

# NCERT solution for Ratio and Proportion

## Exercise 12.2

### Question 1

Determine if the following are in proportion.

(a) 15, 45, 40, 120

(b) 33, 121, 9, 96

(c) 24, 28, 36, 48

(d) 32, 48, 70, 210

(e) 4, 6, 8, 12

(f) 33, 44, 75, 100

### Answer

If the ratio of first to the second is equal to ratio to third to the fourth, these will be in proportion

S.no	Problem	First to second ratio	third to fourth ratio	Answer
a)	15, 45, 40, 120	$15/45 = 1:3$	$40/120 = 1:3$	Yes
b)	33, 121, 9, 96	$33/121 = 3:11$	$9/96 = 3:23$	No
c)	24, 28, 36, 48	$24:28 = 6:7$	$36/48 = 3:4$	No
d)	32, 48, 70, 210	$32:48 = 2:3$	$70/210 = 1:3$	No
e)	4, 6, 8, 12	$4/6 = 2:3$	$8/12 = 2:3$	yes
f)	33, 44, 75, 100	$33/44 = 3:4$	$75/100 = 3:4$	yes

### Question 2

Write True (T) or False (F) against each of the following statements:

- (a)  $16:24::20:30$
- (b)  $21:6::35:10$
- (c)  $12:18::28:12$
- (d)  $8:9::24:27$
- (e)  $5.2:3.9::3:4$
- (f)  $0.9:0.36::10:4$

### Answer

If the ratio of first to the second is equal to ratio to third to the fourth, these will be in proportion

S.no	Problem	First to second ratio	third to fourth ratio	Answer(T/F)
a)	$16:24::20:30$	$16/24 = 2:3$	$20/30 = 2:3$	True
b)	$21:6::35:10$	$21/6 = 7:2$	$35:10 = 7:2$	True
c)	$12:18::28:12$	$12:18 = 2:3$	$28:12 = 7:3$	False
d)	$8:9::24:27$	8:9	$24/27 = 8:9$	False
e)	$5.2:3.9::3:4$	$5.2/3.9 = 4:3$	3:4	False
f)	$0.9:0.36::10:4$	$.9/.36 = 90/36 = 10/4$	10:4	True

### Question 3

Are the following statements true?

- (a) 40 persons: 200 persons = Rs 15: Rs 75
- (b) 7.5 litres: 15 litres = 5 kg: 10 kg

(c) 99 kg: 45 kg = Rs 44: Rs 20

(d) 32 m: 64 m = 6 secs: 12 sec

(e) 45 km: 60 km = 12 hours: 15 hours

### Answer

S.no	Problem	Left hand side ratio	Right hand side ratio	Answer(T/F)
a)	40 persons: 200 persons = Rs 15: Rs 75	$40/200 = 1:5$	$15/75 = 1:5$	True
b)	7.5 litres: 15 litres = 5 kg: 10 kg	$7.5/15 = 1:2$	$5/10 = 1:2$	True
c)	99 kg: 45 kg = Rs 44: Rs 20	$99/45 = 11:5$	$44/20 = 11:5$	True
d)	32 m: 64 m = 6 secs: 12 secs	$32/64 = 1:2$	$6/12 = 1:2$	True
e)	45 km: 60 km = 12 hours: 15 hours	$45/60 = 3:4$	$12/15 = 4:5$	False

### Question 4

Determine if the following ratios form a proportion. Also, write the middle terms and extreme terms where the ratios form a proportion.

(a) 25 cm: 1 m and Rs 40: Rs 160

(b) 39 litres: 65 litres and 6 bottles: 10 bottles

(c) 2 kg: 80 kg and 25 g: 625 g

(d) 200 mL: 2.5 litre and Rs 4: Rs 50

### Answer

When the units are different in one ratio, we need to convert the bigger unit into smaller unit

S.no	LHS ratio	RHS ratio	Middle terms	Extreme terms
a)	1 m = 100 cm So 25 cm : 100 cm = 1 : 4	40/160 1:4	100cm and Rs 40	25 cm and Rs 160
b)	39/65 = 3:5	6/10 = 3/5	65 litres and 6 bottles	39 litres and 10 bottles
c)	2/80 = 1/40	25/625 = 1/25	NA as they are not proportional	NA
d)	2.5 litre = 2500 ml So 200/2500 = 4/50 = 2/25	4/50 = 2/25	2500 ml and Rs 4	200ml and Rs 50

### Exercise 12.3

#### Question 1

If the cost of 7 m of cloth is Rs 294, find the cost of 5 m of cloth.

#### Answer

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In these type of question, we need to find the value per unit value which is find by dividing the quantity given

Cost of 7 m of cloth = Rs 294

So, the cost of 1 m of cloth =  $294 \div 7 = \text{Rs } 42$

Cost of 5 m of cloth =  $42 \times 5 = \text{Rs } 210$

### Question 2

Ekta earns Rs 1500 in 10 days. How much will she earn in 30 days?

