

## Class 7 Chapter 8 – Comparing Quantities

Exercise 8.1 Page: 157

1. Find the ratio of:

(a) ₹ 5 to 50 paise

**Solution:-**

We know that,

$$₹ 1 = 100 \text{ paise}$$

Then,

$$₹ 5 = 5 \times 100 = 500 \text{ paise}$$

Now we have to find the ratio,

$$= 500/50$$

$$= 10/1$$

So, the required ratio is 10: 1.

(b) 15 kg to 210 g

**Solution:-**

We know that,

$$1 \text{ kg} = 1000 \text{ g}$$

Then,

$$15 \text{ kg} = 15 \times 1000 = 15000 \text{ g}$$

Now we have to find the ratio,

$$= 15000/210$$

$$= 1500/21$$

$$= 500/7 \text{ ... [∵ divide both by 3]}$$

So, the required ratio is 500: 7.

(c) 9 m to 27 cm

**Solution:-**

We know that,

$$1 \text{ m} = 100 \text{ cm}$$

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Then,

$$9 \text{ m} = 9 \times 100 = 900 \text{ cm}$$

Now we have to find the ratio,

$$= 900/27$$

$$= 100/3 \dots [\therefore \text{divide both by 9}]$$

So, the required ratio is 100: 3.

**(d) 30 days to 36 hours**

**Solution:-**

We know that,

$$1 \text{ day} = 24 \text{ hours}$$

Then,

$$30 \text{ days} = 30 \times 24 = 720 \text{ hours}$$

Now we have to find the ratio,

$$= 720/36$$

$$= 20/1 \dots [\therefore \text{divide both by 36}]$$

So, the required ratio is 20: 1.

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

**Solution:-**

From the question it is given that,

$$\text{Number of computer required for 6 students} = 3$$

$$\text{So, number of computer required for 1 student} = (3/6)$$

$$= \frac{1}{2}$$

$$\text{So, number of computer required for 24 students} = 24 \times \frac{1}{2}$$

$$= 24/2$$

$$= 12$$

$\therefore$  Number of computer required for 24 students is 12 computers.

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

**Area of Rajasthan = 3 lakh km<sup>2</sup> and area of UP = 2 lakh km<sup>2</sup>.**

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(i) How many people are there per km<sup>2</sup> in both these States?

(ii) Which State is less populated?

**Solution:-**

(i) From the question, it is given that,

Population of Rajasthan = 570 lakh

Area of Rajasthan = 3 lakh Km<sup>2</sup>

Then, population of Rajasthan in 1 km<sup>2</sup> area = (570 lakh)/ (3 lakh km<sup>2</sup>)

= 190 people per km<sup>2</sup>

Population of UP = 1660 Lakh

Area of UP = 2 Lakh km<sup>2</sup>

Then, population of UP in 1 lakh km<sup>2</sup> area = (1660 lakh)/ (2 lakh km<sup>2</sup>)

= 830 people per km<sup>2</sup>

(ii) By comparing the two states Rajasthan is the less populated state.

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Exercise 8.2 Page: 164

**1. Convert the given fractional numbers to percent.**

**(a) 1/8**

**Solution:-**

In order to convert a fraction into a percentage multiply the fraction by 100 and put the percent sign %.

$$= (1/8) \times 100 \%$$

$$= 100/8 \%$$

$$= 12.5\%$$

**(b) 5/4**

**Solution:-**

In order to convert a fraction into a percentage multiply the fraction by 100 and put the percent sign %.

$$= (5/4) \times 100 \%$$

$$= 500/4 \%$$

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= 125%

**(c) 3/40**

**Solution:-**

In order to convert a fraction into a percentage multiply the fraction by 100 and put the percent sign %.

$$= (3/40) \times 100 \%$$

$$= 300/40 \%$$

$$= 30/4 \%$$

$$= 7.5\%$$

**(d) 2/7**

**Solution:-**

In order to convert a fraction into a percentage multiply the fraction by 100 and put the percent sign %.

$$= (2/7) \times 100 \%$$

$$= 200/7 \%$$

=

$$\boxed{28\frac{4}{7}}\%$$

**2. Convert the given decimal fraction to percent.**

**(a) 0.65**

**Solution:-**

First we have to remove the decimal point,

$$= 65/100$$

Now,

Multiply by 100 and put the percent sign %.

