Exercise 8.1

Q 1. (a) Yes (b)No (c) No (d) Yes

Q 2.

(a) 63:45

= 63/45 = 7/5 = 7:5

(b) 8 days:4 weeks
4 weeks = 28 days
= 8/28 = 2/7= 2:7

(c) 30 min:510 min
= 30/510 = 1/17 = 1:17

(d) 1 h 25 min and 45 min
= 85/45 = 17/9 = 17:9

Q 3.

(a) 100 mL and 2 L
= 100/2000
= 1/20
= 1:20

(b) 11 and 33
= 11/33
=1/3
= 1:3

(c) 3 min to 45 min
= 3/45
= 1/15
= 1:15

(d) ₹50 and ₹250
= 50/250
= 1/5
= 1:5

(e) 1.3 kg and 300 g
= 1300/300
= 13/3
= 13:3

(f) 1 km and 750 m
= 1000/750
= 4/3
= 4:3

(g) 18:12
= 3/2
= 3:2

(h) ₹4.5:60 paise
= 450/60
= 15/2
= 15:2

(i) 24 m:96 cm

= 2400/96

= 25/1

= 25:1

(j) 1 h:25 min

= 60/25

= 12/5

= 12:5

Q 4.

a) $4/x = 32/24$

- $x = (4x24)/32$
- $x = 3$

b) $18/4 = 36/x$

- $x = (36 \times 4)/18$
- $x = 8$

c) $15/5 = x/25$

- $x = (15 \times 25)/5$
- $x = 75$

Q5.

(a) Ratio of marks obtained by Ravi and Rajan = 92:88 = 23:22

On interchanging the marks, ratio will be 88:92 = 22:23

Yes, on interchanging the marks ratio has changed.

(b) On adding two marks to their scores, ratio becomes 94:90 = 47: 45

No. The ratio will not remain the same.

Q6. Ratio of goals scored by Vijay and Riaz last year = 14 : 12 = 7 : 6

To keep the ratio of goals scored remains the same, Vijay and Riaz should score minimum 7 goals and 6 goals respectively.

Q7.

Ratio of number of baby teeth to the number of permanent teeth = 20: 32 = 5: 8

The three ratios equivalent to 5: 8 are 5×2: 8×2, 5×3 : 8×3, 5×5 : 8×5, i.e., 10 : 16, 15 : 24, 25 : 40.

Exercise 8.2

Q 1.

4:5, 19:20, 8:15

4/5, 19/20, 8/15

LCM :- 60

48/60, 57/60, 32/60

Ascending order

32/60, 48/60, 57/60, i.e., 8/15, 4/5, 19/20

8:15; 4:5; 19:20

Q 2.

Total number of students in a school = 2160

Number of boys = 1170

Number of girls = 2160 – 1170= 990

Ratio of girls to boys = 990/1170 = 11/13

Required ratio is 11:13.

Q 3.

Cost of an LED television is ₹36,000

Cost of a Box television is ₹12,000

Ratio of their cost = 36000/12000= 3/1

Required ratio is 3:1.

Q 4.

Width of the rectangle = 85 cm

Perimeter = 44 m = 4400 cm

Perimeter of a rectangle = 2(l+b)

- 4400 = 2(85 + l)
- 2200 = 85+l
- 2200 – 85 = l
- l = 2115 cm

Ratio of width to length = 85/2115= 17/423

Required ratio is 17:423.

Q 5.

In a month Roshini earns = ₹75000

She spends = ₹ 63000

Her saving = 75000 – 63000=₹12000

a) Ratio of money she earns to money she spends = 75000/63000 = 25/21 = 25:21
b) Ratio of her savings to her income = 12000/75000 = 4/25 = 4:25

Q 6.

According to the question,

2x+4x = 360

- $6x = 360$
- $x = 360/6$
- $x = 60$

Shreya = 2 x 60 =₹120

Isha = 4 x 60 =₹240

Q 7.

Ajay and Rahul divide 96 balls in the ratio of 9:7 between them

According to the question,

$9x + 7x = 96$

- $16x = 96$
- $x = 96/16$
- $x = 6$

Number of balls Ajay gets = 9 x 6 = 54

Number of balls Rahul gets = 7 x 6 = 42

Q 8.

Total number of pieces of sweets = 1560

According to the question,

$7x + 8x + 9x = 1560$

- $24x = 1560$
- $x = 1560/24$
- $x = 65$

Number of pieces of each type

7 x 65 = 455

8 x 65 = 520

9 x 65 = 585

Q 9.

The ratio of the ages of Sonu and Muskan is 7:11.
If Muskan is 33 years old

11x = 33

- x = 33/11
- x = 3

Age of Sonu= 7 x 3 = 21 years

Q 10.

The ratio of the number of bananas to that of apples in a basket is 5:13.
If there are 30 bananas, according to the question
5x = 30

- x = 30/5
- x = 6

Number of apples = 13 × 6 = 78

Difference between number of bananas and apples = 78 – 30 = 48

Exercise 8.3

Q 1.

(a) 15:35 and 49:35
Product of means = 35 × 49 = 1715
Product of extremes = 15 ×35 = 525
As the product of means is not equal to product of extremes,
Therefore the ratios are not in proportion.

