UNIT –I

Directions (1 - 5): Study the graph and answer the questions from 1 to 5:
Expenditure (in Lakhs) of three different company in five different year

Expenditure (in Lakhs) of three different companies in five different years.

1. What was the overall average expenditure of Company C in all the years together?

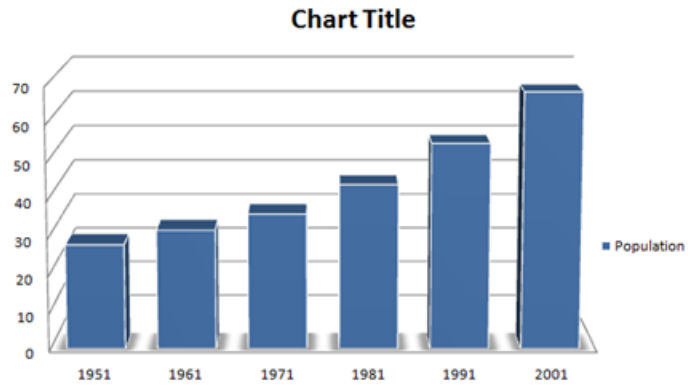
2. What was the difference between the total expenditure of company B in the year 2006 and 2008 together and the total expenditure of company C in the year 2007 and 2009 together?

3. What was the respective ratio between the expenditure of company A in the year 2009 and expenditure of company B in the year 2005?

4. In which year was the total expenditure by all three Companies together second highest?

5. Total expenditure of all three companies together in the year 2006 was what percentage of the total expenditure of company A overall the year together?

Directions (1 - 4): Study the graph and answer the questions:
The bar chart give



1.

The percent increase in population from 1991 to 2001 is:

2.

In which census year, the per cent increase in population is highest as compared to that in the previous census year?

3.

In which census year, the per cent increase in population is least as compared to that in the previous census year?

4.

Per year increase in population from the year 1951 to 2001 is

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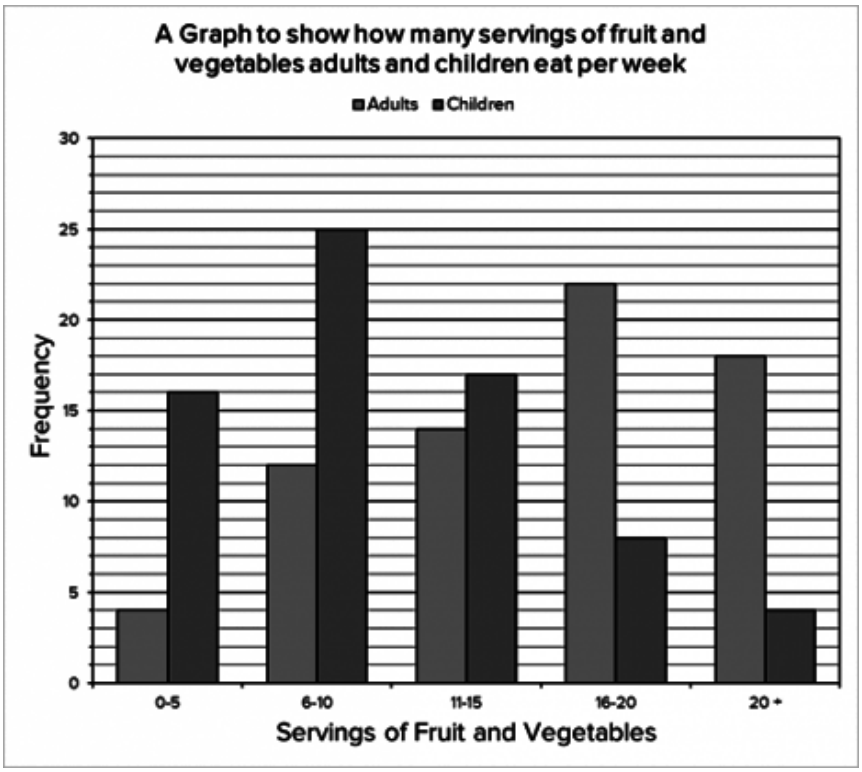
Study the graph and answer the questions from 1 to 4

70 adults and 70 children were surveyed to find out how many servings of fruit and vegetables they eat per week. The results are shown in the bar graph below