We have,

$$= (65/100) \times 100$$

$$= 65\%$$

**(b) 2.1**

**Solution:-**

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First we have to remove the decimal point,

$$= 21/10$$

Now,

Multiply by 100 and put the percent sign %.

We have,

$$= (21/10) \times 100$$

$$= 210\%$$

**(c) 0.02**

**Solution:-**

First we have to remove the decimal point,

$$= 2/100$$

Now,

Multiply 100 and put the percent sign %.

We have,

$$= (2/100) \times 100$$

$$= 2\%$$

**(d) 12.35**

**Solution:-**

First we have to remove the decimal point,

$$= 1235/100$$

Now,

Multiply by 100 and put the percent sign %.

We have,

$$= (1235/100) \times 100$$

$$= 1235\%$$

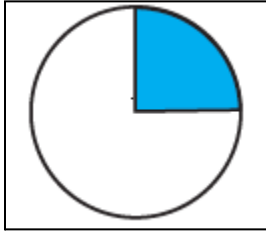
**3. Estimate what part of the figures is coloured and hence find the per cent which is coloured.**

**(i)**

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**Solution:-**

By observing the given figure,

We can able to identify that 1 part is shaded out of 4 equal parts.

It is represented by a fraction =  $\frac{1}{4}$

Then,

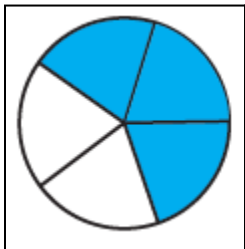
$$= \frac{1}{4} \times 100$$

$$= 100/4$$

$$= 25\%$$

Hence, 25% of figure is coloured.

(ii)



**Solution:-**

By observing the given figure,

We can able to identify that 3 part is shaded out of 5 equal parts.

It is represented by a fraction =  $\frac{3}{5}$

Then,

$$= \left(\frac{3}{5}\right) \times 100$$

$$= 300/5$$

$$= 60\%$$

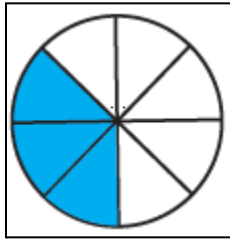
Hence, 60% of figure is coloured.

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(iii)



**Solution:-**

By observing the given figure,

We can able to identify that 3 part is shaded out of 8 equal parts.

It is represented by a fraction =  $\frac{3}{8}$

Then,

$$= \left(\frac{3}{8}\right) \times 100$$

$$= \frac{300}{8}$$

$$= 37.5\%$$

Hence, 37.5% of figure is coloured.

**4. Find:**

**(a) 15% of 250**

**Solution:-**

We have,

$$= \left(\frac{15}{100}\right) \times 250$$

$$= \left(\frac{15}{10}\right) \times 25$$

$$= \left(\frac{15}{2}\right) \times 5$$

$$= \left(\frac{75}{2}\right)$$

$$= 37.5$$

**(b) 1% of 1 hour**

**Solution:-**

We know that, 1 hour = 60 minutes

Then,

1% of 60 minutes

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1 minute = 60 seconds

60 minutes =  $60 \times 60 = 3600$  seconds

Now,

1% of 3600 seconds

$$= (1/100) \times 3600$$

$$= 1 \times 36$$

$$= 36 \text{ seconds}$$

**(c) 20% of ₹ 2500**

**Solution:-**

We have,

$$= (20/100) \times 2500$$

$$= 20 \times 25$$

$$= ₹ 500$$

**(d) 75% of 1 kg**

**Solution:-**

We know that, 1 kg = 1000 g

Then,

75% of 1000 g

$$= (75/100) \times 1000$$

$$= 75 \times 10$$

$$= 750 \text{ g}$$

**5. Find the whole quantity if**

**(a) 5% of it is 600**

**Solution:-**

Let us assume the whole quantity be x,

Then,

$$(5/100) \times (x) = 600$$

$$X = 600 \times (100/5)$$

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$$X = 60000/5$$

$$X = 12000$$

**(b) 12% of it is ₹ 1080.**

**Solution:-**

Let us assume the whole quantity be x,

Then,

$$(12/100) \times (x) = 1080$$

$$X = 1080 \times (100/12)$$

$$X = 540 \times (100/6)$$

$$X = 90 \times 100$$

$$X = ₹ 9000$$

**(c) 40% of it is 500k km**

**Solution:-**

Let us assume the whole quantity be x,

Then,

$$(40/100) \times (x) = 500$$

$$X = 500 \times (100/40)$$

$$X = 500 \times (10/4)$$

$$X = 500 \times 2.5$$

$$X = 1250 \text{ km}$$

**(d) 70% of it is 14 minutes**

**Solution:-**

Let us assume the whole quantity be x,

Then,

$$(70/100) \times (x) = 14$$

$$X = 14 \times (100/70)$$

$$X = 14 \times (10/7)$$

$$X = 20 \text{ minutes}$$

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**(e) 8% of it is 40 liters**

