Class –VII Mathematics (Ex. 8.1)
Questions

1. Find the ratio of:
   (a) ₹ 5 to 50 paise
   (b) 15 kg to 210 g
   (c) 9 m to 27 cm
   (d) 30 days to 36 hours

2. In a computer lab, there are 3 computers for every 6 students. How many computers will be needed for 24 students?

3. Population of Rajasthan = 570 lakhs and population of U.P. = 1660 lakhs. Area of Rajasthan = 3 lakh km^2 and area of U.P. = 2 lakh km^2.
   (i) How many people are there per km^2 in both states?
   (ii) Which state is less populated?

Class –VII Mathematics (Ex. 8.1)

Answers

1. To find ratios, both quantities should be in same unit.

(a) ₹ 5 to 50 paise

$\Rightarrow$ 5 x 100 paise to 50 paise [$\because$ ₹ 1 = 100 paise]

$\Rightarrow$ 500 paise to 50 paise

Thus, the ratio is = $\frac{500}{50} = \frac{10}{1}$ = 10 : 1

(b) 15 kg to 210 g

$\Rightarrow$ 15 x 1000 g to 210 g [$\because$ 1 kg = 1000 g]

$\Rightarrow$ 15000 g to 210 g

Thus, the ratio is = $\frac{15000}{210} = \frac{500}{7}$ = 500 : 7

(c) 9 m to 27 cm

$\Rightarrow$ 9 x 100 cm to 27 cm [$\because$ 1 m = 100 cm]

$\Rightarrow$ 900 cm to 27 cm

Thus, the ratio is = $\frac{900}{27} = \frac{100}{3}$ = 100 :3

(d) 30 days to 36 hours

$\Rightarrow$ 30 x 24 hours to 36 hours [$\because$ 1 day = 24 hours]

$\Rightarrow$ 720 hours to 36 hours

Thus, the ratio is = $\frac{720}{36} = \frac{20}{1}$ = 20 : 1

2. $\because$ 6 students need = 3 computers

$\therefore$ 1 student needs = $\frac{3}{6}$ computers

$\therefore$ 24 students need = $\frac{3}{6} \times 24$ = 12 computers

Thus, 12 computers will be needed for 24 students.

3. (i) People present per km^2 = $\frac{\text{Population}}{\text{Area}}$

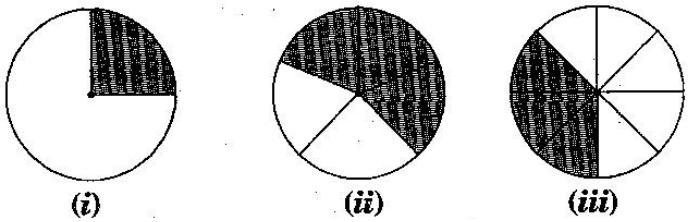
In Rajasthan = $\frac{570 \text{ lakhs}}{3 \text{ lakhs per km}^2}$ = 190 people km^2

In U.P. = $\frac{1660 \text{ lakhs}}{2 \text{ lakh per km}^2}$ = 830 people per km^2

(ii) Rajasthan is less populated.

Class –VII Mathematics (Ex. 8.2)
Questions

1. Convert the given fractional numbers to percent:
   (a) $\frac{1}{8}$ (b) $\frac{5}{4}$ (c) $\frac{3}{40}$ (d) $\frac{2}{7}$
2. Convert the given decimal fractions to percents:
   (a) 0.65 (b) 2.1 (c) 0.02 (d) 12.35
3. Estimate what part of the figures is coloured and hence find the percent which is coloured:



4. Find:
   (a) 15% of 250 (b) 1% of 1 hour
   (c) 20% of ₹ 2500 (d) 75% of 1 kg
5. Find the whole quantity if:
   (a) 5% of it is 600 (b) 12% of it is ₹ 1080
   (c) 40% of it is 500 km (d) 70% of it is 14 minutes
   (e) 8% of it is 40 liters
6. Convert given percents to decimal fractions and also to fractions in simplest forms:
   (a) 25% (b) 150% (c) 20% (d) 5%
7. In a city, 30% are females, 40% are males and remaining are children. What percent are children?
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?
9. Meeta saves ₹ 400 from her salary. If this is 10% of her salary. What is her salary?
10. A local cricket team played 20 matches in one season. It won 25% of them. How many matches did they win?