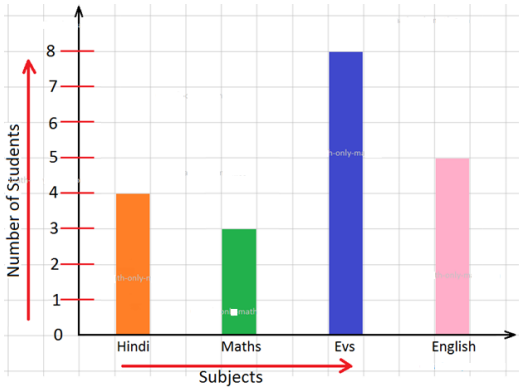
i) How many adults and children combined eat between 0 and 5 servings of fruit and vegetables per week?

ii) What is the difference between the number of children who eat over 20 servings of fruit and vegetables per week and between 6 to 10 servings of fruit and vegetables per week?

iii) What is the mode for the number of servings of fruit and vegetables eaten per week by adults?

iv) What basic trend do we notice from the data presented?

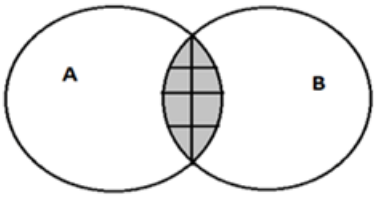
A survey was conducted among the students of class IV to find their favorite subject. The collected information is represented in the form of a bar graph. Observe the graph and answer the following questions.



i. How many students participated in the survey?
ii. How many students had Mathematics as their favourite subject?
iii. Which subject was least favourite?

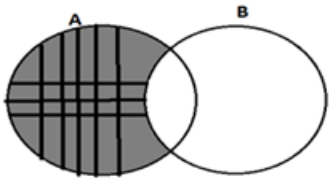
What is the difference between the number of students who liked Hindi and Englis

1. The shaded area of figure is best described by?

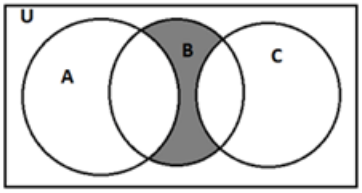


2. If n(A)=20 and n(B)=30 and n(A U B) = 40 then n(A ∩ B) is?

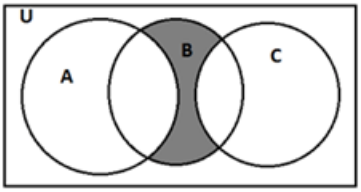
3. The shaded area of figure is best described by?



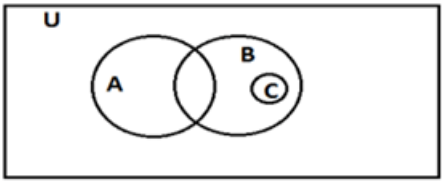
4. The shaded area of figure is best described by?



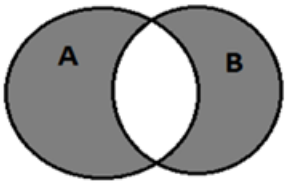
5. The relation between sets A, B, C as shown by venn diagram is _____



6. In the given figure the if n(A)=20,n(U)=50,n(C)=10 and n(A∩B)=5 then n(B)=?



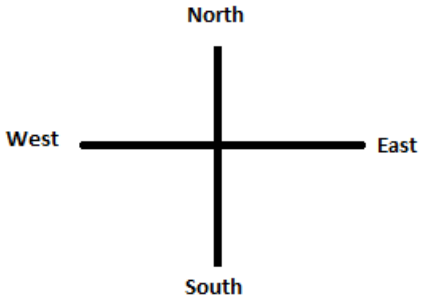
7. The shaded area of figure is best described by?



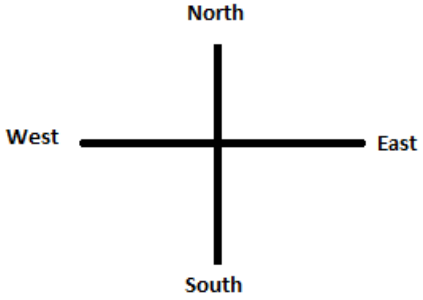
8. Let the students who likes table tennis be 12, the ones who like lawn tennis 10, those who like only table tennis are 6, then number of students who likes only lawn tennis are, assuming there are total of 16 students.
9. Let N = 1421 × 1423 × 1425. What is the remainder when N is divided by 12?
10. The value of 25.25 – 23.23 + 24.24 is
11. If a = 4.36, b = 2.39, c = 1.97, then the value of a3-b3-c3-3abc is
12. A scale 6 ft. 8 inches long is divided into 4 equal parts. Find the length of each part.
13. A number is doubled and 9 is added. If the resultant is trebled, it becomes 75. What is that number?
14. 100 + 50 x 2 = ?
15. 3640 ? 14 x 16 + 340 = ?
16. What mathematical operation should come at the place of '?' in the equation : 2 ? 6 - 12 ? 4 + 2 = 11
17. (3080 + 6160) + 28 = ?
18. Find the simple interest and the amount on Rs. 2400 for 3 years 5 months and 15 days at the rate of 9%.
19. Which of the following has most number of divisors ?
20. HCF of 4 x 27 x 3125, 8 x 9 x 25 x 7 & 16 x 81 x 5 x 11 x 49 is :
21. Find the highest common factor of 36 and 84
22. The difference between the place value and the face value of 6 in the numeral 856973 is
23. The difference between the place values of two sevens in the numeral 69758472 is
24. 252 can be expressed as a product of primes as :
25. Find the highest common factor of 36 and 84
26. Find the compound interest on Rs. 8000 for 3 year at 5% per annum.
27. Find the simple interest and the amount on Rs. 2400 for 3 years 5 months and 15 days at the rate of 9%.
28. A sum of Rs. 500/- was lent for two years at 2% compound interest. The interest for two years will be:

Unit-II

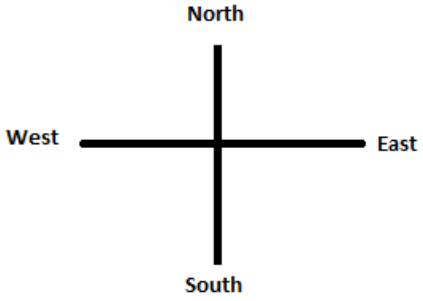
29. Mrs.Veena wants to go to the Krishna Rajendra market. She moved northwards and after covering some distance turned left and moved 4 km and reached a crossing. The road in front of her led to Jaynagar while the road on to her left led to Bangalore Medical College and the road on to her right led to the Krishna Rajendra market. In which direction the Krishna Rajendra market is located with reference to the starting point?

30. 

31. One morning after sunrise, Nandita and Ravi were sitting in a lawn with their backs towards each other. Nandita's shadow fell exactly towards her left-hand side. Which direction was Ravi facing?



32. At a crossing, there was a direction pole, which was showing all the four correct directions. But due to the wind, it turns in such a manner that now West pointer is showing South. Harish went in the wrong direction thinking that he was travelling East. In what direction he was actually travelling?

33. 

34. Example

General placement of carrom board

P, Q, R, and S are playing a game of carrom. P, R, and S, Q are partners. S is to the right of R who is facing west. Then Q is facing?

35. *Mr. A moves North and then turns to his right and keep walking. After that, he again turns right and walks a certain distance and then finally walks to the left. In which direction is he walking now?*
36. J,K,L,M,N,O,P and R are eight huts. L is 2 km east of K. J is 1 km north of K and Q is 2 km south of J. P is 1 km west of Q while M is 3 km east of P and O is 2 km north of P. R is situated right in the middle of K and L while N is just in the middle of Q and M.
37. Directions (Q1-Q2): Based on the alphanumeric series given below, answer the following questions:
    Alphanumeric Series: W % ^ K V P 1 I 7 E 0 & 2 9 A F Z N 4 * @ U ? M
        Q 1. How many numbers in the series are preceded by a vowel?
        Q 2. What is the second element from the right of 7th element from left?
38. From a certain point, Smriti walks 70 m towards the south. Then, she turns to her right & starts walking straight for another 70 m. Then, again turning to her left he walks for 60 m. She then turns to her left & walks for 70 m. How far is she from the starting point?
39. In a certain code language, ‘ANIMALS’ is written as ‘SLAMINA’. How is ‘ONLINE’ written in that code?
40. A family consists of six members Priya, Qureshi, Raj, Xavi, Yusuf and Zain. Qureshi is the son of Raj but Raj is not mother of Qureshi. Priya and Raj are a married couple. Yusuf is the brother of Raj. Xavi is the daughter of Priya. Zain is the brother of Priya. How many children does Priya have?
41. Directions (Q 7-Q8). Read the information given below carefully and answer the following questions:
42.
43. Five friends A, B, C, D and E travelled from Tamil Nadu to five different states Uttar Pradesh, Maharashtra, Rajasthan, Karnataka and Punjab by 5 different modes of transport: Cycle, Bus, Train, Truck, and Bike. The one who travelled to Rajasthan did not travel by Bike. C went to Karnataka by Truck and B went to Maharashtra by Train. D

travelled by Bike and E travelled by Bus. Tamil Nadu is not connected by Cycle to Uttar Pradesh and Rajasthan.

a. What means of Transport did C use?
b. Which state did E travel to?

44.

