

Bar Graphs and Histograms



Hundreds of different languages are spoken around the world. The graph shows the numbers of native speakers of four languages.



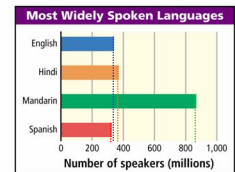
A **bar graph** can be used to display and compare data. The scale of a bar graph should include all the data values and be easily divided into equal intervals.

Additional Example 1A: Interpreting a Bar Graph

Use the bar graph to answer the question.

A. Which language has the fewest native speakers?

The bar for Spanish is the shortest, so Spanish has the fewest native speakers.

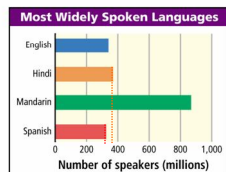


Additional Example 1B: Interpreting a Bar Graph

Use the bar graph to answer the question.

B. About how many more people speak Hindi than Spanish?

About 50 million more people speak Hindi than speak Spanish.

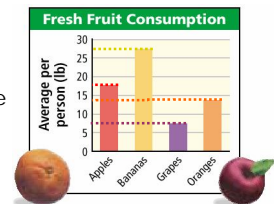


Try This: Example 1A

Use the bar graph to answer the question.

A. Which fruit was eaten the most?

The bar for bananas is the longest, so bananas were eaten the most.

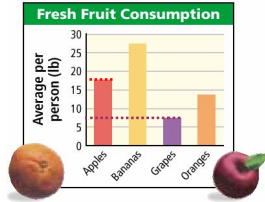


[Try This: Example 1B](#)

Use the bar graph to answer the question.

B. About how many more pounds of apples than pounds of grapes were eaten per person?

About 10 pounds more apples were eaten than grapes per person.



You can use a **double-bar graph** to *compare two related sets of data*.

Steps for Making a Double Bar Graph

Step 1: Choose a scale and interval for the vertical axis.

Step 2: Draw a pair of bars for each data sets. Use different colors the different sets.

Step 3: Label the axes and give the graph a title.

Step 4: Make a key to show what each bar represents.

[Additional Example 2: Making a Double-Bar Graph](#)

The table shows the speed limits of three states on interstate highways. Make a double-bar graph of the data.

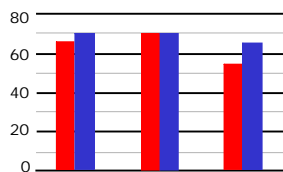
Step 1: Choose a scale and interval for the vertical axis.



State	Urban	Rural
Florida	65 mi/h	70 mi/h
Texas	70 mi/h	70 mi/h
Vermont	55 mi/h	65 mi/h

[Additional Example 2 Continued](#)

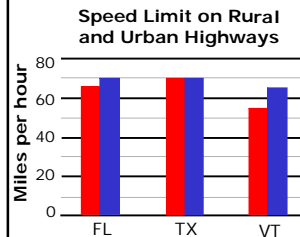
Step 2: Draw a pair of bars for each state's data. Use different colors to show urban and rural speed limits.



State	Urban	Rural
Florida	65 mi/h	70 mi/h
Texas	70 mi/h	70 mi/h
Vermont	55 mi/h	65 mi/h

[Additional Example 2 Continued](#)

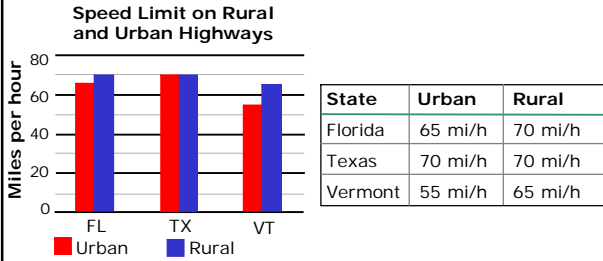
Step 3: Label the axes and give the graph a title.



State	Urban	Rural
Florida	65 mi/h	70 mi/h
Texas	70 mi/h	70 mi/h
Vermont	55 mi/h	65 mi/h

Additional Example 2 Continued

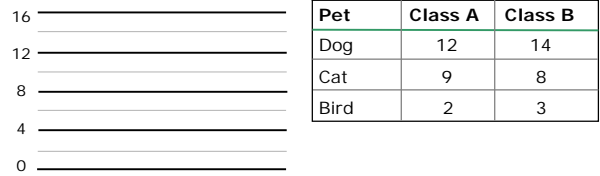
Step 4: Make a key to show what each bar represents.



