

RD Sharma Solutions for Class 6 Maths Chapter 9 –  
Ratio, Proportion and Unitary MethodEXERCISE 9.1

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**1. Express each of the following in the language of ratios:**

- (i) In a class, the number of girls in the merit list of the board examination is two times that of boys.  
(ii) The number of students passing mathematics test is  $\frac{2}{3}$  of the number that appeared.

**Solution:**

- (i) Ratio of the number of girls to that of boys in the merit list is 2: 1.  
(ii) Ratio of the number of students passing a mathematics test to that of total students appearing in the test is 2: 3.

**2. Express the following ratios in language of daily life:**

- (i) The ratio of the number of bad pencils to that of good pencils produced in a factory is 1: 9.  
(ii) In India, the ratio of the number of villages to that of cities is about 2000: 1.

**Solution:**

- (i) The number of bad pencils produced in a factory is  $\frac{1}{9}$  of the number of good pencils produced in the factory.  
(ii) The number of villages is 2000 times that of cities in India.

**3. Express each of the following ratios in its simplest form:**

- (i) 60: 72  
(ii) 324: 144  
(iii) 85: 391  
(iv) 186: 403

**Solution:**

- (i) 60: 72

It can be written as  $\frac{60}{72}$ 

We know that the HCF of 60 and 72 is 12

By dividing the term by 12 we get

$$(\frac{60}{72}) \times (\frac{12}{12}) = \frac{5}{6}$$

So we get 60: 72 = 5: 6

- (ii) 324: 144

It can be written as  $\frac{324}{144}$ 

We know that the HCF of 324 and 144 is 36

By dividing the term by 36 we get

$$(\frac{324}{144}) \times (\frac{36}{36}) = \frac{9}{4}$$

So we get 324: 144 = 9: 4

- (iii) 85: 391

It can be written as  $\frac{85}{391}$ 

We know that the HCF of 85 and 391 is 17

By dividing the term by 17 we get

$$(\frac{85}{391}) \times (\frac{17}{17}) = \frac{5}{23}$$

So we get 85: 391 = 5: 23

- (iv) 186: 403

It can be written as  $\frac{186}{403}$

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We know that the HCF of 186 and 403 is 31

By dividing the term by 31 we get

$$(186/403) \times (31/31) = 6/13$$

So we get 186: 403 = 6: 13

**4. Find the ratio of the following in the simplest form:**

(i) 75 paise to Rs 3

(ii) 35 minutes to 45 minutes

(iii) 8 kg to 400 gm

(iv) 48 minutes to 1 hour

(v) 2 metres to 35 cm

(vi) 35 minutes to 45 seconds

(vii) 2 dozen to 3 scores

(viii) 3 weeks to 3 days

(ix) 48 min to 2 hours 40 min

(x) 3 m 5 cm to 35 cm

**Solution:**

(i) 75 paise to Rs 3

It can be written as

$$75 \text{ paise to Rs } 3 = 75 \text{ paise: Rs } 3$$

We know that 1 Rs = 100 paise

So we get

$$75 \text{ paise to Rs } 3 = 75 \text{ paise: } 300 \text{ paise}$$

Dividing the two terms by HCF 75

$$75 \text{ paise to Rs } 3 = 1: 4$$

(ii) 35 minutes to 45 minutes

It can be written as

$$35 \text{ minutes to } 45 \text{ minutes} = 35 \text{ minutes: } 45 \text{ minutes}$$

Dividing the two terms by HCF 5

$$35 \text{ minutes to } 45 \text{ minutes} = 7: 9$$

(iii) 8 kg to 400 gm

It can be written as

$$8 \text{ kg to } 400 \text{ gm} = 8 \text{ kg: } 400 \text{ gm}$$

We know that 1 kg = 1000 gm

So we get

$$8 \text{ kg to } 400 \text{ gm} = 8000 \text{ gm: } 400 \text{ gm}$$

Dividing the two terms by HCF 400

$$8 \text{ kg to } 400 \text{ gm} = 20: 1$$

(iv) 48 minutes to 1 hour

It can be written as

$$48 \text{ minutes to } 1 \text{ hour} = 48 \text{ minutes: } 1 \text{ hour}$$

We know that 1 hour = 60 minutes

So we get

$$48 \text{ minutes to } 1 \text{ hour} = 48 \text{ minutes: } 60 \text{ minutes}$$

