Board- CBSE	Std- 6	Topic- Ratio and Proportion	Solved Questions

Q 1. Find the ratio of each of the following in simplest form:

(i) 30 and 15

= 30 : 15

First we need to convert the given ratio into fraction,

= 30/15, [divide both the numerator and denominator by 15, since the h.c.f. of 30 and 15 is 15]

= 2/1

= 2 : 1

(ii) 60 and 48

= 60 : 48

First we need to convert the given ratio into fraction,

= 60/48 (divide both the numerator and denominator by 12 since, the h.c.f. of 60 and 48 is 12)

= 5/4

= 5 : 4

(iii) 8 kg and 10 kg

= 8 kg : 10 kg

= (8 kg)/(10 kg), [divide both the numerator and denominator by 2 since, the h.c.f. of 8 and 10 is 2]

= 4/5

= 4: 5

Q 2. Compare the ratios 4: 5 and 2: 3.

Solution:

Express the given ratios as fraction

4: 5 = 4/5 and 2: 3 =2/3

Now find the L.C.M (least common multiple) of 5 and 3

The L.C.M (least common multiple) of 5 and 3 is 15.

Making the denominator of each fraction equal to 15, we have

$4/5 = (4 \times 3)/(5 \times 3) = 12/15$ and $2/3 = (2 \times 5)/(3 \times 5) = 10/15$

Clearly, $12 > 10$

Now, $12/15 > 10/15$

Therefore, $4 : 5 > 2 : 3$.

Q 3. Compare the ratios 5 : 6 and 7 : 9.

Solution:

Express the given ratios as fraction:

$5 : 6 = 5/6$ and $7 : 9 = 7/9$

Now find the L.C.M (least common multiple) of 6 and 9

The L.C.M (least common multiple) of 6 and 9 is 18.

Making the denominator of each fraction equal to 18, we have

$5/6 = (5 \times 3)/(6 \times 3) = 15/18$ and $7/9 = (7 \times 2)/(9 \times 2) = 14/18$

Clearly, $15 > 14$

Now, $15/18 > 14/18$

Therefore, $5 : 6 > 7 : 9$.

Q 4. Give two equivalent ratios of 8 : 18.

Solution:

We will find the first equivalent ratio of 8 : 18 by using multiplication.

So first, we need to write the given ratio as a fraction,

$= 8/18$

$= (8 \times 2)/(18 \times 2)$

$= 16/36$

$= 16 : 36$ (one equivalent ratio),

So, 16 : 36 is an equivalent ratio of 8 : 18.

Now we will find another equivalent ratio of 8 : 18 by using division.

Similarly, we need to write the given ratio as a fraction,

$= 8/18$

$= (8 \div 2)/(18 \div 2)$

$= 4/9$

$= 4 : 9$ (another equivalent ratio)

So, 4 : 9 is an equivalent ratio of 8 : 18.

Therefore, the two equivalent ratios of 8 : 18 are 16 : 36 and 4 : 9.

Q 5. For the following ratio find the two equivalent ratios of 11 : 13.

Solution:

To find two equivalent ratios of 11 : 13 first we need to write the given ratio as a fraction,

$= 11/13$

$= (11 \times 2)/(13 \times 2)$

$= 22/26$

$= 22 : 26$ is one equivalent ratio

Similarly again, to get another equivalent ratio of 11 : 13;

$11/13$

$= (11 \times 4)/(13 \times 4)$

$= 44/52$

$= 44 : 52$ is another equivalent ratio

Therefore, the two equivalent ratios of 11 : 13 are 22 : 26 and 44 : 52.

Q 6. Two numbers are in the ratio of 7 : 6. If the sum of the numbers is 91, find the numbers.

Solution:

Sum of the terms of the ratio $= 7 + 6 = 13$.

First number $= (7/13) \times 91 = 49$.

Second number $= (6/13) \times 91 = 42$.

Thus, the numbers are 49 and 42.

Q 7. 12 sweets are to be divided between A and B in the ratio of 1 : 3. Find how many sweets does each gets?

Solution:

Here, A and B get sweets in the ratio of 1 : 3.

This means that the sweets are divided into $1 + 3 = 4$ equal parts.

Then, A gets $= 1/4$ of the total number of sweets.

$= (¼) \times 12$ sweets $= 3$ sweets.

And, B gets $= 3/4$ of the total number of sweets.

$= (¾) \times 12$ sweets $= 9$ sweets.

