



Unit:1

Ratio, Proportion and Percentage:

Answer the following :

1. Two friends, Akash & Beenu had some candies each. One of them had 15 candies more than the other. The candies with Akash was 60% of the total candies with them. How many candies did each have?
2. A fruit seller had some oranges. He sells 30% oranges and still has 140 mangoes. Originally, he had:
3. What percentage of numbers from 1 to 30 has 1 or 9 in the unit's digit? 14) In ABC College, 63% of students are less than 20 years of age. The number of students more than 20 years of age is $\frac{2}{3}$ of number of students of 20 years of age which is 42. What is the total number of students in the ABC College?
4. If $M = y\%$ of z and $B = z\%$ of y , then which of the following must be true?
5. A student erroneously multiplied a number by $\frac{2}{5}$ instead of $\frac{5}{2}$. What is the percentage error in the calculation?
6. The sum of the first six terms of an AP is 48 and the common difference is 2. What is the 4th term?
7. Three candidates, Ajay, Bijoy & Chandu contested an election and received 1800, 3300 and votes 3900 respectively. What percent of the total votes did A get?
8. A Stationery seller had some Pens, Sharpeners, Erasers & Pencils. He sells 65% of the total units and still has 175 units. Originally, he had:
- 9.
10. The total population of a village increased from 1,80,00 to 22, 500 in a decade. The average percentage increase of population per year of that village is



Unit:2

Profit and Loss:

Answer the following :

11. By selling 45 lemons for Rs 40, a man loses 20%. How many should he sell for Rs 24 to gain 20% in the transaction?
12. A trader mixes 26 kg of rice at Rs 20 per kg with 30 kg of rice of other variety at Rs 36 per kg and sells the mixture at Rs 30 per kg. His profit percent is:
13. Arun purchased 30 kg of wheat at the rate of Rs 11.50 per kg and 20 kg of wheat at the rate of Rs 14.25 per kg. he mixed the two and sold the mixture. Approximately what price per kg should he sell the mixture to make 30% profit?
14. Padam purchased 30 kg of rice at the rate of Rs 17.50 per kg and another 30 kg rice at a certain rate. He mixed the two and sold the entire quantity at the rate of Rs 18.60 per kg and made 20% overall profit. At what price per kg did he purchase the lot of another 30 kg rice?
15. A trader mixes three varieties of groundnuts costing Rs 50, Rs 20 and Rs 30 per kg in the ratio 2 : 4 : 3 in terms of weight, and sells the mixture at Rs 33 per kg. What percentage of profit does he make?
16. Two shopkeepers announce the same price of Rs 700 for a sewing machine. The first offers successive discounts of 30% and 6% while the second offers successive discounts of 20% and 16%. The shopkeeper that offers a better discount, charges less than the other shopkeeper.
17. The marked price of a watch was Rs 720. A man bought the same for Rs.550.80 after getting two successive discounts, the first being 10%. What was the second discount rate?
18. A shopkeeper purchased 150 identical pieces of calculators at the rate of Rs 250 each. He spent an amount of Rs. 2500 on transport and packaging. He fixed the labeled price of each calculator at Rs 320. However, he decided to give a discount of 5% on the labeled price. What is the percentage profit earned by him?
19. A trader marked the price of his commodity so as to include a profit of 25%. He allowed a discount of 16% on the marked price. His actual profit was:
20. A tradesman marks his goods 30% above the C.P. If he allows a discount of $6\frac{1}{4}$ %, then his gain percent is:



Unit:3

Interest and Annuity:

Answer the following :

- 1) The difference in simple interest and compound interest on a certain sum of money in 2 years at 10 % p.a. is Rs. 50. The sum is
- 2) The difference in simple interest and compound interest on a certain sum of money in 2 years at 18 % p.a. is Rs. 162. The sum is
- 3) The difference between compound interest and simple interest on a certain sum for 2 years at 10 % is Rs. 25. The sum is
- 4) The compound interest on a certain sum of money for 2 years is Rs. 208 and the simple interest for the same time at the same rate is Rs. 200. Find the rate %.
- 5) .The simple interest on a certain sum for 3 years is Rs. 225 and the compound interest on the same sum for 2 years is Rs. 165. Find the rate percent per annum.
- 6) The simple interest on a sum of money for 2 years is Rs. 150 and the compound interest on the same sum at same rate for 2 years is Rs. 155. The rate % p.a. is
- 7) Mihir's capital is $\frac{5}{4}$ times more than Tulsi's capital. Tulsi invested her capital at 50 % per annum for 3 years (compounded annually). At what rate % p.a. simple interest should Mihir invest his capital so that after 3 years, they both have the same amount of capital?
- 8) The difference in simple interest and compound interest on a certain sum of money in 3 years at 10 % p.a. is Rs. 372. The sum is
- 9) Sahil's capital is $\frac{1}{6}$ times more than Chaya's capital. Chaya invested her capital at 20 % per annum for 2 years (compounded annually). At what rate % p.a. simple interest should Sahil invest his capital so that after 2 years, they both have the same amount of capital?
- 10) The difference in simple interest and compound interest on a certain sum of money in 3 years at 20 % p.a. is Rs. 640. The sum is



Unit:4

Matrices and Determinant:

Answer the following

- 1) Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?
- 2) In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?
- 3) From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there in the committee. In how many ways can it be done?
- 4) In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together?
- 5) In how many different ways can the letters of the word 'CORPORATION' be arranged so that the vowels always come together?
- 6) In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women?
- 7) In how many different ways can the letters of the word 'MATHEMATICS' be arranged such that the vowels must always come together?
- 8) There are 8 men and 10 women and you need to form a committee of 5 men and 6 women. In how many ways can the committee be formed?
- 9) How many 3-letter words with or without meaning, can be formed out of the letters of the word, 'LOGARITHMS', if repetition of letters is not allowed?
- 10) In how many different ways can the letters of the word 'LEADING' be arranged such that the vowels should always come together?



Unit:5

Answer the following :

- 1) Arun borrowed a certain sum from Manish at a certain rate of simple interest for 2 years. He lent this sum to Sunil at the same rate of interest compounded annually for the same period. At the end of two years, he received Rs. 2400 as compound interest but paid Rs. 2000 only as simple interest. Find the rate of interest.
- 2) If a sum on compound interest becomes three times in 4 years, then with the same interest rate, the sum will become 81 times in:
- 3) Divide Rs. 3364 between A and B, so that A's Share at the end of 5 years may equal to B's share at the end of 7 years, compound interest being at 5 percent.
- 4) A sum is invested for 3 years compounded at 5%, 10% and 20 % respectively. In three years, if the sum amounts to Rs. 1386, then find the sum.
- 5) What is the probability of selecting a prime number from 1,2,3,...10?
- 6) What is the probability of drawing a "Queen" from a deck of 52cards?
- 7) One ball is picked up randomly from a bag containing 8 yellow,7 blue and 6 black balls. What is the probability that it is neither yellow nor black?
- 9) Two cards are drawn together from a pack of 52 cards. The probability that one is a club and one is a diamond?
- 10) A bag contains 2 yellow, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?