Dividing the two terms by HCF 12

$$48 \text{ minutes to } 1 \text{ hour} = 4: 5$$

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(v) 2 metres to 35 cm

It can be written as

2 metres to 35 cm = 2 metres: 35 cm

We know that 1 m = 100 cm

So we get

2 metres to 35 cm = 200 cm: 35 cm

Dividing the two terms by HCF 5

2 metres to 35 cm = 40: 7

(vi) 35 minutes to 45 seconds

It can be written as

35 minutes to 45 seconds = 35 minutes: 45 seconds

We know that 1 minute = 60 seconds

So we get

35 minutes to 45 seconds = 2100 seconds: 45 seconds

Dividing the two terms by HCF 15

35 minutes to 45 seconds = 140: 3

(vii) 2 dozen to 3 scores

It can be written as

2 dozen to 3 scores = 2 dozen: 3 scores

We know that 1 dozen = 12 score = 20

So we get

2 dozen to 3 scores = 24: 60

Dividing the two terms by HCF 12

2 dozen to 3 scores = 2: 5

(viii) 3 weeks to 3 days

It can be written as

3 weeks to 3 days = 3 weeks: 3 days

We know that 1 week = 7 days

So we get

3 weeks to 3 days = 21 days: 3 days

Dividing the two terms by HCF 3

3 weeks to 3 days = 7: 1

(ix) 48 min to 2 hours 40 min

It can be written as

48 min to 2 hours 40 min = 48 min: 2 hours 40 min

We know that 1 hour = 60 minutes

So we get

48 min to 2 hours 40 min = 48 min: 160 min

Dividing the two terms by HCF 16

48 min to 2 hours 40 min = 3: 10

(x) 3 m 5 cm to 35 cm

It can be written as

3 m 5 cm to 35 cm = 3 m 5 cm: 35 cm

We know that 1 m = 100 cm

So we get

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3 m 5 cm to 35 cm = 305 cm: 35 cm

Dividing the two terms by HCF 5

3 m 5 cm to 35 cm = 61: 7

**5. Find the ratio of**

(i) 3.2 metres to 56 metres

(ii) 10 metres to 25 cm

(iii) 25 paise to Rs 60

(iv) 10 litres to 0.25 litre

**Solution:**

(i) 3.2 metres to 56 metres

It can be written as

3.2 metres to 56 metres = 3.2 metres: 56 metres

Dividing the two terms by HCF 1.6

3.2 metres to 56 metres = 2: 35

(ii) 10 metres to 25 cm

It can be written as

10 metres to 25 cm = 10 m: 25 cm

We know that 1 m = 100 cm

10 metres to 25 cm = 1000 cm: 25 cm

Dividing the two terms by HCF 25

10 metres to 25 cm = 40: 1

(iii) 25 paise to Rs 60

It can be written as

25 paise to Rs 60 = 25 paise: Rs 60

We know that 1 Rs = 100 paise

25 paise to Rs 60 = 25 paise: 6000 paise

Dividing the two terms by HCF 25

25 paise to Rs 60 = 1: 240

(iv) 10 litres to 0.25 litre

It can be written as

10 litres to 0.25 litre = 10 litres: 0.25 litre

Dividing the two terms by HCF 0.25

10 litres to 0.25 litre = 40: 1

**6. The number of boys and girls in a school are 1168 and 1095 respectively. Express the ratio of the number of boys to that of the girls in the simplest form.**

**Solution:**

No. of boys = 1168

No. of girls = 1095

So the ratio of the number of boys to that of the girls = 1168: 1095

Dividing the two terms by HCF 73

Ratio of number of boys to that of the girls = 16: 15

Hence, the ratio of the number of boys to that of girls in simplest form is 16: 15.

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7. Avinash works as a lecturer and earns Rs 12000 per month. His wife who is a doctor earns Rs 15000 per month. Find the following ratios:

(i) Avinash's income to the income of his wife.

(ii) Avinash's income to their total income.

**Solution:**

Avinash salary earned per month = Rs 12000

Avinash wife salary per month = Rs 15000

(i) Avinash's income to the income of his wife =  $12000/15000 = 4: 5$

(ii) Avinash's income to their total income =  $12000/ (12000 + 15000) = 4: 9$

8. Of the 72 persons working in an office, 28 are men and the remaining are women. Find the ratio of the number of:

(i) men to that of women,

(ii) men to the total number of persons

(iii) persons to that of women.

**Solution:**

No. of persons working in an office = 72

No. of men = 28

So the number of women =  $72 - 28 = 44$

(i) men to that of women = 28: 44

Multiplying and dividing the equation by HCF 4

Men to that of women =  $(28/44) \times (4/4) = 7: 11$

(ii) men to the total number of persons = 28: 72

Multiplying and dividing the equation by HCF 4

Men to the total number of persons =  $(28/72) \times (4/4) = 7: 18$

(iii) persons to that of women = 72: 44

Multiplying and dividing the equation by HCF 4

Persons to that of women =  $(72/44) \times (4/4) = 18: 11$

9. The length of a steel tape for measurements of buildings is 10 m and its width is 2.4 cm. What is the ratio of its length to width?

**Solution:**

It is given that

Length of a steel tape = 10 m

Width of steel tape = 2.4 cm

So the ratio of its length to width =  $10 \text{ m} / 2.4 \text{ cm}$

We know that  $1 \text{ m} = 100 \text{ cm}$

Ratio of its length to width =  $1000 \text{ cm} / 2.4 \text{ cm}$

Dividing the two terms by HCF 0.8 cm

Ratio of its length to width = 1250: 3

Hence, the ratio of its length to width is 1250: 3.

