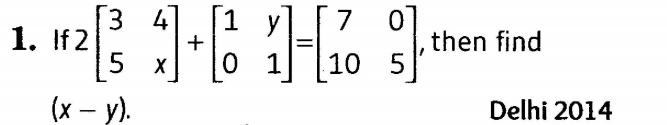
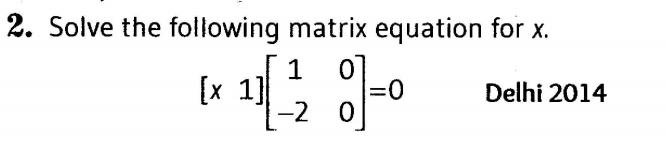
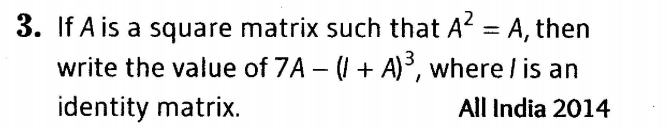
**Mathematics and Statistics for Managers**

**UNIT I**

  
  
  
  
**UNIT III**

1.Draw histogram and frequency polygon of the following data:

Wages (`) 50-59 60-69 70-79 80-89 90-99 100-109 110-119

No. of Employees 8 10 16 14 10 5 2

2. Write the meaning and definitions of statistics.

3. Write the definitions of statistics as given by Croxton and Crowden? Explain the four stages in statistics.

4. Explain the categories of data.

5. Explain the classification and objects of classification.

6. Describe the advantages of tabulation.

7. Explain the process of preparing a table

8. Explain the scales of measurement?

9. Write the general rules of constructing diagrams.

10. Explain the functions of statistics.

11. Describe the scope of statistics.

12. What are the limitations of statistics?

13. Explain the collection of data.

14. Explain the classification and Tabulation.

15. Describe the frequency distribution.

16. Write the types of diagrams and graphs

17.Find the median and median-class of the data given below:

Class-boundaries 15-25 25-35 35-45 45-55 55-65 65-75

Frequency 4 11 19 14 0 2

18.Explain the origin of statistics.

**UNIT IV**

1.What are the Central Tendency Values.Calculate the Central Tendency values for the following data given below. 12,23,56,22,14,19,13,12,17,19,14,12,18,10

2. Compute median for the following data :  
Weakly wages (Rs.) : 50-60 60-70 70-80 80-90 90-100 100-110 110-120  
Number of labours : 5 8 15 25 21 19 7

3. A sample of 10 patient making initial visit to health department traveled these distances :  
Patient : 1 2 3 4 5 6 7 8 9 10  
Distance (in miles) : 6 10 12 4 13 14 13 7 14 10

4.Calculate the median, suppose we have the data below:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 65 | 55 | 89 | 56 | 35 | 14 | 56 | 55 | 87 | 45 | 92 |

5.Compute rank correlation from the following table

X 415 434 420 430 424 428

Y 330 332 328 331 327 325

6.Find the mean deviation from the mean of the following data : Size of items

xi 4 6 8 10 12 14 16

Frequency i f 2 5 5 3 2 1 4

7.Calculate the mean deviation from mean of the following distribution :

Marks 0-10 10-20 20-30 30-40 40-50

No. of Students 5 8 15 16 6

8.The ages of 10 girls are given below : 3 5 7 8 9 10 12 14 17 18 What is the range ?

9. The weight of 10 students (in Kg) of class XII are given below :

45 49 55 43 52 40 62 47 61 58 What is the range ?

10. Find the mean deviation from mean of the data 45 55 63 76 67 84 75 48 62 65 Given mean = 64.

11. Calculate the mean deviation from mean of the following distribution.

Salary (in rupees) 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100

No. of employees 4 6 8 12 7 6 4 3

12.Calculate the mean deviation for the following data of marks obtained by 40 students in a test

Marks obtained 20 30 40 50 60 70 80 90 100

No. of students 2 4 8 10 8 4 2 1 1

13. The data below presents the earnings of 50 workers of a factory

Earnings (in rupees) : 1200 1300 1400 1500 1600 1800 2000

No. of workers : 4 6 15 12 7 4 2 Find mean deviation.

