

NCERT SOLUTIONS

CLASS - 7TH



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Class : 7th
Subject : Maths
Chapter : 8

Chapter Name : Comparing Quantities

Exercise 8.1

Q1 Find the ratio of:

- (a) Rs.5 to 50 paise
- (b) 15 kg to 210 g
- (c) 9 m to 27 cm
- (d) 30 days to 36 hours

Answer. (a) 5 to 50 paise

1 rupee = 100 paise

5 rupee = 500 paise

$$\therefore \frac{\text{Rs } 5}{50 \text{ paise}} = \frac{500}{50} = \frac{10}{1}$$

Hence, the required ratio is 10:1.

(b) 15 kg to 210 g

1 Kg = 1000 g

15 kg = 15000 g

$$\Rightarrow \frac{15\text{kg}}{210\text{g}} = \frac{15000}{210} = \frac{500}{7}$$

Hence, the required ratio is 500:7.

(c) 9 m to 27 cm

1 m = 100 cm

9 m = 900 cm

$$\Rightarrow \frac{9\text{cm}}{27\text{cm}} = \frac{900}{27} = \frac{100}{3}$$

Hence, the required ratio is 100:3.

(d) 30 days to 36 hours

1 days = 24 hrs

30 days = 24 x 30 = 720 hrs

$$\Rightarrow \frac{30 \text{ days}}{36\text{hrs}} = \frac{720}{36} = \frac{20}{1}$$

Hence, the required ratio is 20:1.

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Q2 In a computer lab, there are 3 computers for every 6 students. How many computers

will be needed for 24 students?

Answer. For 6 students, number of computers required = 3

\therefore For 1 student, number of computers required = $\frac{3}{6} = \frac{1}{2}$

\therefore For 24 students, number Of computers required = $24 * \frac{1}{2} = 12$

Hence, 12 computers are required for 24 students.

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Q3 Population of Rajasthan = 570 lakhs and population of UP = 1660 lakhs.

Area of Rajasthan = 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?

Answer. (i) Population Of Rajasthan in 3 km^2 area = 570 lakh

Population of Rajasthan in 1 km^2 area = $\frac{570}{3} = 190$ lakh

Population Of U.P in 2 km^2 area = 1660 lakh

Population Of U.P in 1 km^2 area = $= \frac{1660}{2} = 830$ lakh

(ii) It can be observed that population per km^2 area is lesser for Rajasthan. Therefore, Rajasthan is less populated.

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Exercise 8.2

Q1 Convert the given fractional numbers to per cents.

(a) $\frac{1}{8}$

(b) $\frac{5}{4}$

(c) $\frac{3}{40}$

(d) $\frac{2}{7}$

Answer.

(a)

$$\frac{1}{8} = \frac{1}{8} \times \frac{100}{100}$$

$$= \frac{1}{8} \times 100\%$$

$$= 12.5\%$$

(b)

$$\begin{aligned}\frac{5}{4} &= \frac{5}{4} \times \frac{100}{100} \\ &= \frac{500}{4}\% = 125\%\end{aligned}$$

(c)

$$\begin{aligned}\frac{3}{40} &= \frac{3}{40} \times \frac{100}{100} \\ &= \frac{300}{40}\% = 7.5\%\end{aligned}$$

(d)

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

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Q2 Convert the given decimal fractions to per cents.

(a) 0.65 (b) 2.1 (c) 0.02 (d) 12.35

Answer. (a) 0.65

$$\begin{aligned}0.65 &= 0.65 \times 100\% \\ &= \frac{65 \times 100}{100}\% = 65\%\end{aligned}$$

(b) 2.1

$$\begin{aligned}2.1 &= 2.1 \times 100\% \\ &= \frac{21 \times 100}{10}\% = 210\%\end{aligned}$$

(c) 0.02

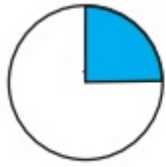
$$\begin{aligned}0.02 &= 0.02 \times 100\% \\ &= \frac{2 \times 100}{100}\% = 2\%\end{aligned}$$

(d) 12.35

$$\begin{aligned}12.35 &= 12.35 \times 100\% \\ &= \frac{1235 \times 100}{100}\% = 1235\%\end{aligned}$$

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Q3 Estimate what part of the figures is coloured and hence find the per cent which is coloured.