Class –VII Mathematics (Ex. 8.2)

Answers

1. (a) $\frac{1}{8} = \frac{1}{8}\times 100\% = \frac{25}{2}\% = 12.5\%$

   (b) $\frac{5}{4} = \frac{5}{4}\times 100\% = 5 \text{ x } 25\% = 125\%$

   (c) $\frac{3}{40} = \frac{3}{40}\times 100\% = \frac{3}{2}\times 5\% = \frac{15}{2}\% = 7.5\%$

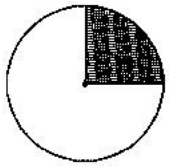
   (d) $\frac{2}{7} = \frac{2}{7}\times 100\% = \frac{200}{7}\% = 28\frac{4}{7}\%$

2. (a) $0.65 = \frac{65}{100}\times 100\% = 65\%$

   (b) $0.02 = \frac{2}{100}\times 100\% = 2\%$

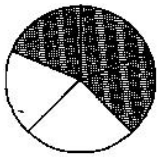
3. (i) Coloured part = $\frac{1}{4}$

   $\therefore$ Percent of coloured part = $\frac{1}{4}\times 100\% = 25\%$



   (ii) Coloured part = $\frac{3}{5}$

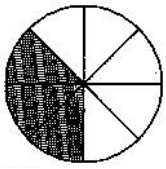
   $\therefore$ Percent of coloured part = $\frac{3}{5}\times 100\% = 60\%$



   (iii) Coloured part = $\frac{3}{8}$

   $\therefore$ Percent of coloured part = $\frac{3}{8}\times 100\% = \frac{3}{2}\times 25\%$

   $= 37.5\%$



4. (a) 15% of 250 = $\frac{15}{100}\times 250 = 15 \text{ x } 2.5 = 37.5$

   (b) 1% of 1 hours = 1% of 60 minutes = 1% of (60 x 60) seconds

   $= \frac{1}{100}\times 60\times 60 = 6 \text{ x } 6 = 36$ seconds

   (c) 20% of ₹ 2500 = $\frac{20}{100}\times 2500 = 20 \text{ x } 25 = ₹ 500$

   (d) 75% of 1 kg = 75% of 1000 g = $\frac{75}{100}\times 1000 = 750$ g = 0.750 kg

5. Let the whole quantity be x in given questions:

(a) 5% of x = 600 $\Rightarrow \quad \frac{5}{100} \times x = 600$

$\Rightarrow \quad x = \frac{600 \times 100}{5}$ = 12,000

(b) 12% of x = ₹ 1080 $\Rightarrow \quad \frac{12}{100} \times x = 1080$

$\Rightarrow \quad x = \frac{1080 \times 100}{12}$ = ₹ 9,000

(c) 40% of x = 500 km $\Rightarrow \quad \frac{40}{100} \times x = 500$

$\Rightarrow \quad x = \frac{500 \times 100}{40}$ = 1,250 km

(d) 70% of x = 14 minutes $\Rightarrow \quad \frac{70}{100} \times x = 14$

$\Rightarrow \quad x = \frac{14 \times 100}{70}$ = 20 minutes

(e) 8% of x = 40 liters $\Rightarrow \quad \frac{8}{100} \times x = 40$

$\Rightarrow \quad x = \frac{40 \times 100}{8}$ = 500 liters

6. Sol.

S. No.	Percents	Fractions	Simplest form	Decimal form
(a)	25%	$\frac{25}{100}$	$\frac{1}{4}$	0.25
(b)	150%	$\frac{150}{100}$	$\frac{3}{2}$	1.5
(c)	20%	$\frac{20}{100}$	$\frac{1}{5}$	0.2
(d)	5%	$\frac{5}{100}$	$\frac{1}{20}$	0.05

7. Given: Percentage of females = 30%
Percentage of males = 40%
Total percentage of females and males = 30 + 40 = 70%
Percentage of children = Total percentage – Percentage of males and females
= 100% – 70%
= 30%
Hence, 30% are children.

8. Total voters = 15,000
Percentage of voted candidates = 60%
Percentage of not voted candidates = 100 – 60 = 40%

Actual candidates, who did not vote = 40% of 15000

$$= \frac{40}{100} \times 15000 = 6{,}000$$

Hence, 6,000 candidates did not vote.

9. Let Meera's salary be ₹ x.

Now, 10% of salary = ₹ 400

$\Rightarrow$ 10% of x = ₹ 400

$$\Rightarrow \quad \frac{10}{100} \times x = 400$$

$$\Rightarrow \quad x = \frac{400 \times 100}{10}$$

$$\Rightarrow \quad x = 4{,}000$$

Hence, Meera's salary is ₹ 4,000.

10. Number of matches played by cricket team = 20

Percentage of won matches = 25%

Total matches won by them = 25% of 20

$$= \frac{25}{100} \times 20$$

$$= 5$$

Hence, they won 5 matches.

