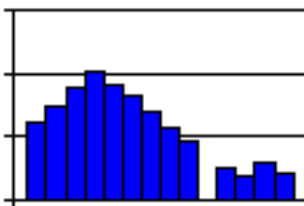
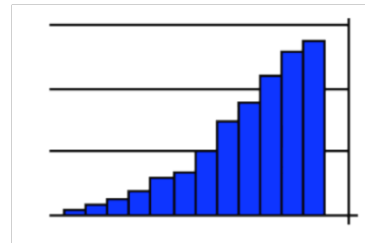
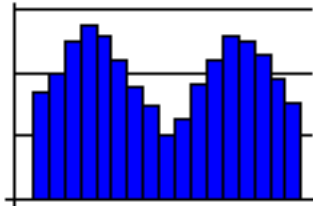
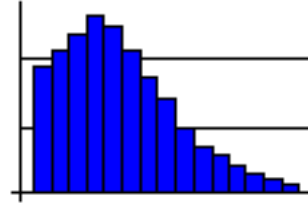
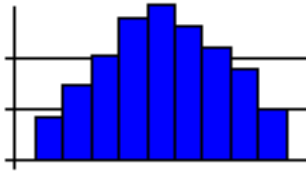


Name:
Unit 2; Histogram Worksheet

Date:

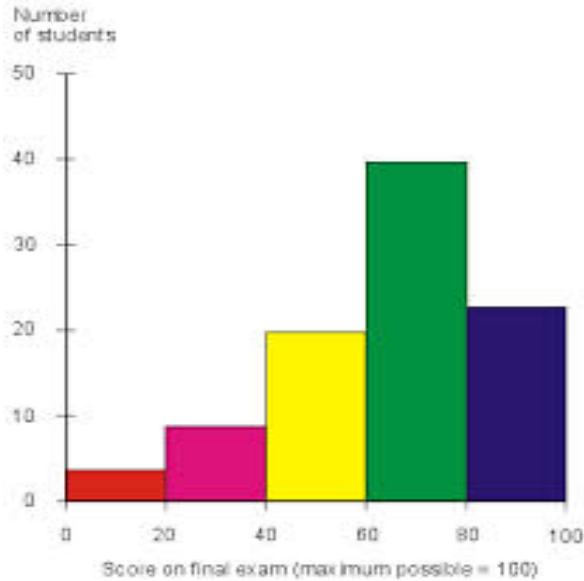
Period:

1 - 5. For the following five histograms, list at least 3 characteristics that describe each histogram (consider symmetric, skewed to left, skewed to right, unimodal, bimodal, multimodal, outliers, gaps, etc.; SOCS).

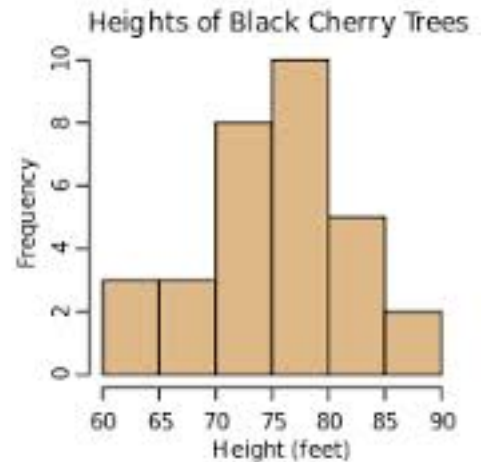


6. Explain the difference between a histogram and a bar graph? How are they alike? How are they different? Be specific.

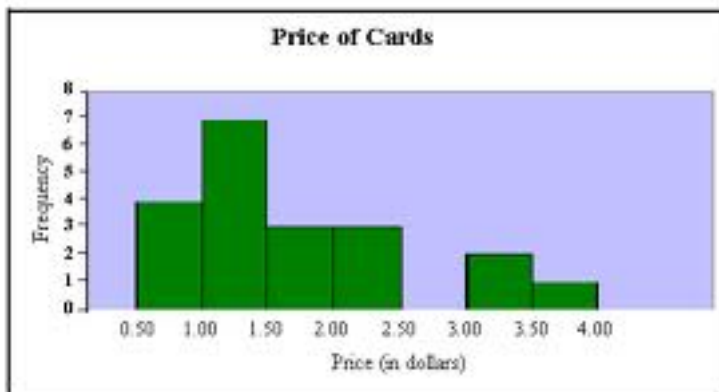
7. How would you estimate the total number of students who were included in this survey of final exam scores? Explain your process of estimating.



