Selina Solutions Concise Mathematics Class 6 Chapter 12
Proportion (Including Word Problems)

EXERCISE 12(C)

1. Are the following numbers in proportion:
(i) 32, 40, 48 and 60?
(ii) 12, 15, 18 and 20?
Solution:
(i) 32, 40, 48 and 60
Given
Numbers are 32, 40, 48 and 60
If 32: 40 = 48: 60 then the ratios are in continued proportion
Hence we can find out as shown below
32: 40 = 48: 60
32 × 60 = 40 × 48
1920 = 1920
Since they are equal
Therefore they are in continued proportion
(ii) 12, 15, 18 and 20
Given
Numbers are 12, 15, 18 and 20
If 12: 15 = 18: 20 then the ratios are in continued proportion
Hence we can find out as shown below
12: 15 = 18: 20
12 × 20 = 15 × 18
240 = 270
240 ≠ 270
Since they are not equal
Therefore they are not in a continued proportion

2. Find the value of x in each of the following such that the given numbers are in proportion
(i) 14, 42, x and 75
(ii) 45, 135, 90 and x
Solution:
(i) 14, 42, x and 75
Given
Numbers are 14, 42, x and 75
If 14: 42 = x: 75 then they are in continued proportion
Hence we can find out as shown below
14: 42 = x: 75
14 × 75 = x × 42

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x = (14 × 75) / 42

x = 1050 / 42

x = 25

Therefore the value of x is 25

(ii) 45, 135, 90 and x

Given

Numbers are 45, 135, 90 and x

If 45: 135 = 90: x then they are in continued proportion

Hence we can find out value of x as shown below

45: 135 = 90: x

45 × x = 90 × 135

x = (90 × 135) / 45

x = 12150 / 45

x = 270

Therefore the value of x is 270

**3. The costs of two articles are in the ratio 7: 4. If the cost of the first article is Rs
2800; find the cost of the second article**
Solution:
Given

Costs of two articles are in the ratio = 7: 4

Cost of first article = Rs 2800

Let us assume the cost of second article be x

Hence the value of second article can be calculated as shown below

7: 4 = 2800: x

7 / 4 = 2800 / x

7 × x = 2800 × 4

x = (2800 × 4) / 7

x = 11200 / 7

x = 1600

Therefore the cost of second article is Rs 1600

**4. The ratio of the length and the width of a rectangular sheet of paper is 8: 5. If the
width of the sheet is 17.5 cm; find the length**
Solution:
Given

Ratio of the length and the width of a rectangular sheet of paper = 8: 5

Width of the sheet = 17.5 cm

Hence the value of length can be calculated as shown below

8: 5 = x: 17.5

8 / 5 = x / 17.5

5 × x = 8 × 17.5

x = (8 × 17.5) / 5

x = 140 / 5

x = 28

Therefore the length of sheet is 28 cm

5. The ages of A and B are in the ratio 6: 5. If A's age is 18 years, find the age of B.

Solution:

Given

The ages of A and B are in the ratio = 6: 5

Age of A = 18 years

Let the age of B be x years

Hence the value of B's age can be calculated as shown below

6: 5 = 18: x

6 / 5 = 18 / x

6 × x = 18 ×5

x = (18 × 5) / 6

x = 90 / 6

x = 15

Therefore the age of B is 15 years

6. A sum of Rs 10, 500 is divided among A, B and C in the ratio 5: 6: 4. Find the share of each.

Solution:

Given

Amount divided among A, B and C in the ratio = 5: 6: 4

Total amount divided = Rs 10500

Hence the sum of ratios can be calculated as below

Sum of ratios = 5 + 6 + 4

= 15

Hence the share's of A, B and C can be calculated as below

A's share = Rs (10500) / 15 × 5

= 700 × 5

= Rs 3500

B's share = Rs (10500) / 15 × 6

= 700 × 6

=4200

C's share = Rs (10500) / 15 × 4
= 700 × 4
= Rs 2800
Therefore the share of A, B and C are Rs 3500, Rs 4200 and Rs 2800

7. Do the ratios 15 cm to 2 m and 10 sec to 3 minutes form a proportion?
Solution:
Given
15 cm: 2 m:: 10 sec: 3 min
We know that,
1 m = 100 cm
1min = 60 sec
Hence 2 m = 200 cm
3 min = 180 sec
We can check that they form the proportion or not as shown below:
15: 200:: 10: 180
3: 40:: 1: 180
Therefore they do not form the proportion

8. Do the ratios 2 kg: 80 kg and 25 g: 625 g form a proportion?
Solution:
Given
2 kg: 80:: 25 g: 625 g
We can check that they form the proportion or not as shown below
2: 80:: 25: 625
1: 40:: 1: 25
Therefore they do not form the proportion

9. 10 kg sugar cost Rs 350. If x kg sugar of the same kind costs Rs 175, find the value of x
Solution:
Given
Cost of 10 kg sugar = Rs 350
Cost of x kg sugar = Rs 175
The value of x can be calculated as shown below
10 kg: x kg:: 350: 175
10 × 175 = 350 × x
350 x = 1750
x = 1750 / 350

x = 5
Therefore, 5 kg of sugar costs Rs 175

10. The length of two ropes are in the ratio 7: 5. Find the length of:
(i) shorter rope, if the longer one is 22.5 m
(ii) longer rope, if the shorter is 9.8 m
Solution:
(i) shorter rope, if the longer one is 22.5 m
Given
Ratio of length of two rope = 7: 5
And longer rope = 22.5 m
Let the shorter rope length be x
Hence, length of shorter rope can be calculated as below
7: 5 = 22.5: x
7x = 22.5 × 5
x = (22.5 × 5) / 7
x = 112.5 / 7
x = 16.07 m
Therefore the length of shorter rope is 16.07 m
(ii) longer rope, if the shorter is 9.8 m
Given
Ratio of length of two rope = 7: 5
And shorter rope = 9.8 m
Let the length of longer rope be x
Hence, the length of longer rope can be calculated as below
7: 5 = x: 9.8
5x = 9.8 × 7
x = (9.8 × 7) / 5
x = 68.6 / 5
x = 13.72 m
Therefore the length of longer rope is 13.72 m

11. If 4, x and 9 are in continued proportion, find the value of x
Solution:
Given
Numbers are 4, x and 9 are in continued proportion
Hence we can find out value of x as below
4: x = x: 9
$x^2 = 9 \times 4$

x = √36
x = 6
Therefore the value of x is 6

12. If 25, 35 and x are in continued proportion, find the value of x
Solution:
Given
Numbers are 25, 35 and x are in continued proportion
Hence we can find out value of x as below
25: 35 = 35: x
25 × x = 35 × 35
x = (35 × 35) / 25
x = 1225 / 25
x = 49
Therefore the value of x is 49