

EXERCISE # 1

- Q.1** Find the ratio of
- 60 paise : 3 rupees
 - 2 m 7 cm : 36 cm
 - 2 years : 10 months
 - 3 kg 250 g : 5 kg
 - $12 \text{ cm} : \frac{3}{2} \text{ cm}$
 - 65 g : 1 kg
 - 75 paise : ₹ 3
 - 50 ml : 1 l
- Q.2** Express the following in the simplest form -
- 28 : 80
 - $\frac{1}{10} : \frac{1}{15}$
 - 80 : 480
 - $1\frac{1}{2} : 3 : 4\frac{1}{2}$
 - $\frac{1}{6} : \frac{1}{8} : \frac{1}{12}$
 - $2\frac{2}{3} : \frac{8}{7}$
- Q.3** Which ratio is greater ?
- (3 : 7) or (4 : 9)
 - (5 : 8) or (6 : 17)
 - (3 : 4) or (2 : 3)
- Q.4** Show that 7, 6, 49, 36 are not in proportion.
- Q.5** Are the following in proportion ?
- 45, 60, 30, 40
 - 84, 42, 44, 22
 - 43, 55, 65, 170
 - 450, 400, 350, 300
- Q.6** The cost of 20 kg of milk is ₹ 500. Find the cost of 59 kg of milk.
- Q.7** A bus travels 440 km in 8 hrs.
- How long will it take to travel 385 km ?
 - How far will it travel in $6\frac{1}{2}$ hours ?
- Q.8** First, second and fourth terms of a proportion are 141, 75 and 25. Find its third term.
- Q.9** Shreyansh works in a factory and earns ₹ 1500 per month. He saves ₹ 250 per month from his earnings. Find the ratio of
- His savings to his earnings
 - His earnings to his expenditure
 - His savings to his expenditure
- Q.10** Find the value of x for which the following forms a proportion :
- $16 : 8 :: 7 : x$
 - $36 : 45 :: 16 : 2x$
- Q.11** In the following question, give your answer in the simplest form :
- A couple have 4 grandsons and 6 granddaughters. Find
 - the ratio of number of grandsons to that of granddaughters
 - the ratio of the number of granddaughters to that of all the grandchildren.
 - Square A has a side of 6 cm and Square B has a side of 12 cm. Find the ratio of -
 - the length of the side of square A to that of square B.
 - the perimeter of the square B to the perimeter of a square A.
 - the area of square A to the area of square B.

- (d) Can you find the ratio of area of square A to the perimeter of square B? If not, justify your answer.

Q.12 If $p : q = 2 : 3$ find the ratio $6p : 2q$.

Q.13 A triangle has sides 4.2 cm, 4.9 cm and 6.3 cm respectively. Find the ratio of lengths of the sides to one another.

Q.14 Two angle of a triangle are 54° and 72° . Find the ratio of size of the third angle to the sum of the first two.

Q.15 Find the missing numbers

(i) $\square : 6 = 12 : 18$ (ii) $9 : 6 = \square : 4$

(iii) $\frac{6}{8} = \frac{\square}{12}$

Q.16 Find the unknown variable in the following :

(i) $\frac{x}{4} = \frac{7}{20}$

(ii) $x : 5 = 4 : 3$

(iii) $5 : 1 = 3 : x$

(iv) $3 : x = 2 : 5$

Q.17 Express the following percents into fraction in their lowest terms and also into decimals.

S.No.	Per cent	Fraction in Lowest Term	Ratio	Decimals
i	20%			
ii	45%			
iii	37%			
iv	$87\frac{1}{2}\%$			
v	$62\frac{1}{2}\%$			
vi	125%			

Q.18 A bike costing ₹40,000 one year ago now costs ₹30,000. Find the percent decrease.

Q.19 In a company of 100 workers, 20 were absent on a day. What percent of workers were present on that day ?

Q.20 If $x\%$ of 420 is 63, find x .

Q.21 Kanu scored 450 marks out of 600. Express this as percent.

Q.22 If $88\frac{1}{2}\%$ of households have a television set, what percentage do not have ?

Q.23 In a box of oranges, 8% are rotten. What percentage are good ?

Q.24 In a driving test, 15% fail to pass in first time. What percentage pass in the first time ?

Q.25 A team won 65% of their matches and draw 24% of them. What percentage did they lose ?

