rightarrow 12/100 \times x = 3$

$\Rightarrow x = 3 \times 100/12$

$\Rightarrow x = 25\text{g}$

Thus, the weight of the chalk is 25 g.

18. Amina buys a book for Rs 275 and sells it at a loss of 15 %. How much does she sell it for?

Ans: Let the Selling Price (S.P.) of the book is Rs x.

Since, Amina bought the book for Rs 275

Therefore, the Cost Price (C.P.) of the book is Rs 275

She losses 15 % while selling the book

Lost Percent = 15 % and,

$\Rightarrow \text{Loss} = 15 \%$ of C.P

$\Rightarrow \text{Loss} = 15 \%$ of Rs 275

$\Rightarrow \text{Loss} = 15/100 \times 275$

$\Rightarrow \text{Loss} = \text{Rs } 41.25$

We know that, $S.P. = C.P. - \text{Loss}$

$$\Rightarrow S.P. = 275 - 41.25$$

$$\Rightarrow S.P. = \text{Rs } 233.75$$

Thus, Amina sells her book at Rs 233.75

19. Find the amount to be paid at the end of 3 years in each case:

(a) Principal = Rs 1,200 at 12 % p.a.

Ans: We know that Amount = Principal + Simple Interest (S.I.)

$$\text{And, } S.I. = P \times R \times T/100$$

Here, $P = \text{Principal} = \text{Rs } 1,200$

$R = \text{Rate} = 12\%$ and,

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

$$\text{Therefore, } S.I. = 1200 \times 12 \times 3/100$$

$$\Rightarrow S.I. = \text{Rs } 432$$

$$\text{So, the Amount} = 1200 + 432$$

$$\Rightarrow \text{Amount} = \text{Rs } 1,632$$

(b) Principal = Rs 7,500 at 5 p.a.

Ans: We know that Amount = Principal + Simple Interest (S.I.)

$$\text{And, } S.I. = P \times R \times T/100$$

Here, $P = \text{Principal} = \text{Rs } 7,500$

$R = \text{Rate} = 5\%$ and,

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

$$\text{Therefore, } S.I. = 7500 \times 5 \times 3/100$$

$$\Rightarrow S.I. = \text{Rs } 1,125$$

$$\text{So, the Amount} = 7,500 + 1,125$$

$$\Rightarrow \text{Amount} = \text{Rs } 8,625$$

20. What rate gives Rs 280 as interest on a sum of Rs 56,000 in 2 years?

Ans: Given,

$$\text{Simple Interest (S.I.)} = \text{Rs } 280$$

Principal = Rs 56,000 and,

Time = 2 years

Let R be the required rate of interest.

$$\text{As, } S.I. = P \times R \times T/100$$

$$\Rightarrow 280 = 56000 \times R \times 2/100$$

$$\Rightarrow R = \frac{280 \times 100}{56000 \times 2}$$

$$\Rightarrow R = 0.25\%$$

Thus, the required rate of interest is, $R = 0.25\%$