8. Could you list the exact heights of all ten students who are between 75" and 80"? Why/why not?

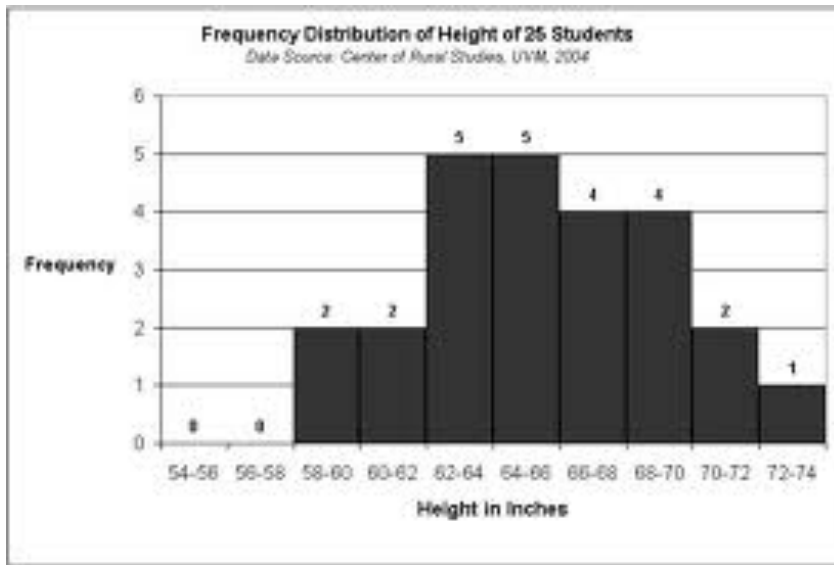


9.

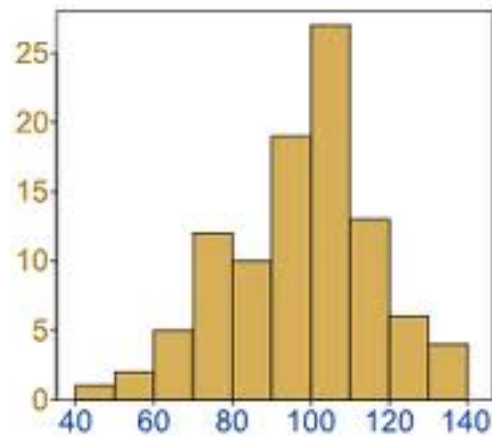
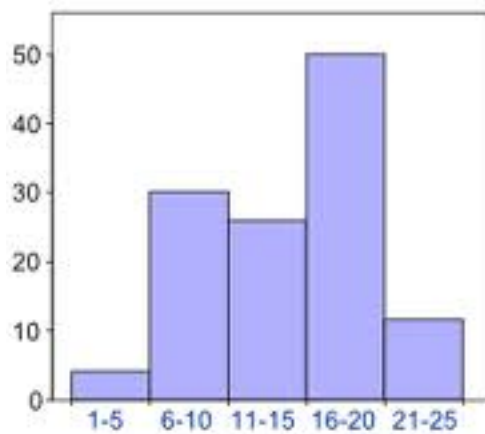


- What is the lowest priced deck of cards? What is the highest priced cards?
- Describe the distribution using SOCS.
- Could you create a dot plot or a box plot from the above histogram? Why or why not?

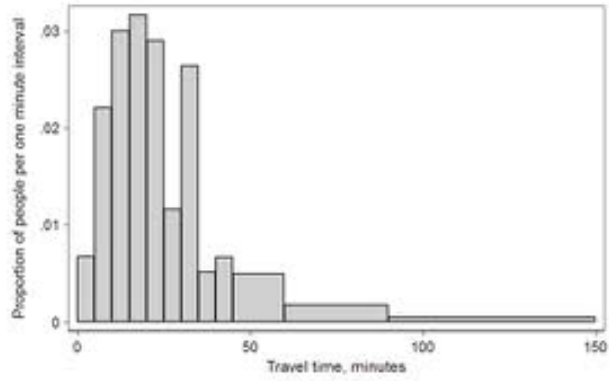
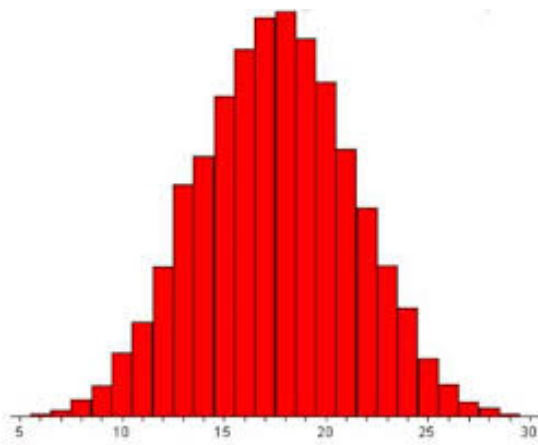
10. What do you notice about the frequency bars in the below histogram? Why is this quality important to histograms?



