Math 335 Assignment — Section 8.4 and 9.2

8.4 - Down for the Count

23. Since the order of the selections doesn't matter:

$$\frac{200 \times 199 \times 198 \times 197}{4 \times 3 \times 2 \times 1} = \frac{1,552,438,800}{24} = 64,684,950$$

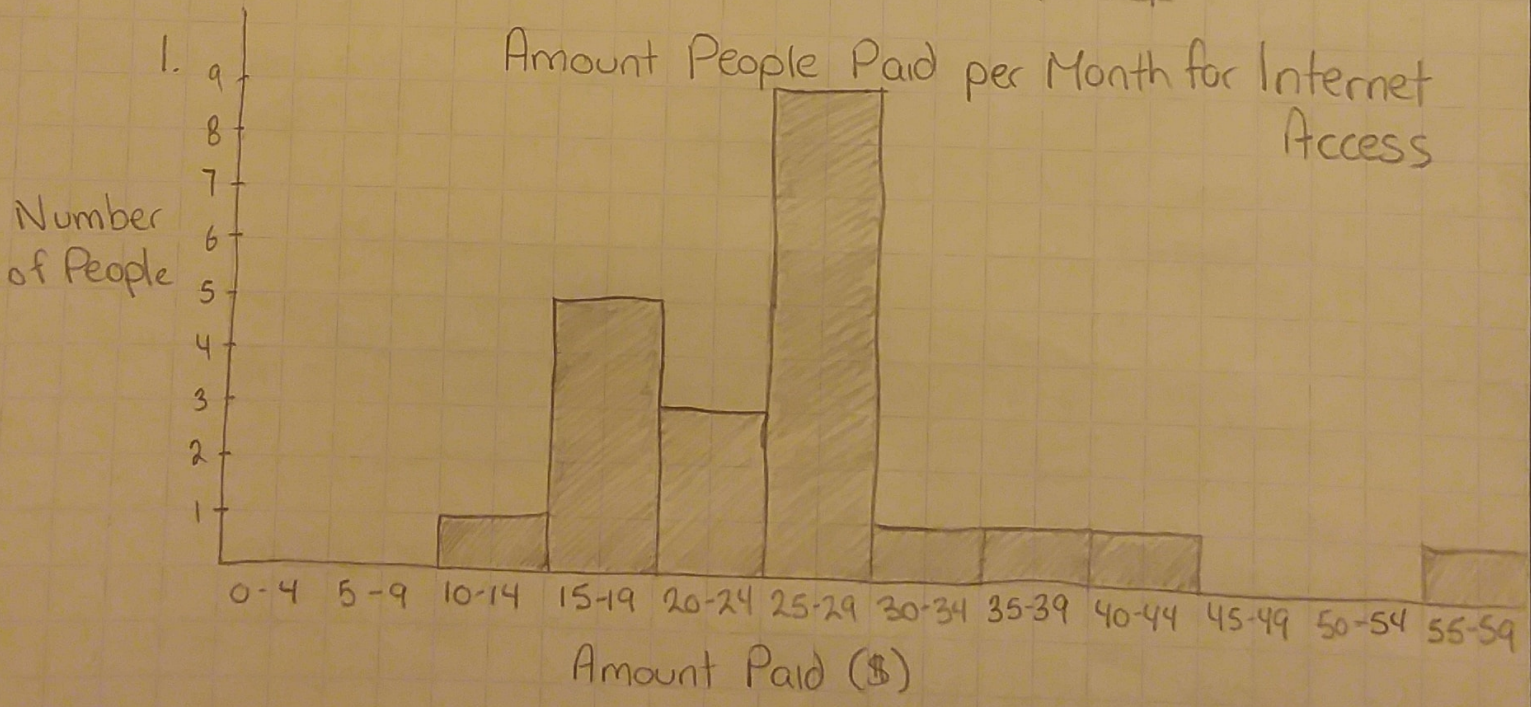
32. Ways to pick 3 bills if order doesn't matter:

$$\frac{10 \times 9 \times 8}{3 \times 2 \times 1} = 120 \text{ ways}$$ → only one of these ways includes the selection of all 3 counterfeit bills

Probability: $\frac{1}{120} = 0.83\%$

9.2 - Getting Your Data to Shape Up

1.



