Unity University

Faculty of Distance and Continuing Education

Department of Marketing Management

Work sheet for **Managerial Statistics I(Mgmt- 2031)**

Name _____

Id No. _____

Department _____

Student Center _____

Program: Distance ☐

Regular / Extension ☐

This is a work sheet you are expected to do by your own. It carries 25 marks. The work sheet should be completed and submitted to your center coordinator which will be sent to the Head Office of the School of Distance and Continuing Education for evaluation. Do not try to complete the worksheet until you have covered all the lessons and exercises in the course material.

Any questions in the course that you have not been able to understand should be stated on a separate sheet of paper and attached to this work sheet. Your tutor will clarify for you.

After completing this worksheet, be certain to write your name, Id No and Address on the first page.

In addition to this, *your Name and Id No should be written on each paper of the work sheet.*

***N.B:* This worksheet has2 parts and 7 pages. Good work!**

Part I: Multiple chooses (20 Markst)

Choose the one best correct answer from the given alternatives and write the letter of your answer in the answer sheet provided at the end of this worksheet booklet (0.67 Pt each)

1. A retail company records daily sales figures, number of customers, and monthly profits. However, the manager later uses statistical tools to analyze trends and make future sales decisions. Which statement BEST describes the two uses of statistics in this scenario?
   A. Both activities represent statistics in the plural sense
   B. Both activities represent statistics in the singular sense
   C. Data recording is plural sense, analysis is singular sense
   D. Data recording is singular sense, analysis is plural sense

2. A bank manager prepares a report showing average loan amounts, total deposits, and graphical trends of customer savings. Later, the manager uses a sample of customers to estimate the default risk of all customers. Which combination BEST describes the statistical methods used?
   A. Both are descriptive statistics C. First is inferential, second is descriptive
   B. Both are inferential statistics D. First is descriptive, second is inferential

3. A manufacturing firm is deciding whether to launch a new product. There is a 70% chance of earning Birr 400,000 profit and a 30% chance of losing Birr 150,000. The manager calculates expected outcomes before deciding. This use of probability mainly helps in:
   A. Data collection and organization C. Data presentation and analysis
   B. Risk assessment and decision making D. Census investigation and survey

4. A sales manager analyzes past sales data and uses trends to predict next year's demand. She also compares two marketing strategies based on their past performance before choosing one. Which uses of statistics are illustrated?
   A. Data collection and census C. Hypothesis testing and sampling
   B. Forecasting and comparison of alternatives D. Data presentation and classification

5. A company analyzes employee salaries and calculates the mean salary as 8,500 Birr. The manager concludes that "most employees earn around 8,500 Birr, indicating a moderate income level." Which of the following pairs of stages is reflected in BOTH the calculation and the conclusion?
   A. Data Organization and Data Presentation C. Data Analysis and Interpretation
   B. Data Collection and Data Analysis D. Data Presentation and Data Collection

6. A supermarket records the number of customers visiting its store over 12 days as follows: 18, 22, 24, 27, 31, 35, 21, 28, 32, 26, 23, 29. The manager groups the data into the following class intervals as: 15–19, 20–24, 25–29, 30–34, and 35–39. What is the frequency of the class interval 25–29?

   A. 2 B. 3 C. 4 D. 5

7. A company manager analyzes monthly salaries (in Birr) of employees: 5,000; 6,000; 7,000; 8,000; 120,000. The manager wants a measure that best represents the typical employee salary. Which measure is most appropriate?

   A. Arithmetic Mean B. Median C. Mode D Geometric Mean

8. A lecturer analyzes students' test scores using a histogram, where the scores are grouped into class intervals such as 50–60, 60–70, 70–80, and so on. The histogram shows that the class interval 60–70 has the highest frequency among all classes. Which one of the following conditions MUST be true?

   A. The bar corresponding to the class interval 60–70 is the tallest
   B. The pie chart sector representing the class 60–70 must be exactly 90°
   C. The histogram bars must have gaps between them
   D. The data cannot be represented using a pie chart

9. A large supermarket in Addis Ababa records the number of daily customers and groups the data into class intervals. The total number of observed days is 40. A less-than cumulative frequency curve (ogive) is constructed. From the ogive, it is observed that the cumulative frequency up to 20 customers is 8 and the cumulative frequency up to 30 customers is 20 What is the frequency of the class interval 20–30 customers?

   A. 8 B. 10 C. 12 D. 20

10. A researcher studies customer behavior in a supermarket. Customers indicate their preferred payment method (cash, card, or mobile money), rate the service quality (poor, average, good, excellent), and report the amount spent in birr. Which measurement scales describe these variables respectively?

