

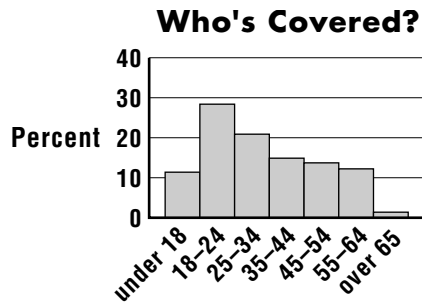
SKILL
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Name _____ Date _____ Period _____

Histograms

A **histogram** uses bars to display numerical data that have been organized into equal intervals.

Example The table shows the percent of people in several age groups who are not covered by health insurance. Make a histogram of the data.

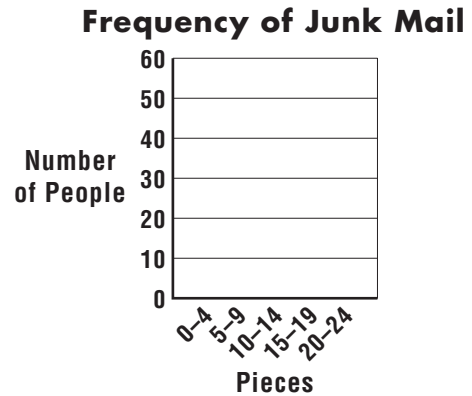


Age	Percent
under 18	12.4%
18-24	28.9%
25-34	20.9%
35-44	15.5%
45-54	14.0%
55-64	12.9%
over 65	1.2%

Make a histogram of the data below.

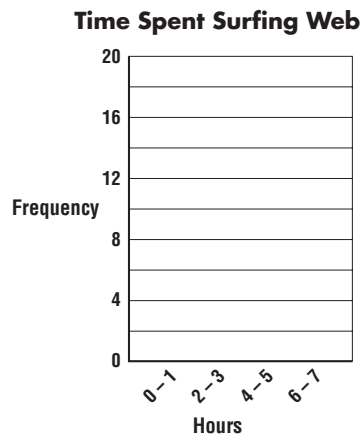
1.

Pieces of Junk Mail	Frequency
0-4	25
5-9	35
10-14	50
15-19	40
20-24	15



2.

Time Spent Surfing the Web (in hours per day)	Frequency
0-1	20
2-3	18
4-5	2
6-7	1

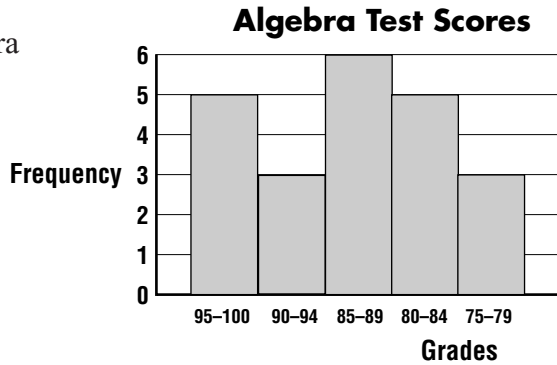


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Histograms *(continued)*

Use the histogram at the right to answer each question.

3. How many students took the algebra test?
4. Which grade has the most test scores?
5. Which grades have the same number of test scores?
6. How many more students earned 85–89 than earned 80–84?
7. Make a frequency table of the algebra scores.



A survey was taken that asked people their height in inches. The data are shown below.

68	69	72	64	74	56	62	58
69	65	70	59	71	67	66	64
73	78	70	52	61	68	67	66

8. Make a frequency table and histogram of the data. Use the intervals 51–55, 56–60, 61–65, 66–70, 71–75, and 76–80.
9. How many heights are in the 66–70 interval?
10. How many people in the survey are taller than 5 feet?
11. How many people in the survey are shorter than 5 feet?
12. What interval has the greatest number of heights?
13. How many people were surveyed?

Mathematics 7
Unit 4: Data Management
Topic 1: Histogram

Name: _____

A **histogram** is similar to a **bar graph**.

Review the idea of a bar graph:

Bar Graph - a diagram showing a system of connections between two or more things using
For example: Recording the amount of precipitation for the year. You place the months on the bottom (horizontal) and the amount of precipitation up the side (vertical). Bars are then used to indicate the amount of precipitation.