11. How could the following histograms be improved? Be specific with your recommendations.



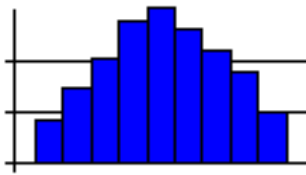
12. Find the error in each of these histograms and describe how that error could be corrected. Be specific in your explanation.



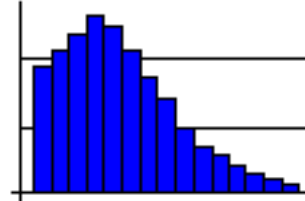
KEY; GRADING GUIDE

Unit 2; Histogram Worksheet

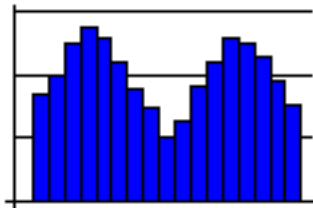
1 – 5. For the following five histograms, list at least 3 characteristics that describe each histogram (consider symmetric, skewed to left, skewed to right, unimodal, bimodal, multimodal, outliers, gaps, etc.; SOCS).



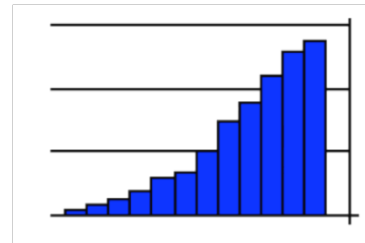
symmetric, unimodal, no gaps, no outliers, unknown value of center (no scale), unknown range (no scale)



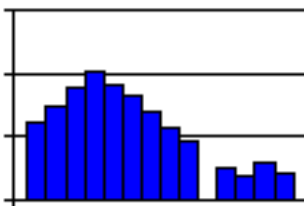
skewed to right, unimodal, no gaps, no outliers, unknown value of center (no scale), unknown range (no scale)



bimodal, fairly symmetric, no gaps, no outliers, unknown value of center (no scale), unknown range (no scale)



skewed to left, unimodal, no gaps, no outliers, unknown value of center (no scale), unknown range (no scale)



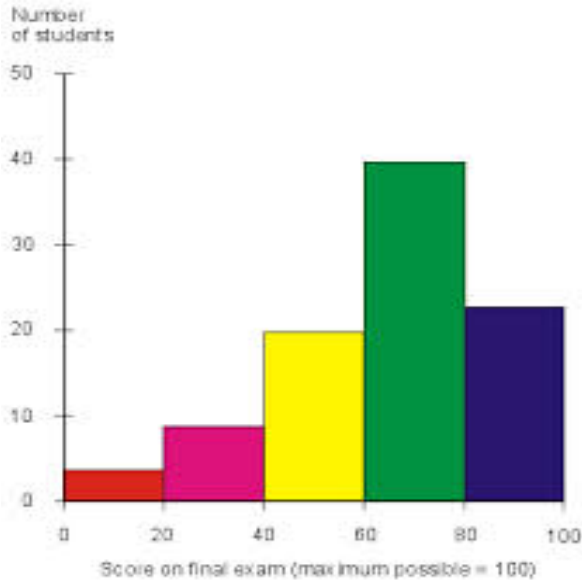
unimodal, gap, possible outlier(s), unknown value of center (no scale), unknown range (no scale), left grouping seems fairly symmetric.

