NCERT Solutions for Class 7 Maths Chapter 8

Comparing Quantities Class 7

Chapter 8 Comparing Quantities Exercise 8.1, 8.2, 8.3 Solutions

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

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

Hence, the required ratio is 10:1.

(b) 15 kg to 210 g

1 kg = 1000 g

15 kg = 15000 g

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

Hence, the required ratio is 500:7.

(c) 9 m to 27 cm

1 m = 100 cm

9 m = 900 cm

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

Hence, the required ratio is 100:3.
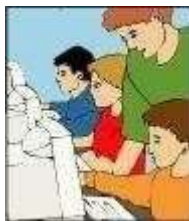
(d) 30 days to 36 hours

1 days = 24 hrs

30 days = 24 × 30 = 720 hrs

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

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

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

$24 \times \dfrac{1}{2}$

∴ 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

Population of Rajasthan in 1 $\dfrac{570}{3} = 190 \text{ lakh}$ km² area =

Population of U.P in 2 km² area = 1660 lakh

Population of U.P in 1 km² area = $\dfrac{1660}{2}$ = 830 lakh

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

Q1 :

Exercise 8.2 : Solutions of Questions on Page Number : **164**

Convert the given fractional numbers to per cents.

(a) $\dfrac{1}{8}$ (b) $\dfrac{5}{4}$

(c) $\dfrac{3}{40}$ (d) $\dfrac{2}{7}$

Answer :

(a)

$$\dfrac{1}{8} = \dfrac{1}{8} \times \dfrac{100}{100}$$
$$= \dfrac{1}{8} \times 100 \ \%$$
$$= 12.5\%$$

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

$$\dfrac{5}{4} = \dfrac{5}{4} \times \dfrac{100}{100}$$
$$= \dfrac{500}{4} \ \% = 125 \ \%$$

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

$$\dfrac{3}{40} = \dfrac{3}{40} \times \dfrac{100}{100}$$
$$= \dfrac{300}{40} \ \% = 7.5 \ \%$$

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

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

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

$$0.65 = 0.65 \times 100 \%$$
$$= \frac{65 \times 100}{100} \% = 65\%$$

(b) 2.1

$$2.1 = 2.1 \times 100 \%$$
$$= \frac{21 \times 100}{10} \% = 210\%$$

(c) 0.02

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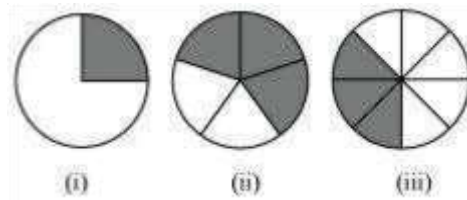$$= \frac{2 \times 100}{100} \% = 2\%$$

(d) 12.35

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

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 $\frac{3}{8}$.

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

Q4 :
Find:

(a) 15% of 250 (b) 1% of 1 hour   (c) 20% of Rs 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)
$$75\% \text{ of } 1 \text{ kg} = \frac{75}{100} \times 1 = 0.75 \text{ kg} = (0.75 \times 1000) \text{ g} = 750 \text{ g}$$

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 = $ Rs 1080

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

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

(c) 40% of $x = 500$ km

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

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

(d) 70% of $x = 14$ min

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

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

(e) 8% of $x = 40$ 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.

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% of x = 400

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

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

$x = 400 \times 10 = $ 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.

Q1

:

Exercise 8.3 : Solutions of Questions on Page Number : **171**
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

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

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

(c) Cost price = Rs 2500

Selling price = Rs 3000

Profit = 3000 - 2500 = Rs 500

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

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

(d) Cost price = Rs 250

Selling price = Rs 150
Loss = 250 - 150 = Rs 100

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

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

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

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

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

(b) 2: 3: 5

Total parts = 2 + 3 + 5 = 10

1st part = $\dfrac{2}{10} = \dfrac{2}{10} \times 100\% = 20\%$

2nd part = $\dfrac{3}{10} = \dfrac{3}{10} \times 100\% = 30\%$

3rd part = $\dfrac{5}{10} = \dfrac{5}{10} \times 100\% = 50\%$

(c) 1: 4

Total parts =1 + 4 = 5

1st part = $\dfrac{1}{5} = \dfrac{1}{5} \times 100\% = 20\%$

2nd part = $\dfrac{4}{5} = \dfrac{4}{5} \times 100\% = 80\%$

(d) 1: 2: 5

Total parts = 1 + 2 + 5 = 8

1st part = $\dfrac{1}{8} = \dfrac{1}{8} \times 100\% = 12.5\%$

2nd part = $\dfrac{2}{8} = \dfrac{2}{8} \times 100\% = 25\%$

3rd = $\dfrac{5}{8} = \dfrac{5}{8} \times 100\% = 62.5\%$

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

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

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

% increase = $\dfrac{20000}{350000} \times 100$

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

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

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

= 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

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

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

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

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

= 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,

$$\frac{3}{25} \times 100 = 12\%$$

Therefore, percentage of carbon =

(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 = 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

l (P) =

Rs 1200

Rate (R) = 12 % p.a.

Time (T) = 3 years

$$S.I. = \frac{P \times R \times T}{100}$$
$$= \frac{1200 \times 12 \times 3}{100}$$

= Rs 432

Amount = P + S.I.

= 1200 + 432

= Rs 1632

(b)   P = Rs

7500 R = 5% p.a.

T = 3 years

$$S.I. = \frac{P \times R \times T}{100}$$
$$= \frac{7500 \times 5 \times 3}{100}$$

= 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 :

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

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.