EXERCISE-01

Multiple Choice Questions

1. The ratio of the number of sides of a square to the number of edges of a cube is

(1) 1 : 2 (2) 1 : 3

(3) 3 : 1 (4) 4 : 1

2. Which of the following ratio is the greatest?

(1) 3 : 4 (2) 5 : 7

(3) 9 : 11 (4) 1 : 8

3. There are 'b' boys and 'g' girls in a school. The ratio of girls to the total number of students in the class is

(1) $\frac{b}{b+a}$ (2) $\frac{g}{b+g}$

(3) $\frac{b}{g}$ (4) $\frac{b+g}{g}$

4. The ratio of 60 cm : 1.8 m is

(1) 100 : 3 (2) 3 : 100

(3) 1 : 3 (4) 3s : 1

5. Which of the following ratio is not equivalent to 3 : 7?

(1) 12 : 28 (2) 18 : 42

(3) 30 : 70 (4) 36 : 72

6. Which of the following ratios is not in the lowest form?

(1) 21 : 56 (2) 9 : 19

(3) 13 : 31 (4) 23 : 40

7. Which of the following is not in proportion?

(1) 25 cm : 1 m and ₹ 50 : ₹ 200

(2) 0.9 : 0.36 and 10 : 4

(3) 150 g : 2 kg and 9 minutes : 2 hours

(4) 5.2 : 3.9 and 3 : 4

8. Which of the following is in proportion?

(1) 2, 3, 20, 30 (2) 3, 4, 15, 18

(3) 1, 3, 11, 22 (4) 2, 5, 40, 80

9. Which of the following is true?

(1) 15 : 40 :: 10 : 30 (2) 16 : 48 :: 25 : 75

(3) 40 : 60 :: 30 : 40 (4) 20 : 100 :: 30 : 120

10. Which of the following is false?

(1) 25 g : 30 g :: 40 kg : 48 kg

(2) 80 : 90 :: 24 h : 27 h

(3) 32 m : 40 m :: 6 minutes : 12 minutes

(4) 25 km : 60 km :: ₹ 10 : ₹ 24

11. Which of the following statement is not true?

(1) 4 : 7 = 5 : 9

(2) ₹ 5 : ₹ 25 = 12 g : 60 g

(3) 30 : 80 = 6 : 16

(4) 12 : 36 = 14 : 42

12. If the number 9, 24, x are in continued proportion, the value of x is

(1) 64 (2) 42 (3) 30 (4) 3

13. The mean proportional between 48 and 75 is

(1) 50 (2) 60 (3) 70 (4) 75

14. If a bus travels 200km in 4 hours and a train travels 350km in 5 hours at uniform speeds, then the ratio of the distance travelled by them in one hour is

(1) 4 :7 (2) 5 : 7

(3) 4 : 5 (4) 7 : 5

15. A bag contains red balls and blue balls in the ratio 6 : 5. If the number of blue balls in the bag is 30, the number of red balls is

(1) 25 (2) 30 (3) 36 (4) 40

16. The ratio of the males to the females in a society is 5 : 4. Which of the following can be the total number of persons in the society?
(1) 600 (2) 700
(3) 800 (4) 900

17. An office opens at 8 : 00 AM and closes at 6 : 00 PM with a lunch break of 45 minutes. The ratio of lunch break to the total period in the office is
(1) 2 : 45 (2) 3 : 40
(3) 2 : 9 (4) 9 : 2

18. The cost of 1 dozen bananas is ₹30. The cost of 6 oranges is ₹18. The ratio of the cost of a banana to the cost of an orange is
(1) 3 : 2 (2) 2 : 3
(3) 6 : 5 (4) 5 : 6

19. The present age of Hari Kishan is 60 years. The present age of Manish is 30 years. The ratio of the age of Manish to the age of Hari Kishan 10 years ago was
(1) 2 : 5 (2) 5 : 2
(3) 2 : 3 (4) 3 : 2

20. 100 students appeared in annual examination. 60 students passed. The ratio of the number of students who failed to the total number of students is
(1) 5 : 2 (2) 2 : 5
(3) 2 : 3 (4) 3 : 2

21. ₹100 are divided between Sangeeta and Manish in the ratio 4 : 1. Find the amount Sangeeta gets
(1) ₹ 80 (2) ₹ 20
(3) ₹ 60 (4) ₹ 50

22. A car requires 5 litres of petrol to cover 80 km. How many litres of petrol are required to cover 32 km?
(1) 11 (2) 21 (3) 31 (4) 41

23. The cost of 10 notebooks is ₹100. The cost of 1notebook is
(1) ₹10 (2) ₹100 (3) ₹20 (4) ₹5

24. The cost of 1 dozen pens is ₹24. Find the cost of 30 pens.
(1) ₹40 (2) ₹45 (3) ₹30 (4) ₹60

25. The cost of 3 envelopes is ₹15. The cost of 10 envelopes is
(1) ₹ 20 (2) ₹ 30 (3) ₹ 45 (4) ₹ 50

26. The cost of 5 kg of tomatoes is ₹100. The cost of 2 kg of tomatoes is
(1) ₹ 20 (2) ₹ 40 (3) ₹ 30 (4) ₹ 50

27. The weight of 50 books is 10 kg. The weight of 25 books is
(1) 5 kg (2) 8 kg (3) 6 kg (4) 4 kg

28. The cost of 20 m of cloth is ₹400. The cost of 15 m of cloth is
(1) ₹ 100 (2) ₹ 200
(3) ₹ 300 (4) ₹ 360

29. The salary of a month of an employer is ₹4000. The annual salary of the employer is
(1) ₹48000 (2) ₹24000
(3) ₹12000 (4) ₹8000