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**10. An office opens at 9 am and closes at 5 pm with a lunch interval of 30 minutes. What is the ratio of lunch interval to the total period in office?**

**Solution:**

Duration of office = 9 am to 5 pm = 8 hours

Lunch interval = 30 minutes

So the ratio of lunch interval to the period in office = 30 minutes/8 hours

We know that 1 hour = 60 minutes

Ratio of lunch interval to the period in office =  $30 / (8 \times 60) = 30/480$

Dividing the two terms by HCF 30

Ratio of lunch interval to the period in office =  $(30/480) \times (30/30) = 1: 16$

Hence, the ratio of lunch interval to the total period in office is 1: 16.

**11. A bullock-cart travels 24 km in 3 hours and a train travels 120 km in 2 hours. Find the ratio of their speeds.**

**Solution:**

Distance travelled by bullock-cart = 24 km in 3 hours

Distance travelled by train = 120 km in 2 hours

It can be written as

Distance travelled by bullock-cart =  $24 \text{ km} / 3 = 8 \text{ km}$

Distance travelled by train =  $120 \text{ km} / 2 = 60 \text{ km}$

So the ratio of their speeds =  $8/60$

Dividing the two terms by HCF 4

Ratio of their speeds =  $(8/60) \times (4/4) = 2/15$

Hence, the ratio of their speeds is 2: 15.

**12. Margarette works in a factory and earns Rs 955 per month. She saves Rs 185 per month from her earnings. Find the ratio of:**

**(i) her savings to her income**

**(ii) her income to her expenditure**

**(iii) her savings to her expenditure.**

**Solution:**

Margarette monthly income = Rs 955

Margarette monthly savings = Rs 185

Margarette expenditure =  $955 - 185 = \text{Rs } 770$

(i) her savings to her income =  $185/955$

Dividing the two terms by HCF 5

Her savings to her income =  $(185/955) \times (5/5) = 37: 191$

(ii) her income to her expenditure =  $955/770 = 191: 154$

(iii) her savings to her expenditure =  $185/770 = 37: 154$

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1. Which ratio is larger in the following pairs?

(i) 3: 4 or 9: 16

(ii) 15: 16 or 24: 25

(iii) 4: 7 or 5: 8

(iv) 9: 20 or 8: 13

(v) 1: 2 or 13: 27

**Solution:**

(i) 3: 4 or 9: 16

It can be written as

 $3: 4 = 3/4$  and  $9: 16 = 9/16$ 

LCM of 4 and 16 is 16

Multiplying by 4 to make the denominator 16

 $3/4 = (3/4) \times (4/4) = 12/16$  and  $9/16$ We know that  $12 > 9$ So we get  $12/16 > 9/16$ 

We can write it as

 $3/4 > 9/16$ 

Hence, 3: 4 &gt; 9: 16.

(ii) 15: 16 or 24: 25

It can be written as

 $15: 16 = 15/16$  and  $24: 25 = 24/25$ 

LCM of 16 and 25 is 400

Multiplying by relevant numbers to make denominator as 400

 $15/16 = (15/16) \times (25/25) = 375/400$  and  $24/25 = (24/25) \times (16/16) = 384/400$ We know that  $384 > 375$ So we get  $384/400 > 375/400$ We can write it as  $24/25 > 15/16$ 

Hence, 24: 25 &gt; 15: 16.

(iii) 4: 7 or 5: 8

It can be written as

 $4: 7 = 4/7$  and  $5: 8 = 5/8$ 

LCM of 7 and 8 is 56

Multiplying by relevant numbers to make denominator as 56

 $4/7 = (4/7) \times (8/8) = 32/56$  and  $5/8 = (5/8) \times (7/7) = 35/56$ We know that  $35 > 32$ So we get  $35/56 > 32/56$ We can write it as  $5/8 > 4/7$ 

Hence, 5: 8 &gt; 4: 7.

(iv) 9: 20 or 8: 13

It can be written as

 $9: 20 = 9/20$  and  $8: 13 = 8/13$

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LCM of 20 and 13 is 260

Multiplying by relevant numbers to make denominator as 260

$$9/20 = (9/20) \times (13/13) = 117/260 \text{ and } 8/13 = (8/13) \times (20/13) = 160/260$$

We know that  $160 > 117$

So we get  $160/260 > 117/260$

We can write it as  $8/13 > 9/20$

Hence,  $8:13 > 9:20$ .

(v)  $1:2$  or  $13:27$

It can be written as

$$1:2 = 1/2 \text{ and } 13:27 = 13/27$$

LCM of 2 and 27 is 54

Multiplying by relevant numbers to make denominator as 54

$$1/2 = (1/2) \times (27/27) = 27/54 \text{ and } 13/27 = (13/27) \times (2/2) = 26/54$$

We know that  $27 > 26$

So we get  $27/54 > 26/54$

We can write it as  $1/2 > 13/27$

Hence,  $1:2 > 13:27$ .

**2. Give two equivalent ratios of 6: 8.**

**Solution:**

The given ratio = 6: 8

It can be written as =  $6/8$

Dividing the fraction by 2 we get

$$6/8 = (6/8) \div (2/2) = 3/4$$

Hence, 3: 4 is an equivalent ratio of 6: 8

Multiply the fraction by 2 we get

$$6/8 = (6/8) \times (2/2) = 12/16$$

Hence, 12: 16 is an equivalent ratio of 6: 8

So, 3: 4 and 12: 16 are the equivalent ratios of 6: 8.