Q.26 A rugby team draws 15% of their matches and loses 25% of them. What percentage of did they win ?

Q.27 An alloy is made of 25% zinc, 30% copper and rest is nickle. Find the percentage of nickle.

Q.28 In a final year exam, Aman scored 378 out of 600. What was his percentage marks ?

Q.29 Seventy of the 120 choristers in a choir wear spectacles. What percentage do not ?

Q.30 Each week a boy saves ₹45 out of ₹250 he earns. What percentage of earn does he not spend ?

Q.31 A secretary takes 92 letters to the post office for posting, 29 are registered and the remaining are ordinary mail. What percentage go by ordinary mail ?

Q.32 Arpit obtained 35 marks out of 40 in his end maths examination. What was his percentage marks ?

- Q.33** If 9% of a crowd of 75,000 at a cricket match were females, how many females attended the game ?
- Q.34** In a garage, 16 of the 30 cars, which are for sale are second hand. What percentage of the cars are :
(i) new ? (ii) second hand ?
- Q.35** There are 125 houses in a village and 72% of them have a television. How many houses :
(i) have a televisions ?
(ii) do not have a television ?
- Q.36** There are 120 shop in a street, 30% of which sell food. How many shops do not sell food ?
- Q.37** A mathematics book has 320 pages, 40% of which are on algebra, 25% on geometry and the remaining on arithmetic. How many pages of arithmetic are there ?
- Q.38** A man spends 92% of his monthly income. If he saves ₹ 220 per month, find his total monthly income.
- Q.39** Jugal had 24 pages to write. By evening he had completed 25% of his work. How many pages were left ?
- Q.40** A box contains 60 eggs. Out of which $16\frac{2}{3}\%$ are rotten ones. How many eggs are rotten ?
- Q.41** Mr. Virmani saves 12% of his salary. If he receives ₹ 15,900 per month as salary, find his monthly expenditure.
- Q.42** A lawyer willed his 3 sons ₹ 2,50,000 to be divided into portions 30%, 45% and 25%. How much did each of them inherit ?
- Q.43** Rajdhani College has 2,400 students, 40% of them are girls. How many boys are there in the college ?
- Q.44** Amar obtained 410 marks out of 500 in an examination while his friend Rajiv gets 536 marks out of 600. Find whose performance is better.
- Q.45** In an orchard $16\frac{2}{3}\%$ of the trees are apple trees. If the number of trees in the orchard is 240, find the number of other type of trees in the orchard.
- Q.46** Out of a total production of 50400 tons of a coal mine, a quantity of 5040 tons was lost during extraction. What percent of the total production was the net coal extracted ?
- Q.47** A drum contained 250 litres of kerosene. 5 litres of kerosene was lost due to leakage. What is the percentage of the kerosene which remained in the drum ?
- Q.48** A football team played 16 matches. The team won 6 matches and lost 2 and 8 matches ended in a draw. What percentage of the matches did the team :
(i) win ? (ii) lose ?

ANSWER KEY

1. (i) 1 : 5 (ii) 23 : 4 (iii) 12 : 5 (iv) 13 : 20
 (v) 8 : 1 (vi) 13 : 200 (vii) 1 : 4 (viii) 1 : 20
2. (i) 7 : 20 (ii) 3 : 2 (iii) 1 : 6 (iv) 1 : 2 : 3 (v) 4 : 3 : 2 (vi) 7 : 3
3. (i) 4 : 9 (ii) 5 : 8 (iii) 3 : 4
5. (i) yes (ii) yes (iii) no (iv) no
6. j-1475 7. (i) 7 hrs (ii) 357.5 km 8. 47
9. (i) 1 : 6 (ii) 6 : 5 (iii) 1 : 5 10. (i) 3.5 (ii) 10
11. (i) (a) 2 : 3 (b) 3 : 5
 (ii) (a) 1 : 2 (b) 2 : 1 (c) 1 : 4 (d) No, because both the quantities are not in same units
12. 2 : 1 13. 6 : 7 : 9 14. 3 : 7 15. (i) 4 (ii) 6 (iii) 9
16. (i) $\frac{7}{5}$ (ii) $\frac{20}{3}$ (iii) $\frac{3}{5}$ (iv) $\frac{15}{2}$

17.