**Solution:-**

Let us assume the whole quantity be x,

Then,

$$(8/100) \times (x) = 40$$

$$X = 40 \times (100/8)$$

$$X = 40 \times (100/8)$$

$$X = 40 \times 12.5$$

$$X = 500 \text{ liters}$$

**6. Convert given percent to decimal fractions and also fractions in simplest forms:**

**(a) 25%**

**Solution:-**

First convert the given percentage into fraction and then put the fraction into decimal form.

$$= (25/100)$$

$$= \frac{1}{4}$$

$$= 0.25$$

**(b) 150%**

**Solution:-**

First convert the given percentage into fraction and then put the fraction into decimal form.

$$= (150/100)$$

$$= 3/2$$

$$= 1.5$$

**(c) 20%**

**Solution:-**

First convert the given percentage into fraction and then put the fraction into decimal form.

$$= (20/100)$$

$$= 1/5$$

$$= 0.2$$

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**(d) 5%**

**Solution:-**

First convert the given percentage into fraction and then put the fraction into decimal form.

$$= (5/100)$$

$$= 1/20$$

$$= 0.05$$

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

**Solution:-**

From the question, it is given that

Percentage of female in a city =30%

Percentage of male in a city = 40%

Total percentage of male and female both = 40% + 30%

$$= 70%$$

Now we have to find the percentage of children = 100 – 70

$$= 30%$$

So, 30% 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?**

**Solution:-**

From the question, it is given that

Total number of voters in the constituency = 15000

Percentage of people who voted in the election = 60%

Percentage of people who did not voted in the election = 100 – 60

$$= 40%$$

Total number of voters who did not voted in the election = 40% of 15000

$$= (40/100) \times 15000$$

$$= 0.4 \times 15000$$

$$= 6000 \text{ voters}$$

∴ 6000 voters did not vote.

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**9. Meeta saves ₹ 4000 from her salary. If this is 10% of her salary. What is her salary?**

**Solution:-**

Let us assume Meeta's salary be ₹ x,

Then,

$$10\% \text{ of } ₹ x = ₹ 4000$$

$$(10/100) \times (x) = 4000$$

$$X = 4000 \times (100/10)$$

$$X = 4000 \times 10$$

$$X = ₹ 40000$$

∴ Meeta's salary is ₹ 40000.

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

**Solution:-**

From the question, it is given that

Total matches played by a local team = 20

Percentage of matches won by the local team = 25%

Then,

Number of matches won by the team = 25% of 20

$$= (25/100) \times 20$$

$$= 25/5$$

$$= 5 \text{ matches.}$$

∴ The local team won 5 matches out of 20 matches.

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Exercise 8.3 Page: 171

**1. 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 ₹ 250 and sold for ₹ 325.**

**Solution:-**

From the question, it is given that

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Cost price of gardening shears = ₹ 250

Selling price of gardening shears = ₹ 325

Since (SP) > (CP), so there is a profit

$$\text{Profit} = (\text{SP}) - (\text{CP})$$

$$= ₹ (325 - 250)$$

$$= ₹ 75$$

$$\text{Profit \%} = \{(\text{Profit}/\text{CP}) \times 100\}$$

$$= \{(75/250) \times 100\}$$

$$= \{7500/250\}$$

$$= 750/25$$

$$= 30\%$$

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

**Solution:-**

From the question, it is given that

Cost price of refrigerator = ₹ 12000

Selling price of refrigerator = ₹ 13500

Since (SP) > (CP), so there is a profit

$$\text{Profit} = (\text{SP}) - (\text{CP})$$

$$= ₹ (13500 - 12000)$$

$$= ₹ 1500$$

$$\text{Profit \%} = \{(\text{Profit}/\text{CP}) \times 100\}$$

$$= \{(1500/12000) \times 100\}$$

$$= \{150000/12000\}$$

$$= 150/12$$

$$= 12.5\%$$

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

**Solution:-**

From the question, it is given that

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Cost price of cupboard = ₹ 2500