30. An aeroplane covers a distance of 5000 km in 5 hours. How much distance will it cover in 2 hours?
(1) 1000 km (2) 2000 km
(3) 3000 km (4) 4000 km

Fill in the blanks

1. _____ is the comparison of two quantities by division.
2. Two quantities can be compared only if they are in the same _____ .
3. We can get equivalent ratios by _____ or _____ the numerator and denominator by the same number.
4. When two ratios are equal, they are said to be in _____ .
5. In a statement of proportion, the first and fourth terms are known as _____ while second and third terms are known as _____ terms.
6. Two ratios are equivalent, if the _____ corresponding to them are equivalent.
7. The method in which we first find the value of one unit and then the value of the required number of units is known as _____ method.
8. a, b, c are said to be in _____ proportion if a : b = b : c.
9. The first term of a ratio is called _____ and the second term is called _____ .
10. A ratio expressed in lowest form has no common factor other than _____ in its terms.

True or False

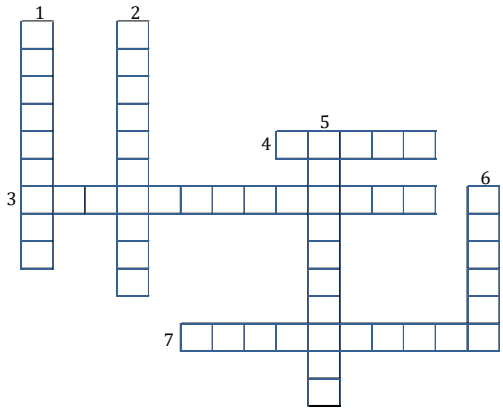
1. The ratio of 200 cm to 2 cm is 100 : 1.
2. The ratio of two quantities never has any unit in itself.
3. The ratio 2 : 3 is same as the ratio 3 : 2.
4. The order of terms in the proportion is important.
5. 0.2 : 5 = 2 : 0.5
6. 2 km : 25 km = ₹ 5 : ₹ 62.5.
7. A ratio is always more than 1.
8. If b : a = c : d, then a, b, c, d are in proportion.
9. $16\ m^2 : 36\ m^2 = 32\ m : 72\ m$.
10. The ratio of one day to one month is 1 : 1.
11. The ratios a : b and b : a are equal.
12. The unit of ratio is the same as that of its terms.
13. If both terms of the ratio are multiplied by the same non-zero constant, then the ratio remains the same.
14. If four quantities are in proportion, then the product of the first two is equal to the product of the last two.
15. A ratio can be treated as a fraction.

Match the column

Column – I	Column – II
(1) ₹ 60 : ₹ 150	(a) 1000 : 1
(2) 50 cm : 5 m	(b) 1 : 4
(3) 60 kg : 60 g	(c) 45 : 135
(4) 15 hours : 40 hrs	(d) 2 : 5
(5) 6.25 : 25	(e) 24 : 56
(6) 15 : 45	(f) 3 : 8
(7) 30 ℓ : 70 ℓ	(g) 1 : 11
(8) 50 paise : ₹ 5.50	(h) 1 : 10

Crossword puzzle

Solve the following crossword puzzle, hints are given below :



Across

3. The method in which we first find the value of one unit from the given quantities and then the required quantity.

4. The name of symbol ':'

7. 3 in the ratio 5 : 3.

Down

1. 9, 15 and 25 are in ____ proportion.

2. The name of symbol '::'.

5. 6 in the ratio 6 : 11.

6. 10 : 3 is _____ form of ratio 50 : 15.

ANSWER KEY

Multiple choice questions

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**2**	**3**	**2**	**3**	**4**	**1**	**4**	**1**	**2**	**3**	**1**	**1**	**2**	**2**	**3**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**4**	**2**	**4**	**1**	**2**	**1**	**2**	**1**	**4**	**4**	**2**	**1**	**3**	**1**	**2**

Fill in the blanks

1. Ratio **2.** Unit **3.** Multiplying, dividing

4. Proportion **5.** Extremes, mean **6.** Fractions

7. Unitary **8.** Continued **9.** Antecedent, consequent

10. 1

True or false

1. True **2.** True **3.** False **4.** True

5. False **6.** True **7.** False **8.** False

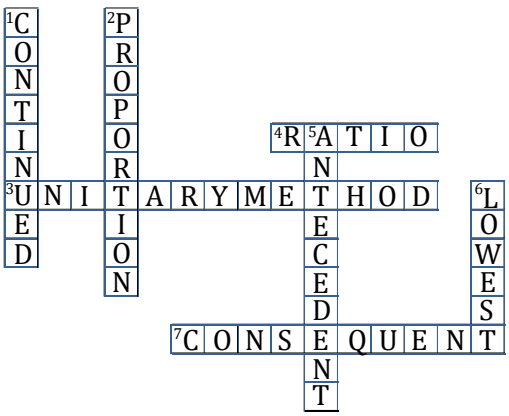
9. True **10.** False **11.** False **12.** False

