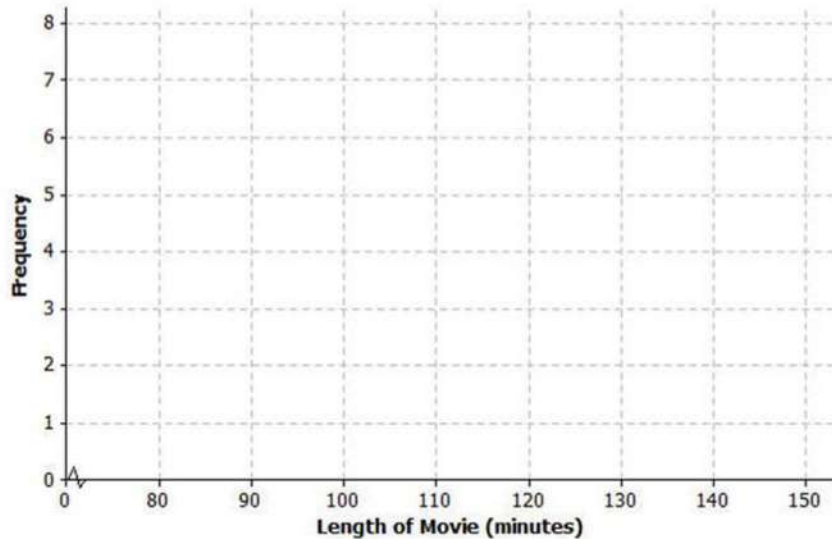Name _____   Date_____

Creating a Histogram

The frequency table below shows the length of selected movies shown in a local theater over the past six months.

Length of Movie (min)	Tally	Frequency
80−< 90			1
90−< 100	||||	4
100−< 110	+++ ||	7
110−< 120	+++	5
120−< 130	+++ ||	7
130−< 140	|||	3
140−< 150			1

1. Construct a histogram for the length of movies data.

2. Describe the shape of the histogram.

3. What does the shape tell you about the length of movies?

1. The data below is the number of goals scored by a professional indoor soccer team over their last 23 games.

    8 16 10 9 11 11 10 15 16 11 15 13 8 9 11 9 8 11 16 15 10 9 12

    a. Make a dot plot of the number of goals scored.

    b. What number of goals describes the center of the data?

    c. What is the least and most number of goals scored by the team?

    d. Over the 23 games played, the team lost 10 games. Circle the dots on the plot that you think represent the games that the team lost. Explain your answer.

2. A 6th grader rolled two number cubes 21 times. The student found the sum of the two numbers that he rolled each time. The following are the sums of the 21 rolls of the two number cubes:

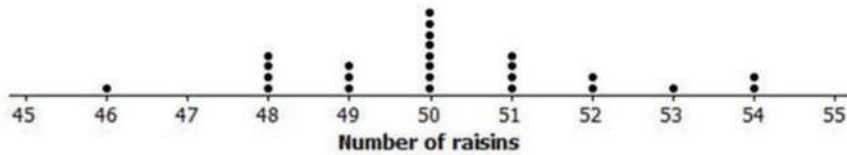   9 2 4 6 5 7 8 11 9 4 6 5 7 7 8 8 7 5 7 6 6

    a. Complete the frequency table.

Sum rolled	Tally	Frequency
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

    b. What sum describes the center of the data?

    c. What was the most common sum of the number cubes?

3. The dot plot below shows the number of raisins in 25 selected small boxes of raisins.

Dot Plot of Number of Raisins

Number of raisins

a. Complete the frequency table.

Number of Raisins	Tally	Frequency
46		
47		
48		
49		
50		
51		
52		
53		
54		

b. Another student opened up a box of raisins and reported that it had 63 raisins. Did this student have the same size box of raisins? Why or why not?