**3. Fill in the following blanks:**

$$12/20 = \square/5 = 9/\square$$

**Solution:**

It is given that

$$12/20 = \square/5 = 9/\square$$

We know that LCM of 20 and 5 is 20

It can be written as  $20/4 = 5$

Dividing the fraction by 4

$$12/20 = (12/20) \times (4/4) = 3/5$$

So the first number is 3 and the ratio is  $3/5$ .

In the same way,

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Consider  $2/3 + 3/5 = 9/\square$

We know that  $9/3 = 3$

Multiply the fraction by 3

$$3/5 = (3/5) \times (3/3) = 9/15$$

So the second number is 15 and the ratio is 9/15.

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1. Which of the following statements are true?

(i)  $16:24 = 20:30$

(ii)  $21:6 = 35:10$

(iii)  $12:18 = 28:12$

(iv)  $51:58 = 85:102$

(v) 40 men: 200 men = Rs 5: Rs 25

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

**Solution:**

(i)  $16:24 = 20:30$

It can be written as

$$16/24 = 20/30$$

Dividing  $16/24$  by  $4/4$  and  $20/30$  by  $5/5$ 

$$(16/24) \div (4/4) = (20/30) \div (5/5)$$

On further calculation

$$4/6 = 4/6$$

We get

$$2/3 = 2/3$$

Hence,  $16:24 = 20:30$  is true.

(ii)  $21:6 = 35:10$

It can be written as

$$21/6 = 35/10$$

Dividing  $21/6$  by  $3/3$  and  $35/10$  by  $5/5$ 

$$(21/6) \div (3/3) = (35/10) \div (5/5)$$

On further calculation

$$7/2 = 7/2$$

Hence,  $21:6 = 35:10$  is true.

(iii)  $12:18 = 28:12$

It can be written as

$$12/18 = 28/12$$

On further calculation

$$6/9 \neq 14/6$$

Hence,  $12:18 = 28:12$  is false.

(iv)  $51:58 = 85:102$

It can be written as

$$51/58 = 85/102$$

On further calculation

$$51/58 \neq 5/6$$

Hence,  $51:58 = 85:102$  is false.

(v) 40 men: 200 men = Rs 5: Rs 25

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It can be written as

$$40/200 = 5/25$$

We get  $40/200 = 1/2$  and  $5/25 = 1/5$

Hence, 40 men: 200 men = Rs 5: Rs 25 is true.

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

It can be written as

$$99/45 = 44/20$$

Dividing the fraction by 9

$$(99/45) \div (9/9) = (44/20) \div (9/9)$$

On further calculation

$$11/5 = 11/5$$

Hence, 99 kg: 45 kg = Rs 44: Rs 20 is true.

**2. Find which of the following are in proportion:**

(i) 8, 16, 6, 12

(ii) 6, 2, 4, 3

(iii) 150, 250, 200, 300

**Solution:**

(i) 8, 16, 6, 12

We know that

$$8: 16 = 8/16 = 1/2$$

$$6: 12 = 6/12 = 1/2$$

So we get  $8/16 = 6/12$

Therefore, 8, 16, 6, 12 are in proportion.

(ii) 6, 2, 4, 3

We know that

$$6: 2 = 6/2 = 3/1$$

$$4: 3 = 4/3$$

So we get  $3/1 \neq 4/3$

Therefore, 6, 2, 4, 3 are not in proportion.

(iii) 150, 250, 200, 300

We know that

$$150: 250 = 150/250 = 3/5$$

$$200: 300 = 200/300 = 4/6 = 2/3$$

So we get  $3/5 \neq 2/3$

Therefore, 150, 250, 200, 300 are not in proportion.