13. True **14.** False **15.** True

Match the column

1. (1) → d ; (2) → h ; (3) → a ; (4) → f ; (5) → b ; (6) → c ; (7) → e ; (8) → g

Crossword puzzle



1. Continued **2.** Proportion **3.** Unitary method **4.** Ratio

5. Antecedent **6.** Lowest **7.** Consequent

EXERCISE-02

Very short answer type questions

1. Find each of the following ratios in the simplest form :

(i) 24 to 56 (ii) 84 paise to ₹ 3

(iii) 4 kg to 750 gm (iv) 1.8 kg to 6 kg

(v) 48 minutes to 1 hour

(vi) 24 km to 9 km

2. Express each of the following ratios in the simplest form :

(i) 36 : 90 (ii) 324 : 144

(iii) 85 : 561 (iv) 480 : 384

(v) 186 : 403

3. Write each of the following ratios in the simplest form :

(i) ₹ 6.30 : ₹ 16.80

(ii) 3 weeks : 30 days

(iii) 3 m 5 cm : 35 cm

(iv) 48 min : 2 hours 40 min

(v) 1 L 35 mL : 270 mL

(vi) 4 kg : 2 kg 500 g

4. Mr Sahai and his wife are both school teachers and earn ₹16800 and ₹10500 per month respectively. Find the ratio of

(i) Mr Sahai's income to his wife's income.

(ii) Mrs Sahai's income to her husband's income.

(iii) Mr Sahai's income to the total income of the two.

5. There are 16 girls and 24 boys in a class. What is the ratio of number of boys to the number of girls?

6. Rizwan drives his car at a speed of 60 km per hour whereas Ravi drives his car at the speed of 45 km per hour. Find the ratio of the speed of Ravi's car to Rizwan's car.

7. Nishi has 4 pairs of white earrings and 5 pairs of red earring. What is the ratio of white pair of earrings to the total number of pairs of earrings?

8. A tempo travels 60 km in 2 hour and a car travels 80 km in 1 hour. Find the ratio of their speed.

9. Which ratio is greater : 3 : 17 or 5 : 51?

10. Determine whether the following ratios form a proportion or not.

(i) 1 L : 250 mL and ₹ 1000 : ₹ 500

(ii) ₹ 2000 : ₹ 200 and 100 bottles : 50 bottles

Short answer type questions

11. In class VI of a school having 50 students, 20 play cricket, 10 play table tennis and 15 play badminton. The remaining students do not play any game. No student is allowed to play more than one game. Find the ratio of the number of students

(i) Playing cricket to the number who play table tennis.

(ii) Playing table tennis to the number who play badminton.

(iii) Playing some game to the number who do not play any game.

(iv) Playing some game to the total number of students.'

12. Determine which of the following are in proportion

(i) 18, 36, 9, 18 (ii) 14, 35, 16, 40

(iii) 80, 32, 60, 24 (iv) 72, 18, 64, 12

13. Find x.

(i) x : 5 = 10 : 50 (ii) 12 : 30 = 8 : x

(iii) 16 : x = x : 121 (iv) 21 : 12 : : x : 8

14. Find mean proportion between

(i) 12 and 3 (ii) 50 and 8

(iii) 27 and 48 (iv) 50 and 98

15. In a proportion, the first, second and fourth terms are 32, 112 and 217 respectively. Find the third term.

16. Find x if 25, 35, x are in continued proportion.

17. The cost of 10 kg rice is ₹ 245. Find the cost of 3 kg rice.

18. Find x if 15 : 60 : : x : 24.

19. Find x if 20, 40, x are in continued proportion

20. Which ratio is greater, 5 : 13 or 15 : 42?

21. Nikhil is earning 5 times as much as Vani, what is the ratio of Vani's earning to that of Nikhil's?

22. In a year, Arvind earns ₹4,50,000 and saves ₹60,000. Find the ratio of

(i) money that Arvind earns to the money he saves

(ii) money that he saves to the money he spends

23. Cost of a dozen bananas is ₹15 and cost of 8 oranges is ₹40. Find the ratio of the cost of a banana to the cost of an orange.

Long answer type questions

24. Anant covers a distance of 225 km in 5 hours in his car. How much distance will he be able to cover in 7 hours? Find the answer using proportions.

25. The ratio of trousers and shirts in the wardrobe of Mr. Hussain is 3 : 5. If the number of shirts is 20, find the number of trousers in the wardrobe.

26. The weight of 12 tables is 132 kg. What will be the weight of 5 such tables?

27. The cost of a dozen eggs is ₹30. What will the cost of 15 eggs?

28. Himanshu purchased 7 pens for ₹ 91 and Shubham bought 9 pens of the same quality for ₹ 108. Who bought the pens at a cheaper rate?

29. If 16 L petrol is required to cover a distance of 256 km, then how much petrol is required to cover a distance of 400 km?

30. An aeroplane covers a distance of 2,550 km in 3 hours. How much distance will it cover in 7 hours? Assume that flying conditions remain the same.

31. A transport company charges ₹1800 to carry 24 boxes. How much will it charge for 18 such boxes?

32. A truck requires 108 L of diesel for covering a distance of 594 km. How much diesel will the truck require to cover a distance of 1650 km?

