

NCERT Solutions for Class 7 Maths Chapter 8

Comparing Quantities Class 7

Chapter 8 Comparing Quantities Exercise 8.1, 8.2, 8.3 Solutions

Exercise 8.1 : Solutions of Questions on Page Number : 157

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) Rs 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

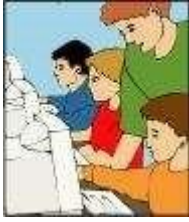
1 days = 24 hrs
30 days = 24 × 30 = 720 hrs

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

Hence, the required ratio is 20:1.

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

$$\begin{aligned} \therefore \text{For 1 student, number of computers required} &= \frac{3}{6} = \frac{1}{2} \\ &= 24 \times \frac{1}{2} \end{aligned}$$

\therefore For 24 students, number of computers required = 12 Hence, 12 computers are required for 24 students.

Q3 :

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

Area of Rajasthan = 3 lakh km² and area of UP = 2 lakh km².

(i) How many people are there per km² in both these States?

(ii) Which State is less populated?

Answer :

(i) Population of Rajasthan in 3 km² area = 570 lakh

$$\begin{aligned} \text{Population of Rajasthan in 1} & \quad \frac{570}{3} = 190 \text{ lakh} \quad \text{km}^2 \text{ area} = \\ \text{Population of U.P in 2 km}^2 \text{ area} & \quad = 1660 \text{ lakh} \end{aligned}$$

$$\begin{aligned} \text{Population of U.P in 1 km}^2 \text{ area} & \quad \frac{1660}{2} = 830 \text{ lakh} \\ & = \end{aligned}$$

(ii) It can be observed that population per km² area is lesser for Rajasthan. Therefore, Rajasthan is less populated.

Exercise 8.2 : Solutions of Questions on Page Number : 164

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)

$$\begin{aligned}\frac{1}{8} &= \frac{1}{8} \times \frac{100}{100} \\ &= \frac{1}{8} \times 100 \% \\ &= 12.5\%\end{aligned}$$

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

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

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

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

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

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

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

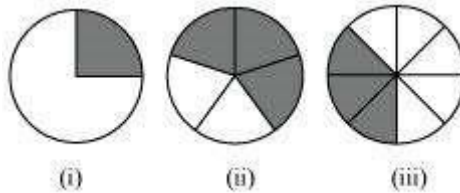
$$\begin{aligned} 0.02 &= 0.02 \times 100 \% \\ &= \frac{2 \times 100}{100} \% = 2\% \end{aligned}$$

(d) 12.35

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

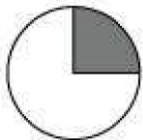
Q3 :

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



Answer :

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



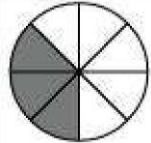
$$\frac{1}{4} = \frac{1}{4} \times 100 \% = 25 \%$$

(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 $\frac{3}{8}$.



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

Q4 :

Find:

(a) 15% of 250 (b) 1% of 1 hour

(c) 20% of Rs 2500 (d) 75% of 1 kg

Answer :

$$15\% \text{ of } 250 = \frac{15}{100} \times 250 = \frac{75}{2} = 37.5$$

(a)

(b) 1 hour = 60 minutes

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

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

(c)

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

(d)

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 $x = 40 \text{ L}$

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

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

$= 500 \text{ L}$

Q6 :

Convert given percents to decimal fractions and also to fractions in simplest forms:

(a) 25% (b) 150%

(c) 20% (d) 5%

Answer :

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

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

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

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

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.

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

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.

Q9 :

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

Answer :

Let Meeta's salary be Rs x.

Given that,

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

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

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

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

Therefore, Meeta's salary is Rs 4000.

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.

Exercise 8.3 : Solutions of Questions on Page Number : 171

Q1 :

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 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

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

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

(b) Cost price = Rs 12000

Selling price = Rs 13,500

Profit = 13500 - 12000 = Rs 1500

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

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

(c) Cost price = Rs 2500

Selling price = Rs 3000

Profit = 3000 - 2500 = Rs 500

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

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

(d) Cost price = Rs 250

Selling price = Rs 150

Loss = 250 - 150 = Rs 100

$$\text{Loss \%} = \frac{\text{Loss}}{\text{CP}} \times 100$$

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

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

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

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

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

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

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

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

$$\% \text{ increase} = \frac{20000}{350000} \times 100$$

$$= 5\frac{5}{7} \%$$

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 :

Cost price = Rs 10000

Profit = 20% of 10000

$$= \frac{20}{100} \times 10000$$

= Rs 2000

Selling price = Cost price + Profit

= 10000 + 2000 = Rs 12,000

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.

∴ Loss = 20% of x

Cost price - Loss = Selling price

$$x - \frac{20}{100} \times x = 13500$$

$$x - \frac{1}{5}x = 13500$$

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

$$x = 13500 \times \frac{5}{4}$$

= 16875

Therefore, she bought it for Rs 16875.

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 $x = 3$

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

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

$$275 - \frac{15}{100} \times 275 = \text{Selling price}$$
$$275 - \frac{4125}{100} = \text{Selling price}$$

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

Selling price = Rs 233.75

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) Principa

I (P) = Rs 1200

Rate (R) = 12 %

p.a.

Time (T) = 3 years

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

= Rs 432

Amount = P + S.I.

= 1200 + 432

= Rs 1632

(b) P = Rs

7500 R = 5% p.a.

T = 3 years

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

= Rs 1125

Amount = 7500 + 1125

= Rs 8625

Q10 :

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

Answer :

$$\begin{aligned} \text{S.I} &= \frac{P \times R \times T}{100} \\ 280 &= \frac{56000 \times R \times 2}{100} \\ R &= \frac{280}{560 \times 2} = \frac{1}{4} = 0.25 \end{aligned}$$

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

Q11 :

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

Answer :

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

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

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

= Rs 500

Therefore, she borrowed Rs 500.