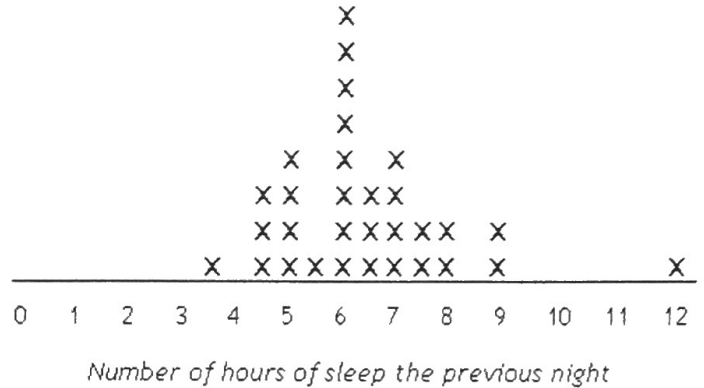


Take a look at other graphical displays. Consider the characteristics of the center, shape, spread, and any unusual features.

11. The school newspaper conducted a survey in which 31 randomly selected students were asked a variety of questions. The responses to one question are shown in the following dotplot. Discuss what you now know about these students.

Finish the following sentences based on the dotplot.

- All students slept more than 3 hours.
- No students slept more than 12 hours.
- The most common response was 6 hours of sleep and was given by 8 students.
- The median is 6 hours
- 9 students slept less than the median number of hours and 14 students slept more than the median number of hours.
- The mean is about 6.4 hours.

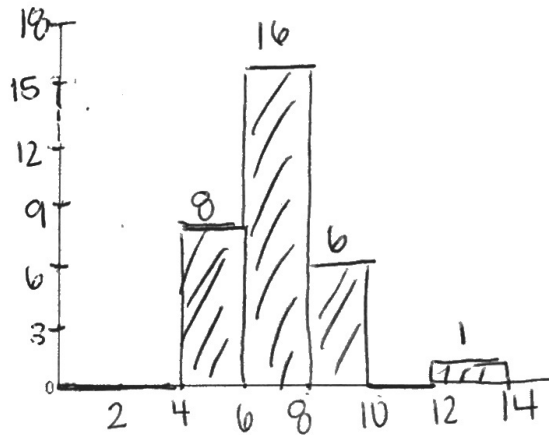


range:  $12 - 3.5 = 8.5$

Shape: relatively symmetric Center: around 6 Spread: \_\_\_\_\_ Unusual Features: outlier at 12

12. Some members of the newspaper staff wanted to report the sleep data in a frequency table as shown below. Discuss the advantages and disadvantages of this option. Then, create a histogram for the data.

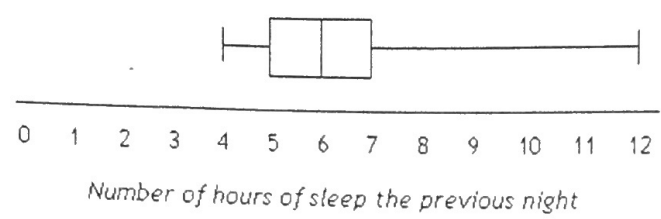
Number of hours of sleep	Frequency
4	1
5	7
6	9
7	7
8	4
9	2
12	1



**Advantages**  
 - easy to find mean  $\approx$  median

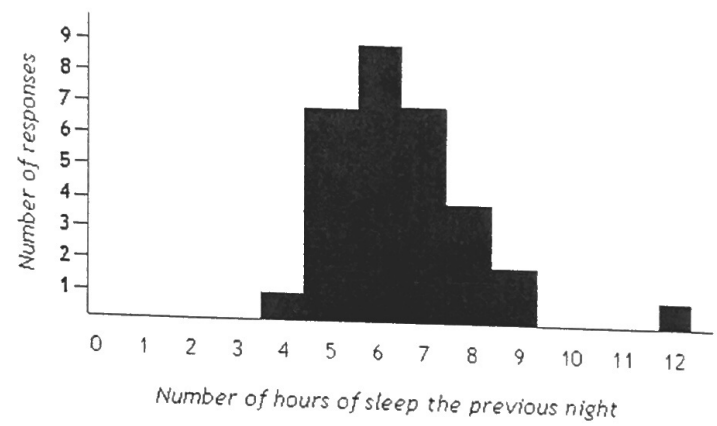
**Disadvantages**  
 - the #'s were rounded  
 - hard to tell 6 was the most common response  
 - gap between 9 & 12 hours of sleep

13. Other staff members voted for a boxplot. Compare and contrast the usefulness of this boxplot with that of the previous two graphical displays.