(i)



(ii)



(iii)

Answer. (i) Here, 1 part out of 4 equal parts are shaded which represents the fraction $\frac{1}{4}$.



$$\frac{1}{4} = \frac{1}{4} \times 100\% = 25\%$$

(ii) Here, 3 parts out of 5 equal parts are shaded which represents the fraction $\frac{3}{5}$



$$\frac{3}{5} = \frac{3}{5} \times 100\% = 60\%$$

(iii) Here, 3 parts out of 8 equal parts are shaded which represents the fraction $\frac{3}{8}$



$$\frac{3}{8} = \frac{3}{8} \times 100\% = \frac{300}{8}\% = 37.5\%$$

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Q4 Find:

(a) 15% of 250 (b) 1% of 1 hour (c) 20% of 2500 (d) 75% of 1 kg

Answer. (a) $15\% \text{ of } 250 = \frac{15}{100} \times 250 = \frac{75}{2} = 37.5$

(b) 1 hour = 60 minutes

$$1\% \text{ of } 60 \text{ minutes} = \frac{1}{100} \times 60 = \frac{3}{5} \text{ minutes}$$

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

(d) $75\% \text{ of } 1\text{kg} = \frac{75}{100} \times 1 = 0.75\text{kg} = (0.75 \times 1000)\text{g} = 750\text{g}$

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Q5 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 litres.

Answer. (a) 5 % of $x = 600$

$$\frac{5}{100} \times x = 600$$

$$x = 600 \times \frac{100}{5} = 12000$$

(b) 12% of $x = \text{Rs}1080$

$$\frac{12}{100} \times x = \text{Rs} 1080$$

$$x = \text{Rs} 1080 \times \frac{100}{12} = \text{Rs} 9000$$

(c) 40 % of $x = 500 \text{ km}$

$$\frac{40}{100} \times x = 500\text{km}$$

$$x = 500 \times \frac{100}{40} = 1250\text{km}$$

(d) 70% of $x = 14 \text{ min.}$

$$x \times \frac{70}{100} = 14 \text{ min}$$

$$x = 14 \times \frac{100}{70} = 20\text{min}$$

(e) 8% of $x = 40 \text{ L}$

$$x \times \frac{8}{100} = 40\text{L}$$

$$x = 40 \times \frac{100}{8} \\ = 500 \text{ L}$$

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Q6 Convert given per cents to decimal fractions and also to fractions in simplest forms:

(a) 25% (b) 150% (c) 20% (d) 5%

Answer. (a) $25\% = \frac{25}{100} = \frac{1}{4} = 0.25$

(b) $150\% = \frac{150}{100} = 1.5 = \frac{3}{2}$

(c) $20\% = \frac{20}{100} = 0.2 = \frac{1}{5}$

(d) $5\% = \frac{5}{100} = 0.05 = \frac{1}{20}$

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Q7 In a city, 30% are females, 40% are males and remaining are children. What per cent are children?

Answer. It is given that 30% are females and 40% are males.

$$\text{Children} = (100 - 30 - 40) \% = 30 \%$$

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Q8 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?

Answer. Percentage of voters who voted = 60%

Percentage Of those who did not vote = 100% – 60% = 40%

Number of people who did not vote = 40% of 15000

$$= \frac{40}{100} \times 15000 = 6000$$

Therefore, 6000 people did not vote.

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Q9 Meeta saves 4000 from her salary. If this is 10% of her salary. What is her salary?

Answer. Let Meeta's salary be Rs x.