    A. Nominal, Ordinal, Ratio
    B. Ordinal, Nominal, Ratio
    C. Nominal, Ratio, Interval
    D. Ordinal, Ratio, Nominal

11. A company has 1,200 employees. The HR manager randomly selects 150 employees and calculates the average satisfaction score from them to estimate the company's overall satisfaction. Which concepts are illustrated?

    A. Sample, Census, Statistic, Parameter
    B. Population, Sampling, Sample, Statistic
    C. Population, Census, Parameter, Variable
    D. Variable, Sampling, Parameter, Census.

12. A retail company recorded the weekly sales over several weeks. The grouped frequency distribution of the sales data is shown below. A business analyst wants to summarize the sales performance using measures of central tendency.

Weekly Sales (000 Birr)	**10–20**	**20–30**	**30–40**	**40–50**	**50–60**
Frequency	5	9	12	8	6

Based on the grouped frequency distribution above, determine the mean, median, and mode respectively.

A. 36.10 , 35.00 , 34.29
B. 34.00 , 33.50 , 32.75
C. 35.25 , 35.00 , 34.29
D. 35.25 , 34.00 , 33.75

13. A market researcher collected data on the daily number of customers visiting a supermarket over several days. The results are summarized in the grouped frequency distribution below:

Number of Customers	40–50	50–60	60–70	70–80	80–90
Frequency	5	9	12	8	6

Based on the above data, determine the approximate values of the first quartile (Q_1), fifth decile (D_5), and 80th percentile (P_{80}) respectively.

A. 56.11, 65.00, 77.50
B. 58.00, 65.00, 75.00
C. 55.50, 64.50, 76.00
D. 57.50, 66.00, 78.00

14. A marketing manager plans to use secondary data from a published report to forecast product demand. Before using the data, the manager checks whether the information directly relates to the research problem, whether the figures are correct and free from major errors, and whether all necessary information required for analysis is included. Which data quality criteria are being evaluated?

A. Completeness, Consistency Timeliness
B. Relevance, Purpose , Consistency
C. Relevance, Accuracy, Completeness
D. Timeliness, Source Credibility, Accuracy

15. A researcher wants to present survey results effectively. First, the data are organized in a table, then the trend over time is shown using a line graph, and finally the proportion of each category is illustrated using a pie chart. Which data presentation tools are used?

A. Histogram, Frequency Polygon, Table
B. Tabular, Line Graph, Pie Chart
C. Scatter Diagram, Bar Chart, Histogram
D. Ogive Curve, Pie Chart, Table

16. Two groups: Group A: n is 10, mean is 50 and Group B: n is 10, mean is 60. Later, one extreme value (200) is added to Group A. Which statement is TRUE?

A. Combined mean increases
B. Combined mean remains unchanged
C. Combined mean decreases
D. Combined mean equals 55

17. A retail manager analyzes the daily sales of 50 retail shops (in thousand Birr).

Daily Sales (000 Birr)	10–20	20–30	30–40	40–50	50–60	60–70	Total
Frequency (f)	4	8	14	12	7	5	50

Using the class midpoints, determine: The Mean Absolute Deviation (MAD) about the mean; and The Coefficient of Variation (CV). Assume the data represent a population and round all final answers to two decimal places.

A. MAD = 9.18 and CV = 33.50%
C. MAD = 11.60 and CV = 34.73%
B. MAD = 10.06 and CV = 35.62%
D. MAD = 8.42 and CV = 31.25%

18. A statistician analyzes a large dataset and wants:A simple interpretation and A highly accurate skewness measure. Which approach is BEST?
A. Use Karl Pearson and Bowley methods together
B. Use Bowley and Kelly methods together
C. Use Kelly and Moment methods together
D. Use Karl Pearson for simplicity and Moment method for accuracy

19. A dataset shows small Quartile Deviation, small Standard Deviation, and low Range. What does this indicate?
A. Data are highly dispersed at the extremes
C. Only the middle values vary widely
B. Data are highly consistent with very little variability
D. The dataset is strongly skewed

20. A manufacturing company obtains its raw materials from two suppliers. Supplier A provides 70% of the total materials and has a defect rate of 4%, while Supplier B supplies the remaining 30% with a higher defect rate of 8%. During quality inspection, a defective item is identified. Based on this information, what is the probability that the defective item originated from Supplier B?
A. 0.30 B. 0.46 C. 0.54 D. 0.67

21. A researcher wants to study the spending behavior of university students. She divides students into undergraduate and postgraduate groups and then randomly selects students from each group proportionally. This sampling method is:
A. Simple Random Sampling
C. Stratified Sampling
B. Systematic Sampling
D. Cluster Sampling

22. A researcher prepares a grouped frequency distribution with the class interval 50–59 to summarize monthly sales data. Which statement is correct?