The distribution is clearly centered in the 25-29 range; more people paid less than this than more, but there is also one outlier on the high side, which skews the graph slightly.

2. Mean: $\frac{\text{Sum of data}}{22} = \frac{575}{22} = 26.14$

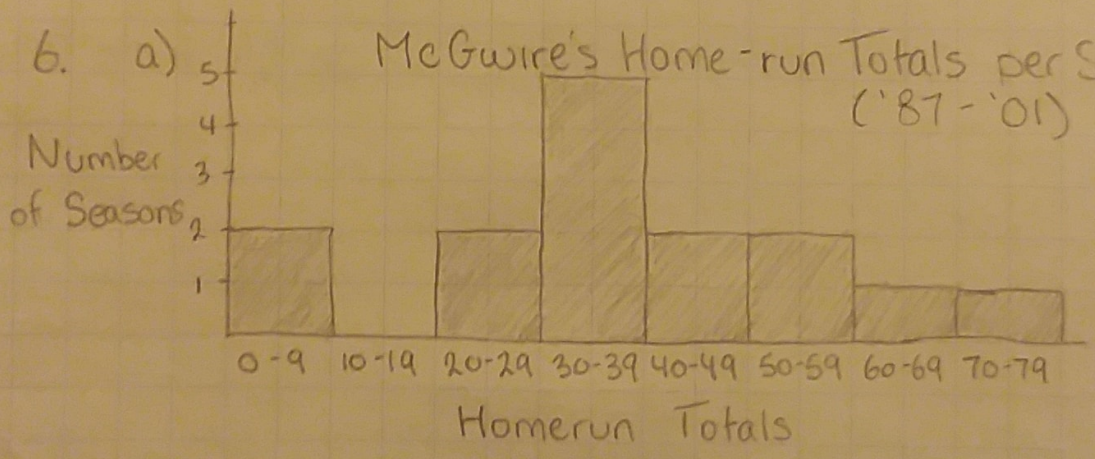
Median: 25

Median gives a better answer to the question, since the mean is distorted by the outlier while the median is unaffected.

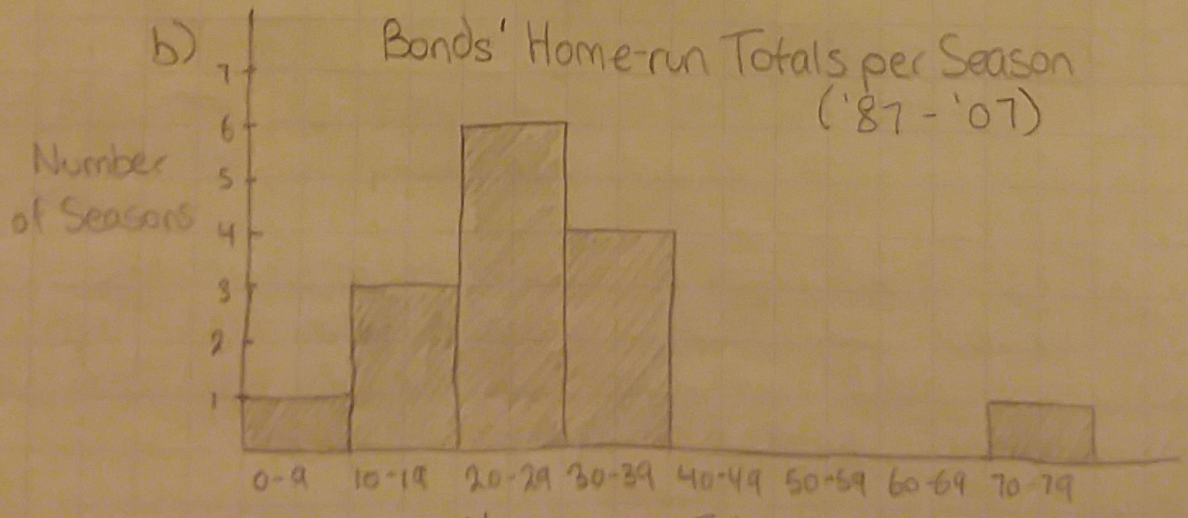
3. Minimum: 14
First Quartile: 19
Second Quartile (Median): 25
Third Quartile: 26
Maximum: 58

