

# MS 204 In-class Problems

August 27, 2024

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## Chapter 1 Section 1

DETERMINE WHETHER THE STATEMENT DESCRIBES A  
POPULATION OR A SAMPLE.

The price of homes of all the employees at a software company.

- ▶ Population
- ▶ Sample

DETERMINE WHETHER THE STATEMENT DESCRIBES A  
POPULATION OR A SAMPLE.

The heights of 5 out of the 32 eggplant plants at Mr. Lonardo's greenhouse.

- ▶ Population
- ▶ Sample

IDENTIFY THE **population** BEING STUDIED.

The number of times 10 out of 20 students on your floor order pizza in a week.

- ▶ The 20 students on your floor.
- ▶ All students who ordered pizza in a week.
- ▶ The 10 students on your floor.

DETERMINE WHETHER THE STATEMENT DESCRIBES A  
DESCRIPTIVE OR INFERENCE STATISTIC.

A recent poll of 1443 luxury car owners in West Virginia showed that the average price of a luxury car in the U.S. is \$48,900.

- ▶ Descriptive Statistic
- ▶ Inferential Statistic

DETERMINE WHETHER THE STATEMENT DESCRIBES A  
DESCRIPTIVE OR INFERENTIAL STATISTIC.

The average price of a car at the new car dealership in town is \$28,400.

- ▶ Descriptive Statistic
- ▶ Inferential Statistic



DETERMINE IF THE NUMERICAL VALUE DESCRIBES A POPULATION PARAMETER OR A SAMPLE STATISTIC.

A recent poll of 2935 corporate executives showed that the average price of their cars is \$27,100.

- ▶ Population Parameter
- ▶ Sample Statistic

DETERMINE IF THE NUMERICAL VALUE DESCRIBES A POPULATION PARAMETER OR A SAMPLE STATISTIC.

The average price of a house in the new subdivision is \$339,000.

- ▶ Population Parameter
- ▶ Sample Statistic

## IDENTIFY THE SAMPLE CHOSEN FOR THE STUDY.

The number of times 4 out of 37 students on your floor order take-out in a week.

- ▶ The 4 students on your floor.
- ▶ All students who ordered take-out in a week.
- ▶ The 37 students on your floor.

## Chapter 1 Section 2

Types of cars people own are an example of which type of data?

- ▶ Qualitative
- ▶ Quantitative
- ▶ Inferential
- ▶ Statistic

Football jersey numbers are an example of which type of data?

- ▶ Qualitative
- ▶ Quantitative
- ▶ Inferential
- ▶ Statistic

Goals scored during a soccer game are an example of which type of data?

- ▶ Qualitative
- ▶ Quantitative
- ▶ Inferential
- ▶ Statistic

INDICATE THE LEVEL OF MEASUREMENT FOR THE DATA SET DESCRIBED.

Monthly amounts of rain in Seattle over 10 years

- ▶ Interval
- ▶ Ratio
- ▶ Ordinal
- ▶ Nominal



INDICATE THE LEVEL OF MEASUREMENT FOR THE DATA SET DESCRIBED.

Categories of hurricanes that have hit the Atlantic coast

- ▶ Interval
- ▶ Ratio
- ▶ Ordinal
- ▶ Nominal

## CLASSIFY DATA AS DISCRETE OR CONTINUOUS

Lengths of time it takes for new light bulbs to burn out are an example of which type of data?

- ▶ Discrete
- ▶ Continuous
- ▶ Neither

## CLASSIFY DATA AS DISCRETE OR CONTINUOUS

Types of movies people go to see are an example of which type of data?

- ▶ Discrete
- ▶ Continuous
- ▶ Neither

## CLASSIFY DATA AS DISCRETE OR CONTINUOUS

The numbers of each color of jelly beans in a jar (assuming they are all whole) are an example of which type of data?

