CHAPTER 2

Frequency

Distributions and Graphs

DEFINITION:

Raw Data: *are the data in original form,*

Sample Size: *total number of values denoted by (n).*

Class: *is quantitative or qualitative category where each raw data value is placed into it.*

Frequency: *is the number of data values contained in a specific class*

Frequency distribution: *is the organization of raw data in table form, using classes and frequencies.*

- *Three types of frequency distributions that are most often used are the* ***categorical frequency distribution*** *,* *the* ***grouped frequency distribution****,* *and* *un****grouped frequency distribution***

1) The ***categorical frequency distribution*** *is used for data that can be placed in specific categories, such as nominal- or ordinal-level data*

* Categorical Frequency Distribution

Class	Frequency (f)	Percent (P)
Categorical class		$P = \frac{f_i}{\sum f}$
Total	$\sum f = n$	$\sum P = 100\%$

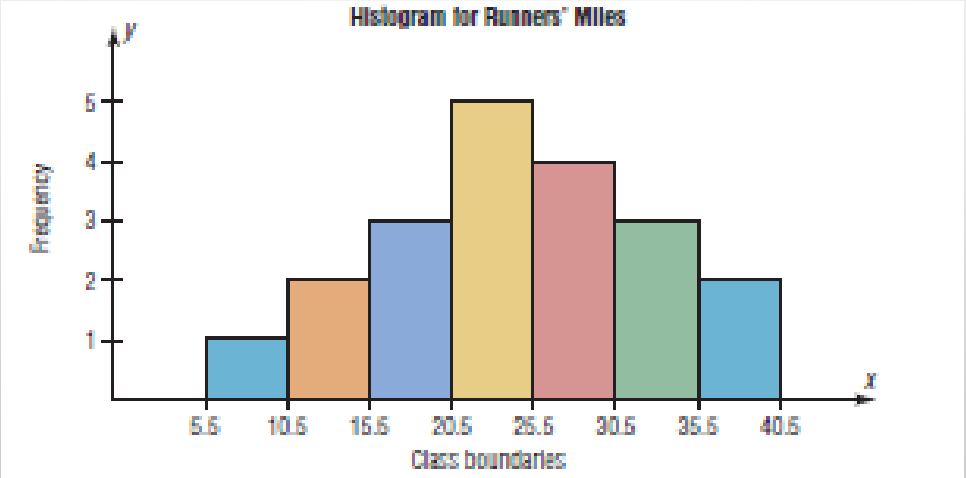
*3) The **grouped frequency distribution** is used when the range of the data values is relatively small, a frequency distribution can be constructed using single data values for each class.*

*** Ungrouped Frequency Distribution

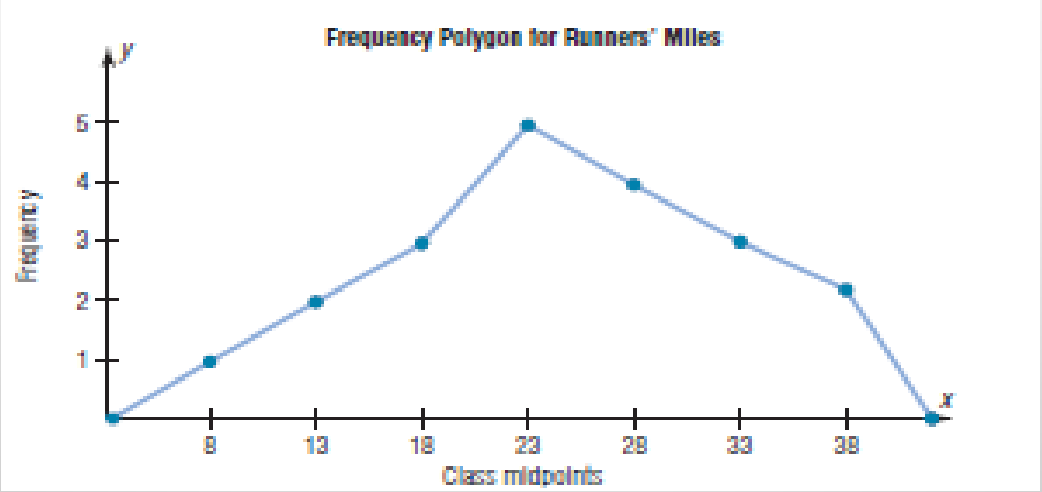
Class limit	Class Boundaries	Frequency (f)	Percent (P)	Cumulative Frequency
C_1 C_2 . . . C_n	$(L_i - 0.5 , U_i + 0.5)$		$P = \frac{f_i}{\sum f}$	f_1 $f_2 + f_1$ $f_3 + f_2 + f_1$ . . . $f_n + \ldots + f_2 + f_1 = n$
Total		$\sum f = n$	$\sum P = 100\%$	

