MAT 135, Discussion Questions 1.27

1. Describe how to calculate a class for quantitative data.

Class width = $\frac{\text{Max} - \text{Min}}{\#\text{ of classes}}$

Start of smallest value, next class Min + class width. Keep adding for next classes until > max

a. Use the data set on the age of presidents at inauguration and divide the data in 5 classes. Hint: You will find it helpful to sort the data first. (Use your calculator!)

President	AGE (in years)	President	AGE (in years)
George Washington	57.1836	Benjamin Harrison	55.5370
John Adams	61.3425	Grover Cleveland	55.9562
Thomas Jefferson	57.8904	William McKinley	54.0932
James Madison	58.9671	Theodore Roosevelt	42.8822
James Monroe	58.8493	William Howard Taft	51.4658
John Quincy Adams	57.6466	Woodrow Wilson	56.1808
Andrew Jackson	61.9699	Warren G. Harding	55.3342
Martin Van Buren	54.2438	Calvin Coolidge	51.0795
William Henry Harrison	68.0630	Herbert Hoover	54.5644
John Tyler	51.0164	Franklin D. Roosevelt	51.0904
James K. Polk	49.3342	Harry S. Truman	60.9288
Zachary Taylor	64.2740	Dwight D. Eisenhower	62.2685
Millard Fillmore	50.5014	John F. Kennedy	43.6466
Franklin Pierce	48.2767	Lyndon B. Johnson	55.2384
James Buchanan	65.8630	Richard Nixon	56.0301
Abraham Lincoln	52.0548	Gerald Ford	61.0712
Andrew Johnson	56.2932	Jimmy Carter	52.3041
Ulysses S. Grant	46.8521	Ronald Reagan	69.9479
Rutherford B. Hayes	54.4137	George H. W. Bush	64.6082
James A. Garfield	49.2877	Bill Clinton	46.4219
Chester A. Arthur	51.9562	George W. Bush	54.5425
Grover Cleveland	47.9616	Barack Obama	47.4630

b. Find the midpoint of each class.

Class width = 6

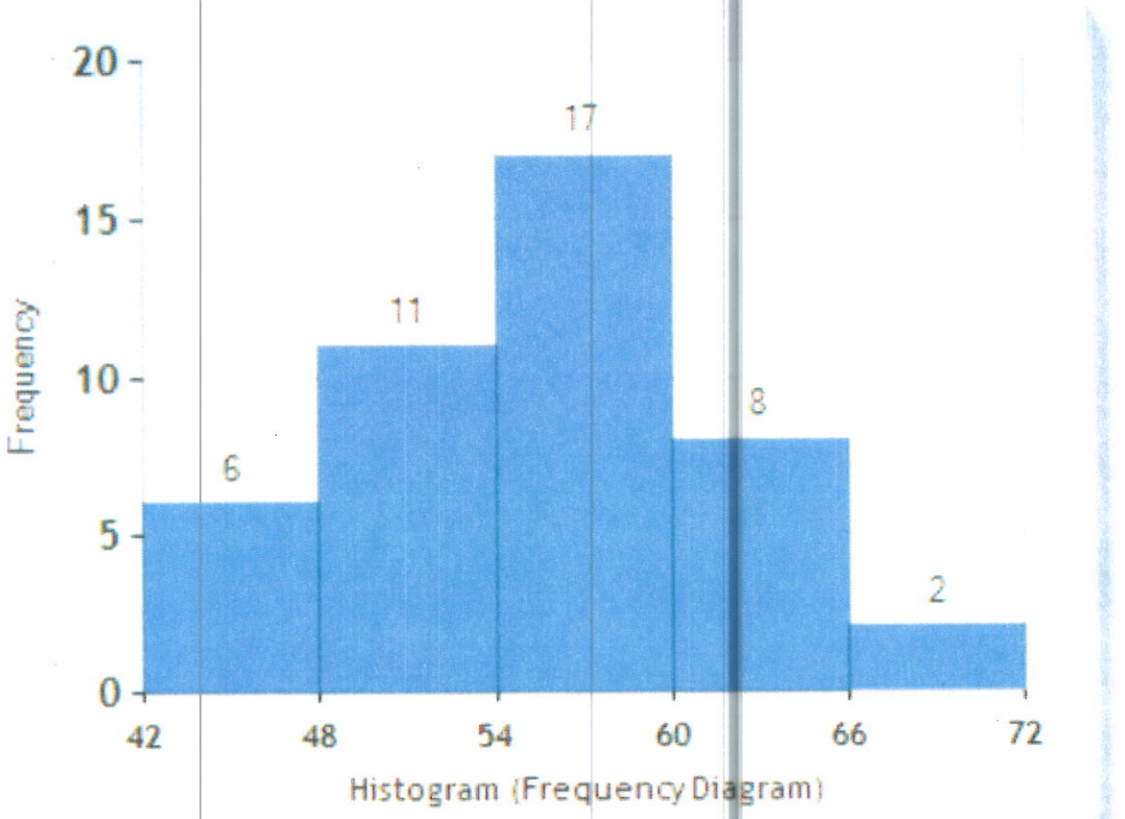
42-47 (.999) Midpoint $\frac{48+42}{2} = 45$