Fraction in Lowest Term	$\frac{1}{5}$	$\frac{9}{20}$	$\frac{37}{100}$	$\frac{7}{8}$	$\frac{5}{8}$	$\frac{5}{4}$
Ratio	1 : 5	9 : 20	37 : 100	7 : 8	5 : 8	5 : 4
Decimals	0.2	0.45	0.37	0.875	0.625	1.25

18. 25% 19. 80% 20. 15 21. 75% 22. $11\frac{1}{2}\%$ 23. 92%
24. 85% 25. 11% 26. 60% 27. 45% 28. 63% 29. 41.67%
30. 18% 31. 68.48% 32. 87.5% 33. 6750 34. (i) 46.67% (ii) 53.33%
35. (i) 90 (ii) 35 36. 84 37. 112 38. j-2750 39. 18
40. 10 41. j-13992 42. j-75000, j-112500, j-62500
43. 1440 44. Rajiv 45. 200 46. 90% 47. 98%
48. (i) 37.5% (ii) 12.5%

EXERCISE # 2

- Q.1** Noori's weight is increased by 15% between her fifteenth and sixteenth birthdays. If she weighed 65 kg on her fifteenth birthday, what did she weigh on her sixteenth birthday ?
- Q.2** The water rates due on my house this year is 15% more than they were last year. Last year I paid ₹ 3250. What must I pay this year ?
- Q.3** In a school there are 80 teachers. It is expected that the number of teaching staff next year will increase by 5%. How many staff members should there be next year ?
- Q.4** A living room suite is priced at ₹ 5000 plus value added tax (VAT) at 15%. How much does the suite actually cost the consumer ?
- Q.5** The cost of a meal is ₹ 150 plus service charge at 12.5%. How much should I pay for the meal?
- Q.6** As a result of using a good quality fertilizer, my potato crop increased by 20% compared to the last year. If I grew 250 kg of potatoes last year, how many kg of potatoes did I grow this year ?
- Q.7** Last year in a school there were 75 reported cases of measles. This year the number of reported cases has dropped by 16%. How many cases have been reported this year ?
- Q.8** A car is valued at ₹ 5,25,000. It depreciates by 20% in the first year and thereafter each year by 15% of its value at the beginning of that year. Find its value (i) after 2 years, (ii) after 3 years.
- Q.9** In any year the value of a motorcycle depreciates by 10% of the value at the beginning of that year. What is its value after two years, if purchase price was ₹ 45,000 ?
- Q.10** When the petrol was ₹ 45 per litre, I used 500 litres in a year. The price of petrol rose by 20% so I reduced my yearly consumption by 20%. Find
(i) the new price of a litre of petrol
(ii) my reduced annual petrol consumption.
(iii) how much more (or less) my petrol bill is for the year.
- Q.11** The speed of a train is 120 km/hr. It is increased by 10%. Find the increase in the speed. Also find its new speed.
- Q.12** The excise duty on a certain item has been reduced to ₹ 3486 from ₹ 5229. Find the percentage reduction in the excise duty for that item.
- Q.13** A grocer sells potato for ₹ 15.50 per kg. If he had purchased the potato for ₹ 14.20 per kg, find the amount of profit or loss.
- Q.14** A shopkeeper sold apples for ₹ 30 per kg. If the shopkeeper made a loss of ₹ 5.50 per kg what was the cost price of 1 kg of apples ?
- Q.15** A cloth merchant sells an old stock at ₹ 85,550. If he had a loss of ₹ 15,000 what was the value of his stock ?
- Q.16** Raju has a cycle worth ₹ 2200 and spent ₹ 50 on its repair. If he wants to sell its at a profit of ₹ 220. What would cycle's selling price be ?