The frequency table below shows the length of selected movies shown in a local theater over the past six months.

| Length of Movie (min)	Tally	Frequency
80−< 90	|	1
90−< 100	||||	4
100−< 110	⊢⊢⊢ ||	7
110−< 120	⊢⊢⊢	5
120−< 130	⊢⊢⊢ ||	7
130−< 140	|||	3
140−< 150	|	1

1. Construct a histogram for the length of movies data.
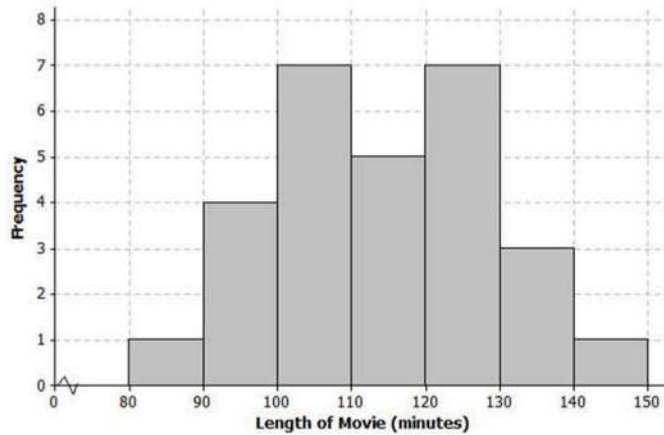
2. Describe the shape of the histogram.

    Mound shaped or approximately symmetric.

3. What does the shape tell you about the length of movies?

    Most movies lengths were between 100 and 130 minutes.

Note that teacher discretion is encouraged for assigning problems from this problem set. Problems are provided to address the varying interests of students.

1. The following histogram shows ages of the actresses whose performances have won in the Best Leading Actress category at the annual Academy Awards (Oscars).

Histogram of Age
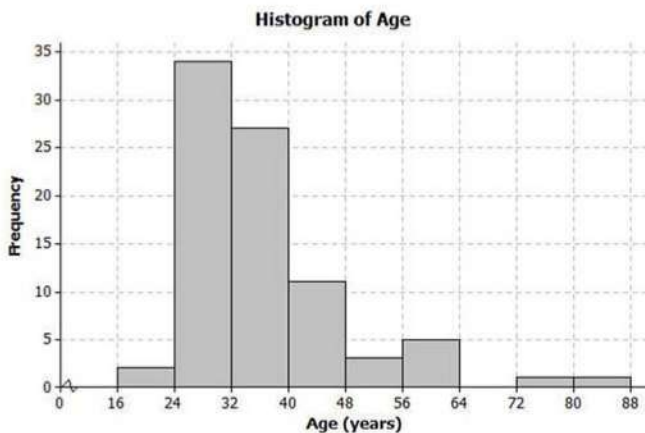
a. Which age interval contains the most actresses? How many actresses are represented in that interval?

The interval 24 to 32 contains the most actresses. There are 34 actresses whose age falls into that category.

b. Describe the shape of the histogram.

Skewed to the right.

c. What does the shape tell you about the ages of actresses who win the Oscar for best actress award?

Most of the ages are between 24 and 40, with two ages much larger than the rest.

d. Which interval describes the center of the ages of the actresses?

32 to 40

e. An age of 72 would be included in which interval?

It is in the interval from 72 to 80.

2. The frequency table below shows the seating capacity of arenas for NBA basketball teams.

Number of seats	Tally	Frequency
17000−< 17500	||	2
17500−< 18000	|	1
18000−< 18500	⊬⊬ |	6
18500−< 19000	⊬⊬	5
19000−< 19500	⊬⊬	5
19500−< 20000	⊬⊬	5
20000−< 20500	||	2
20500−< 21000	||	2
21000−< 21500		0
21500−< 22000		0
22000−< 22500	|	1

a. Draw a histogram of the number of seats in NBA arenas. Use the histograms you have seen throughout this lesson to help you in the construction of your histogram.
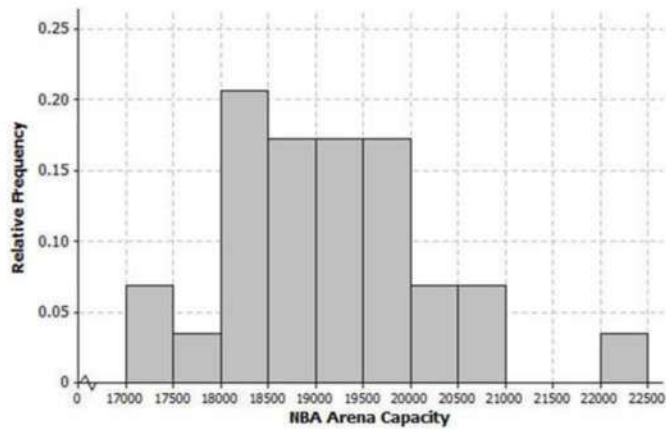
b. What is the width of each interval? How do you know?

