Exercise set 1

Stat 251

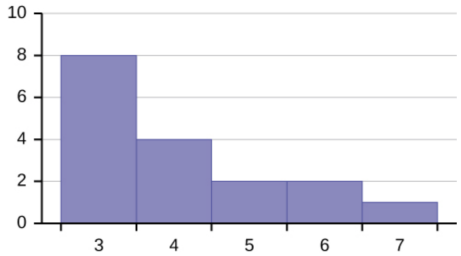
(1) Define the following terms
   (a) Population
   (b) Sample
   (c) Parameter
   (d) Statistic (not the discipline)

(2) Name the sampling method used in each of the following situations:
   (a) A woman in the airport is handing out questionnaires to travelers asking them to evaluate the airport's service. She does not ask travelers who are hurrying through the airport with their hands full of luggage, but instead asks all travelers who are sitting near gates and not taking naps while they wait.
   (b) A teacher wants to know if her students are doing homework, so she randomly selects rows two and five and then calls on all students in row two and all students in row five to present the solutions to homework problems to the class.
   (c) The marketing manager for an electronics chain store wants information about the ages of its customers. Over the next two weeks, at each store location, 100 randomly selected customers are given questionnaires to fill out asking for information about age, as well as about other variables of interest.
   (d) The librarian at a public library wants to determine what proportion of the library users are children. The librarian has a tally sheet on which she marks whether books are checked out by an adult or a child. She records this data for every fourth patron who checks out books.
   (e) A political party wants to know the reaction of voters to a debate between the candidates. The day after the debate, the party's polling staff calls 1,200 randomly selected phone numbers. If a registered voter answers the phone or is available to come to the phone, that registered voter is asked whom he or she intends to vote for and whether the debate changed his or her opinion of the candidates.

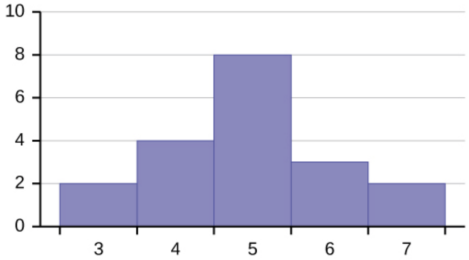
(3) Sixty adults with gum disease were asked the number of times per week they used to floss before their diagnosis. The (incomplete) results are shown in the provided table.
   (a) Fill in the blanks on the table
   (b) What percent of adults flossed six times per week?
   (c) What percent flossed at most three times per week?

# Flossing per Week	Frequency	Relative Frequency	Cumulative Relative Freq.
0	27	0.4500	
1	18		
3			0.9333
6	3	0.0500	
7	1	0.0167	

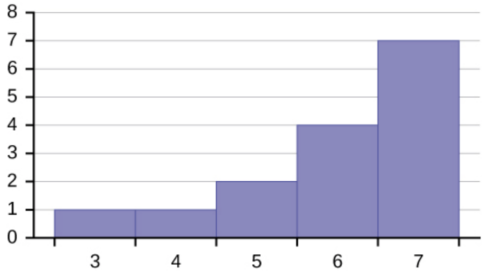
(4) Describe the shape of the distribution.



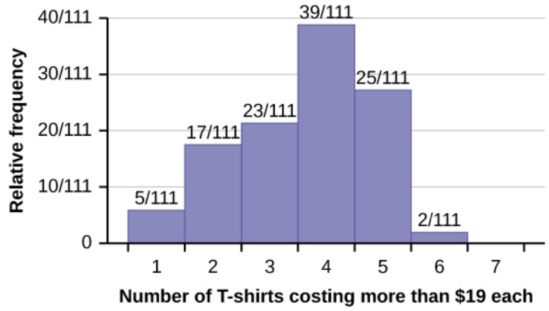
(5) Describe the shape of the distribution.



(6) Describe the shape of the distribution.



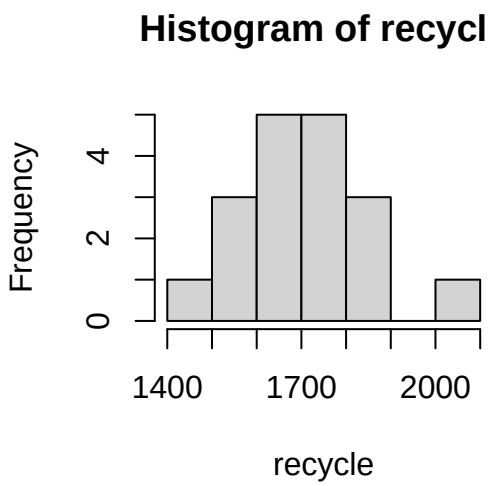
(7) Suppose one hundred eleven people who shopped in a special t-shirt store were asked the number of t-shirts they own costing more than $19 each. Using the provided graph with numbers, what is the (approximate) percentage of people who own at most three t-shirts costing more than $19 each?
   (a) 21
   (b) 59
   (c) 41
   (d) Cannot be determined



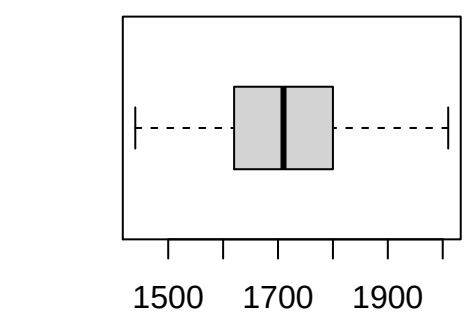
(8) If the data were collected by asking the first 111 people who entered the store, then the type of sampling is:
   (a) cluster
   (b) simple random
   (c) stratified
   (d) convenience

(9) A dealer in recycled paper places empty trailers at various sites. The trailers are gradually filled by individuals who bring in old newspapers and magazines, and are picked up on several schedules. One such schedule involves pickup every second week. This schedule is desirable if the average amount of recycled paper is more than 1600 cubic feet per 2-week period. The dealer's records for eighteen 2-week periods show the following volumes (in cubic feet) at a particular site: `{1660 1820 1590 1440 1730 1680 1750 1720 1900 1570 1700 1900 1800 1770 2010 1580 1620 1690}`; graphs provided below as well. Use the data to calculate the following:
   (a) mean
   (b) mode
   (c) variance
   (d) standard deviation
   (e) Use Empirical Rule to describe the distribution of the data. Is ER appropriate to use (i.e.: is the data distribution approximately symmetric)?

```
hist(recycle)
```




```
boxplot(recycle,horizontal=T,main='Recycled paper (cubic feet) data')
```



Extra practice

There are problems in the PDF book that have answers in the back to check that could be worked on for extra practice in chapters 1 and 2 of the book (see website for book link in Syllabus)