(b) 20 L:45 L and 28 L:63 L
Product of means = 45 × 28 = 1260
Product of extremes = 20 × 63 = 1260
As the product of means is equal to product of extremes,
Therefore the ratios are in proportion.

Means: 45 L and 28 L; Extremes: 20 L and 63 L

(c) 32:48 and 70:210
Product of means = 48 × 70 = 3360
Product of extremes = 32 ×210 = 6720
As the product of means is not equal to product of extremes,
Therefore the ratios are not in proportion.

(d) 28:14 and 24:12
Product of means = 14 × 24 = 336
Product of extremes = 12 × 28 = 336
As the product of means is equal to product of extremes,
Therefore the ratios are in proportion.

Means: 14 and 24; Extremes: 28 and 12

(e) 16:48 and 35:120
Product of means = 35 × 48 = 1680
Product of extremes = 16 ×120 = 1920
As the product of means is not equal to product of extremes, therefore the ratios are not in proportion.

(f) 12:16 and 6:8
Product of means = 16 × 6 = 96
Product of extremes = 12 × 8 = 96
As the product of means is equal to product of extremes, therefore the ratios are in proportion.

Means: 16 and 6; Extremes: 12 and 8

(g) 32 m:64 m = 6 s:12 s
Product of means = 64 × 6 = 384
Product of extremes = 32 ×12 = 384
As the product of means is equal to product of extremes, therefore the ratios are in proportion.

Means: 64 and 6; Extremes: 32 and 12

(h) 12:18 = 28:12

Product of means = 28 × 18 = 504
Product of extremes = 12 ×12 = 144
As the product of means is not equal to product of extremes, therefore the ratios are not in proportion.

Means: 64 and 6; Extremes: 32 and 12

Q 2.

(a) 4:7 = 20:35
Product of means = 7 × 20 = 140
Product of extremes = 4 ×35 = 140
As the product of means is equal to product of extremes,
Therefore the ratios are in proportion.
(True)

(b) 15:40 = 35:65
Product of means = 40 × 35 = 1400
Product of extremes = 15 × 65 = 975
As the product of means is not equal to product of extremes,
Therefore the ratios are not in proportion.
(False)

(c) 3/8 = 15/40
Product of means = 8 × 15 = 120
Product of extremes = 3 × 40 = 120
As the product of means is equal to product of extremes,
Therefore the ratios are in proportion.
(True)

(d) 16 kg:24 kg = 20 men:30 men
Product of means = 24 × 20 = 480
Product of extremes = 16 ×30 = 480
As the product of means is equal to product of extremes,
Therefore the ratios are in proportion.
(True)

(e) 9:15 = 18:34
Product of means = 15 ×18 = 270
Product of extremes = 9 × 34 = 306
As the product of means is not equal to product of extremes,
Therefore the ratios are not in proportion.
(False)

(f) 52 L:39 L = 3 m:4 m

Product of means = 39 × 3 = 117
Product of extremes = 52 × 4 = 208
As the product of means is not equal to product of extremes,
Therefore the ratios are not in proportion.
(False)

Q 3.

(a) 33, 121, 9, 96
Product of means = 121 × 9 = 1089
Product of extremes = 33 × 96 = 3168
As the product of means is not equal to product of extremes,
Therefore the ratios are not in proportion.

(b) 40, 120, 15, 45
Product of means = 120 × 15 = 1800
Product of extremes = 40 × 45 = 1800
As the product of means is equal to product of extremes,
Therefore the ratios are in proportion.

(c) 4, 6, 8, 12

Product of means = $6 \times 8 = 48$

Product of extremes = $12 \times 4 = 48$

As the product of means is equal to product of extremes,

Therefore the ratios are in proportion.

Q 4.

25: x:: 5:8

Product of means = product of extremes

- $x = (25 \times 8)/5$
- $x = 40$

Q 5.

Correct order of numbers to see if the numbers are in proportion.

3:5::21:35 or 3:21::5:35

Here,

Product of means = product of extremes

$3 \times 35 = 5 \times 21$

$105 = 105$

Q 6.

The ratio of blue paint and white paint used in a design is in proportion to the ratio of red paint and yellow paint.

40:260:: x : 325

- $x = (325 \times 40)/260$

➢ x = 50

Red paint = 50 mL

Q 7. Let the numbers of overs bowled by Irfan be x.

According to question,

80:48:: x : 12

➢ x = 12 × 80/48 = 20

Number of overs bowled by Irfan = 20

Q 8. Let the smallest number be x.

According to question,

14 – x:17 – x = 34 – x: 42 – x

➢ 14 – x/17– x = 34 – x/42 – x
➢ $x^2 – 56x + 588 = x^2 – 51x + 578$
➢ 56x – 51x = 588 – 578
➢ 5x = 10
➢ x = 10/5 = 2

Smallest number = 2

Q 9. Rohan’s salary = ₹10,000

Ratio of Rohan’s and Sohan’s salary = 1:3

Sohan’s salary = 3 × ₹10,000 = ₹30,000

Suppose after x years, the ratio of their salaries is 1:2.

Therefore, 10,000 + 1000x: 30,000 + 1000x = 1:2

⇨2(10,000 + 1000x) = 30,000 + 1000x

⇨20,000 + 2000x = 30,000 + 1000x

⇨1000x = 10,000

⇨ x = 10

After 10 years, the ratio of Rohan’s and Sohan’s salary is 1:2.