33. A machine produces 240 m of cloth in 4 hours. How many metres of cloth will be produced in 6 days, if the factory runs for 18 hours a day?

34. The cost of 5 dozen oranges is ₹ 160. What is the cost of 12 dozen oranges?

35. An electric pole casts a shadow of length 18 m at a time when a tree 12 m high casts a shadow 9 m long. Find the height of the pole.

36. Anish made 43 runs in 6 overs and Anup made 63 runs in 7 overs. Who made more runs per over?

37. Divide ₹ 1800 among three persons in the ratio 1 : 4 : 5.

38. Divide ₹ 6500 in the ratio 2 : 3 between Aarti and Bharti.

39. Distances travelled by Ruchi and Deepa in an hour are 40 km and 45 km. Find the ratio of the speed of Ruchi to the speed of Deepa.

40. Present age of Ashima is 16 years and that of her mother is 32 years. Find the ratio of

(i) Present age of mother to the present age of Ashima.

(ii) Age of the mother to the age of Ashima, when Ashima was 10 years old.

(iii) Age of Ashima after 8 years to the age of her mother after 8 years.

ANSWER KEY

Very short answer type questions

1. (i) 3 : 7 (ii) 7 : 25 (iii) 16 : 3 (iv) 3 : 10
(v) 4 : 5 (vi) 8 : 3

2. (i) 2 : 5 (ii) 9 : 4 (iii) 5 : 33 (iv) 5 : 4
(v) 6 : 13

3. (i) 3 : 8 (ii) 7 : 10 (iii) 61 : 7 (iv) 3 : 10
(v) 23 : 6 (vi) 8 : 5

4. (i) 8 : 5 (ii) 5 : 8 (iii) 8 : 13

5. 3 : 2 **6.** 3 : 4 **7.** 4 : 9 **8.** 3 : 8

9. 3 : 17 **10.** (i) No (ii) No

Short answer type questions

11. (i) 2 : 1 (ii) 2 : 3 (iii) 9 : 1 (iv) 9 : 10

12. (i) Yes (ii) Yes (iii) Yes (iv) No

13. (i) x = 1 (ii) x = 20 (iii) x = 44 (iv) x = 14

14. (i) 6 (ii) 20 (iii) 36 (iv) 70

15. 62 **16.** 49 **17.** ₹ 73.5 **18.** 6

19. 80 **20.** 5 : 13 **21.** 1 : 5 **22.** (i) 15 : 2 (ii) 2 : 13

23. 1 : 4

Long answer type questions

24. 315 km **25.** 12 **26.** 55 kg

27. ₹ 37.5 **28.** Shubham **29.** 25 L **30.** 5,950 km

31. ₹ 1350 **32.** 300 L **33.** 6,480 m **34.** ₹ 384

35. 6 m **36.** Anup **37.** ₹180, ₹720, ₹900

38. ₹ 2600, ₹ 3900 **39.** 8 : 9

40. (i) 2 : 1 (ii) 13 : 5 (iii) 3 : 5

Exercise-01 Solutions

Multiple choice questions

1. Option (2)

Sides of square = 4, Numbers of edges of cube = 12

$4 : 12 \Rightarrow 1 : 3$

2. Option (3)

$\frac{3}{4}\times\frac{154}{154}=\frac{462}{616}$

$\frac{5}{7}\times\frac{88}{88}=\frac{440}{616}$

$\frac{9}{11}\times\frac{56}{56}=\frac{504}{616}$

$\frac{1}{8}\times\frac{77}{77}=\frac{77}{616}$

$\frac{504}{616}$ is greatest of all.

$\therefore$ 9 : 11 is greatest

2	4, 7, 11, 8
2	2, 7, 11, 4
2	1, 7, 11, 2
7	1, 7, 11, 1
11	1, 1, 11, 1
	1, 1, 1, 1

L.C.M = 2 × 2 × 2 × 7 × 11 = 616

3. Option (2)

Girls = 'g'

Boys = 'b'

Total students = b + g

$\Rightarrow$ Girls: Total students = g : (b + g)

or $\frac{g}{b+g}$

4. Option (3)

60 cm and 1.8 m = 1.8 × 100 = 180 cm

Required Ratio $=\frac{60}{180}=\frac{1}{3}$

$\Rightarrow 1 : 3$

5. Option (4)

(1) $\frac{12}{28}=\frac{3}{7}$

(2) $\frac{18}{42}=\frac{3}{7}$

(3) $\frac{30}{70}=\frac{3}{7}$

(4) $\frac{36}{72}=\frac{2}{4}=\frac{1}{2}$

$\therefore$ Option (4) not equal to $\frac{3}{7}$

6. Option (1)

Can be reduced to lower forms as in the other options there is a prime number.

$\frac{21}{56}=\frac{3}{8}$

7. Option (4)

(1) $\frac{25}{100}=\frac{1}{4}$ and $\frac{50}{200}=\frac{1}{4}$

(2) $\frac{0.9}{0.36}=\frac{900}{360}=\frac{10}{4}=\frac{5}{2}$ and $\frac{10}{4}=\frac{5}{2}$

(3) $\frac{150}{2000}=\frac{3}{40}$ and $\frac{9}{2\times60}=\frac{3}{40}$

(4) $\frac{5.2}{3.9}=\frac{4}{3}$ and $\frac{3}{4}$

$\frac{4}{3}\neq\frac{3}{4}$

is not in proportion.