Given that, 10% of x = 400

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

$$\frac{x}{10} = 400$$

$$x = 400 \times 10 = \text{RS } 4000$$

Therefore, Meeta's salary is Rs 4000.

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Q10 A local cricket team played 20 matches in one season. It won 25% of them. How many matches did they win?

Answer. Number of games won = 25% of 20

$$= \frac{25}{100} \times 20 = 5$$

Therefore, the team won 5 matches.

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Exercise 8.3

Q1 Tell what is the profit or loss in the following transactions. Also find profit per cent or loss per cent in each case.

- (a) Gardening shears bought for Rs.250 and sold for Rs.325.
 (b) A refrigerator bought for Rs. 12,000 and sold at Rs. 13,500.
 (c) A cupboard bought for Rs. 2,500 and sold at Rs. 3,000.
 (d) A skirt bought for Rs.250 and sold at Rs.150.

Answer. (a) cost price = Rs 250

Selling price = RS 325

Profit = 325 - 250 = RS 75

$$\begin{aligned} \text{Profit \%} &= \frac{\text{Profit}}{\text{CP}} \times 100 \\ &= \frac{75}{250} \times 100 = 30\% \end{aligned}$$

(b) cost price = RS 12000

Selling price = Rs 13,500

Profit = 13500 - 12000 = RS 1500

$$\begin{aligned} \text{Profit \%} &= \frac{\text{Profit}}{\text{CP}} \times 100 \\ &= \frac{1500}{12000} \times 100 = 12.5\% \end{aligned}$$

(c) cost price = RS 2500

selling price = RS 3000

Profit = 3000 - 2500 = Rs 500

$$\begin{aligned} \text{Profit \%} &= \frac{\text{Profit}}{\text{CP}} \times 100 \\ &= \frac{500}{2500} \times 100 = 20\% \end{aligned}$$

(d) cost price = RS 250

Selling price = RS 150

Loss = 250 - 150 = RS 100

$$\begin{aligned} \text{Loss \%} &= \frac{\text{Loss}}{\text{CP}} \times 100 \\ &= \frac{100}{250} \times 100 = 40\% \end{aligned}$$

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Q2 Convert each part of the ratio to percentage:

(a) 3 : 1 (b) 2 : 3 : 5 (c) 1:4 (d) 1 : 2 : 5

Answer. (a) 3:1

Total parts = 3 + 1 = 4

$$1^{\text{st}} \text{ part} = \frac{3}{4} = \frac{3}{4} \times 100\% = 75\%$$

$$2^{\text{nd}} \text{ part} = \frac{1}{4} = \frac{1}{4} \times 100\% = 25\%$$

(b) 2 : 3 : 5

Total Parts = 2 + 3 + 5 = 10

$$1^{\text{st}} \text{ part} = \frac{2}{10} = \frac{2}{10} \times 100\% = 20\%$$

$$2^{\text{nd}} \text{ part} = \frac{3}{10} = \frac{3}{10} \times 100\% = 30\%$$

$$3^{\text{rd}} \text{ part} = \frac{5}{10} = \frac{5}{10} \times 100\% = 50\%$$

(c) 1:4

Total Parts = 1 + 4 = 5

$$1^{\text{st}} \text{ part} = \frac{1}{5} = \frac{1}{5} \times 100\% = 20\%$$

$$2^{\text{nd}} \text{ part} = \frac{4}{5} = \frac{4}{5} \times 100\% = 80\%$$

(d) 1:2:5

Total Parts = 1 + 2 + 5 = 8

$$1^{\text{st}} \text{ part} = \frac{1}{8} = \frac{1}{8} \times 100\% = 12.5\%$$

$$2^{\text{nd}} \text{ part} = \frac{2}{8} = \frac{2}{8} \times 100\% = 25\%$$

$$3^{\text{rd}} \text{ part} = \frac{5}{8} = \frac{5}{8} \times 100\% = 62.5\%$$

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Q3 The population of a city decreased from 25,000 to 24,500. Find the percentage decrease.