Unit- III

1) There are 6 pillows in a bed, 3 are red, 2 are yellow and 1 is blue. What is the probability of picking a yellow pillow?
2) 2) There is a container full of coloured bottles, red, blue, green and orange. Some of the bottles are picked out and displaced. Sumit did this 1000 times and got the following results:
    a. a) What is the probability that Sumit will pick a green bottle?
    b. b) If there are 100 bottles in the container, how many of them are likely to be green?
3) Example 4: Find the mean of the following data:
   55, 36, 95, 73, 60, 42, 25, 78, 75, 62

4) Example 5: Find the median and mode of the following marks (out of 10) obtained by 20 students:
   4, 6, 5, 9, 3, 2, 7, 7, 6, 5, 4, 9, 10, 10, 3, 4, 7, 6, 9, 9

5) Example 3: What is the probability that Ram will choose a marble at random and that it is not black if the bowl contains 3 red, 2 black and 5 green marbles.
6) 1. Two coins are tossed 500 times, and we get:
   Two heads: 105 times
   One head: 275 times
   No head: 120 times
   Find the probability of each event to occur.

7) Example: Calculate 10% of 80.
8) A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had how many apples?
9) There are 150 students in a class. Out of them, 75 are girls. Find the percentage of girls in the class.
10) 20 is what percentage of 40?
11) What is 10% of 50?
12) 5 is 65% of what?
13) What percentage of 70 is 8?
14) 64% of what is 9?
15) Suppose a shopkeeper has bought 1 kg of apples for 100 rs. And sold it for Rs. 120 per kg. How much is the profit gained by him?
    a. For the above example calculate the percentage of the profit gained by the shopkeeper.
16) A man buys a fan for Rs. 1000 and sells it at a loss of 15%. What is the selling price of the fan?
17) Raj purchased a bike for Rs. 75000 and he sold it for Rs.55000. Is it the condition of profit or loss? Also, find the profit or loss percentage incurred by him.
18) A shopkeeper buys watches in bulk for Rs. 20 each. He sells them for Rs. 45 each. Calculate the profit and the profit percentage.
19) Solve the equation $5x - 6 = 3x - 8$.

20) Simplify: $7x+5\ /x-4-6x-1/x-3-1/x^2-7x+12=1$
21) Find the value of x in the given equation: $4x + 10 = 30$
22) Find y, when, $y + 15 = 30$
23) Find x, when, $9x = 63$
24) If $x/7 = 21$, then find x.
25) Solve $x+12 = 6$
26) Find the value of z, if $23z + 3 = 10$
27) Solve $2y – 8 = 5y$
28) Write all factors of 15,55,48,36 & 84.
29) Write all Prime numbers between 15 &35.
30) Write all Prime numbers less than 25.
31) Write all Prime numbers between 5 & 45.
32) Write all Prime numbers from 2 & 32.
33) Write all Prime numbers from 8 & 48.
34) Using the common factor method, Find the HCF of 16 and 35.
35) Using the common factor method, Find the HCF of 25 and 20.
36) Using the common factor method, Find the HCF of 27and 75.
37) Using the common factor method, Find the HCF of 8, 12 and 18.
38) Using the common factor method, find the HCF of 24, 36, 45 and 60.
39) Using the common multiple method, find the LCM of 8, 12 and 24.
40) Using the common multiple method, find the LCM of 10, 15 and 20.
41) Using the common multiple method, find the LCM of 3, 6, 9 and 12.
42) Using prime factor method, find the LCM of 18, 24 and 96.
43) Using prime factor method, find the LCM of 100, 150 and 200.
44) Using prime factor method, find the LCM of 14, 21 and 98.
45) Using prime factor method, find the LCM of 34, 85 and 51.
46) Find the average of 2, 4, 6, 8.
47) Find the average of 6, 13, 17, 21, 23.
48) If the age of 9 students in a team is 12, 13, 11, 12, 13, 12, 11, 12, 12. Then find the average age of students in the team.
49) If the heights of males in a group are 5.5, 5.3, 5.7, 5.9, 6, 5.10, 5.8, 5.6, 5.4, 6. Then find the average height.
50) A batsman scored runs in seven consecutive matches are given below:

    69, 21, 78, 77, 94, 54, 48

    Find the average runs scored by the batsman.

1) What are the five rational numbers between 1 and 2?

2) What are the different types of numbers?

3) What are the four different types of number system?

4) Find five rational numbers between 3/5 and 4/5.

5) Find the decimal expansions of 10/3, 7/8 and 1/7.

6) Find the Highest Common Factor of 25, 35 and 45.

7) Find the Least Common Multiple of 36 and 44.