Yes, it gives a similar impression, showing that there are a lot of values in the same range above the median, but the values are more spread out below it.

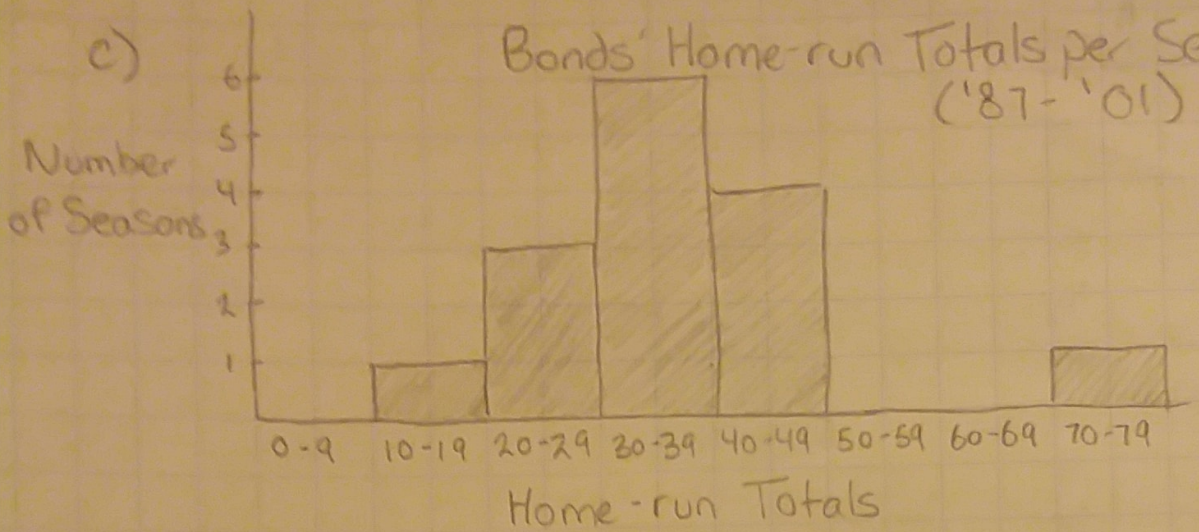
6. a)



b)



c)



When comparing the first two graphs, McGwire has a more equally distributed number of home-runs with a larger standard deviation. When comparing the first and last graph, the Bonds graph looks more equally distributed, following a kind of bell curve, and seems to have a similar average.