Answer. Initial population = 25000

Final population = 24500

Decrease = 500

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

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Q4 Arun bought a car for Rs. 3,50,000. The next year, the price went upto Rs. 3,70,000. What was the Percentage of price increase?

Answer. Initial price = RS 350000
 Final price = RS 370000
 Increase = Rs 20000
 $\% \text{ increase} = \frac{20000}{350000} \times 100 = 5\frac{5}{7}\%$

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Q5 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?

Answer. C.P. = 10000
 Profit = 20% of C.P.
 = 20% of 10000
 = $\frac{20}{100} \times 10,000$
 = 2000
 $\therefore \text{S.P} = \text{C.P} + \text{Profit}$
 = 10000 + 2000
 = 12000, Hence I get 12000 for it.

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Q6 Juhi sells a washing machine for Rs. 13,500. She loses 20% in the bargain. What was the price at which she bought it?

Answer. Selling price = Rs 13500
 LOSS % = 20%
 Let the cost price be x.
 $\therefore \text{LOSS} = 20\% \text{ of } x$
 Cost price — Loss = Selling price
 $x - \frac{20}{100} \times x = 13500$
 $x - \frac{1}{5}x = 13500$
 $\frac{4}{5}x = 13500$ = 16875
 $x = 13500 \times \frac{5}{4}$

Therefore, she bought it for Rs 16875.

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Q7 (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 3g, what is the weight of the chalk stick?

Answer. (i) Ratio of calcium, carbon, and oxygen = 10:3:12

As $10 + 3 + 12 = 25$,

Therefore, percentage of Carbon = $\frac{3}{25} \times 100 = 12\%$

(ii) Let the weight of the stick be x g.

12% of $x = 3$

$$\frac{12}{100} \times x = 3$$

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

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Q8 Amina buys a book for Rs. 275 and sells it at a loss of 15%. How much does she sell it for?

Answer. Cost price = Rs 275

LOSS % = 15%

LOSS = 15% of 275

Cost price — Loss = Selling price

$$275 - \frac{15}{100} \times 275 = \text{Selling price}$$

$$275 - \frac{4125}{100} = \text{Selling price}$$

$$275 - 41.25 = \text{Selling Price}$$

$$\text{Selling Price} = \text{Rs } 233.75$$

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Q9 Find the amount to be paid at the end of 3 years in each case:

(a) Principal = Rs. 1,200 at 12% p.a. (b) Principal = Rs. 7,500 at 5% p.a.

Answer. (a) Principal (P) = Rs. 1,200

Rate (R) = 12% p.a.

Time (T) = 3 years

$$\begin{aligned} \text{S.I} &= \frac{P \times R \times T}{100} \\ &= \frac{1200 \times 12 \times 3}{100} \end{aligned}$$

$$= \text{Rs } 432$$

$$\text{Amount} = P + SI$$

$$= 1200 + 432 = \text{Rs } 1632$$

$$(b) P = \text{RS } 7500$$

$$R = 5\% \text{ p.a.}$$

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

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

$$\text{Amount} = 7500 + 1125$$

$$= \text{Rs. } 8625$$

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Q10 What rate gives Rs. 280 as interest on a sum of Rs.56,000 in 2 years?

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

$$\text{Answer. } 280 = \frac{56000 \times R \times 2}{100}$$

$$R = \frac{280}{560 \times 2} = \frac{1}{4} = 0.25$$

Therefore, 0.25% gives Rs 280 as interest on the given sum.

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Q11 If Meena gives an interest of 45 for one year at 9% rate p.a.. What is the sum she has borrowed?

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

$$\text{Answer. } 45 = \frac{P \times 9 \times 1}{100}$$

$$P = \frac{45 \times 100}{9}$$

$$= \text{Rs } 500$$

Therefore, she borrowed Rs 500.

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