Histograms, Frequency Polygons, and Ogives

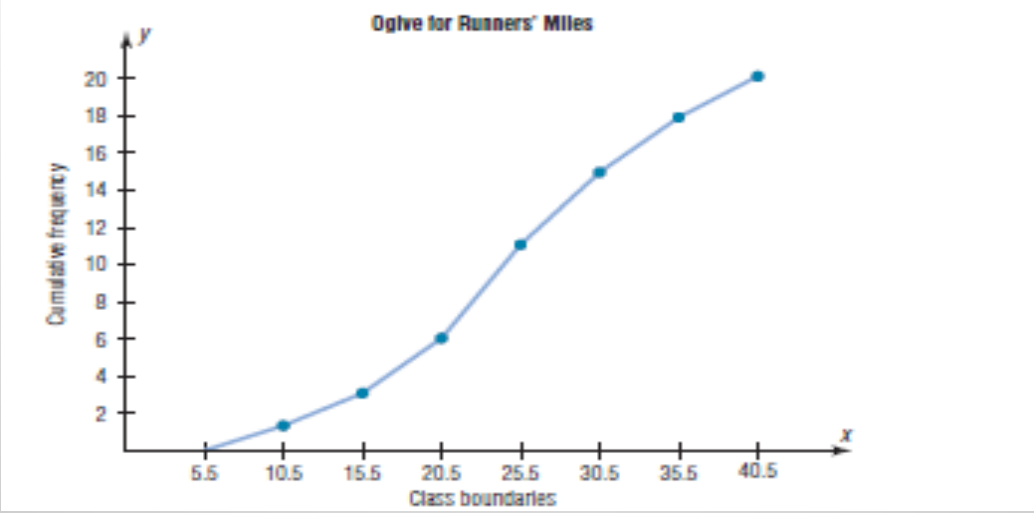
*1) The **histogram** is a graph that displays the data by using contiguous vertical bars (unless the frequency of a class is 0) of various heights to represent the frequencies of the classes.*



*2) The **frequency polygon** is a graph that displays the data by using lines that connect points plotted for the frequencies at the midpoints of the classes. The frequencies are represented by the heights of the points.*

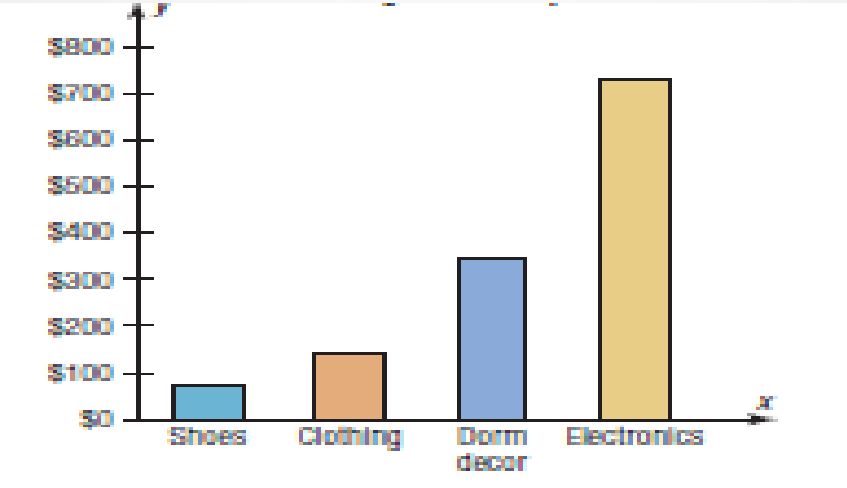


*3) The **ogive** is a graph that represents the **cumulative frequencies** for the classes in a frequency distribution.*