6. Explain the difference between a histogram and a bar graph? How are they alike? How are they different? Be specific.

Histogram: Graphical representation of numerical/quantitative data; no spaces between vertical frequency bars

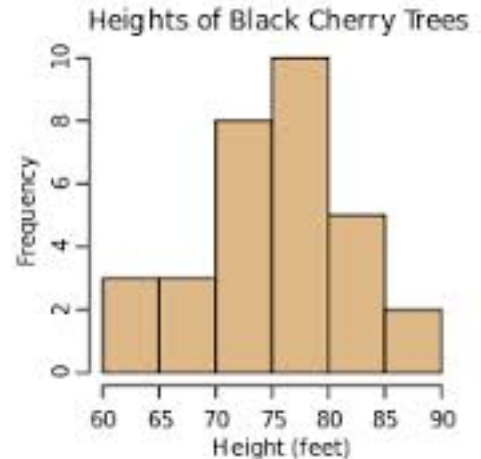
Bar Graph: Graphical representation of categorical/qualitative data (color of eyes, religion, political party, college attended, etc.); spaces between vertical bars on graph.

7. How would you estimate the total number of students who were included in this survey of final exam scores? Explain your process of estimating.



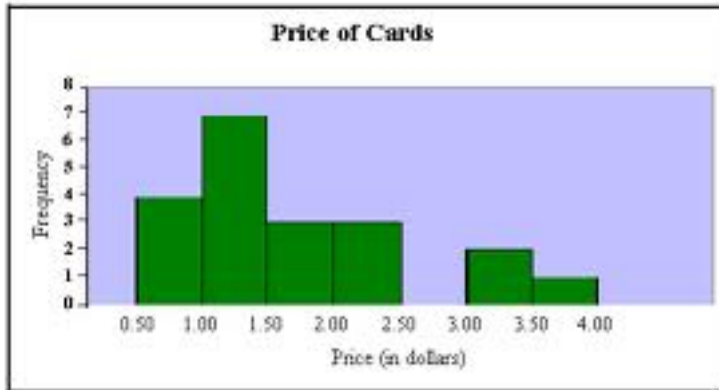
Look at the height of each vertical bar and the left vertical scale. Add the values together i.e., the red bar is represents about 3 students, the yellow bar represents about 20 students, etc.

8. Could you list the exact heights of all ten students who are between 75" and 80"? Why/why not?



No. original data is not retained when creating a histogram. All we know is that there are about ten cherry trees that are between the heights of 75 – 80 feet. We don't know their specific heights.

9.



- a) What is the lowest priced deck of cards? What is the highest priced cards?

The lowest priced cards are 50 cents per deck. The highest priced cards are \$4 per deck.

- b) Describe the distribution using SOCS.

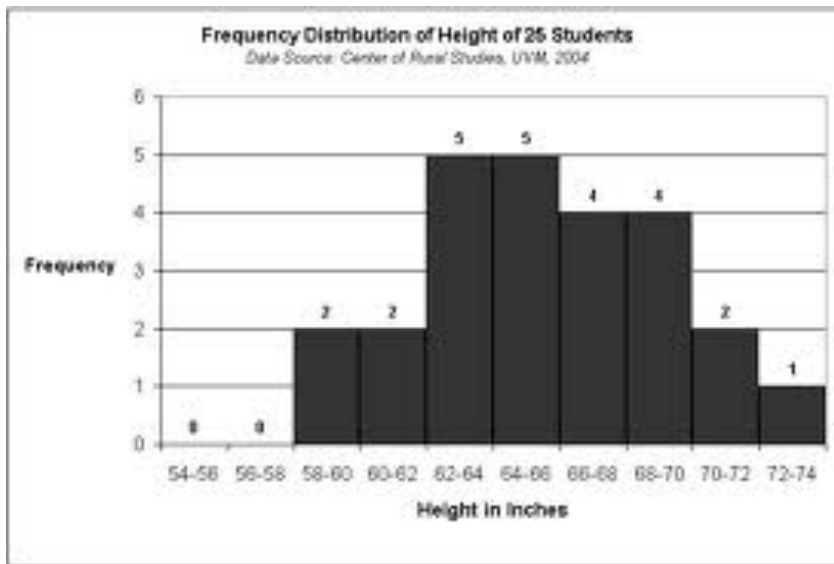
The shape is unimodal, with a gap between \$2.50 and \$3 per deck (what does a gap mean? Point of discussion with students). The distribution is not symmetric, and skewed to the right. There don't appear to be any outliers. The center of the distribution appears to be approximately \$1.50. The data doesn't seem to be extremely spread out. The range of costs is from \$.50 per deck to \$4.00 per deck.

- c) Could you create a dot plot or a box plot from the above histogram? Why or why not?

We could not create a dot plot as dot plots require exact data values. We don't know the exact data values. For example, we know there are about four decks of cards that cost between \$0.50 and \$1 but that's all we know. We don't know their individual exact costs.