**3. Find x in the following proportions:**

(i)  $x: 6 = 55: 11$

(ii)  $18: x = 27: 3$

(iii)  $7: 14 = 15: x$

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(iv)  $16: 18 = x: 96$

**Solution:**

(i)  $x: 6 = 55: 11$

It can be written as

$$x/6 = 55/11$$

We get

$$x/6 = 5/1$$

On further calculation

$$x = 5 (6) = 30$$

(ii)  $18: x = 27: 3$

It can be written as

$$18/x = 27/3$$

We get

$$18/x = 9/1$$

On further calculation

$$x = 18/9 = 2$$

(iii)  $7: 14 = 15: x$

It can be written as

$$7/14 = 15/x$$

We get

$$1/2 = 15/x$$

On further calculation

$$x = 15 (2) = 30$$

(iv)  $16: 18 = x: 96$

It can be written as

$$16/18 = x/96$$

We get

$$8/9 = x/96$$

On further calculation

$$x = 8/9 (96) = 256/3$$

**4. Set up all proportions from the numbers 9, 150, 105, 1750.**

**Solution:**

The proportions from the numbers are

$$9: 150 = 3: 50$$

$$9: 105 = 3: 35$$

$$9: 1750$$

$$150: 9 = 50: 3$$

$$150: 105 = 10: 7$$

$$150: 1750 = 3: 35$$

$$105: 9 = 35: 3$$

$$105: 150 = 7: 10$$

$$105: 1750 = 3: 50$$

$$1750: 9$$

$$1750: 150 = 35: 3$$

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$$1750: 105 = 50: 3$$

Hence, the proportions that are formed are

$$9: 150 :: 105: 1750$$

$$150: 9 :: 1750: 105$$

$$1750: 150 :: 105: 9$$

$$9: 105 :: 150: 1750$$

**5. Find the other three proportions involving terms of each of the following:**

**(i)  $45: 30 = 24: 16$**

**(ii)  $12: 18 = 14: 21$**

**Solution:**

(i)  $45: 30 = 24: 16$  can be written as  $3: 2$  in simplest form

So the other three proportions involving terms are

$45: 24 = 3: 16$  can be written as  $15: 8$  in simplest form

$30: 45 = 16: 24$  can be written as  $2: 3$  in simplest form

$16: 3 = 24: 45$  can be written as  $8: 15$  in simplest form

(ii)  $12: 18 = 14: 21$  can be written as  $2: 3$  in simplest form

So the other three proportions involving terms are

$12: 14 = 18: 21$  can be written as  $6: 7$  in simplest form

$21: 18 = 14: 12$  can be written as  $7: 6$  in simplest form

$18: 12 = 21: 14$  can be written as  $3: 2$  in simplest form

**6. If 4, x, 9 are in continued proportion, find the value of x.**

**Solution:**

We know that 4, x, 9 are in continued proportion

It can be written as

$$4: x :: x: 9$$

We get

$$4/x = x/9$$

On further calculation

$$x^2 = 9(4) = 36$$

So we get

$$x = 6$$

**7. If in a proportion, the first, second and fourth terms are 32, 112 and 217 respectively, find the third term.**

**Solution:**

It is given that in a proportion the first, second and fourth terms are 32, 112 and 217

Consider x as the third term

We can write it as

$$32: 112 :: x: 217$$

On further calculation

$$32/112 = x/217$$

So we get

$$x = 32/112(217) = 62$$

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**8. Show that the following numbers are in continued proportion:**

**(i) 36, 90, 225**

**(ii) 48, 60, 75**

**(iii) 16, 84, 441**

**Solution:**

(i) 36, 90, 225

Consider the fraction  $36/90$

By dividing the fraction by 18

We get

$$36/90 = 2/5$$

Consider the fraction  $90/225$

By dividing the fraction by 45

We get

$$90/225 = 2/5$$

Hence,  $36: 90 :: 90: 225$ .

(ii) 48, 60, 75

Consider the fraction  $48/60$

By dividing the fraction by 12

We get

$$48/60 = 4/5$$

Consider the fraction  $60/75$

By dividing the fraction by 15

We get

$$60/75 = 4/5$$

Hence,  $48: 60 :: 60: 75$ .

(iii) 16, 84, 441

Consider the fraction  $16/84$

By dividing the fraction by 4

We get

$$16/84 = 4/21$$

Consider the fraction  $84/441$

By dividing the fraction by 21

We get

$$84/441 = 4/21$$

Hence,  $16: 84 :: 84: 441$ .

**9. The ratio of the length of a school ground to its width is 5: 2. Find its length if the width is 40 metres.**

**Solution:**

It is given that

Ratio of length of a school ground to its width = 5: 2

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Width of the school ground = 40 m

So the length of the school ground =  $5/2 (40) = 100$  m

Hence, the length of the school ground is 100 m.

**10. The ratio of the sale of eggs on a Sunday to that of the whole week of a grocery shop was 2: 9. If the total sale of eggs in the same week was Rs 360, find the sale of eggs on Sunday.**

**Solution:**

It is given that

Ratio of the sale of eggs on a Sunday to that of the whole week of a grocery shop = 2: 9

We know that the sale of eggs in a week is Rs 9 and on Sunday is Rs 2

If eggs of Rs 1 is sold in a week, the cost of egg on Sunday = Rs  $2/9$

If the total sale of eggs in the same week was Rs 360, the sale of eggs on Sunday =  $2/9 (360) = \text{Rs } 80$

Hence, the sale of eggs on Sunday is Rs 80.

**11. The ratio of copper and zinc in an alloy is 9: 7. If the weight of zinc in the alloy is 9.8 kg, find the weight of copper in the alloy.**

**Solution:**

It is given that

Ratio of copper and zinc in an alloy = 9: 7

We know that

If the weight of zinc is 7 kg then the weight of copper is 9 kg

If the weight of zinc is 1 kg then the weight of copper =  $9/7$  kg

So if the weight of zinc is 9.8 kg then the weight of copper =  $9/7 (9.8) = 12.6$  kg

Hence, the weight of copper in the alloy is 12.6 kg.

**12. The ratio of the income to the expenditure of a family is 7: 6. Find the savings if the income is Rs 1400.**

**Solution:**

It is given that

Ratio of the income to the expenditure of a family = 7: 6

We know that saving = total income – expenditure

So we get

Ratio of saving to the income =  $[7 - 6]: 7 = 1: 7$

It is given that income = Rs 1400

So the saving of the family =  $1/7 (1400) = \text{Rs } 200$

Hence, the saving of the family is Rs 200.