- Q.17** A milkman earned a profit of ₹ 75 after selling some litres of milk for ₹ 825. Find the cost of the milk.
- Q.18** A farmer bought a cow for ₹ 3520. He spent ₹ 250 in bringing the cow to his house. He sold it at a loss of ₹ 275. Find its selling price.
- Q.19** A man bought eggs at ₹ 2 per egg. If he sells them at ₹ 25 a dozen, find his loss or profit on selling one dozen egg.
- Q.20** A computer company manufactured computer for ₹ 65,550. The packaging cost is ₹ 520 per computer. If the company sold them at a profit of ₹ 450 per computers what was the selling price of each computer ?
- Q.21** A farmer bought 100 hens for ₹ 4000, sells 20 of them at a gain of 5%. At a what gain % must he sell the remaining hens so as to gain 20% on the whole ?
- Q.22** By selling a bucket for ₹ 24, a blacksmith loses 20% of his cost. If he sells it for ₹ 27, what is his profit or loss ?
- Q.23** An article is sold at a profit of 10%. Had it been sold for ₹ 30 more, the profit would have been 25%, find the C.P.
- Q.24** Ramesh purchased a house for ₹ 4,52,000 and spent ₹ 28000 on its repairs. He had to sell it for ₹ 4,68,000. Find his profit or loss percent.
- Q.25** By selling a chair for ₹ 160, a carpenter loses 20%. How much percent would he gain or loss by selling it for ₹ 170 ?
- Q.26** Mr. Siddharth sold two bicycles at ₹ 924 each. On one he gains 20% and on the other he loses 20%. How much does he gain or lose in the whole transaction ?
- Q.27** If the selling price of 4 articles is equal to the cost price of 5 articles, find the gain percent.
- Q.28** By selling 20 oranges, a vendor gains a profit equal to selling price of oranges. Find his gain percent.
- Q.29** A tricycle is sold at a gain of 15%. Had it been sold for ₹ 27 more, the profit would have been 20%. Find its cost price.
- Q.30** Mr. Shah sold a sofa at a gain of 15%. Had he sold it for ₹ 340 less, he would have lost 2%. At what price did Mr. Shah purchase it ?
- Q.31** Paro purchased two ceiling fans for ₹ 1000 each. She sold one of them at a loss of 10%. At what should the other be sold so as to gain 20% on the whole transaction ?
- Q.32** What sum lent out at 10% per annum simple interest would produce ₹ 150 as interest in 5 years ?
- Q.33** Find the simple interest on ₹ 8500 from 12th October, 1999 to 6th March, 2000 at 15% per annum.
- Q.34** Find the simple interest on ₹ 3285 from May 11, 1999 to 11 September, 1999 at 10% annum.
- Q.35** Jeevan deposited ₹ 2500 in his bank for buying Magnum certificates issued by the State bank of India. Unfortunately, his application for the certificate was rejected. However, his money was refunded on March 28, 1988. He was paid interest on his money at the rate of 8% per annum for the period starting from Jan 15, 1988. How much did he get back in all ?

- Q.36** For investing money in the firm Rosy and Mitthu, you get interest at the rate of 18% per annum. What amount will you get after 6 years if you deposit ₹ 10000 with the firm now and ₹ 5000 three year from hence ?
- Q.37** What sum of money lent out at 6.25% per annum simple interest produces ₹ 37.50 as interest in 8 months ?
- Q.38** Mohan borrowed some money at 12% per annum. He had to pay ₹ 168 as interest after 2 years and 4 months. What sum did he borrow ?
- Q.39** I borrowed some money at 8% per annum. I had to pay ₹ 138.75 as interest after 3 year and one month. What sum did I borrow ?
- Q.40** In how much time will the simple interest on ₹ 800 at 12.5% per annum be ₹ 125 ?
- Q.41** In what time will a sum of money put at $13\frac{1}{3}\%$ simple interest triple itself ?

ANSWER KEY

1. 74.75 kg 2. ₹ 3737.50 3. 84 4. ₹ 5750 5. ₹ 168.75 6. 300 kg
7. 63 8. (i) ₹ 357000 (ii) ₹ 303450 9. ₹ 36450 10. (i) ₹ 54 (ii) 400 (iii) less ₹ 900
11. 12 km, 132 km/h 12. 33.33% 13. profit ₹ 1.30 14. ₹ 35.50 15. ₹ 100550 16. 2470
17. ₹ 750 18. ₹ 3495 19. profit ₹ 1 20. ₹ 66520 21. 23.75% 22. loss ₹ 3 23. ₹ 200
24. loss $\frac{5}{2}\%$ 25. loss 15% 26. loss 4% 27. gain 25% 28. 25% 29. ₹ 540 30. ₹ 2000
31. ₹ 1500 32. ₹ 300 33. ₹ 510 34. ₹ 123 35. ₹ 2540 36. ₹ 28500 37. ₹ 900
38. ₹ 600 39. ₹ 562.50 40. $1\frac{1}{4}$ years 41. 15 years