8. Option (1)

(1) $\frac{2}{3}=\frac{20}{30}$

(2) $\frac{3}{4}=\frac{15}{18}=\frac{5}{6}$

(3) $\frac{1}{3}=\frac{11}{22}=\frac{1}{2}$

(4) $\frac{2}{5}\neq\frac{40}{80}=\frac{1}{2}$

9. Option (2)

(1) $\frac{3}{8}\frac{\cancel{15}}{\cancel{40}}\neq\frac{10}{30}$

(2) $\frac{1}{3}\frac{\cancel{16}}{\cancel{48}}=\frac{\cancel{25}}{\cancel{75}}\frac{1}{3}$

(3) $\frac{2}{3}\frac{\cancel{40}}{\cancel{60}} = \frac{\cancel{30}}{\cancel{40}}\frac{3}{4}$

(4) $\frac{1}{5}\frac{\cancel{20}}{\cancel{100}} \neq \frac{\cancel{30}}{\cancel{120}}\frac{1}{4}$

10. Option (3)

(1) $\frac{\cancel{25}}{\cancel{30}}\frac{5}{6} = \frac{\cancel{40}}{\cancel{48}}\frac{5}{6}$ (True)

(2) $\frac{\cancel{80}}{\cancel{90}}\frac{8}{9} = \frac{\cancel{24}}{\cancel{27}}\frac{8}{9}$ (True)

(3) $\frac{4}{5}\frac{\cancel{32}}{\cancel{40}} \neq \frac{\cancel{6}}{\cancel{12}}\frac{1}{2}$ (False)

(4) $\frac{5}{12}\frac{\cancel{25}}{\cancel{60}} = \frac{\cancel{10}}{\cancel{24}}\frac{5}{12}$ (True)

11. Option (1)

$\frac{4}{7} \times \frac{5}{9}$

$36 \neq 35$

12. Option (1)

9 : 24 : : 24 : x

$\frac{9}{24} = \frac{24}{x} \Rightarrow x = \frac{24\times24}{9} = 64$

13. Option (2)

48 : x : : x : 75 $\Rightarrow x^2 = 48 \times 75$

$x = \sqrt{48\times75} = \sqrt{3600} = 60$

14. Option (2)

4 hour = 200 km

$\therefore$ 1 hour = 50 km ...(1)

5 hour = 350 km

$\therefore$ 1 hour = 70 km ...(2)

Required Ratio = $\frac{50}{70}$ = 5 : 7

15. Option (3)

Let the no. of balls be 6x and 5x

$\therefore$ 5x = 30

x = 6

Red Balls = 6x = 6 × 6 = 36

16. Option (4)

Let the number of males and females be 5x and 4x.

$\therefore$ Their sum $\Rightarrow$ 9x

which is only divisible by 900.

17. Option (2)

Office opens at 8 : 00 AM

Closes at 6 : 00 pm

Total time : 8 :00 Am to 6 : 00 PM = 10 hours.

$\Rightarrow$ Lunch break : total time

$\Rightarrow 45 : 10 \times 60 \Rightarrow \frac{45}{600} = \frac{9}{120} = \frac{3}{40} = 3:40$

18. Option (4)

1 dozen bananas = ₹ 30

12 Banana = ₹ 30

1 Banana = ₹ $\frac{30}{12}$

6 Oranges = ₹ 18

$\therefore$ 1 Orange = ₹ $\frac{18}{6}$

Their Ratio = $\frac{30}{12} : \frac{18}{6} \Rightarrow \frac{30}{12} \times \frac{6}{18}$

$\Rightarrow$ 5 : 6

19. Option (1)

Hari Kishan age= 60 years

Manish age = 30 years

Before 10 years age, Hari Kishan age = 50 years

Manish age = 20 years

$\therefore$ Their ratio $\Rightarrow$ 20 : 50 $\Rightarrow$ 20 : 50

$\Rightarrow$ 2 : 5

$\therefore$ Ratio of Manish to Hari Kishan = 2 : 5

20. Option (2)

100 students = Total

60 passed & 40 failed

Ratio $\Rightarrow$ 40 : 100 $\Rightarrow$ 2 : 5

21. Option (1)

Sangeeta gets $\Rightarrow \frac{4}{4+1} \times 100$

$\Rightarrow \frac{4}{5} \times 100$

$\Rightarrow$ Rs.80

22. Option (2)

ATQ,

5 : 80 :: x : 32

$\Rightarrow \frac{5}{80} = \frac{x}{32}$

$\Rightarrow 2 = x$

So, 2 litres of petrol are required to cover 32 km.

23. Option (1)

1 Notebook = ₹ $\frac{100}{10}$ = ₹10

24. Option (4)

Cost of 1 dozen pens = ₹ 24

Cost of 30 pens = ?