**13. The ratio of story books in a library to other books is 1: 7. The total number of story books is 800. Find the total number of books in the library.**

**Solution:**

It is given that

Ratio of story books in a library to other books = 1: 7

We know that 1 is a story book out of  $1 + 7 = 8$  books

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So if there is 1 story book then the total number of books = 8

If there is 800 story books then the total number of books =  $8 (800) = 6400$

Hence, the total number of books in the library is 6400.

RD Sharma Solutions for Class 6 Maths Chapter 9 –  
Ratio, Proportion and Unitary Method**EXERCISE 9.4**

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**1. The price of 3 metres of cloth is Rs 79.50. Find the price of 15 metres of such cloth.****Solution:**

It is given that

Price of 3 m of cloth = Rs 79.50

We get

Price of 1 m of cloth =  $79.50/3 = \text{Rs } 26.5$ So the price of 15 m of cloth =  $26.5 (15) = \text{Rs } 397.50$ 

Hence, the price of 15 m of such cloth is Rs 397.50.

**2. The cost of 17 chairs is Rs 9605. Find the number of chairs that can be purchased in Rs 56500.****Solution:**

No. of chairs purchased for Rs 9605 = 17

We get

No. of chairs purchased for Rs 1 =  $17/9605$ So the number of chairs purchased for Rs 56500 =  $17/9605 (56500) = 100$ 

Hence, 100 chairs can be purchased in Rs 56500.

**3. Three ferryloads are needed to carry 150 people across a river. How many people will be carried on 4 ferryloads?****Solution:**

We know that

No. of people required to carry 3 ferryloads = 150

We get

No. of people required to carry 1 ferryload =  $150/3 = 50$ So the number of people required to carry 4 ferryloads =  $4 (50) = 200$ 

Hence, 200 people are required to carry 4 ferryloads.

**4. If 9 kg of rice costs Rs 120.60, what will 50 kg of such a quality of rice cost?****Solution:**

It is given that

Cost of 9 kg rice = Rs 120.60

We know that

Cost of 1 kg rice =  $120.60/9 = \text{Rs } 13.4$ So the cost of 50 kg rice =  $13.4 (50) = \text{Rs } 670$ 

Hence, 50 kg of such a quality of rice costs Rs 670.

**5. A train runs 200 kilometres in 5 hours. How many kilometres does it run in 7 hours?****Solution:**

Distance travelled by train in 5 hours = 200 km

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We know that

Distance travelled by train in 1 hour =  $200/5 = 40$  km

So the distance travelled by train in 7 hours =  $40 (7) = 280$  km

Hence, the train runs 280 km in 7 hours.

**6. 10 boys can dig a pitch in 12 hours. How long will 8 boys take to do it?**

**Solution:**

It is given that

10 boys can dig a pitch in 12 hours

We know that the time taken by one boy =  $10 (12) = 120$  hours

So the time taken by 8 boys to dig the pitch =  $120/8 = 15$  hours

Hence, 8 boys will take 15 hours to dig the pitch.

**7. A man can work 8 hours daily and finishes a work in 12 days. If he works 6 hours daily, in how many days will the same work be finished?**

**Solution:**

It is given that

A man can work 8 hours daily and finishes a work in 12 days

We know that the time taken by the man to finish work =  $8 (12) = 96$  hours

If he works 6 hours daily, the days required to finish the work =  $96/6 = 16$  days

Hence, the man requires 16 days to finish the same work.

**8. Fifteen post cards cost Rs 2.25. What will be the cost of 36 post cards? How many postcards can be bought in Rs 45?**

**Solution:**

It is given that

Cost of fifteen post cards = Rs 2.25

We know that

Cost of one post card =  $Rs\ 2.25/15$

So the cost of 36 post cards =  $2.25/15 (36) = Rs\ 5.40$

We get

No. of postcards that can be purchased in Rs 1 =  $15/2.25$

So the number of postcards that we can buy in Rs 45 =  $15/2.25 (45) = 300$

Hence, the cost of 36 post cards is Rs 5.40 and 300 post cards can be bought in Rs 45.

**9. A rail journey of 75 km costs Rs 215. How much will a journey of 120 km cost?**

**Solution:**

It is given that

Cost of rail journey of 75 km = Rs 215

We know that

Cost of rail journey of 1 km =  $Rs\ 215/75$

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So the cost of rail journey of 120 km =  $215/75 (120) = \text{Rs } 344$

Hence, the cost of rail journey of 120 km is Rs 344.

**10. If the sales tax on a purchase worth Rs 60 is Rs 4.20. What will be the sales tax on the purchase worth Rs 150?**

**Solution:**

It is given that

Sales tax on a purchase worth Rs 60 = Rs 4.20

We know that

Sales tax on a purchase worth Rs 1 = Rs  $4.20/60$

So the sales tax on the purchase worth Rs 150 =  $4.20/60 (150) = \text{Rs } 10.50$

Hence, the sales tax on the purchase worth Rs 150 is Rs 10.50.