14. The distribution of weight of 100 students is given below :

Weight (in Kg) 50-55 55-60 60-65 65-70 70-75 75-80

No. of students 5 13 35 25 17 5 Calculate the mean deviation.

15.The marks of 50 students in a particular test are :

Marks 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100

No. of students 4 6 9 12 8 6 4 1

16.Find the mean deviation for the above data.

The salary of 10 employees (in rupees) in a factory (per day) is 50 60 65 70 80 45 75 90 95 100 Calculate the variance and standard deviation.

17.The marks of 10 students of class X in a test in English are given below :

1. 10 15 16 18 20 25 30 32 35 Determine the variance and the standard deviation.

18.The data on relative humidity (in %) for the first ten days of a month in a city are given below:

90 97 92 95 93 95 85 83 85 75 Calculate the variance and standard deviation for the above data.

19. Find the standard deviation for the data 4 6 8 10 12 14 16

20. Find the variance and the standard deviation for the data 4 7 9 10 11 13 16

21. Find the standard deviation for the data. 40 40 40 60 65 65 70 70 75 75 75 80 85 90 90 100

22.The data on ages of teachers working in a school of a city are given below:

Age (in years) 20-25 25-30 30-35 35-40 40-45 45-50 50-55 55-60

No. of teachers 25 110 75 120 100 90 50 30 Calculate the variance and standard deviation using step deviation method.

23.Calculate the variance and standard deviation using step deviation method of the following data :

Age (in years) 25-30 30-35 35-40 40 -50 45-50 50-55

No. of persons 70 51 47 31 29 22

PART B

1.What are the desirable characteristics of a good measurable central tendency?

2. Define Mean (or) Arithmetic mean.

3. Find the mean 6, 8, 11, 5, 2, 9, 7, and 8.

4. A student‟s marks in 5 subjects are 75, 68, 80, 92, and 56. Find his average mark.

5. Calculate the mean for the following data. X 5 8 12 15 20 24 F 3 4 6 5 3 2

6. Given the following frequency distribution. Calculate the arithmetic mean.

Marks 64 63 62 61 60 59 No. of Students 8 18 12 9 7 6

7. Calculate the Arithmetic mean. Income 0-10 10-20 20-30 30-40 40-50 50-60 60-70 No. of persons 6 8 10 12 7 4 3

8. Give the merits and demerits of Arithmetic mean.

9. Define Median

10. Determine median following data? i) 8, 10, 18, 20, 25, 27, 30, 42, 53. ii) 25, 20, 15, 45, 18, 17, 10, 38, 12.

11. Find median for the following data. 5, 8, 12, 30, 18, 10, 2, 22.

12. Find median size of the family. No. of Member (x) 1 2 3 4 5 6 7 8 9 10 11 12 Frequency 1 3 5 6 10 13 9 5 3 2 2 1

13. Define Mode?

14. Find the mode. 2, 8, 5, 12, 5, 7, 1, 10, 5, 6.

15. Describe the merits and demerits of mode?

16. Describe the merits and demerits of Geometric mean?

17. Describe the merits and demerits of harmonic mean?

18. Compute quartiles for the data given below. 25, 18, 30, 8, 15, 5 , 10, 35, 40 and 45.

19. Compute quartiles for the data given below. X 5 8 12 15 19 24 30 F 4 3 2 4 5 2 4

20. Explain the characteristics of a good measure of dispersion

21. Define range and Co-efficient range.

22. Give the merits and demerits of range.

23. Define mean deviation and Co-efficient mean deviation.

24. Explain merits and demerits of mean deviation.

25. Define Quartile deviation and Quartile deviation.

26. Explain merits and demerits of Quartile deviation.

27. Define standard deviation and Co-efficient standard deviation

28.Find the mode following distribution

X 1 2 3 4 5 6 7 8 9 10 11 12

F 3 8 15 23 35 40 32 28 40 45 14 6 39. Calculate the geometric mean of the following series of monthly income of a batch of families 180, 250, 490, 1400, 1050.