ATQ,

12 : 24 : : 30 : x

$\Rightarrow \frac{12}{24} = \frac{30}{x}$

$\Rightarrow x = 15 \times 4 = ₹\ 60$

25. Option (4)

ATQ,

3 : 15 :: 10 : x

$\Rightarrow \frac{3}{15} = \frac{10}{x}$

$x = \frac{15 \times 10}{3}$ = ₹ 50

26. Option (2)

ATQ,

5 : 100 : : 2 : x

$\Rightarrow \frac{5}{100} = \frac{2}{x}$

$\Rightarrow x = ₹\ 40$

27. Option (1)

ATQ,

50 : 10 : : 25 : x

$\Rightarrow \frac{50}{10} = \frac{25}{x}$

$\Rightarrow x = 5$ kg

28. Option (3)

ATQ,

20 : 400 : : 15 : x

$\Rightarrow \frac{20}{400}=\frac{15}{x}$

$\Rightarrow$ x = ₹ 300

29. Option (1)

Annual salary = Monthly salary × 12

₹ 4000 × 12 = ₹ 48000

30. Option (2)

5000 km : 5 hours :: x : 2 hours

$\frac{5000}{5}=\frac{x}{2}$

$\Rightarrow$ 1000 × 2 = x

$\Rightarrow$ 2000 km = x

Match the Column

I		II	
(1)	$\frac{60}{150}$	**(d)**	2 : 5
(2)	$\frac{50}{500}$	**(h)**	1 : 10
(3)	$\frac{60\times1000}{60}$	**(a)**	1000 : 1
(4)	$\frac{15}{40}$	**(f)**	3 : 8
(5)	$\frac{6.25}{25}=\frac{25}{100}=\frac{1}{4}$	**(b)**	1 : 4
(6)	$\frac{15}{45}$	**(c)**	1 : 3 = 45 : 13
(7)	$\frac{30\ell}{70\ell}$	**(e)**	$\frac{3}{7}\times\frac{8}{8}=\frac{24}{56}$ = 24 : 56
(8)	$\frac{50}{550}$	**(g)**	1 : 11

Exercise-02 Solutions

1. (i) 24 to 56

$$\frac{24}{56}=\frac{3}{7}=3:7$$

(ii) 84 paise to ₹ 3 (∵ ₹ 1 = 100 paise)

$$\frac{84}{300}=\frac{21}{75}=7:25$$

(iii) 4 Kg to 750 gm (∵ 1 kg = 1000 gm)

$$\frac{4000}{750}=\frac{400}{75}=\frac{16}{3}=16:3$$

(iv) 1.8 kg to 6 kg

$$\frac{18}{60}=\frac{3}{10}=3:10$$

(v) 48 minutes to 1 hour (∵ 1 hour = 60 min)

$$\frac{48}{60}=\frac{4}{5}=4:5$$

(vi) 24 km to 9 km

$$\frac{24}{9}=\frac{8}{3}=8:3$$

2. (i) $\frac{36}{90}=\frac{2}{5}=2:5$

(ii) $\frac{324}{144}=\frac{27}{12}=\frac{9}{4}=9:4$

(iii) $85:561 \Rightarrow \frac{85}{561}=\frac{5}{33}=5:33$

(iv) 480 : 324

$$\frac{480}{384}=\frac{40}{32}=\frac{10}{8}=\frac{5}{4}=5:4$$

(v) $\frac{186}{403}=\frac{6}{13}=6:13$

3. Write each of the following ratio in the simplest form :-

(i) ₹ 6.30 to ₹ 16.80

$$\frac{6.30}{16.80}=\frac{630}{1680}=\frac{63}{168}=\frac{9}{24}=9:24=3:8$$

(ii) 3 Weeks : 30 days ($\because$ 1 week = 7 days)

$\frac{3\times7}{30} = \frac{21}{30} = \frac{7}{10} = 7:10$

(iii) 3 m 5cm : 35 cm ($\because$ 1 m = 100 cm)

$\frac{305}{35} = \frac{61}{7} = 61:7$

(iv) 48 min : 2 hours 40 min

$\frac{48\text{ min}}{160\text{ min}} = \frac{12}{40} = \frac{3}{10} = 3:10$ [$\because$ 2 hours 40 min = 160 min]

(v) 1 L 35 mL : 270 mL (1 L 35 mL = 1035 mL)

$\therefore \frac{1035}{270} = \frac{115}{30} = \frac{23}{6} = 23:6$

(vi) 4 kg : 2 kg 500 g

$\frac{4000}{2500} = \frac{40}{25} = \frac{8}{5} = 8:5$

4. Mr. Sahai's income = Rs. 16,800

His wife's income = Rs. 10500

(i) $\frac{16800}{10500} = \frac{168}{105} = \frac{8}{5} = 8:5$

(ii) 5 : 8 [Reciprocal of ans (i)]

(iii) $\frac{16,800}{16,800+10,500} = \frac{16,800}{27,300} = \frac{168}{273} = \frac{56}{91} = 8:13$

5. Number of boys in class = 24

Number of girls in class = 16

Ratio of boys to girls = 24 : 16

$\frac{24}{16} = \frac{6}{4} = \frac{3}{2} = 3:2$

6. Speed of Rizwan's car = 60 km/hr

Speed of Ravi's car = 45 km/hr

Required ratio = $\frac{45}{60} = \frac{3}{4} = 3:4$

7. Required ratio = $\frac{4}{4+5} = \frac{4}{9} = 4:9$

8. Speed of Tempo = $\frac{60}{2}$ = 30 km/hr

Speed of Car = $\frac{80}{1}$ = 80 km/hr

Their Ratio $\Rightarrow \frac{30}{80} = 3:8$

9. $\frac{3}{17}\times\frac{3}{3}=\frac{9}{51}$ But, $\frac{9}{51}>\frac{5}{51}$

$\therefore \frac{3}{7}>\frac{5}{51}$

10. Given

(i) $\frac{1\text{L}}{250\text{mL}}=\frac{1000}{250}=\frac{4}{1}$ and $\frac{\text{Rs. } 1000}{\text{Rs. } 500}=\frac{2}{1}$

$\frac{4}{1}\neq\frac{2}{1}$

$\therefore$ They are not in proportion.