**11. The cost of 17 chairs is Rs 19210. Find the number of such chairs that can be purchased in Rs 113000?**

**Solution:**

It is given that

No. of chairs purchase in Rs 19210 = 17

We know that

No. of chairs purchased in Rs 1 =  $17/19210$

So the number of chairs that can be purchased in Rs 113000 =  $17/19210 (113000) = 100$

Hence, 100 chairs can be purchased in Rs 113000.

**12. A car travels 165 km in 3 hours**

**(i) How long will it take to travel 440 km?**

**(ii) How far will it travel in 7 hours?**

**Solution:**

Distance travelled by car = 165 km in 3 hours

So the speed of car = Distance/ time =  $165/3 = 55$  km per hour

(i) Time taken to travel 440 km =  $440/55 = 8$  hours

(ii) Distance covered in 7 hours =  $55 (7) = 385$  km

**13. 2 dozens of oranges cost Rs 60. Find the cost of 120 similar oranges?**

**Solution:**

It is given that

Cost of 2 dozens of oranges = Rs 60

We know that

Cost of 1 orange = Rs  $60/24$

So the cost of 120 similar oranges =  $60/24 (120) = \text{Rs } 300$

Hence, the cost of 120 similar oranges is Rs 300.

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**14. A family of 4 members consumes 6 kg of sugar in a month. What will be the monthly consumption of sugar, if the number of family members becomes 6?**

**Solution:**

It is given that

Amount of sugar used by a 4 members family = 6 kg

We know that

Amount of sugar used by 1 member =  $6/4$  kg

So the sugar consumed by 6 members of a family =  $6/4 (6) = 9$ kg

Hence, 9 kg is the monthly consumption of sugar, if the number of family members becomes 6.

**15. The weight of 45 folding chairs is 18 kg. How many such chairs can be loaded on a truck having a capacity of carrying 4000 kg load?**

**Solution:**

It is given that

No. of folding chairs weighing 18 kg = 45

We know that

No. of folding chairs weighing 1 kg =  $45/18$

So the number of folding chairs weighing 4000 kg =  $45/18 (4000) = 10000$

Hence, 10000 chairs can be loaded on a truck having a capacity of carrying 4000 kg load.

RD Sharma Solutions for Class 6 Maths Chapter 9 –  
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Mark the correct alternative in each of the following:

1. A ratio equivalent of 2 : 3 is

- (a) 4 : 3
- (b) 2 : 6
- (c) 6 : 9
- (d) 10 : 9

**Solution:**

The option (c) is correct answer.

We know that 6 : 9 when divided by 3 we get 2 : 3.

2. The angles of a triangle are in the ratio 1 : 2 : 3. The measure of the largest angle is

- (a)  $30^\circ$
- (b)  $60^\circ$
- (c)  $90^\circ$
- (d)  $120^\circ$

**Solution:**

The option (c) is correct answer.

We know that the sum of all the angles =  $180^\circ$ So the largest angle =  $3 / (1 + 2 + 3) \times 180$ 

We get

Largest angle =  $3/6 \times 180 = 90^\circ$ 

3. The sides of a triangle are in the ratio 2 : 3 : 5. If its perimeter is 100 cm, the length of its smallest side is

- (a) 2 cm
- (b) 20 cm
- (c) 3 cm
- (d) 5 cm

**Solution:**

The option (b) is correct answer.

We know that the length of smallest side =  $100 \times 2 / (2 + 3 + 5) = 20$  cm

4. Two numbers are in the ratio 7 : 9. If the sum of the numbers is 112, then the larger number is

- (a) 63
- (b) 42
- (c) 49
- (d) 72

**Solution:**

The option (a) is correct answer.

Consider x as the largest number

So we get

$$9 / (7 + 9) = x / 112$$

By cross multiplication

$$x = 9/16 \times 112 = 63$$

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**5. Two ratio 384 : 480 in its simplest form is**

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

**Solution:**

The option (c) is correct answer.

384: 480 can be written as

$384/480 = 4/5$  when divided by 96

**6. If A, B, C, divide Rs 1200 in the ratio 2 : 3 : 5, then B's share is**

- (a) Rs 240
- (b) Rs 600
- (c) Rs 380
- (d) Rs 360

**Solution:**

The option (d) is correct answer.

So B's share =  $1200 \times 3 / (2 + 3 + 5)$

On further calculation

B's share =  $1200 \times 3/10 = \text{Rs } 360$

**7. If a bus travels 126 km in 3 hours and a train travels 315 km in 5 hours, then the ratio of their speeds is**

- (a) 2 : 5
- (b) 2 : 3
- (c) 5 : 2
- (d) 25 : 6

**Solution:**

The option (b) is correct answer.

We know that speed = distance/time

So the speed of bus =  $126/3 = 42 \text{ km/h}$

Speed of train =  $315/5 = 63 \text{ km/h}$

So the ratio of their speeds =  $42: 63 = 2: 3$

**8. The ratio of male and female employees in a multinational company is 5 : 3. If there are 115 male employees in the company, then the number of female employees is**

- (a) 96
- (b) 52
- (c) 69
- (d) 66

**Solution:**

The option (c) is correct answer.