- ▶ Discrete
- ▶ Continuous
- ▶ Neither

## Chapter 1 Section 4



What is response bias and how can you avoid it?<sup>1</sup>

<sup>1</sup>This webpage seems to explain each type well, but I didn't read every sentence. I mainly put the link here for attributive purposes.

## Chapter 2 Section 1

The following data describes grades of students in biology. Complete the frequency table for this data.

88.2, 94.9, 86.6, 80.0, 83.5, 96.1, 87.3, 89.7, 83.5, 93.1, 89.5, 88.6, 95.2, 96.7, 86.8, 96.8, 95.1, 89.0, 88.2, 94.9, 86.6, 80.0, 83.5, 96.1, 87.3, 89.7, 83.5, 93.1, 89.5, 88.6, 95.2, 96.7, 86.8, 96.8, 95.1, 89.0

Determine the frequency of each class in the table shown.

Grades of Students in Biology	
Class	Frequency
77.0–80.9	
81.0–84.9	
85.0–88.9	
89.0–92.9	
93.0–96.9	



Consider the following frequency table representing the distribution of hours students spend on homework in a week.

Hours Students Spend on Homework in a Week	
Class	Frequency
19–28	3
29–38	11
39–48	15
49–58	6
59–68	9

Determine the class width of each class.

Consider the following frequency table representing the distribution of hours students spend on homework in a week.

Price of a Newspaper (in Dollars)	
Class	Frequency
0.34–0.42	11
0.43–0.51	12
0.52–0.60	14
0.61–0.69	10
0.70–0.78	10

Determine the class width of each class.

Consider the following frequency table representing the distribution of cost of a paperback book (in dollars).

Cost of a Paperback Book (in Dollars)	
Class	Frequency
5.7–6.1	6
6.2–6.6	13
6.7–7.1	12
7.2–7.6	14
7.7–8.1	1

1. Determine the relative frequency for the second class as a simplified fraction.
2. Determine the relative frequency for the fourth class as a simplified fraction.






Consider the following frequency table representing the distribution of hourly wages for first jobs of a certain population.

Hourly Wage at First Job	
Class	Frequency
6.1–7.1	2
7.2–8.2	9
8.3–9.3	9
9.4–10.4	13
10.5–11.5	9

1. Determine the cumulative frequency for the fifth class.
2. Determine the cumulative frequency for the third class.

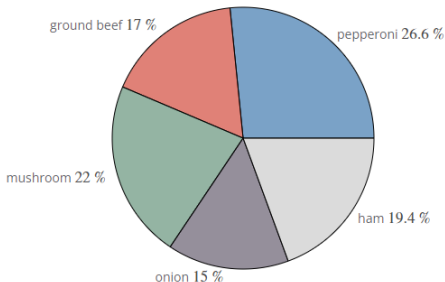
## Chapter 2 Section 2

## Qualitative Data

Type of Graph	Description
Pie Chart 	A pie chart shows how large each category is in relation to the whole; that is, it uses the relative frequencies from the frequency distribution to divide the "pie" into different-sized wedges. It can only be used to display qualitative data.
Bar Graph 	In a bar graph, bars are used to represent the amount of data in each category; one axis displays the categories of qualitative data and the other axis displays the frequencies.
Pareto Chart 	A Pareto chart is a bar graph with the bars in descending order of frequency. Pareto charts are typically used with nominal data.
Side-by-Side Bar Graph 	A side-by-side bar graph is a bar graph that compares the same categories for different groups.
Stacked Bar Graph 	A stacked bar graph is a bar graph that compares the same categories for different groups and shows category totals.

The Pizza Pie 'N Go sells about 2260 one-topping pizzas each month. The circle graph displays the most requested one-topping pizzas, by percentage, for one month.