   The width of each interval is 500.

   Subtract the values identifying an interval.

c. Describe the shape of the histogram.

   Skewed to the right.

d. Which interval describes the center of the number of seats?

   19, 000 *to* 19, 500

3. Listed are the grams of carbohydrates in hamburgers at selected fast food restaurants.

33	40	66	45	28	30	52	40	26	42
42	44	33	44	45	32	45	45	52	24

a. Complete the frequency table with intervals of width 5.

| Number of carbohydrates (grams)	Tally	Frequency
20−< 25			1
25−< 30	||	2
30−< 35	||||	4
35−< 40		0
40−< 45	⊬⊬		6
45−< 50	||||	4
50−< 55	||	2
55−< 60		0
60−< 65		0
65−< 70			1

b. Draw a histogram of the carbohydrate data.
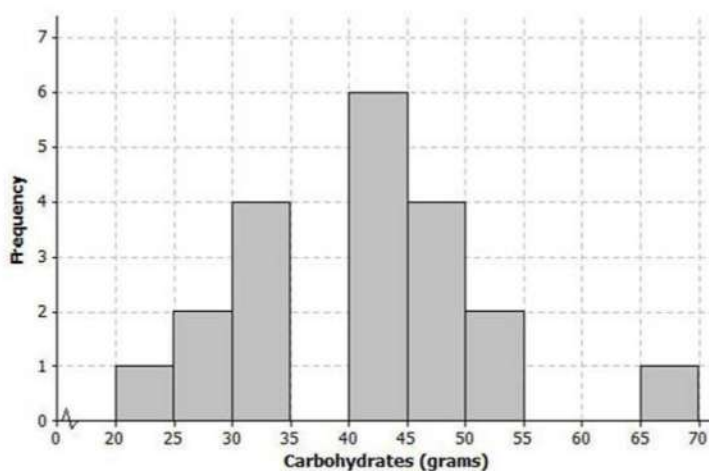
c. Describe the center and shape of the histogram.

Center is around 40; it is mound shaped.

d. In the frequency table below, the intervals are changed. Using the carbohydrate data above, complete the frequency table with intervals of width 10.

Number of carbohydrates (grams)	Tally	Frequency
20−< 30	|||	3
30−< 40	||||	4
40−< 50	⊬⊬ ⊬⊬	10
50−< 60	||	2
60−< 70			1

e. Draw a histogram.
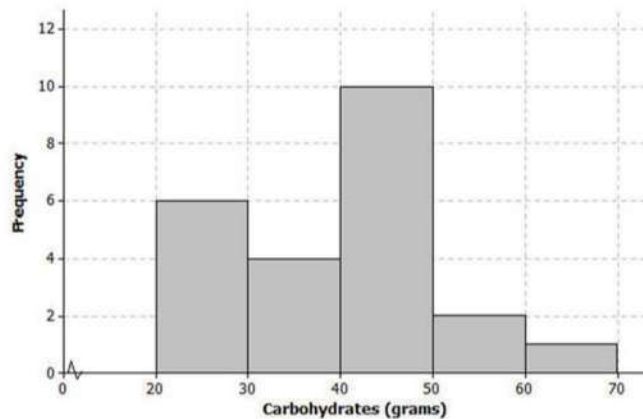
4. Use the histograms that you constructed in question 3 parts (b) and (e) to answer the following questions.

a. Why are there fewer bars in the histogram in question 3 part (e) than the histogram in part (b)?

There are fewer bars because the width of the interval changed from 5 grams to 10 grams, so there are fewer intervals.

b. Did the shape of the histogram in question 3 part (e) change from the shape of the histogram in part (b)?

Generally, both are mound shaped, but the histogram in question 3 part (b) has gaps.

c. Did your estimate of the center change from the histogram in question 3 part (b) to the histogram in part (e)?

The centers of the two histograms are about the same.