48-53 (.999) 45+6=51

54-59 (.999) 57

60-65 (.999) 63

66-71 (.999) 69

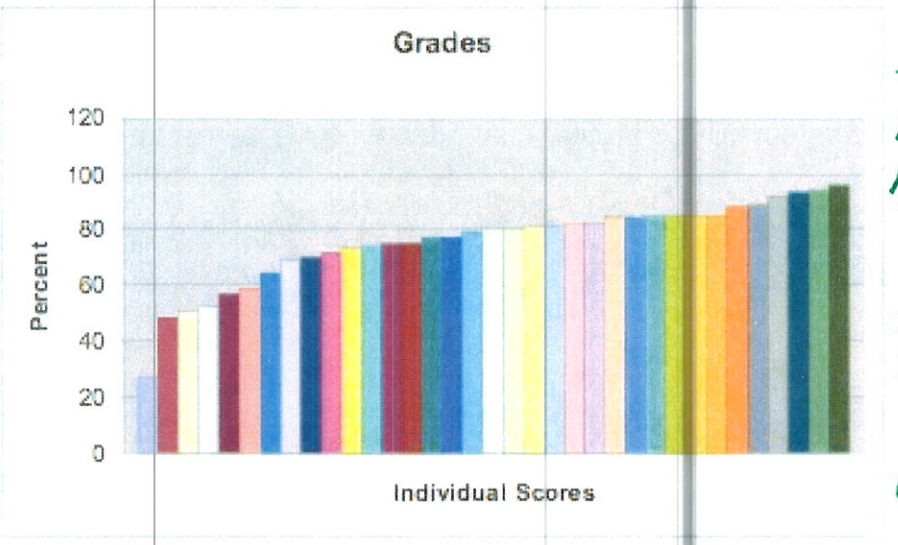

20
15
10
5
0
Frequency
6
11
17
8
2
42
48
54
60
66
72
Histogram (Frequency Diagram)

2. How do histograms differ from bar charts?

histograms are for quantitative data
bar charts are for qualitative data

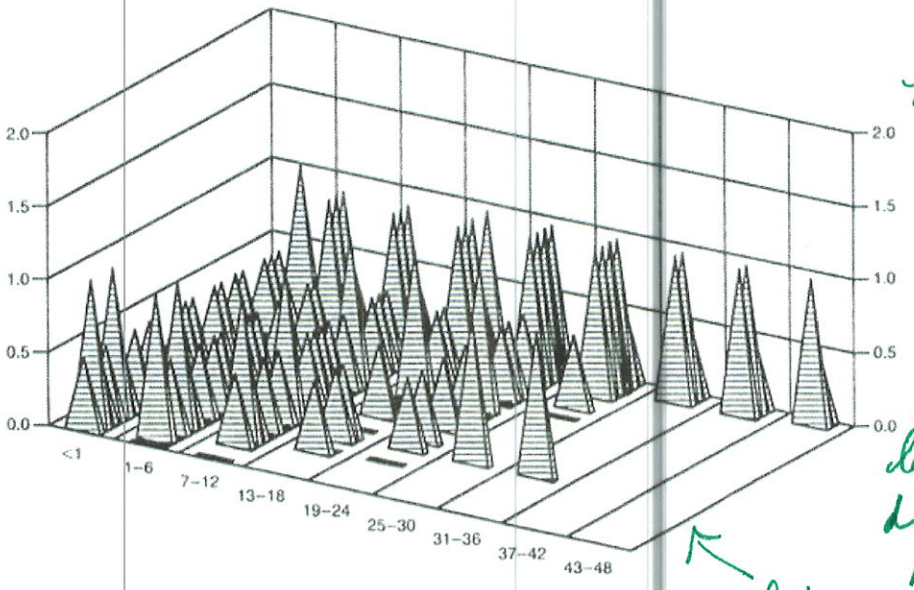
3. For each of the graphs below comment on what type of graph it is (bar, Pareto, histogram), and whether it is good, bad, misused or misleading.

a.