(ii) ₹ 2000 : ₹ 200 $\Rightarrow \frac{2000}{200}=\frac{10}{1}$ = 10 : 1

100 bottles : 50 bottles $\Rightarrow \frac{100}{50}=\frac{2}{1}$

$\frac{10}{1}\neq\frac{2}{1}$

$\therefore$ They are not in proportion.

11. Total number of students = 50

Cricket = 20

Table Tennis = 10

Badminton = 15

No game = 5 [$\because$ 50 – (20 + 10 + 15)]

(i) $\frac{\text{Cricket}}{\text{Table Tennis}}=\frac{20}{10}=2:1$

(ii) $\frac{\text{Table Tennis}}{\text{Badminton}}=\frac{10}{15}=\frac{2}{3}=2:3$

(iii) $\frac{\text{Some Game}}{\text{No Game}}=\frac{20+10+15}{5}=\frac{45}{5}=\frac{9}{1}=9:1$

(iv) $\frac{\text{Some Game}}{\text{Total}}=\frac{45}{50}=\frac{9}{10}=9:10$

12. Given

(i) $\frac{\cancel{18}}{\cancel{36}}=\frac{1}{2}$ and $\frac{\cancel{9}}{\cancel{18}}=\frac{1}{2}$

$\frac{1}{2}=\frac{1}{2}$ They are in proportion.

(ii) $\frac{\cancel{14}}{\cancel{35}} = \frac{2}{5}$ and $\frac{\cancel{16}}{\cancel{40}} = \frac{2}{5}$

$\frac{2}{5} = \frac{2}{5}$ They are in proportion.

(iii) $\frac{\cancel{80}}{\cancel{32}} = \frac{5}{2}$ and $\frac{\cancel{60}}{\cancel{24}} = \frac{10}{4} = \frac{5}{2}$

$\frac{5}{2} = \frac{5}{2}$ They are in proportion.

(iv) $\frac{72}{18} = \frac{12}{3} = \frac{4}{1}$ and $\frac{64}{12} = \frac{16}{3}$

$\frac{4}{1} \neq \frac{16}{3}$ They are not in proportion.

13. Given

(i) $\frac{x}{5} = \frac{10}{50}$

$\therefore x = 1$

(ii) $\frac{12}{30} = \frac{8}{x}$

$\frac{2}{5} = \frac{8}{x}$

$x = \frac{8 \times 5}{2} = 20$

(iii) $\frac{16}{x} = \frac{x}{121}$

$\Rightarrow 16 \times 121 = x^2$

$\Rightarrow \sqrt{16 \times 121} = x^2$

$\Rightarrow 4 \times 11 = x$

$\Rightarrow 44 = x$

(iv) $\frac{21}{12} = \frac{x}{8}$

$\Rightarrow \frac{21 \times 8}{12} = x$

$\Rightarrow 14 = x$

14. Given

(i) $\sqrt{12 \times 3} = \sqrt{36} = 6$

(ii) $\sqrt{50 \times 8} = \sqrt{400} = 20$

(iii) $\sqrt{27 \times 48} = \sqrt{1296} = 36$

(iv) $\sqrt{50 \times 98} = \sqrt{4900} = 70$

15. Let the third term be x.

$32 : 112 :: x : 217$

$\Rightarrow \frac{32}{112} = \frac{x}{217}$

$\Rightarrow \frac{32 \times 217}{112} = x$

$\therefore x = 62$

16. $\frac{25}{35} = \frac{35}{x}$

$x = \frac{35 \times 35}{25} = 49$

17. 10 Kg. of rice costs ₹ 245

1 Kg. of rice costs ₹ $\frac{245}{10}$

3 Kg. of rice costs = $\frac{245}{10} \times 3 =$ ₹ 73.5

18. $15 : 60 : : x : 24$

$\frac{15}{60} = \frac{x}{24}$

$\Rightarrow \frac{15 \times 24}{60} = x$

$\therefore x = 6$

19. $20 : 40 : : 40 : x$

$\frac{20}{40} = \frac{40}{x} \Rightarrow 20x = 40 \times 40$

$\Rightarrow x = \frac{40 \times 40}{20} = 80$

20. $\frac{5}{13}$ or $\frac{15}{42} = \frac{5}{14}$

$\frac{5}{13}$ or $\frac{5}{14}$ [Numerators are same and denominator is smaller in 5/13]

$\therefore \frac{5}{13} > \frac{5}{14}$

21. Nikhil = 5 × Vani

$\frac{\text{Vani's income}}{\text{Nikhil's income}} = \frac{1}{5}$ or 1 : 5

22. Arvind Earns Rs. 4,50,000

Arvind Saves Rs. 60,000

$\therefore$ Arvind Spends Rs. (4,50,000 – 60,000)

= Rs. 3,90,000

(i) $\frac{\text{Earning}}{\text{Saving}} = \frac{4,50,000}{60,000} = \frac{45}{6} = \frac{15}{2}$ or 15 : 2