- Advantages: identify high & low values as well as median & quartiles; can tell the spread better
- Disadvantages: can't find the mean. can't tell pattern of symmetry data to left of 6 is bunched up; data to right is spread out

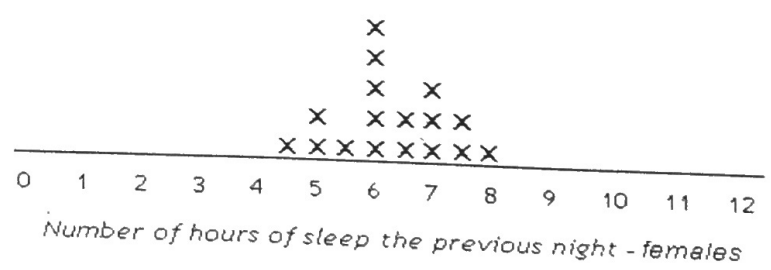
14. Another group of staffers argued for the following graph. What do you think were their reasons for preferring a histogram? What are the advantages and disadvantages of using a histogram?



- Advantages: cleaner than dot plot, somewhat symmetric w/ a peak at the middle, except for the 12.
- Disadvantages: rounds the #'s where original dot plot doesn't have to clumping reduces some of the up & down nature of the data

15. The following dotplots show the effect of separating the data on male students' hours of sleep from the data on female students' hours of sleep. Compare and contrast the two plots.

Shape: roughly symmetric  
 Center: around 6  
 Spread:  $9 - 4.5 = 3.5$   
 Unusual Features: none

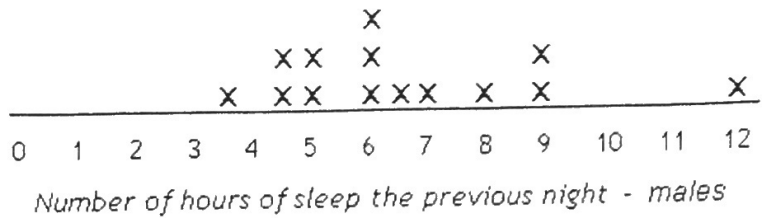


Shape: more spread out

Center: around 6

Spread:  $12 - 3.5 = 8.5$

Unusual Features: outlier at 12 possibly



16a. Complete the frequency tables for the male and female sleep data.

Number of hours of sleep - Females	Frequency
5	3
6	6
7	5
8	3

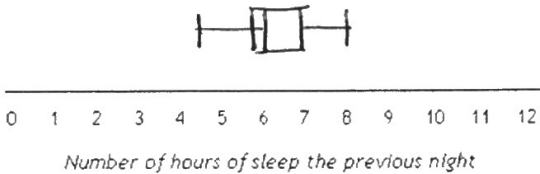
Number of hours of sleep - Males	Frequency
4	1
5	4
6	3
7	2
8	1
9	2
12	1

16b. Complete the boxplot for the male and female sleep data.

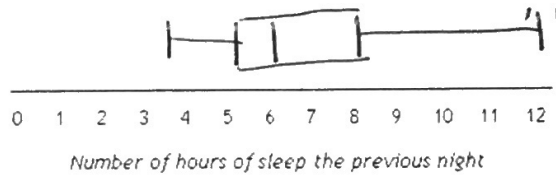
min: 4.5 Females:

Q1: 5.75

med: 6



Males:

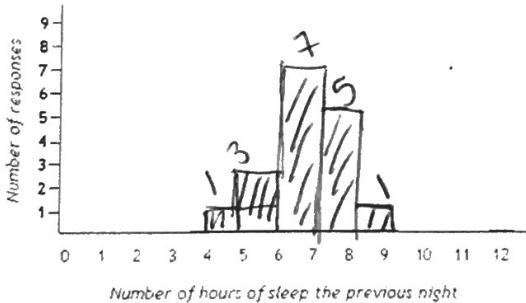


min: 3.5  
 Q1: 5  
 med: 6  
 Q3: 8  
 max: 12

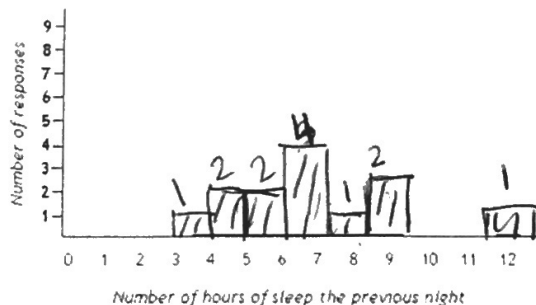
Q3: 7

max: 16.8 Complete the histogram to report the male and female sleep data.

Females:



Males:



17. REFLECTION: Is it easier to compare and contrast the male and female sleep data from the dot plot or from your new display in Question 16? Explain. Refer to the information regarding limitations and differences of various graphical representations to support your thinking as needed.

dot plot shows all of the data values in the sample.  
 the box plot shows the 5# summary & the 25% sections.  
 the histogram shows the shape of the data as well as the spread. I think the histograms clearly show a good comparison between male & female sleep data.