Note: In a bar graph the horizontal does not have to be numerical. (number)

Histogram - a bar graph that shows frequency of a given set of data

- the data is broken up into class intervals and a frequency is kept for those class intervals
- the bars in a histogram are joined together

Histograms vs Bar Graphs

A **histogram** is like sorting bins. You have one variable and you sort data by this variable by placing them in "bins". You count how many pieces of data you have in each bin. The bar you draw represents the number in each "sorting bin".

A **bar graph** you have several measurements of different items and you compare them.

A histogram answers the question "How many measurements are there in each of the classes of measurements?"

A bar graph answers the question "What is the measurement of each item?"

Situation	Bar Graph or Histogram?
We want to compare total revenues of five different companies.	Bar Graph: What is the revenue for each company?
We have measured revenues of several companies. We want to compare numbers of companies that make, 0 to 10 000, 10 000 to 20 000, 20 000 to 30 000 and so on.	Histogram: How many companies are there in each class of revenues?
We want to compare heights of ten oak trees in a city park.	Bar Graph: What is the height of each tree?
We have measured several trees in a city park. We want to compare numbers of trees that are from 0 to 5 meters high, 5 to 10, 10 to 15 and so on.	Histogram: How many trees are there in each class of heights?

Steps for Creating a Histogram:

1. Collect data and sort it into categories.
2. Label data as the independent or the dependent set.
3. The data is grouped using the independent variable. The frequency would be grouped using the dependent variable.
4. Draw a graph and label it. The intervals are placed on the horizontal axis (bottom) and only the number for the lower bound is shown on each interval. The frequency is placed on the vertical axis (side) and the bars are drawn using the frequency of each interval.

Example: Construct a histogram for the following: Below is information showing the Number of people attending a concert.

4 aged 0 - 9; 87 aged 10 - 19; 119 aged 20 - 29; 61 aged 40 - 49; 32 aged 50 - 59

Worksheet on Histogram:

1. The data in the table show the number of pedestrians killed in one year in a large city, by age:

AGE	FREQUENCY
0 - 9	84
10 - 19	28
20 - 29	9
30 - 39	24
40 - 49	19
50 - 59	43
60 - 69	63
70 - 79	58
80 - 89	38

- A) Construct a histogram for the data.
B) Comment on the shape of the graph and give possible reasons for it.
2. One year in December the number of hours of bright sunshine recorded at 36 selected stations is as follows:

16 25 41 20 35 20 16 8 38 23 25 38 41 34 24 39 47 45 17 42 44 47 51
35 37 51 39 14 14 40 44 50 40 31 22

- A) choose an interval and create a frequency table for the data
B) use the grouped data to create a histogram
C) choose a different interval and repeat a and b
D) compare the two histogram and explain which they feel is more useful
3. Construct a histogram to represent the following data. The number of hours of television watched in a week:

2 2 2 3 3.5 3.5 4 4 5.5 5.5 5.5 6 8 8.5 8.5 8.5 8.5 8.5 8.5 9 9 9 9.5 12.5

Exercise

Monthly report of sales for Fast Growing, Inc. for the year 2001.

Month	Sales (in millions)
January	61
February	60
March	63
April	65
May	68
June	67
July	71
August	74
September	72
October	73
November	75
December	76

1. Create a Histogram using a vertical scale of 5 million per unit, starting from 0.
2. Create a Histogram using a vertical scale of 1 million per unit, starting from 60.
3. Which histogram would you use if you were the manager of Fast Growing, Inc. who wants to convince people that the company grows fast?
4. Which would you use if you were a manager of Stable Income, Inc. (the main competitor of Fast Growing) who wants to diminish the success of the competing company?
5. How would you present the data if you were an independent observer who wants to present the information in the most accurate manner?

Exercise

Price Range	Number of Cars Sold
\$0-\$1,000	3
\$1,000-\$1,999	5
\$2,000-\$2,999	12
\$3,000-\$3,999	25
\$4,000-\$4,999	40
\$5,000-\$5,999	75
\$6,000-\$6,999	52
\$7,000-\$7,999	35
\$8,000-\$8,999	15
\$9,000-\$10,000	9

Over the past several years, you have recorded the number of automobiles that a used car dealer in your town has sold in different price ranges.

1. Using the intervals found in the table create a histogram for the information.
2. Change the class width to \$5,000 and create a new histogram.
3. Change the class width to \$2,000 and create a new histogram.
4. If you were the car dealer, what increment size would you choose to advertise car sales?