(ii) $\frac{\text{Saving}}{\text{Expenditure}} = \frac{60,000}{3,90,000} = \frac{2}{13}$ or 2 : 13

23. 12 Bananas = Rs. 15

$\therefore$ 1 Banana = Rs. $\frac{15}{12}$

8 Oranges = Rs. 40

$\therefore$ 1 Orange = Rs. $\frac{40}{8}$

Banana : orange = $\frac{15}{12} : \frac{40}{8}$

$= \frac{15}{12} \times \frac{8}{40} = \frac{1}{4} = 1 : 4$

24. Let the distance be x Km.

$\therefore$ 255 : 5 :: x : 7

$\frac{225}{5} = \frac{x}{7}$

$\frac{7 \times 225}{5} = x$

315 km = x

25. Let the ratio be 3x and 5x

Number of Trousers = 3x

Number of Shirts = 5x

Number of Shirts = 20

$\therefore$ 5x = 20

x = 4

Number of Trousers = 3x = 3 × 4 = 12

26. 12 Tables = 132 Kg.

$\therefore$ 1 Table = $\frac{132}{12}$ kg = 11 kg

5 Such Tables = $\left(\frac{132}{12}\times 5\right)$ Kg.

= 11 × 5 = 55 Kg.

Another solution :

12 : 132 : : 5 : x

$\frac{12}{132}=\frac{5}{x} \Rightarrow x = \frac{5\times 132}{12}$

x = 55

27. 12 : 30 :: 15 : x

$\frac{12}{30} = \frac{15}{x} \Rightarrow x = \frac{15\times 30}{12}$ = ₹ 37.5

28. Himanshu Purchased 7 Pens for ₹ 91

$\therefore$ 1 pen = $\frac{91}{7}$ = ₹ 13

Shubham bought 9 pens for ₹ 108.

$\therefore$ 1 pen = $\frac{108}{9}$

1 pen = ₹ 12

$\therefore$ Shubham bought pens at a cheaper rate.

29. Let the required quantity of petrol be x litre.

16 : 256 : : x : 400

$\frac{16}{256} = \frac{x}{400}$

$\frac{400}{16} = x$

25 = x = 25 L

30. Let the distance be x km.

2550 : 3 :: x : 7

$\Rightarrow \frac{2550}{3} = \frac{x}{7}$

$\Rightarrow x = \frac{2550\times 7}{3}$

$\Rightarrow$ 5950 = x

= 5950 Km.

31. Let the transport charge be ₹ x.

1800 : 24 :: x : 18

$\Rightarrow \frac{1800}{24} = \frac{x}{18}$

$\Rightarrow \frac{1800 \times 18}{24} = x$

$\Rightarrow 1350 = x$

Transport charge =₹ 1350

32. Let the required diesel be x litre.

108 : 594 : : x : 1650

$\Rightarrow \frac{108 \times 1650}{594} = x = 300$ L

33. 18 hours a day

$\therefore$ In 6 days = 18 × 6 = 108 hours

$\therefore$ 240 : 4 :: x : 108

$\frac{240}{4} = \frac{x}{108}$

60 × 108 = x

6480 = x

= 6480 m

34. 5 : 160 :: 12 : x

$\frac{5}{160} = \frac{12}{x}$

x = 384 = ₹ 384

35. 18 :12 :: 9 : x

$\Rightarrow \frac{18}{12} = \frac{9}{x}$

$\Rightarrow \frac{3}{2} = \frac{9}{x}$

$\Rightarrow x = \frac{9 \times 2}{3}$

$\Rightarrow x = 6$

So, The height of pole = 6m

36. Anish made $\frac{43}{6}$ = 7.166 Runs per over.

Anup made $\frac{63}{7}$ = 9 Runs per over.

$\therefore$ Anup made more Runs per over.

37. Given ratio = 1 : 4 : 5; total amount = ₹ 1800

(i) $\frac{1}{1+4+5} \times 1800 = \frac{1800}{10} = ₹\ 180$

(ii) $\frac{4}{1+4+5} \times 1800 = \frac{1800 \times 4}{10} = ₹\ 720$

(iii) $\frac{5}{1+4+5} \times 1800 = \frac{5 \times 1800}{10} = ₹\ 900$

38. (i) $\frac{2}{2+3} \times 6500 = \frac{2}{5} \times 6500 = ₹\ 2600$

(ii) $\frac{3}{2+3} \times 6500 = \frac{3}{5} \times 6500 = ₹\ 3900$

39. Speed of Ruchi = 40 Km/hr.

Speed of Deepa = 45 Km/hr.

$\therefore$ Their Ratio $= \frac{40}{50} = \frac{8}{9} = 8 : 9$

40. Present age of Ashima = 16 years

Her Mother age = 32 years

(i) Ratio of

$$\frac{\text{Present age mother}}{\text{Present age ashima}} = \frac{32}{16} = 2 : 1$$

(ii) Her Mother is 16 years age of older than her daughter.

$\therefore$ when ashima = 10 year.

Mother age = 10 + 16 = 26 years

Ratio = $\frac{26}{10} = \frac{13}{5} = 13 : 5$

(iii) After 8 years, Ashima's age = 24 years

Her Mother age = 40 years

= 3 : 5