Class –VII Mathematics (Ex. 8.3)
Questions

1. Tell what is the profit or loss in the following transactions. Also find profit percent or loss percent in each case.
   (a) Gardening shears bought for ₹ 250 and sold for ₹ 325.
   (b) A refrigerator bought ₹ 12,000 and sold at ₹ 13,500.
   (c) A cupboard bought for ₹ 2,500 and sold at ₹ 3,000.
   (d) A skirt bought for ₹ 250 and sold at ₹ 150.
2. Convert each part of the ratio to percentage:
   (a) 3 : 1 (b) 2 : 3 : 5 (c) 1 : 4 (d) 1 : 2 : 5
3. The population of a city decreased from 25,000 to 24,500. Find the percentage decrease.
4. Arun bought a car for ₹ 3,50,000. The next year, the price went up to ₹ 3,70,000. What was the percentage of price increase?
5. I buy a T.V. for ₹ 10,000 and sell it at a profit of 20%. How much money do I get for it?
6. Juhi sells a washing machine for ₹ 13,500. She loses 20% in the bargain. What was the price at which she bought it?
7. (i) Chalk contains Calcium, Carbon and Oxygen in the ratio 10 : 3 : 12. Find the percentage of Carbon in chalk.
   (ii) If in a stick of chalk, Carbon is 3 g, what is the weight of the chalk stick?
8. Amina buys a book for ₹ 275 and sells it at a loss of 15%. How much does she sell it for?
9. Find the amount to be paid at the end of 3 years in each case:
   (a) Principal = ₹ 1,200 at 12% p.a.
   (b) Principal = ₹ 7,500 at 5% p.a.
10. What rate gives ₹ 280 as interest on a sum of ₹ 56,000 in 2 years?
11. If Meena gives an interest of ₹ 45 for one year at 9% rate p.a. What is the sum she has borrowed?

Class –VII Mathematics (Ex. 8.3)

Answers

1. (a) Cost price of gardening shears = ₹ 250

Selling price of gardening shears = ₹ 325

Since, S.P. > C.P., therefore here is profit.

$\therefore$ Profit = S.P. – C.P. = 325 – 250 = ₹ 75

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

$= \frac{75}{250} \times 100 = 30\%$

Therefore, Profit = ₹ 75 and Profit% = 30%

(b) Cost price of refrigerator = ₹ 12,000

Selling price of refrigerator = ₹ 13,500

Since, S.P. > C.P., therefore here is profit.

$\therefore$ Profit = S.P. – C.P. = 13500 – 12000 = ₹ 1,500

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

$= \frac{1500}{12000} \times 100 = 12.5\%$

Therefore, Profit = ₹ 1,500 and Profit% = 12.5%

(c) Cost price of cupboard = ₹ 2,500

Selling price of cupboard = ₹ 3,000

Since, S.P. > C.P., therefore here is profit.

$\therefore$ Profit = S.P. – C.P. = 3,000 – 2,500 = ₹ 500

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

$= \frac{500}{2500} \times 100 = 20\%$

Therefore, Profit = ₹ 500 and Profit% = 20%

(d) Cost price of skirt = ₹ 250

Selling price of skirt = ₹ 150

Since, C.P. > S.P., therefore here is loss.

$\therefore$ Loss = C.P. – S.P. = 250 – 150 = ₹ 100

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

$= \frac{100}{250} \times 100 = 40\%$

Therefore, Profit = ₹ 100 and Profit% = 40%

2. (a) 3 : 1

Total part = 3 + 1 = 4

Therefore, Fractional part = $\frac{3}{4}:\frac{1}{4}$

$\Rightarrow$ Percentage of parts = $\frac{3}{4}\times 100:\frac{1}{4}\times 100$

$\Rightarrow$ Percentage of parts = 75% : 25%

(b) 2 : 3 : 5

Total part = 2 + 3 + 5 = 10

Therefore, Fractional part = $\frac{2}{10}:\frac{3}{10}:\frac{5}{10}$

$\Rightarrow$ Percentage of parts = $\frac{2}{10}\times 100:\frac{3}{10}\times 100:\frac{5}{10}\times 100$

$\Rightarrow$ Percentage of parts = 20% : 30% : 50%

(c) 1 : 4

Total part = 1 + 4 = 5

Therefore, Fractional part = $\frac{1}{5}:\frac{4}{5}$

$\Rightarrow$ Percentage of parts = $\frac{1}{5}\times 100:\frac{4}{5}\times 100$

$\Rightarrow$ Percentage of parts = 20% : 80%

(d) 1 : 2 : 5

Total part = 1 + 2 + 5 = 8

Therefore, Fractional part = $\frac{1}{8}:\frac{2}{8}:\frac{5}{8}$

$\Rightarrow$ Percentage of parts = $\frac{1}{8}\times 100:\frac{2}{8}\times 100:\frac{5}{8}\times 100$

$\Rightarrow$ Percentage of parts = 12.5% : 25% : 62.5%

3. The decreased population of a city from 25,000 to 24,500.

Population decreased = 25,000 – 24,500 = 500

Decreased Percentage = $\frac{\text{Population decreased}}{\text{Original population}}\times 100$

$= \frac{500}{25000}\times 100 = 2\%$

Hence, the percentage decreased is 2%.