Selling price of cupboard = ₹ 3000

Since (SP) > (CP), so there is a profit

$$\text{Profit} = (\text{SP}) - (\text{CP})$$

$$= ₹ (3000 - 2500)$$

$$= ₹ 500$$

$$\text{Profit \%} = \{(\text{Profit}/\text{CP}) \times 100\}$$

$$= \{(500/2500) \times 100\}$$

$$= \{50000/2500\}$$

$$= 500/25$$

$$= 20\%$$

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

**Solution:-**

Since (SP) < (CP), so there is a loss

$$\text{Loss} = (\text{CP}) - (\text{SP})$$

$$= ₹ (250 - 150)$$

$$= ₹ 100$$

$$\text{Loss \%} = \{(\text{Loss}/\text{CP}) \times 100\}$$

$$= \{(100/250) \times 100\}$$

$$= \{10000/250\}$$

$$= 40\%$$

**2. Convert each part of the ratio to percentage:**

**(a) 3 : 1**

**Solution:-**

We have to find total parts by adding the given ratio = 3 + 1 = 4

$$1\text{st part} = \frac{3}{4} = \left(\frac{3}{4}\right) \times 100 \%$$

$$= 3 \times 25\%$$

$$= 75\%$$

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$$2^{\text{nd}} \text{ part} = \frac{1}{4} = \left(\frac{1}{4}\right) \times 100\%$$

$$= 1 \times 25$$

$$= 25\%$$

**(b) 2: 3: 5**

**Solution:-**

We have to find total parts by adding the given ratio =  $2 + 3 + 5 = 10$

$$1^{\text{st}} \text{ part} = \frac{2}{10} = \left(\frac{2}{10}\right) \times 100\%$$

$$= 2 \times 10\%$$

$$= 20\%$$

$$2^{\text{nd}} \text{ part} = \frac{3}{10} = \left(\frac{3}{10}\right) \times 100\%$$

$$= 3 \times 10$$

$$= 30\%$$

$$3^{\text{rd}} \text{ part} = \frac{5}{10} = \left(\frac{5}{10}\right) \times 100\%$$

$$= 5 \times 10$$

$$= 50\%$$

**(c) 1:4**

**Solution:-**

We have to find total parts by adding the given ratio =  $1 + 4 = 5$

$$1^{\text{st}} \text{ part} = \frac{1}{5} = \left(\frac{1}{5}\right) \times 100\%$$

$$= 1 \times 20\%$$

$$= 20\%$$

$$2^{\text{nd}} \text{ part} = \frac{4}{5} = \left(\frac{4}{5}\right) \times 100\%$$

$$= 4 \times 20$$

$$= 80\%$$

**(d) 1: 2: 5**

**Solution:-**

We have to find total parts by adding the given ratio =  $1 + 2 + 5 = 8$

$$1^{\text{st}} \text{ part} = \frac{1}{8} = \left(\frac{1}{8}\right) \times 100\%$$

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$$= (100/8) \%$$

$$= 12.5\%$$

$$\text{2nd part} = 2/8 = (2/8) \times 100\%$$

$$= (200/8)$$

$$= 25\%$$

$$\text{3rd part} = 5/8 = (5/8) \times 100\%$$

$$= (500/8)$$

$$= 62.5\%$$

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

**Solution:-**

From the question, it is given that

Initial population of the city = 25000

Final population of the city = 24500

Population decrease = Initial population – Final population

$$= 25000 - 24500$$

$$= 500$$

Then,

Percentage decrease in population = (population decrease/Initial population)  $\times$  100

$$= (500/25000) \times 100$$

$$= (50000/250000)$$

$$= 50/25$$

$$= 2\%$$

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

**Solution:-**

From the question, it is given that

Arun bought a car for = ₹ 350000

The price of the car in the next year, went up to = ₹ 370000

Then increase in price of car = ₹ 370000 – ₹ 350000

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= ₹ 20000

The percentage of price increase =  $(\frac{₹ 20000}{₹ 350000}) \times 100$

=  $(\frac{2}{35}) \times 100$

=  $\frac{200}{35}$

=  $\frac{40}{7}$

=

$\frac{59}{7}$

**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?**

**Solution:-**

From the question, it is given that

Cost price of the T.V. = ₹ 10000

Percentage of profit = 20%

Profit =  $(\frac{20}{100}) \times 10000$

= ₹ 2000

Then,

Selling price of the T.V. = cost price + profit

= 10000 + 2000

= ₹ 12000

∴ I will get it for ₹ 12000.