Consider x as the number of female employees

So we get

$5/3 = 115/x$

By cross multiplication

$x = 115/5 \times 3 = 69$

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**9. Length and width of a field are in the ratio 5 : 3. If the width of the field is 42 m, then its length is**

- (a) 50 m
- (b) 70 m
- (c) 80 m
- (d) 100 m

**Solution:**

The option (b) is correct answer.

It is given that length and width of a field = 5: 3

Consider x m as the length

Width of the field = 42 m

So the length can be written as

$$5/3 = x/42$$

By cross multiplication

$$x = 5/3 \times 42 = 70 \text{ m}$$

**10. If  $57 : x = 51 : 85$ , then the value of x is**

- (a) 95
- (b) 76
- (c) 114
- (d) None of these

**Solution:**

The option (a) is correct answer.

It can be written as

$$57/x = 51/85$$

By cross multiplication

$$57 \times 85/51 = x$$

So we get

$$x = 95$$

**11. The ratio of boys and girls in a school is 12 : 5. If there are 840 girls in the school, then the number of boys is**

- (a) 1190
- (b) 2380
- (c) 2856
- (d) 2142

**Solution:**

The option are not correct.

Consider x as the number of boys

Ratio of boys and girls = 12: 5

It can be written as

$$12/5 = x/840$$

By cross multiplication

$$x = 12/5 \times 840 = 2016$$

**12. If 4, a, a, 36 are in proportion, then a =**

- (a) 24
- (b) 12

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(c) 3

(d) 24

**Solution:**

The option (b) is correct answer.

It is given that 4, a, a, 36 are in proportion

We can write it as  $4 : a :: a : 36$

So we get

$$4/a = a/36$$

By cross multiplication

$$4 \times 36 = a \times a$$

We get

$$a^2 = 144$$

So  $a = 12$

**13. If  $5 : 4 :: 30 : x$ , then the value of x is**

(a) 24

(b) 12

(c)  $3/2$

(d) 6

**Solution:**

The option (a) is correct answer.

It can be written as

$$5/4 = 30/x$$

By cross multiplication

$$x = 30 \times 4/5 = 24$$

**14. If a, b, c, d are in proportion, then**

(a)  $ab = cd$

(b)  $ac = bd$

(c)  $ad = bc$

(d) None of these

**Solution:**

The option (c) is correct answer.

It is given that a, b, c, d are in proportion

We can write it as  $a : b = c : d$

So we get

$$a/b = c/d$$

By cross multiplication

$$ad = bc$$

**15. If a, b, c, are in proportion, then**

(a)  $a^2 = bc$

(b)  $b^2 = ac$

(c)  $c^2 = ab$

(d) None of these

**Solution:**

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The option (b) is correct answer.

It is given that a, b, c are in proportion

We can write it as

$$a : b :: b : c$$

So we get

$$a/b = b/c$$

By cross multiplication

$$b^2 = ac$$

**16. If the cost of 5 bars of a soap is Rs. 30, then the cost of one dozen bars is**

(a) Rs 60

(b) Rs 120

(c) Rs 72

(d) Rs 140

**Solution:**

The option (c) is correct answer.

Consider Rs x as the cost of one dozen bars

It can be written as

$$30/5 = x/12$$

So we get

$$x = 30/5 \times 12 = \text{Rs } 72$$

**17. 12 men can finish a piece of work in 25 days. The number of days in which the same piece of work can be done by 20 men, is**

(a) 10 days

(b) 12 days

(c) 15 days

(d) 14 days

**Solution:**

The option (c) is correct answer.

Consider x days required by 20 men to do the same work

$$20/12 = 25/x$$

So we get

$$x = 12 \times 25/20 = 15 \text{ days}$$

**18. If the cost of 25 packets of 12 pencils each is Rs 750, then the cost of 30 packets of 8 pencils each is**

**Solution:**

The option (a) is correct answer.

We know that

Cost of 300 pencils = Rs 750

So consider Rs x as the cost of 240 pencils

It can be written as

$$750 : 300 :: x : 240$$

So we get

$$\text{Cost of 240 pencils} = 750/300 \times 240 = \text{Rs } 600$$

**19. If a, b, c are in proportion, then**

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- (a)  $a : b :: b : c$   
(b)  $a : b :: c : a$   
(c)  $a : b :: c : b$   
(d)  $a : c :: b : c$

**Solution:**

The option (a) is correct answer.

We know that a, b, c are in proportion

So we get  $a : b :: b : c$

It can be written as  $ac = b^2$

**20. The first, second and fourth terms of a proportion are 16, 24 and 54 respectively. The third term is**

- (a) 32  
(b) 48  
(c) 28  
(d) 36

**Solution:**

The option (d) is correct answer.

Consider x as the third term

We can write it as

$$16 : 24 = x : 54$$

So we get

$$16/24 = x/54$$

By cross multiplication

$$x = 16/24 \times 54$$

We get

$$x = 36$$