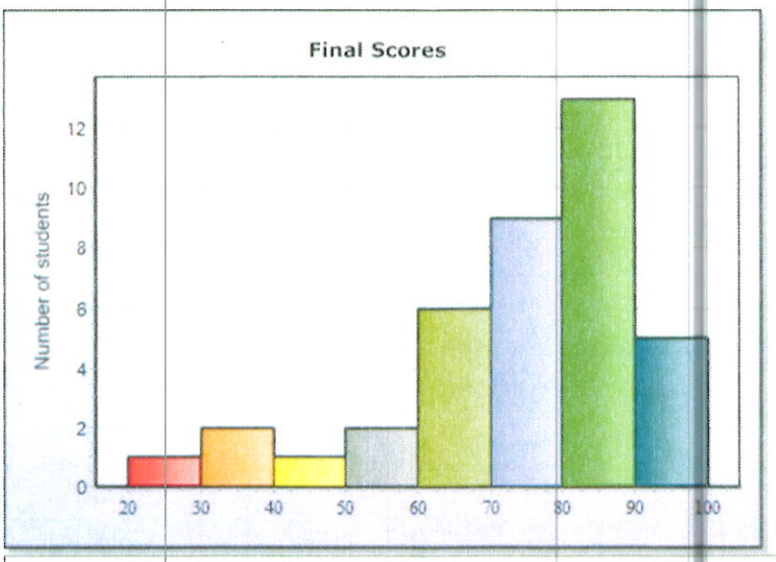
bad — use histogram not bar graph.
misused
too difficult to read.
Students are not categories in this context

b.



histogram?
bad.
3D generally should be avoided.
missing axis labels & title
difficult to read
what #'s or categories on this axis?

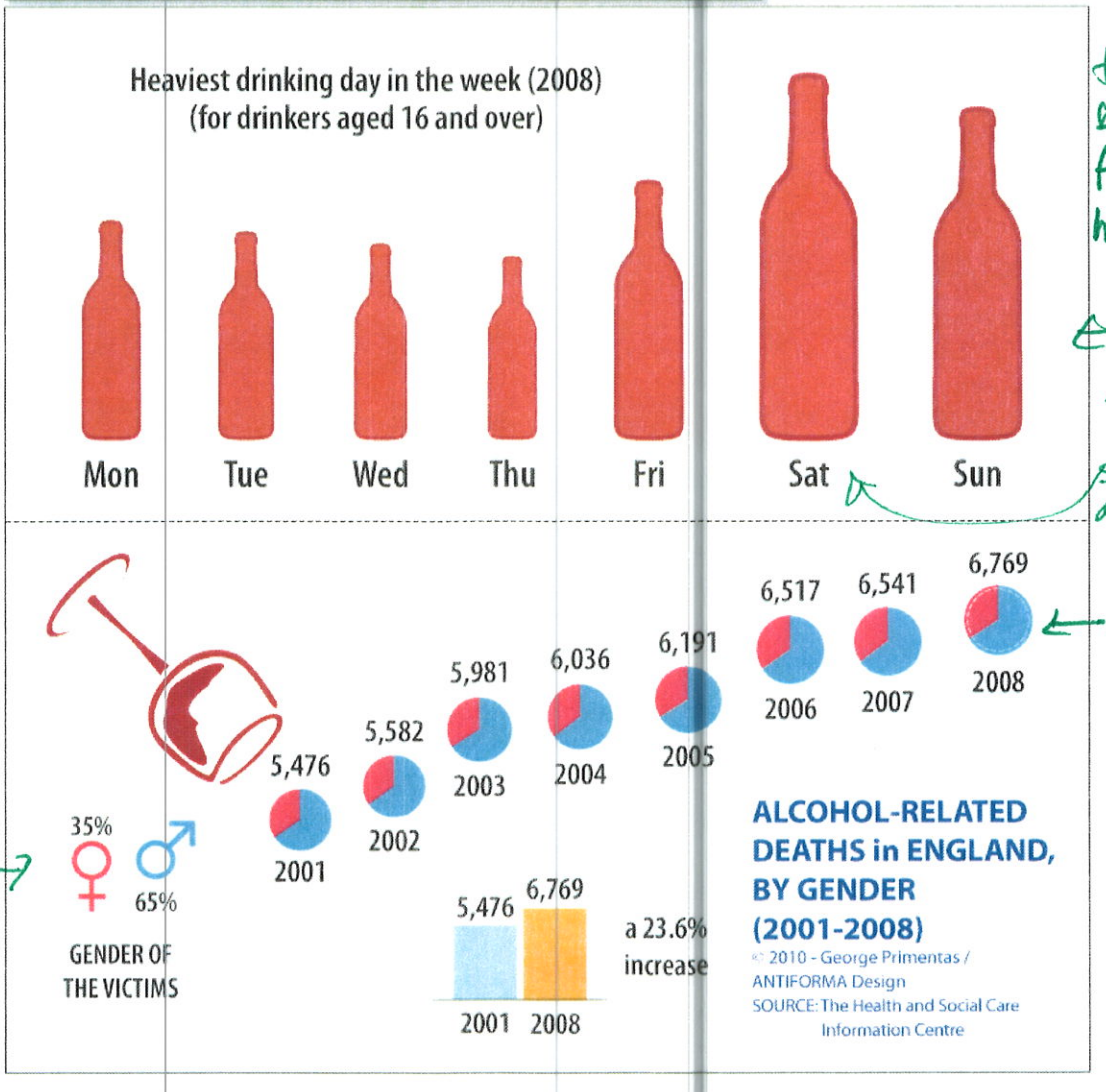
c.