Most Popular One-Topping Pizzas

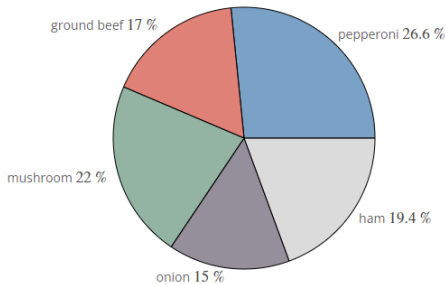


**Step 1 of 5:** Find the number of pepperoni pizzas sold each month. Round your answer to the nearest integer.

**Step 2 of 5:** Find the number of ground beef pizzas sold each month. Round your answer to the nearest integer.

The Pizza Pie 'N Go sells about 2260 one-topping pizzas each month.

Most Popular One-Topping Pizzas

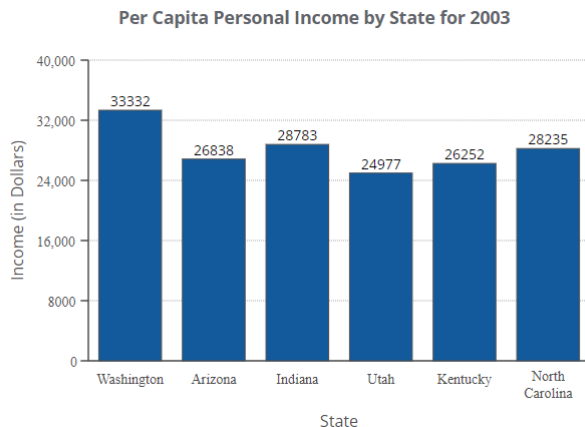


**Step 3 of 5:** Find the number of mushroom pizzas sold each month. Round your answer to the nearest integer.

**Step 4 of 5:** Find the number of onion pizzas sold each month. Round your answer to the nearest integer.

**Step 5 of 5:** Find the number of ham pizzas sold each month. Round your answer to the nearest integer.

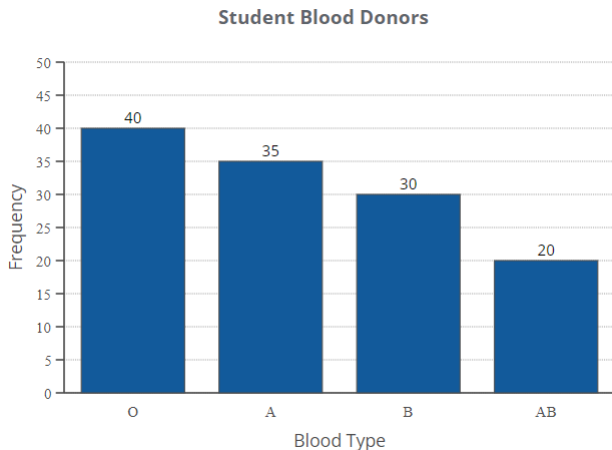




**Step 1 of 2:** Find the lowest per capita personal income for the six states shown.

**Step 2 of 2:** Find the highest per capita personal income for the six states shown.

Consider the Pareto chart, which shows the number of student blood donors by their type for one day of a campus blood drive. How many students donated blood on that day?



## Quantitative Data

## Type of Graph

## Definition

Histogram



A histogram is a bar graph of a frequency distribution of quantitative data; the horizontal axis is a number line.

Stem-and-Leaf Plot

Stem	Leaves
32	0
33	7 7 7 8
34	0 0 0 0

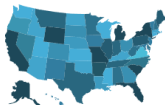
A stem-and-leaf plot retains the original data; the leaves are the last significant digit in each data value and the stems are the remaining digits.

Dot Plot



A dot plot retains the original data by plotting a dot above each data value on a number line.

Heat Map



A heat map depicts relative values of the data using shades of color.

Line Graph



A line graph uses straight lines to connect points plotted at the value of each measurement above the time it was taken.

The following histogram represents the distribution of scores on a ten point quiz.



Step 1 of 3: Which score has the highest frequency?