#### Answer

Amount Ekta earns in 10 days = Rs 1500

So, amount earned in 1 day =  $\text{Rs } 1500 \div 10 = \text{Rs.}$

Amount she will earn in 30 days =  $\text{Rs. } 150 \times 30 = \text{Rs. } 4500$

### Question 3

If it has rained 276 mm in the last 3 days, how many cm of rain will fall in one full week (7 days)? Assume that the rain continues to fall at the same rate.

#### Answer

Amount of rain in 3 days = 276 mm = 27.6 cm

So, Amount of rain in 1 day =  $27.6 \div 3 = 9.2 \text{ cm}$

We know that one week has 7 days.

So, Amount of rain in 7 days =  $9.2 \times 7 = 64.4 \text{ cm}$

### Question 4

Cost of 5 kg of wheat is Rs 30.50.

(a) What will be the cost of 8 kg of wheat?

(b) What quantity of wheat can be purchased in Rs 61?

#### Answer

Given

Cost of 5 kg of wheat = Rs. 30.50

So Cost of 1 kg = Rs.  $30.50 \div 5 = \text{Rs. } 6.10$

a) Cost of 8 kg of wheat =  $8 \times \text{Rs. } 6.10 = \text{Rs. } 48.80$

b) Amount of wheat purchased for Rs. 6.10 = 1 kg

Amount of wheat purchased for Rs 61 =  $61 \div 6.10 = 6100 \div 610 = 10 \text{ kg}$

### Question 5

The temperature dropped 15 degrees Celsius in the last 30 days. If the rate of temperature drop remains the same, how many degrees will the temperature drop in the next ten days?

#### Answer

Temperature drop in 30 days =  $15^\circ\text{C}$

Rate of Temperature drop in 1 day =  $15 \div 30 = (\frac{1}{2})^\circ\text{C}$

Temperature drop in 10 days =  $(\frac{1}{2})^\circ\text{C} \times 10 = 5^\circ\text{C}$

### Question 6

Shaina pays Rs 7500 as rent for 3 months. How much does she has to pay for a whole year, if the rent per month remains same?

#### Answer

Rent paid by Shaina for 3 months = Rs 7500

Rent paid by Shaina per month =  $7500 \div 3 = \text{Rs } 2500$

We know that in a year, there are 12 months.

So, the rent paid by Shaina for a year =  $\text{Rs } 2500 \times 12 = \text{Rs } 30,000$

### Question 7

Cost of 4 dozen bananas is Rs 60. How many bananas can be purchased for Rs 12.50?

#### Answer

We know that

1 dozen = 12

So, 4 dozen contain 48 bananas

The cost of 48 bananas is given as Rs. 60

So Cost of 1 banana =  $60 \div 48 = 5 \div 4 = \text{Rs } 1.25$

Number of bananas purchased in Rs 12.50 = Total Rupees/ Price of one banana

$$= 12.5 \div 1.25 = 10$$

So, 10 bananas can be purchased.

### Question 8

The weight of 72 books is 9 kg. What is the weight of 40 such books?

#### Answer

Given

Weight of 72 books = 9 kg

So Weight of 1 book =  $72 \div 9 = 8 \text{ Kg}$

Now Weight of 40 books =  $40 \times 8 = 320 \text{ kg}$

### Question 9

A truck requires 108 litres of diesel for covering a distance of 594 km. How much diesel will be required by the truck to cover a distance of 1650 km?

#### Answer

Amount of Diesel required by truck for covering a distance for 594 km = 108 /

Amount of Diesel required by truck for covering a distance for 1 km =  $108 \div 594 = (2/11) \text{ litre}$

So Amount of diesel required by truck for covering a distance for 1650 km =  $1650 \times (2/11) = 300 \text{ Litre}$

### Question 10

Raju purchases 10 pens for Rs 150 and Manish buys 7 pens for Rs 84. Can you say who got the pens cheaper?

#### Answer

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Given

Amount paid by Raju for 10 pens = Rs. 150

Amount paid by Manish for 7 pens = Rs. 84

Therefore

Amount paid by Raju for 1 pen =  $150 \div 10 = \text{Rs } 15$

Amount paid by Manish for 1 pen =  $84 \div 7 = \text{Rs } 12$

Raju paid Rs 15 for 1 pen but Manish paid Rs. 12

So, Manish got the pens cheaper.

### Question 11

Anish made 42 runs in 6 overs and Anoop made 63 runs in 7 overs. Who made more runs per over?

**Answer**

Given

Runs made by Anish in 6 overs = 42

Runs made by Anoop in 7 overs = 63

Therefore

Runs made by Anish in 1 over =  $42 \div 6 = 7$

Runs made by Anoop in 1 over =  $63 \div 7 = 9$

In one over, Anoop made 9 runs but Anish made 7 runs.

So, Anoop made more runs in an over than Anish.