histogram good

← is this points & percents?

d.



top is bar graph pictograph

misleading

← no axis label

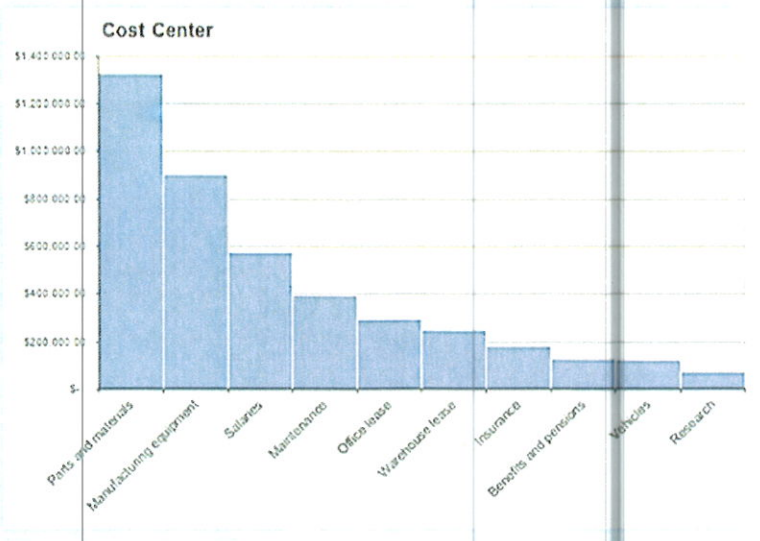
scaled by area

← unnecessary

pies redundent % given here

too much going on

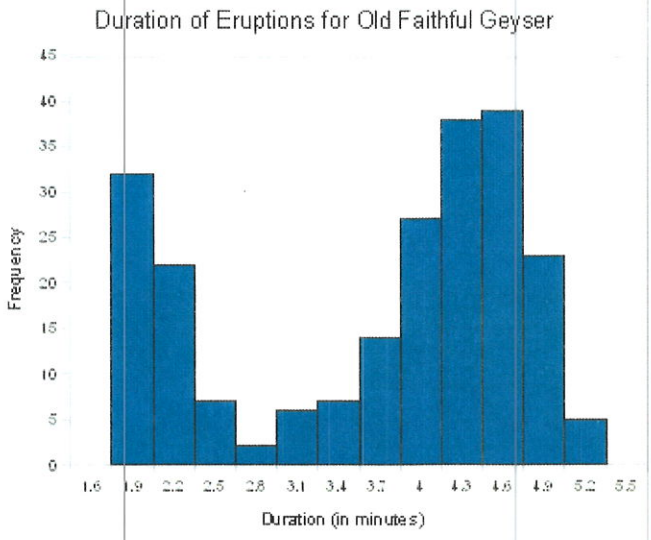
e.



Pareto chart

good

f.



histogram

good

4. How can we use bar graphs to compare data? Why do we have to do the comparison differently for histograms and stemplots?

Stacked or cluster; can compare 2 or more sets in same graph
since histograms have adjoining ranges, cluster not possible
Can do side by-side ⊢⊣ or ⊤⊥ top bottom 2 sets only

5. What are the steps in creating a stemplot? Take a problem from the textbook (2.1 #31-45) and use the stemplot grapher at http://www.calculatorsoup.com/calculators/statistics/stemleaf.php to create a stemplot for the data. In what way are stemplots better than histograms?

Stem	Leaf
4	2 3
4	6 6 7 7 8 9 9
5	0 1 1 1 1 1 2 2 4 4 4 4 4
5	5 5 5 5 6 6 6 7 7 7 8 8
6	0 1 1 1 2 4 4
6	5 8 9