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

**Solution:-**

From the question, it is given that

Selling price of washing machine = ₹ 13500

Percentage of loss = 20%

Now, we have to find the cost price washing machine

By using the formula, we have:

CP = ₹  $\{(\frac{100}{(100 - \text{loss } \%)}) \times \text{SP}\}$

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$$= \{(100 / (100 - 20)) \times 13500\}$$

$$= \{(100 / 80) \times 13500\}$$

$$= \{1350000 / 80\}$$

$$= \{135000 / 8\}$$

$$= ₹ 16875$$

**7. (i) Chalk contains calcium, carbon and oxygen in the ratio 10:3:12. Find the percentage of carbon in chalk.**

**Solution:-**

From the question it is given that,

The ratio of calcium, carbon and oxygen in chalk = 10: 3: 12

So, total part = 10 + 3 + 12 = 25

In that total part amount of carbon = 3/25

Then,

$$\text{Percentage of carbon} = (3/25) \times 100$$

$$= 3 \times 4$$

$$= 12 \%$$

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

**Solution:-**

From the question it is given that,

Weight of carbon in the chalk = 3g

Let us assume the weight of the stick be x

Then,

$$12\% \text{ of } x = 3$$

$$(12/100) \times (x) = 3$$

$$X = 3 \times (100/12)$$

$$X = 1 \times (100/4)$$

$$X = 25g$$

∴ The weight of the stick is 25g.

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

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**Solution:-**

From the question, it is given that

Cost price of book = ₹ 275

Percentage of loss = 15%

Now, we have to find the selling price book,

By using the formula, we have:

$$SP = \left\{ \left( \frac{100 - \text{loss \%}}{100} \right) \times CP \right\}$$

$$= \left\{ \left( \frac{100 - 15}{100} \right) \times 275 \right\}$$

$$= \left\{ \left( \frac{85}{100} \right) \times 275 \right\}$$

$$= \frac{23375}{100}$$

$$= ₹ 233.75$$

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

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

**Solution:-**

Given: – Principal (P) = ₹ 1200, Rate (R) = 12% p.a. and Time (T) = 3years.

If interest is calculated uniformly on the original principal throughout the loan period, it is called Simple interest (SI).

$$SI = \frac{P \times R \times T}{100}$$

$$= \frac{1200 \times 12 \times 3}{100}$$

$$= \frac{12 \times 12 \times 3}{1}$$

$$= ₹432$$

Amount = (principal + SI)

$$= (1200 + 432)$$

$$= ₹ 1632$$

**(b) Principal = ₹ 7,500 at 5% p.a.**

**Solution:-**

Given: – Principal (P) = ₹ 7500, Rate (R) = 5% p.a. and Time (T) = 3years.

If interest is calculated uniformly on the original principal throughout the loan period, it is called Simple interest (SI).

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$$SI = (P \times R \times T)/100$$

$$= (7500 \times 5 \times 3)/ 100$$

$$= (75 \times 5 \times 3)/ 1$$

$$= ₹ 1125$$

$$\text{Amount} = (\text{principal} + SI)$$

$$= (7500 + 1125)$$

$$= ₹ 8625$$

**10. What rate gives ₹ 280 as interest on a sum of ₹ 56,000 in 2 years?**

**Solution:-**

Given: – P = ₹ 56000, SI = ₹ 280, t = 2 years.

We know that,

$$R = (100 \times SI) / (P \times T)$$

$$= (100 \times 280) / (56000 \times 2)$$

$$= (1 \times 28) / (56 \times 2)$$

$$= (1 \times 14) / (56 \times 1)$$

$$= (1 \times 1) / (4 \times 1)$$

$$= (1/ 4)$$

$$= 0.25\%$$

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

**Solution:-**

From the question it is given that, SI = ₹ 45, R = 9%, T = 1 year, P =?

$$SI = (P \times R \times T)/100$$

$$45 = (P \times 9 \times 1)/ 100$$

$$P = (45 \times 100)/ 9$$

$$= 5 \times 100$$

$$= ₹ 500$$

Hence, she borrowed ₹ 500.

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