8) Given, two numbers 36 and 44. Let us find out the LCM, by division method.

9) L.C.M. of 25, 30, 35 and 40

10) Rajiv takes a loan of Rs. 7000 from a bank at 10% as rate of interest. Find the interest he has to pay at the end of one year.

11) This means if he borrowed Rs 100, he had to pay Rs 10 as interest. So for Rs. 7000, the interest he has to pay for one year is $7000 \times 10/100$ = Rs. 700.

12) Find the compound interest when principal is Rs. 2000 and the rate is 10% per annum compounded annually for 2 years.

13) Compute the amount and the compound interest in each of the following by using the formulae when:
(i) Principal = Rs 3000, Rate = 5%, Time = 2 years

14) Compute the amount and the compound interest in each of the following by using the formulae when:

(ii) Principal = Rs 3000, Rate = 18%, Time = 2 years

15) Compute the amount and the compound interest in each of the following by using the formulae when:

(iii) Principal = Rs 5000, Rate = 10 paise per rupee per annum, Time = 2 years

16) Compute the amount and the compound interest in each of the following by using the formulae when:

(iv) Principal = Rs 2000, Rate = 4 paise per rupee per annum, Time = 3 years

17) Find the simple interest, when:
(i) Principal =Rs.2000, Rate of Interest =5% per annum and Time =5 years.

18) Find the simple interest, when:
(ii) Principal =Rs.500, Rate of Interest =12.5% per annum and Time =4 years.

19) Find the simple interest, when:
(iii) Principal =Rs.4500, Rate of Interest =4% per annum and Time =6 months.

20) Find the simple interest, when:
(iv) Principal =Rs.12000, Rate of Interest =18% per annum and Time =4 months.

21) Find the simple interest, when:
(v) Principal =Rs.1000, Rate of Interest =10% per annum and Time =73 days.

22) What is Simple Interest?

23) Difference Between Simple Interest and Compound Interest

24) Rishav takes a loan of Rs 10000 from a bank for a period of 1 year. The rate of interest is 10% per annum. Find the interest and the amount he has to pay at the end of a year.

25) Namita borrowed Rs 50,000 for 3 years at the rate of 3.5% per annum. Find the interest accumulated at the end of 3 years.
26) Mohit pays Rs 9000 as an amount on the sum of Rs 7000 that he had borrowed for 2 years. Find the rate of interest.
27) What amount is to be repaid on a loan of Rs. 12000 for one and half years at 10% per annum compounded half yearly?
28) A town had 10,000 residents in 2000. Its population declines at a rate of 10% per annum. What will be its total population in 2005?
29) The count of a certain breed of bacteria was found to increase at the rate of 2% per hour. Find the bacteria at the end of 2 hours if the count was initially 600000.
30) The price of a radio is Rs. 1400 and it depreciates by 8% per month. Find its value after 3 months.
31) A sum of Rs.10000 is borrowed by Akshit for 2 years at an interest of 10% compounded annually. Find the compound interest and amount he has to pay at the end of 2 years.
32) What is the compound interest (CI) on Rs.5000 for 2 years at 10% per annum compounded annually?
33) Heera invests Rs. 20,000 at the beginning of every year in a bank and earns 10 % annual interest, compounded at the end of the year. What will be her balance in the bank at the end of three years?

34) What is Compound interest?
35) How do you calculate compound interest?

36) How to Solve Quadratic Equations?
37) Example: Solve $(2x – 10)/2 = 3(x – 1)$
38) Example 1:

Solve $x = 12(x +2)$

39) Example 2:

Solve $x – y = 12$ and $2x + y = 22$

40) Is $x^2 – 1$ a quadratic equation?

41) What is a pure quadratic equation? Give an example.
42) Write down the Quadratic Formula

3. Find the roots of $4x^2 + 3x + 5 = 0$ by the method of completing the square.
4. Find the roots of the quadratic equation $3x^2 – 5x + 2 = 0$, if they exist, using the quadratic formula.
5. Find the values of k for which the quadratic equation $kx(x – 2) + 6 = 0$ has two equal roots.

1) Solve following equations:
   (i) $(x – 2)^2 + 1 = 2x – 3$
   (ii) $x(x + 1) + 8 = (x + 2) (x – 2)$
   (iii) $x (2x + 3) = x 2 + 1$
   (iv) $(x + 2)^3 = x 3 – 4$

1. Solve $x^2 + 2 x + 1 = 0$.
2. Solve $5x^2 + 6x + 1 = 0$
3. Solve $2x^2 + 3 x + 2 = 0$.
4. Solve $x^2 − 4x + 6.25 = 0$