Statistical Reasoning
Review Notes

Name:_____

Warm Up A-I

a) What numbers are included in the five number summary?

min, Q_1, Q_2, Q_3, max The numbers that go into the boxplot

b) How do you calculate outliers? Include both formulas. Explain this process in detail.

Below: $Q_1 - 1.5(IQR)$ [$IQR = Q_3 - Q_1$] The formulas give the boundary between outliers/not outliers. The numbers given by both formulas are not the outliers.

Above: $Q_3 + 1.5(IQR)$

c) Name measures of spread and how to find them.

① range = max − min ③ standard deviation calc-Sx

② $IQR = Q_3 - Q_1$

d) State the definition of standard deviation.

On average, how far each data point is from the mean

e) The smaller the standard deviation, the numbers are closer to the mean.

f) The larger the standard deviation, the numbers are farther from the mean.

g) If my mean is 65 and my standard deviation is 12 and I add 10 points to every data value. Calculate the new mean and standard deviation.

$\bar{x} = 75$ (65+10) $Sx = 12$ (same)

h) Name measures of center.

mean = $\bar{x}$ (middle)

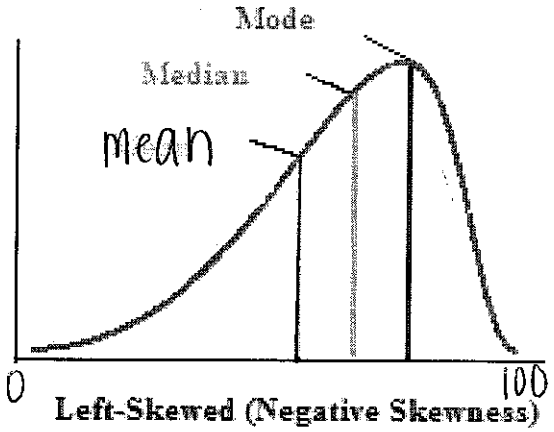
median = Q_2 mode = the number that appears the most.

i) What skews your data?

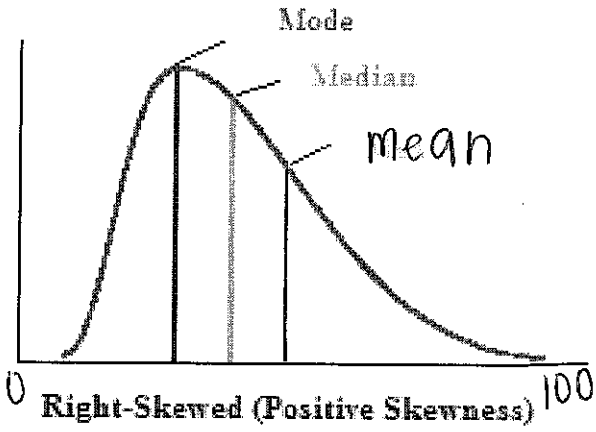
Outliers

Skewness and Measures of Center

1. Outliers will affect your mean therefore the best measure of center to use if your data is skewed is the median.



Left-Skewed (Negative Skewness)



Right-Skewed (Positive Skewness)

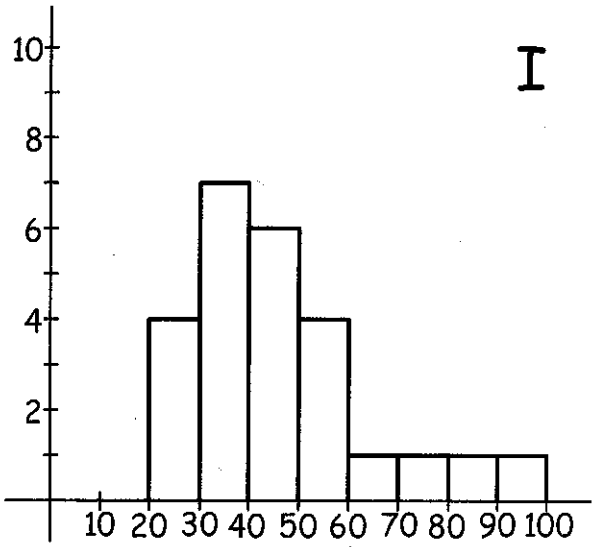
2. When your data is skewed left the mean is smaller than the median.

3. When your data is skewed right the mean is bigger than the median.

Practice

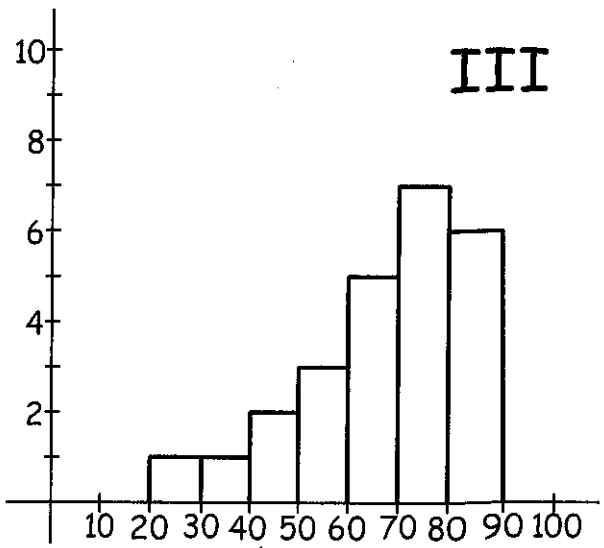
For the following describe the shape and describe the relationship between the mean and the median.