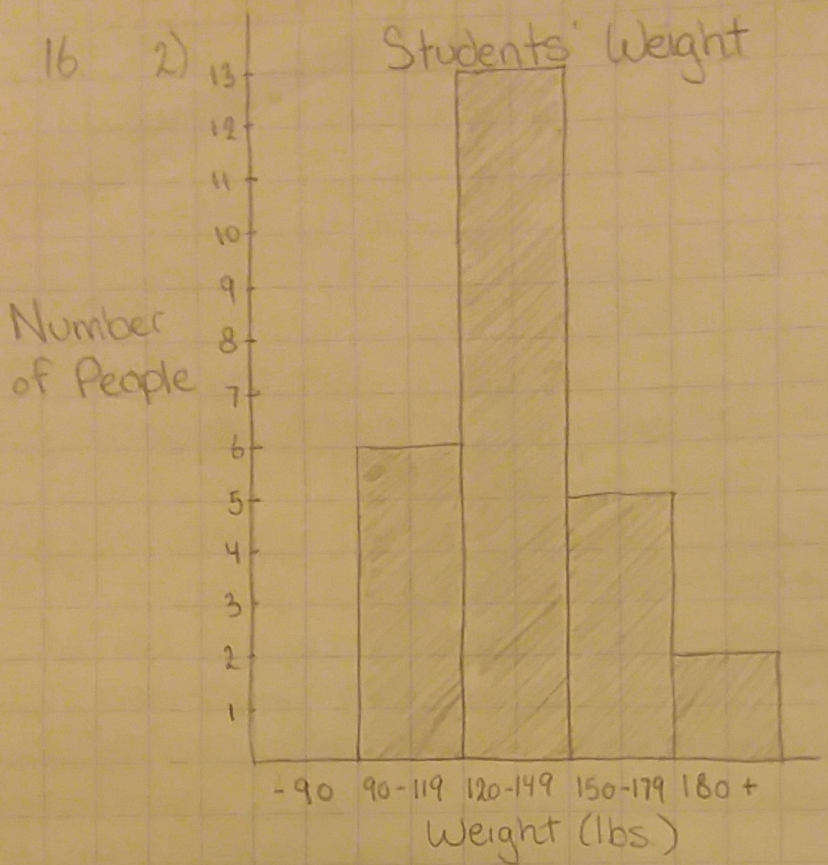
13. For question 19:

Data: 4, 5, 5, 5, 5, 5, 6, 6, 6, 6, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 8, 8, 8, 8

Minimum: 4
First Quartile: 6
Second Quartile (Median): 7
Third Quartile: 7
Maximum: 8

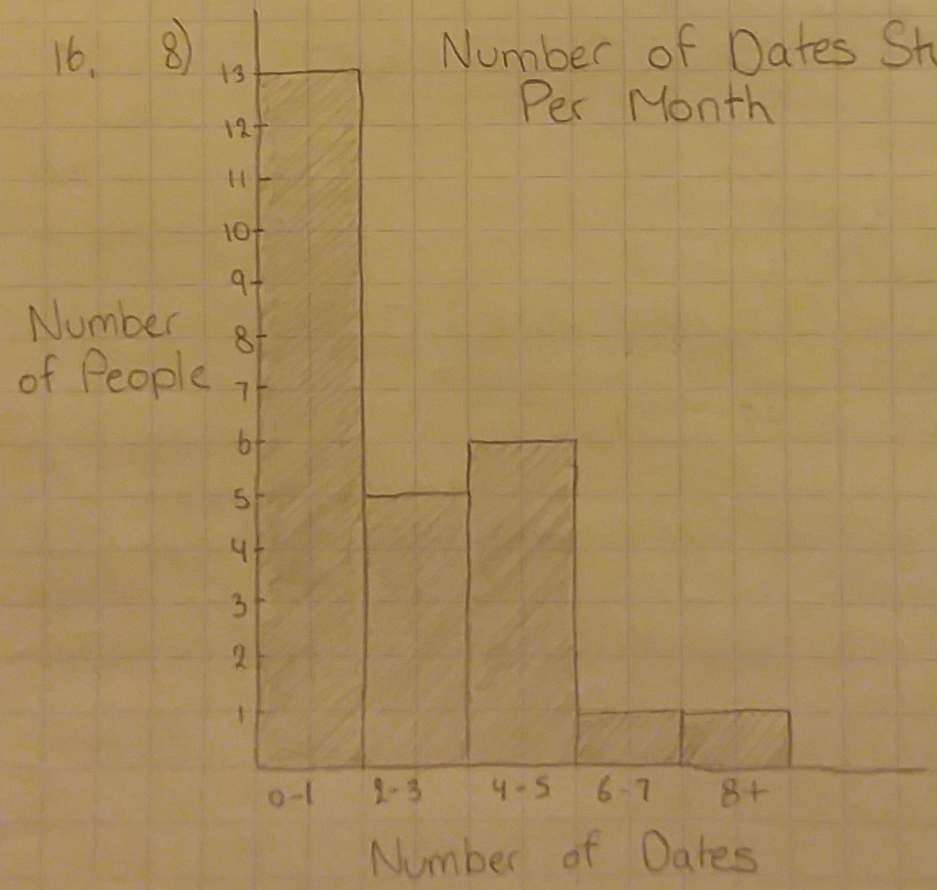
Five-number summary shows that the data has a small standard deviation with all of the numbers close to the median and no drastic outliers.