A. Lower boundary = 50, Upper boundary = 59, Width = 9
B. Lower boundary = 49.5, Upper boundary = 59.5, Width = 10
C. Lower boundary = 50.5, Upper boundary = 59.5, Width = 9
D. Lower boundary = 49.5, Upper boundary = 60.5, Width = 11

23. A company sells its products through two channels: Online and Retail Store. Historical data show that 60% of sales are made online and 40% through retail stores. The probability that a customer is satisfied is 0.80, and customer satisfaction is independent of the sales channel. What is the probability that a randomly selected transaction is either made through the online channel or involves a satisfied customer?

A. 0.92 C. 0.48
B. 0.80 D. 1.00

24. A university evaluates a student's performance using the following grading system:

Course	Grade Point	Credit Hours
Statistics	3.0	4
Economics	4.0	3
Marketing	2.0	2

What is the student's weighted average grade point?

A. 2.89 B. 3.11 C. 3.33 D. 3.50

25. A company has two sales divisions. Division A employs 40 salespersons with an average monthly sales volume of Birr 25,000. Division B employs 60 salespersons with an average monthly sales volume of Birr 35,000. What is the overall average monthly sales volume per salesperson?

A. Birr 29,000 C. Birr 31,000
B. Birr 30,000 D. Birr 32,500

26. A quality control manager inspects a shipment of 20 electronic components, of which 6 are defective and 14 are non-defective. If 5 components are selected randomly without replacement for inspection, what is the probability that exactly 2 of the selected components are defective?

A. 0.232 B. 0.281 C. 0.352 D. 0.417

27. The distribution of monthly customer expenditures in a retail shop is moderately skewed. The mean expenditure is Birr 90 and the median expenditure is Birr 80. Using the empirical relationship among mean, median, and mode, estimate the mode.

A. Birr 50
C. Birr 70
B. Birr 60
D. Birr 80

28. A production manager in a manufacturing firm analyzes different operational situations. Machine failures occur randomly over time with an average of 2 failures per day. In quality inspection, 5 items are selected from a large production process where each item has a 0.1 probability of being defective. In another case, 3 items are selected independently from a process where the probability of a defective item is 0.4. Which one of the following statements is NOT true?

A. The number of machine failures follows a Poisson distribution and the probability of exactly 2 failures is 0.2707
B. The number of defectives in the second case follows a Binomial distribution and the probability of exactly 2 defectives is 0.288
C. The number of defectives in inspection follows a Binomial distribution and the probability of exactly 2 defectives is 0.0729
D. The number of machine failures follows a Poisson distribution and the probability of exactly 3 failures is 0.2707

29. A distribution of employee salaries has the following characteristics: Mean = 75, Mode = 66 and Standard Deviation = 18. What is Karl Pearson's coefficient of skewness?

A. 0.25 B. 0.50 C. 0.75 D. 1.00

30. A company must select 4 employees from a group of 10 employees to attend a leadership training program. How many different selections are possible?

A. 120 B. 210 C. 5040 D. 720

Part II: Matching (5 Marks)

Match each item in Column A with the most appropriate answer in Column B. Write the letter of your answer in the answer sheet provided at the end of this worksheet booklet.**(0.5 pt each)**

Column A (Statements)	Column B (Responses)
1. Numerical facts collected for a specific purpose.	A. Secondary data
2. Selecting a subset from a population.	B. Addition Rule
3. Data collected directly by the researcher.	C. Continuous Variable
4. Graph using equal-width bars for frequencies.	D. .Normal Distribution
5. Most frequently occurring value.	E. Sampling
6. Graph of cumulative frequency.	F. Ogive Curve
7. Counting arrangements where order matters.	G. Statistics
8. Rule for mutually exclusive events.	H. Permutation
9. Variable taking any value within a range.	I. Combination
10. Symmetric bell-shaped distribution	J. Discreet variable
	K. Binomial distribution
	L. Primary Data
	M. Mode
	N. Histogram

Answer sheet for Managerial Statistics I(Mgmt-2031)

Name _____ID_____ Department _____

Part I: Multiple choices (20pts)

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

Part II: Matching (5 pts)

1.) **_____ 3. _____ 5. _____7. _____9, _____**

2.) **_____4, _____6. _____8. _____10. _____**