Try This: Example 2

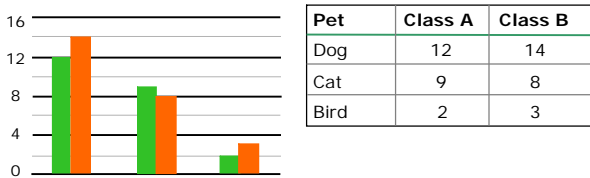
The table shows the number of pets owned by students in two classes.

Step 1: Choose a scale and interval for the vertical axis.



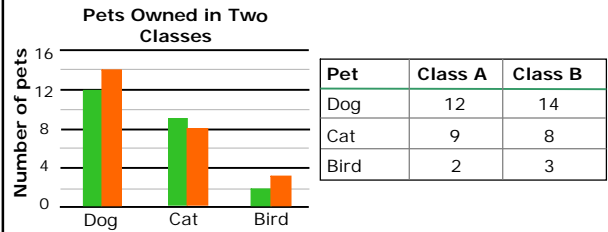
Try This: Example 2

Step 2: Draw a pair of bars for each pet's data. Use different colors to show class A and class B.



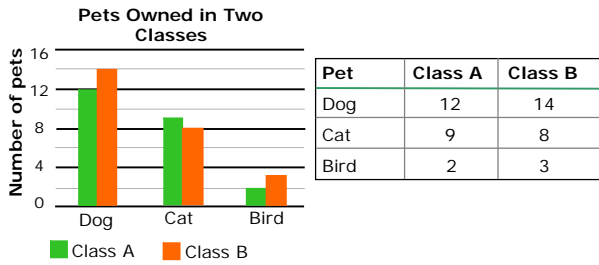
Try This: Example 2

Step 3: Label the axes and give the graph a title.



Try This: Example 2

Step 4: Make a key to show what each bar represents.



A **histogram** is a bar graph that shows the frequency of data within equal intervals. There is no space between the bars in a histogram.

Steps for Making a Histogram

- Step 1:** Make a frequency table of the data. Be sure to use equal intervals.
- Step 2:** Choose an appropriate scale and interval for the vertical axis. The greatest value on the scale should be at least as great as the greatest frequency.
- Step 3:** Draw a bar graph for each interval. The height of the bar is the frequency for that interval. Bars must touch but not overlap.
- Step 4:** Label the axes and give the graph a title.

Additional Example 3: Making a Histogram

The table below shows the number of hours students watch TV in one week. Make a histogram of the data.

Step 1: Make a frequency table of the data. Be sure to use equal intervals.

Number of Hours of TV			
1	//	6	///
2	////	7	////
3	////	8	///
4	////	9	///
5	////		

Number of Hours of TV	Frequency
1–3	15
4–6	17
7–9	17

Additional Example 3 Continued

Step 2: Choose an appropriate scale and interval for the vertical axis. The greatest value on the scale should be at least as great as the greatest frequency.

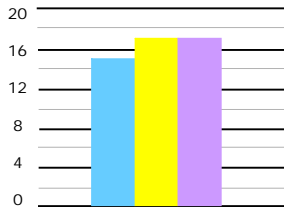
Number of Hours of TV	Frequency
1–3	15
4–6	17
7–9	17



Additional Example 3 Continued

Step 3: Draw a bar graph for each interval. The height of the bar is the frequency for that interval. Bars must touch but not overlap.

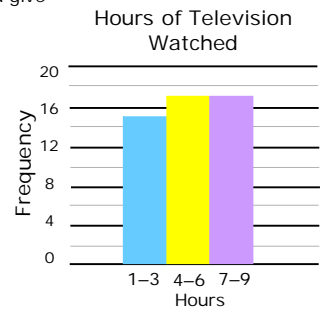
Number of Hours of TV	Frequency
1–3	15
4–6	17
7–9	17



Additional Example 3 Continued

Step 4: Label the axes and give the graph a title.

Number of Hours of TV	Frequency
1–3	15
4–6	17
7–9	17



Try This: Example 3

The table below shows the number of hats a group of students own. Make a histogram of the data.

Step 1: Make a frequency table of the data. Be sure to use equal intervals.

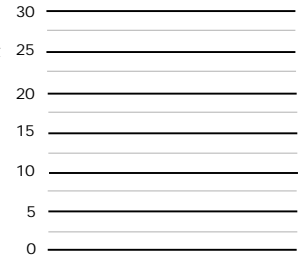
Number of Hats Owned	Frequency
1-3	12
4-6	18
7-9	24

Number of Hats Owned	Frequency
1	//
2	////
3	//// /
4	//// /
5	//// /
6	////
7	//// /
8	//// /
9	//// /

Try This: Example 3

Step 2: Choose an appropriate scale and interval for the vertical axis. The greatest value on the scale should be at least as great as the greatest frequency.