29. The marks secured by some students of a class are given below. Calculate the harmonic mean. Marks 20 21 22 23 24 25

Number of Students 4 2 7 1 3 1

30. Calculate D3 and D7 for the data given below

Class Interval 0-10 10-20 20-30 30-40 40-50 50-60 60-70

F 5 7 12 16 10 8 4

31. Calculate mean, median, mode for the following data given below. X 10 20 30 40 50 60 70 80 90 100 Cumulative Frequency 140 133 118 100 75 45 25 9 20 0

32. Calculate mean deviation from mean and median for the following data, 100, 150, 200, 250, 360, 490, 500, 600, 671 also calculate coefficients of mean deviation.

33. Calculate the standard deviation of the following data.

Size 6 7 8 9 10 11 12

Frequency 3 6 9 13 8 5 4

**UNIT V**

1.Calculate the Karl Pearson’s coefficient of skewness for the following data :  
Age : 20-25 25-30 30-35 35-40  
Number of persons : 50 70 80 180  
Age : 40-45 45-50 50-55 55-60  
Number of persons : 150 120 70 50  
  
2 Fit a straight line trend by the method of least squares to the following data  
Year : 1997 1998 1999 2000 2001 2002 2003  
Sales (in lakhs) : 125 128 133 135 140 141 143

3.Explain the concept of correlation? Discuss the different methods of studying correlation. 5. Find out the regression equation of X on Y from the following data:

X 100 150 200 250 300

Y 35 70 105 140 175

4. The table below shows the number of absences, x, in a Calculus course and the final exam grade, y, for 7 students. Find the correlation coefficient and interpret your result

x 1 0 2 6 4 3 3

y 95 90 90 55 70 80 85

5.The table below shows the height, x, in inches and the pulse rate, y, per minute, for 9 people. Find the correlation coefficient and interpret your result

x 68 72 65 70 62 75 78 64 68

y 90 85 88 100 105 98 70 65 72

6.The success of a shopping center can be represented as a function of the distance (in miles) from the center of the population and the number of clients (in hundreds of people) who will visit. The data is given in the table below:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **No. Customer (x)** | **8** | **7** | **6** | **4** | **2** | **1** |
| **Distance (y)** | **15** | **19** | **25** | **23** | **34** | **40** |

Calculate the linear correlation coefficient.

7. The grades of five students in mathematics and chemistry classes are:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Mathematics** | **6** | **4** | **8** | **5** | **3. 5** |
| **Chemistry** | **6. 5** | **4. 5** | **7** | **5** | **4** |

8.Determine the regression lines and calculate the expected The heights (in centimeters) and weight (in kilograms) of 10 basketball players on a team are:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Height (X)** | **186** | **189** | **190** | **192** | **193** | **193** | **198** | **201** | **203** | **205** |
| **Weight (Y)** | **85** | **85** | **86** | **90** | **87** | **91** | **93** | **103** | **100** | **101** |

Calculate**1**The regression line of y on x.2.The coefficient of correlation.**3**The estimated weight of a player who measures 208 cm.

9**.**From the following data of hours worked in a factory (x) and output units (y), determine the regression line of y on x, the linear correlation coefficient and determine the type of correlation.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Hours (X)** | **80** | **79** | **83** | **84** | **78** | **60** | **82** | **85** | **79** | **84** | **80** | **62** |
| **Production (Y)** | **300** | **302** | **315** | **330** | **300** | **250** | **300** | **340** | **315** | **330** | **310** | **240** |

**10.**A group of 50 individuals has been surveyed on the number of hours devoted each day to sleeping and watching TV. The responses are summarized in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No. of sleeping hours (x)** | **6** | **7** | **8** | **9** | **10** |
| **No. of hours of television (y)** | **4** | **3** | **3** | **2** | **1** |
| **Absolute frequencies (fi)** | **3** | **16** | **20** | **10** | **1** |

**1**Calculate the correlation coefficient.**2**Determine the equation of the regression line of y on x.**3**If a person sleeps eight hours, how many hours of TV are they expected to watch?

**11.**The following table summarizes the results of an aptitude test given to six clerks to determine the correlation between test scores (x) and sales in the first month (y) in hundreds of dollars.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **X** | **25** | **42** | **33** | **54** | **29** | **36** |
| **Y** | **42** | **72** | **50** | **90** | **45** | **48** |

**1**Find the correlation coefficient and interpret the results**2**Calculate the regression line of y on x and predict the sales of a vendor who obtains 47 on the test.