Step 2 of 3: What is the frequency corresponding to a score of 6?

Step 3 of 3: What is the total number of people who made a score between 0 and 2 inclusive?

The following stem-and-leaf plot represents the distribution of weights for a group of people.

Stem	Leaves					
8	0	3	6	6		
9	1	3				
10	1	2	4	4	5	9
11	1	2	5	7	8	
12	1	2	3	3	6	8
13	1	2	2	7	7	
14	8	8				
15	2	4	5	8	9	
16	4	5	5	6	9	

Key: 8|0 = 80 pounds

**Step 1 of 3:** What is the weight of the lightest person in the group?

**Step 2 of 3:** How many people weigh in the range from 110 to 140 inclusive?

**Step 3 of 3:** What is the weight of the heaviest person in the range 80 to 89 inclusive?

The following data represent the test scores for 18 students in a class on their most recent test. Use the given data to determine the stems for this stem-and-leaf plot.

87 84 69 85 73 58  
 65 53 63 66 67 82  
 66 82 79 89 52 60

Test Scores by Student						
Stem	Leaves					
_____	2	3	8			
_____	0	3	5	6	6	7 9
_____	2	9				
_____	2	2	4	5	7	9

The following data represents the distribution of ages of a group of people. Determine the graph that correctly represents the data.

Age	10-19	20-29	30-39	40-49	50-59
Frequency	7	4	7	3	6







Select the graph that best illustrates the following distribution shape:

Uniform

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a)



b)



c)

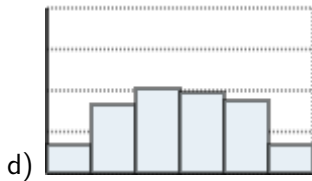
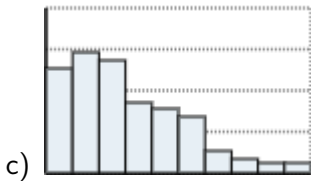
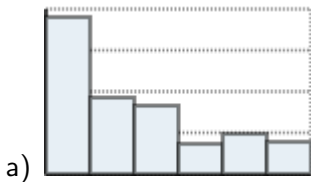


d)



Select the graph that best illustrates the following distribution shape:

Symmetrical

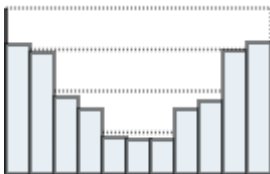


For the set of data displayed below, describe the most likely shape of its distribution.



- 
- ▶ Skewed to the right
  - ▶ Symmetrical, but not uniform
  - ▶ Skewed to the left
  - ▶ Uniform

For the set of data displayed below, describe the most likely shape of its distribution.

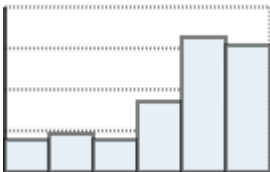


- 
- ▶ Uniform
  - ▶ Skewed to the left
  - ▶ Symmetrical, but not uniform
  - ▶ Skewed to the right

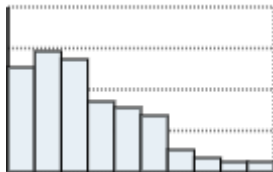
Select the graph that best illustrates the following distribution shape:

Skewed to the right

a)



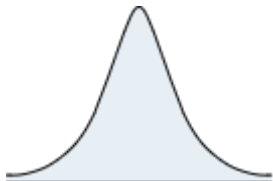
b)



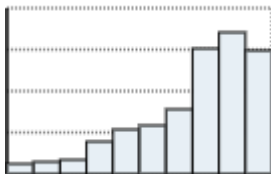
c)



d)



For the set of data displayed below, describe the most likely shape of its distribution.



- 
- ▶ Symmetrical, but not uniform
  - ▶ Uniform
  - ▶ Skewed to the left
  - ▶ Skewed to the right