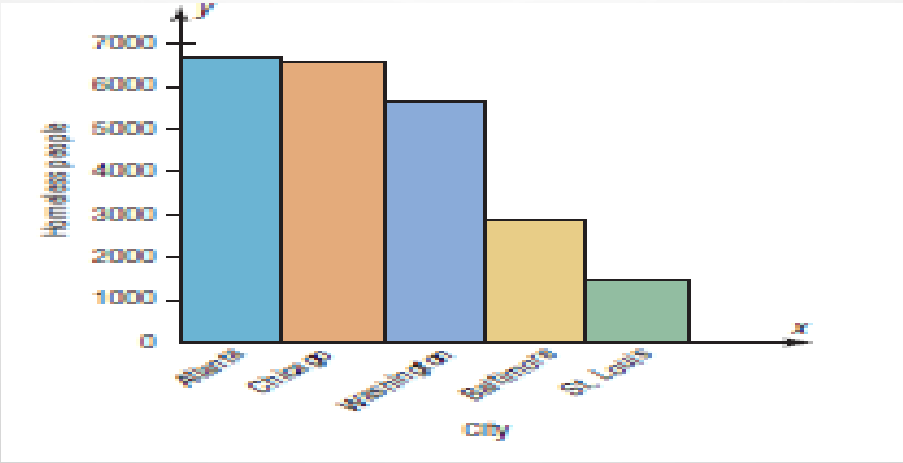


Other Types of Graphs

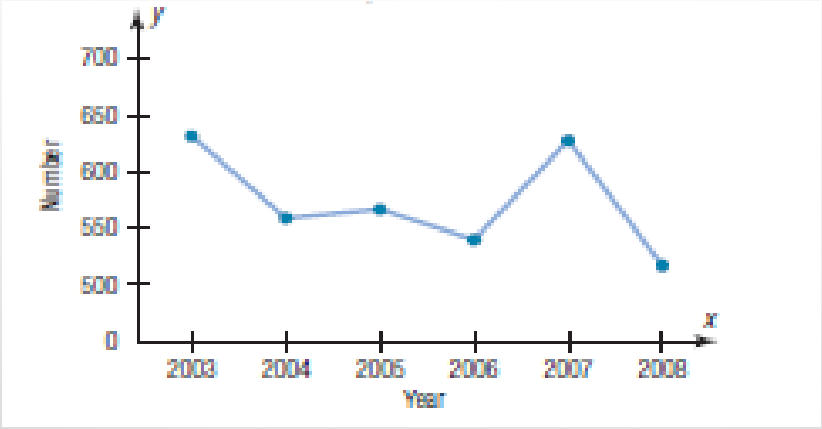
*1) A **bar graph** represents the data by using vertical or horizontal bars whose heights or lengths represent the frequencies of the data.*



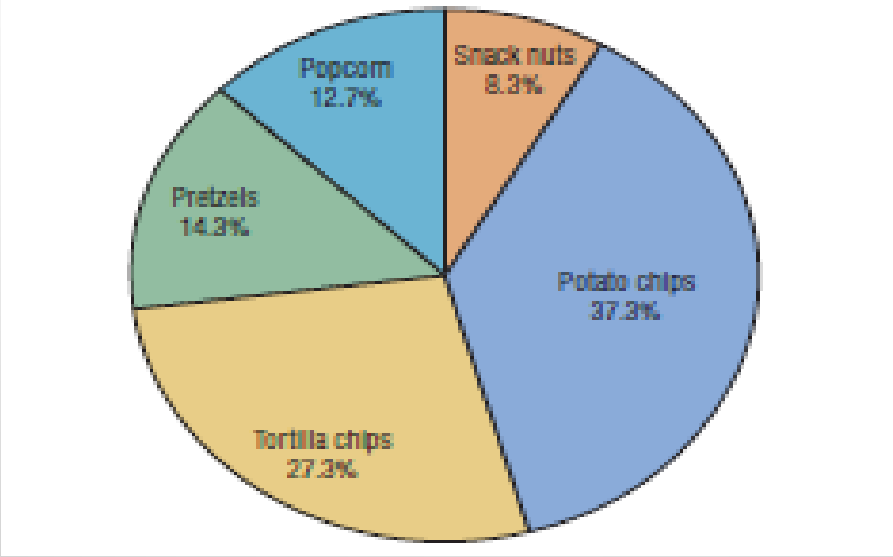
*2) A **Pareto chart** is used to represent a frequency distribution for a categorical variable, and the frequencies are displayed by the heights of vertical bars, which are arranged in order from highest to lowest.*



*3) A **time series graph** represents data that occur over a specific period of time.*



*A **pie graph** is a circle that is divided into sections or wedges according to the percentage of frequencies in each category of the distribution.*



The purpose of the pie graph is to show the relationship of the parts to the whole by visually comparing the sizes of the sections.