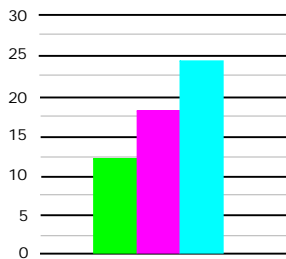
Number of Hats Owned	Frequency
1-3	12
4-6	18
7-9	24



Try This: Example 3

Step 3: Draw a bar graph for each interval. The height of the bar is the frequency for that interval. Bars must touch but not overlap.

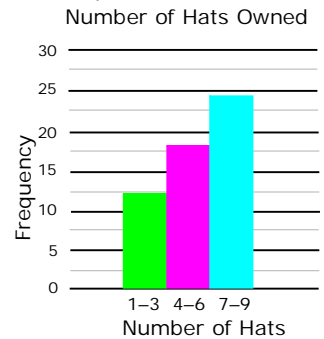
Number of Hats Owned	Frequency
1-3	12
4-6	18
7-9	24



Try This: Example 3

Step 4: Label the axes and give the graph a title.

Number of Hats Owned	Frequency
1-3	12
4-6	18
7-9	24



Steps for Making a Double Bar Graph

Step 1: Choose a scale and interval for the vertical axis.

Step 2: Draw a pair of bars for each data sets. Use different colors the different sets.

Step 3: Label the axes and give the graph a title.

Step 4: Make a key to show what each bar represents.

Steps for Making a Histogram

Step 1: Make a frequency table of the data. Be sure to use equal intervals.

Step 2: Choose an appropriate scale and interval for the vertical axis. The greatest value on the scale should be at least as great as the greatest frequency.

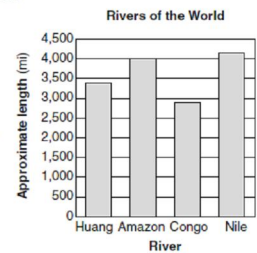
Step 3: Draw a bar graph for each interval. The height of the bar is the frequency for that interval. Bars must touch but not overlap.

Step 4: Label the axes and give the graph a title.

LESSON 1-4 Practice A
1-4 Bar Graphs and Histograms

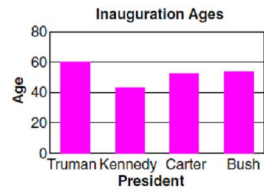
The bar graph shows the lengths of four rivers. Use the graph for Exercises 1-3.

- Which river is the longest?
Nile River
- About how much longer is the Amazon River than the Congo River?
about 1,100 mi
- About how much longer is the Nile River than the Huang River?
about 700 mi



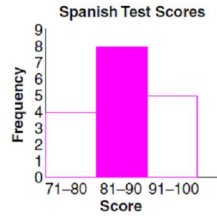
4. The table shows the ages of four U.S. Presidents when they first entered office. Make a bar graph of the data.

Name	President's Age
Truman	60
Kennedy	43
Carter	52
Bush	54



5. The table below shows the scores on a Spanish test. Make a histogram of the data.

Scores	Frequency
71-80	4
81-90	8
91-100	5



LESSON 14 Practice B
Bar Graphs and Histograms

The bar graph shows the elevations of the highest points in several states. Use the graph for Exercises 1-3.

1. Which state has the highest elevation?

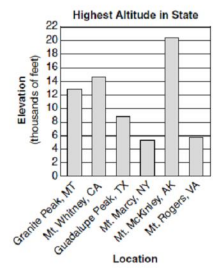
Alaska

2. About how much higher is Granite Peak than Guadalupe Peak?

about 4,000 ft

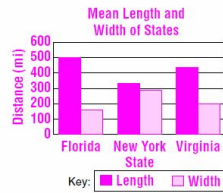
3. About how much higher is Mount Whitney than Mount Marcy?

about 9,000 ft



4. The table shows the approximate mean length and width of three states. Make a double-bar graph of the data.

State	Length (mi)	Width (mi)
Florida	500	160
New York	330	283
Virginia	430	200



5. The list shows the bowling scores of the first game played by a group of bowlers on Thursday night. Make a histogram of the data.

96, 110, 132, 128, 105, 94, 116, 95, 126, 114, 123, 136, 121, 99