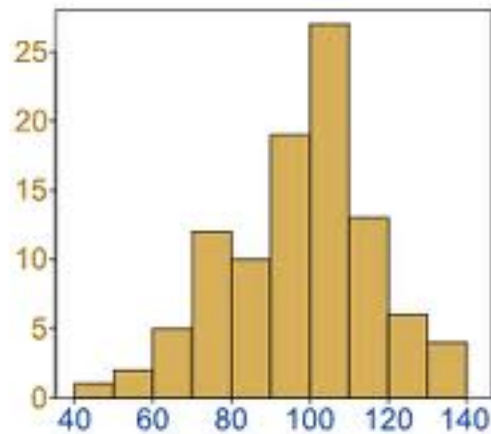
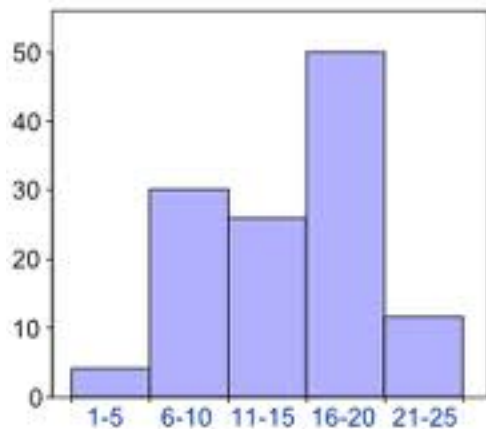
We could create an approximate model of this data in a box plot but it would be time consuming and possibly not very accurate. We would have to calculate the approximate number of data points in the set (about 20). The median would be the 10th value plus 11th value divided by 2. We don't know the exact value of the 10th and 11th values (somewhere between \$1 and \$1.50). We would have to use the middle value of that column (\$1.25)... you can see this is very difficult and could be inaccurate. You would do the same for the 1st and 3rd quartiles.

10. What do you notice about the frequency bars in the below histogram? Why is this quality important to histograms?



All the frequency bars are equal widths. This is a required characteristic in all histograms, otherwise the histograms can be misleading. There are many 'correct' widths of frequency bars in histograms (for example the above widths could have been 3" height increments or 4" height increments, etc.), but all must be the same width, whatever that width is.

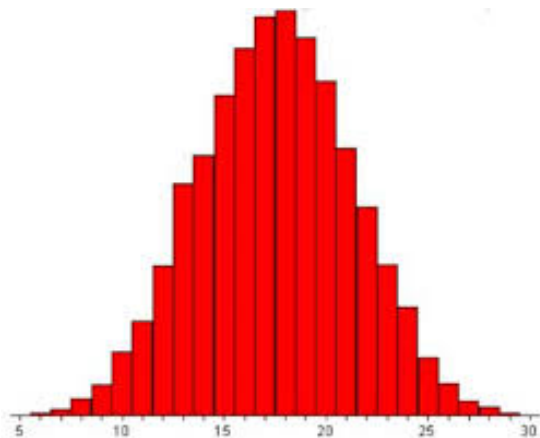
11. How could the following histograms be improved? Be specific with your recommendations.



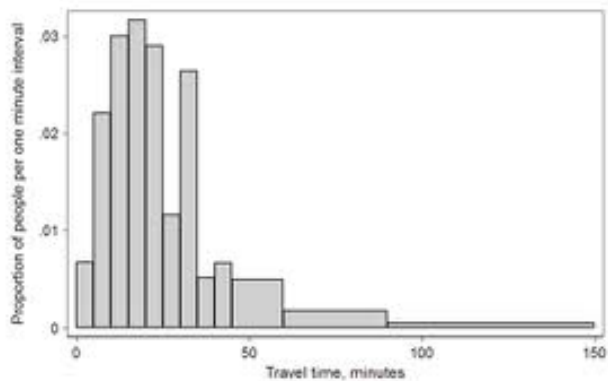
Both of the above histograms are not labeled horizontally (We don't know what the histograms represent... are they the average number of children American families have? Do they represent number of contacts teens have in their phones? We have no idea from the histograms). Next, we don't know what the vertical scale on the left represents (the frequency). Is it in thousands? Hundreds? Can you think of anything else that could be improved on these histograms?

Extension: Can you list some characteristics that the creators of these histograms did correctly?

12. Find the error in each of these histograms and describe how that error could be corrected. Be specific in your explanation.



No labeling, no frequency scale on left.



Some frequency bars to the right seem to be wider than the bars on the left. All bars must be of equal width.