Q 8. 20 apples are distributed between Aaron and Ben in the ratio of 2 : 3. Find how many does each gets?

Solution:

Aaron and Ben get apples in the ratio 2 : 3 i.e. if Aaron gets 2 parts, Ben should get 3 parts.

In other words, if we make $(2 + 3) = 5$ equal parts, then Aaron should get 2 parts out of these 5 equal parts

i.e. Aaron gets $= 2/5$ of the total number of apples $= 2/5$ of $20 = (⅖) \times 20 = 8$ apples

Similarly, Ben gets 3 parts out of 5 equal parts

i.e. Ben gets $= 3/5$ of the total number of apples $= 3/5$ of $20 = (⅗) \times 20 = 12$ apples

Therefore, Aaron gets 8 apples and Ben gets 12 apples.

Q 9. Divide \$260 among A, B, and C in the ratio 1/2 : 1/3 : 1/4.

Solution:

First, convert the given ratio into its simplest form.

L.C.M. of denominators 2, 3, and 4 is 12.

Therefore, $1/2 : 1/3 : 1/4 = 1/2 \times 12 : 1/3 \times 12 : 1/4 \times 12 = 6 : 4 : 3$

And, $6 + 4 + 3 = 13$

Therefore, A's share $= 6/13$ of \$260 $= (6/13) \times 260 =$ \$120

B's share $= 4/13$ of \$260 $= (4/13) \times 260 =$ \$80

C's share $= 3/13$ of \$260 $= (3/13) \times 260 =$ \$60

Therefore, A get \$120, B gets \$80 and C gets \$60

Q 10. Find the mean proportion between 4 and 9.

Solution:

Let the mean proportion be x

Therefore, 4 : x = x : 9

$\Rightarrow x \times x = 4 \times 9$

$\Rightarrow x^2 = 36$

$\Rightarrow x^2 = 6^2$

$\Rightarrow x = 6$

Q11. Find the third proportional to 12 and 30.

Solution:

Let x be the third proportional

Therefore, 12 : 30 = x : 30

$\Rightarrow 12 \times x = 30 \times 30$

$\Rightarrow 12x = 900$

$\Rightarrow x = 900/12$

$\Rightarrow x = 75$

Q12. Check whether the two ratios form a proportion or not:

(i) 6 : 8 and 12 : 16; (ii) 24 : 28 and 36 : 48

Solution:

(i) 6 : 8 and 12 : 16

6 : 8 = 6/8 = 3/4

12 : 16 = 12/16 = 3/4

Thus, the ratios 6 : 8 and 12 : 16 are equal.

Therefore, they form a proportion.

(ii) 24 : 28 and 36 : 48

24 : 28 = 24/28 = 6/7

36 : 48 = 36/48 = 3/4

Thus, the ratios 24 : 28 and 36 : 48 are unequal.

Therefore, they do not form a proportion.

Q 13. In a sports meet, groups of boys and girls are to be formed. Each group consists of 4 boys and 6 girls. How many boys are required, if 102 girls are available for such groupings?

Solution:

Ratio between boys and girls in a group = 4 : 6 = 4/6 = 2/3 = 2 : 3

Let the number of boys required = x

Ratio between boys and girls = x : 102

So, we have, 2 : 3 = x : 102

Now, product of extremes = 2 × 102 = 204

Product of means = 3 × x

We know that in a proportion, product of extremes = product of means

i.e., 204 = 3 × x

If we multiply 3 by 68, we get 204 i.e., 3 × 68 = 204

Thus, x = 68

Hence, 68 boys are required.

Q 14. If a : b = 4 : 5 and b : c = 6 : 7; find a : c.

Solution:

a : b = 4 : 5

⇒ a/b = 4/5

b : c = 6 : 7

⇒ b/c = 6/7

Therefore, a/b × b/c = (⅘) × (6/7)

⇒ a/c = 24/35

Therefore, a : c = 24 : 35

Q 15. If 4, x, 32, and 40 are in proportion, find the value of x.

Solution:

4, x, 32 and 40 are in proportion, i.e., 4 : x :: 32 : 40

Now, product of extremes = 4 × 40 = 160

And product of means = x × 32

We know that in a proportion product of extremes = product of means

i.e., $160 = x \times 32$

If we multiply 32 by 5, we get 160

i.e., $5 \times 32 = 160$

So, $x = 5$

Hence, the value of x is 5.