16 2)



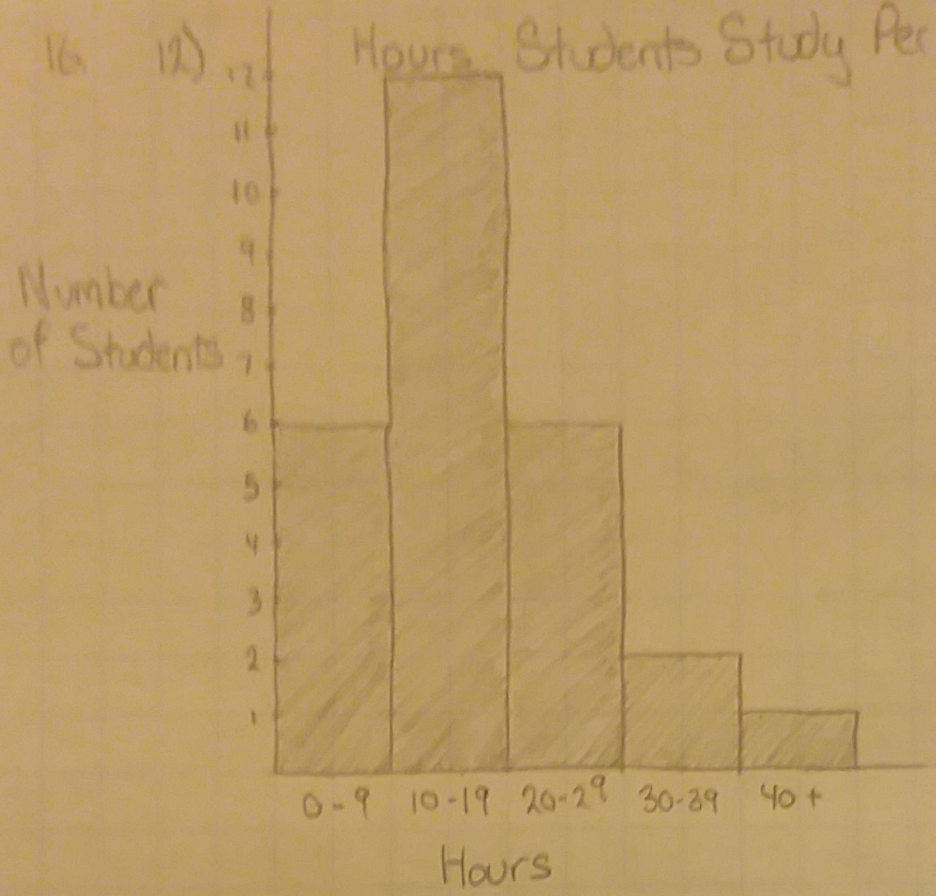
Mean: 133.5 lbs (using middle value of range)
Median: 130 lbs.

16. 8)



Mean: 2.3 (using middle value of range)
Median: 1.5

16 12) Hours Students Study Per Week



Mean: 17.6
Median: 15

These graphs shows that students are generally "equally distributed", resulting in a centred graph, with an exception being the skewed graph for number of dates per month; graphs also generally have a small standard deviation.

17. 1)