1.



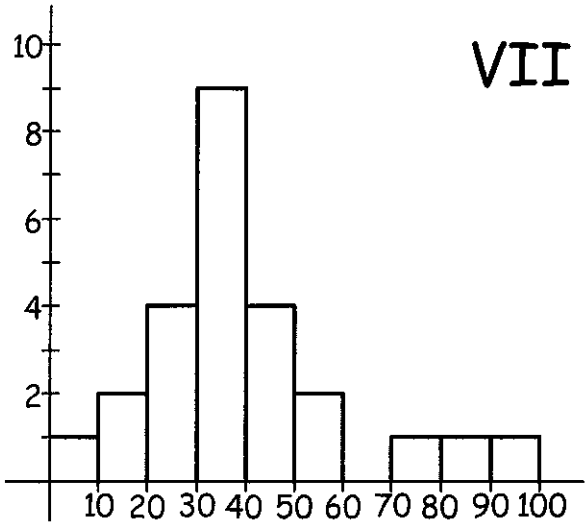
skewed right
mean is bigger than the median

2.



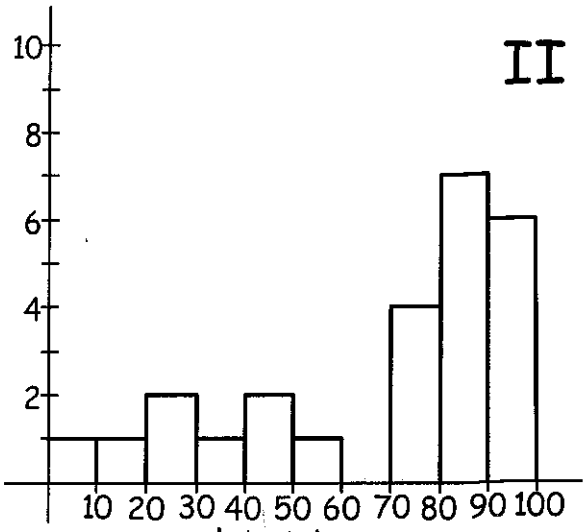
skewed left
mean is smaller than the median

3. VII



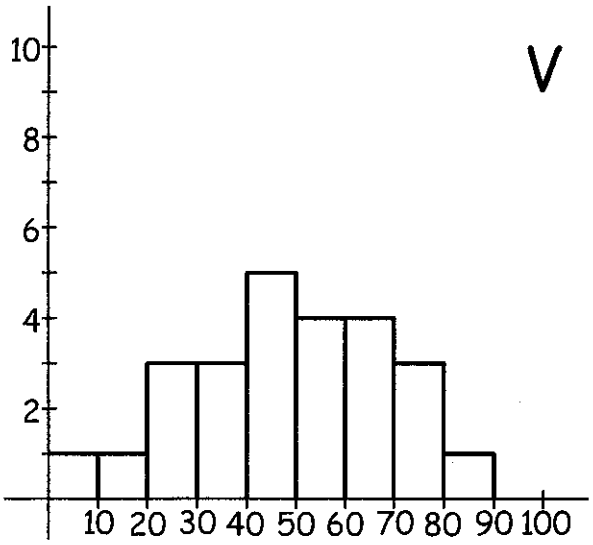
Skewed right
mean is bigger than the median

4. II



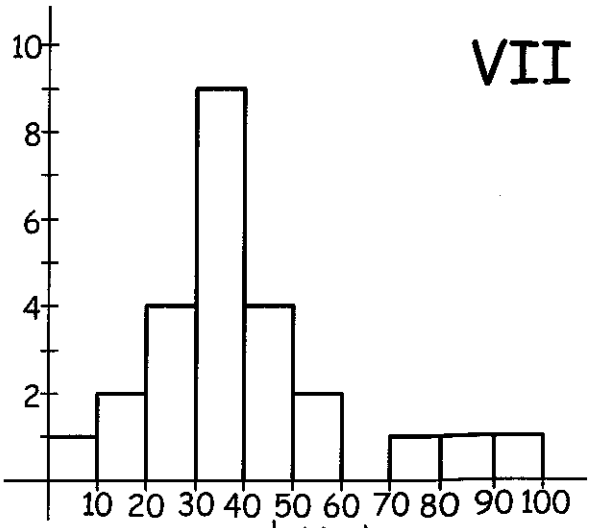
Skewed left
mean is smaller than the median

5. V



Symmetric
mean and median are the same

6. VII



Skewed right
mean is bigger than the median

Complete the following practice problems on this paper.

PG 65 #2.28 **PG 70 #2.37** **PG 81 #2.51** **PG 93 #2.61**