4. Increased in price of a car from ₹ 3,50,000 to ₹ 3,70,000.

Amount change = ₹ 3,70,000 – ₹ 3,50,000 = ₹ 20,000.

Therefore, Increased percentage = $\frac{\text{Amount of change}}{\text{Original amount}} \times 100$

$= \frac{20000}{350000} \times 100 = 5\frac{5}{7}\%$

Hence, the percentage of price increased is $5\frac{5}{7}\%$.

5. The cost price of T.V. = ₹ 10,000
Profit percent = 20%
Now, Profit = Profit% of C.P.

$= \frac{20}{100} \times 10000$ = ₹ 2,000

Selling price = C.P. + Profit
= 10,000 + 2,000 = ₹ 12,000
Hence, he gets ₹ 12,000 on selling his T.V.

6. Selling price of washing machine = ₹ 13,500
Loss percent = 20%
Let the cost price of washing machine be ₹ x.
Since, Loss = Loss% of C.P.

$\Rightarrow$ Loss = 20% of ₹ $x = \frac{20}{100} \times x = \frac{x}{5}$

Therefore, S.P. = C.P. – Loss

$\Rightarrow$ $13500 = x - \frac{x}{5}$ $\Rightarrow$ $13500 = \frac{4x}{5}$

$\Rightarrow$ $x = \frac{13500 \times 5}{4}$ = ₹ 16,875

Hence, the cost price of washing machine is ₹ 16,875.

7. (i) Given ratio = 10 : 3 : 12
Total part = 10 + 3 + 12 = 25
Part of Carbon = $\frac{3}{25}$
Percentage of Carbon part in chalk = $\frac{3}{25} \times 100 = 12\%$

(ii) Quantity of Carbon in chalk stick = 3 g
Let the weight of chalk be x g.
Then, 12% of x = 3

$\Rightarrow$ $\frac{12}{100} \times x = 3$ $\Rightarrow$ $x = \frac{3 \times 100}{12}$ = 25 g

Hence the weight of chalk stick is 25 g.

8. The cost of a book = ₹ 275
Loss percent = 15%
Loss = Loss% of C.P. = 15% of ₹ 275
$= \frac{15}{100} \times 275$ = ₹ 41.25
Therefore, S.P. = C.P. – Loss
= 275 – 41.25 = ₹ 233.75
Hence, Amina sells a book for ₹ 233.75.

9. (a) Here, Principal (P) = ₹ 1,200, Rate (R) = 12% p.a., Time (T) = 3 years
Simple Interest = $\frac{P \times R \times T}{100} = \frac{1200 \times 12 \times 3}{100}$
= ₹ 432
Now, Amount = Principal + Simple Interest
= 1200 + 432
= ₹ 1,632
(b) Here, Principal (P) = ₹ 7,500, Rate (R) = 5% p.a., Time (T) = 3 years
Simple Interest = $\frac{P \times R \times T}{100} = \frac{7500 \times 5 \times 3}{100}$
= ₹ 1,125
Now, Amount = Principal + Simple Interest
= 7,500 + 1,125
= ₹ 8,625

10. Here, Principal (P) = ₹ 56,000, Simple Interest (S.I.) = ₹ 280, Time (T) = 2 years
Simple Interest = $\frac{P \times R \times T}{100}$
$\Rightarrow \quad 280 = \frac{56000 \times R \times 2}{100} \quad \Rightarrow \quad R = \frac{280 \times 100}{56000 \times 2}$
$\Rightarrow$ R = 0.25%
Hence, the rate of interest on sum is 0.25%.

11. Simple Interest = ₹ 45, Rate (R) = 9% p.a., Time (T) = 1 years
Simple Interest = $\frac{P \times R \times T}{100}$
$\Rightarrow \quad 45 = \frac{P \times 9 \times 1}{100} \quad \Rightarrow \quad P = \frac{45 \times 100}{9 \times 1}$
$\Rightarrow$ P = ₹ 500
Hence, she borrowed ₹ 500.