

# Assignment

## Write

Match each definition to its corresponding term.

1. displays the total of the frequencies of the rows or columns of a frequency distribution
  2. displays the frequencies for categorical data in a two-way table
  3. non-numerical data that can be grouped into categories
  4. displays categorical data by representing the number of occurrences that fall into each group for two variables
  5. any frequency you record within the body of a two-way frequency table
- a. categorical data
  - b. two-way frequency table
  - c. frequency distribution
  - d. joint frequency
  - e. marginal frequency distribution

## Remember

A frequency distribution table is helpful in organizing categorical data in two variables in order to see any associations and trends in the data.

You can use a double bar graph to visually represent categorical data in two variables.

## Practice

1. Forty workers arriving at an office building in a city were asked how they got to work that day. They were also asked if they were less than 40 years old or older. The survey results are shown in the table.
  - a. Identify the variables for this survey. Are the variables categorical or quantitative? Explain your reasoning.
  - b. Construct and analyze a marginal frequency distribution for the survey data. What was the most commonly used transportation method for each age group? Explain how you determined your answer.
  - c. Construct two bar graphs of the frequencies. In one, let the x-axis represent the transportation method, and in the other, let the x-axis represent the age levels. Let the y-axis represent the number of workers in both graphs. What conclusion(s) can you draw by examining each graph?

Age	Transportation Method	Age	Transportation Method
<40	Subway	<40	Bus
<40	Bus	<40	Bus
40+	Walk	<40	Subway
<40	Bus	40+	Car
<40	Subway	<40	Walk
40+	Car	40+	Taxi
40+	Car	40+	Walk
40+	Walk	<40	Subway
<40	Subway	40+	Car
40+	Taxi	<40	Taxi
<40	Walk	40+	Taxi
<40	Bus	<40	Bus
<40	Subway	<40	Bus
40+	Bus	<40	Subway
<40	Bus	40+	Walk
40+	Walk	40+	Car
40+	Taxi	40+	Subway
<40	Subway	40+	Bus
40+	Car	<40	Subway
<40	Car	40+	Taxi

- d. The manager of a firm in the building where the survey was taken has noticed that a number of his employees have been coming in late. The late employees often say they are late because of subway problems, but he also notices it is mostly younger workers who are using this excuse. He thinks these employees may be irresponsible because most of his older employees are not coming in late. Which graph could be used to show the manager that his thinking may be wrong?

## Stretch

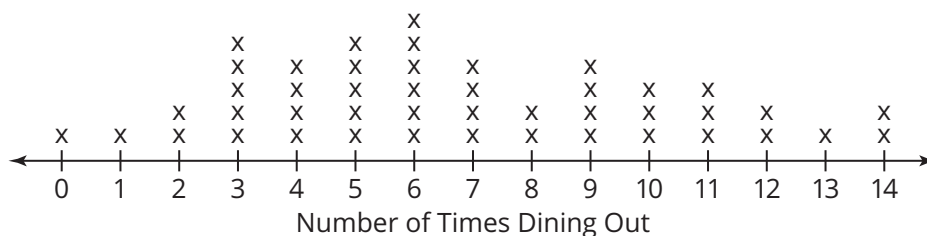
1. Analyze the transportation survey data from the marginal frequency distribution in the Practice.

	Percent Distribution	
	<40	40+
Subway		
Bus		
Walk		
Car		
Taxi		
Total	100%	100%

- a. Complete the table to show the percent of the total in each category that used the different forms of transportation.
- b. Construct a bar graph of the percentages. Let the x-axis represent the transportation method, and let the y-axis represent the percent of workers. What conclusions can you make based on the graph?

## Review

1. A group of 45 adults were asked how many times they dined out the previous week. Their responses are shown in the dot plot.



- a. Describe the distribution of the dot plot.
- b. How do you think the mean and median of the data set compare? Explain your reasoning.
- c. Calculate the mean and median. Explain what they mean in terms of the problem situation.
- d. Which measure of center do you think best represents these data? Explain your reasoning.

2. A clothing store has two checkout methods. In Method A, the customer chooses a line at any of the cashiers' stations. In Method B, the customers wait in one line and then get called to the next available cashier. Data were collected for customers using both methods. The dot plots show the average wait times in minutes for 15 customers for each method of checkout.

a. Predict whether Method A or Method B has the greater standard deviation in wait times.

Explain your reasoning.

b. Determine the standard deviation for

Method A and Method B. Round your

answers to the nearest tenth. Explain

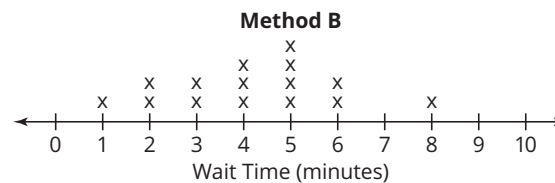
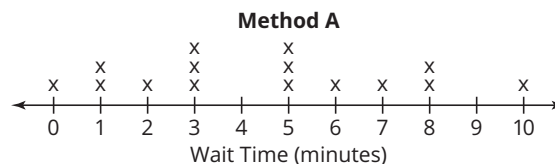
what the standard deviations mean

in terms of the problem situation.

c. Which waiting line method would you prefer

if you were in a big hurry to checkout? Explain

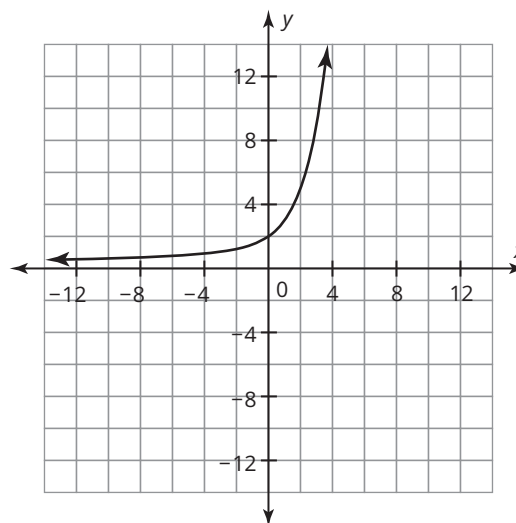
your reasoning.



3. Use the graph of the exponential function to determine

the domain, whether it is increasing or decreasing, the

y- and x-intercept, and the horizontal asymptote.



4. Is the graph of the function  $f(x) = \left(\frac{1}{2}\right)^x$  increasing or decreasing? Explain your reasoning.