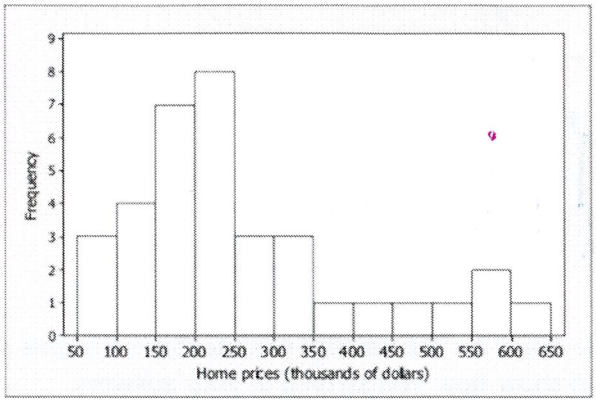
AP Stats
Quiz Review 2.1

Name Key
Date_____ Hour_____

A real estate company compiled data on the prices at which 35 homes sold during a one month in a county in New Jersey. A histogram and some summary statistics from Minitab for the home prices are given below. (Note that home prices are in thousands of dollars.)

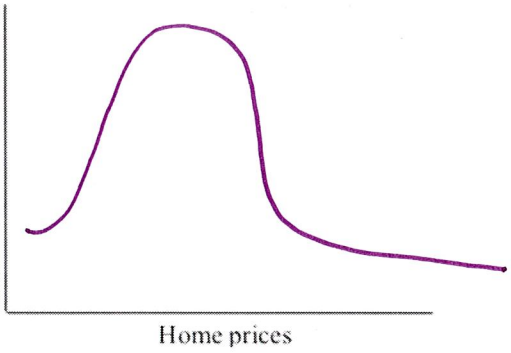


Descriptive Statistics: home prices

Variable	N	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3	Maximum
home prices	35	260.8	24.6	145.6	80.0	165.0	220.0	307.0	626.0

1. On the axes at right, make a rough sketch of a density curve for these data, based on the histogram above. How would you describe the shape of this density curve?

The density curve is clearly skewed right.



2. One of the houses in this data set sold for 350 thousand dollars. Six houses sold for more than that. Calculate and interpret the percentile and z-score for this house's price.

35 - 7 = 28

House that sold for 350 thousand has 28 houses below it.

Percentile for 350 thousand house = $\frac{28}{35}$ = .8 = 80th percentile

So house that sold @ 350 thousand sold at a higher price than 80 % of homes that month in NJ county.

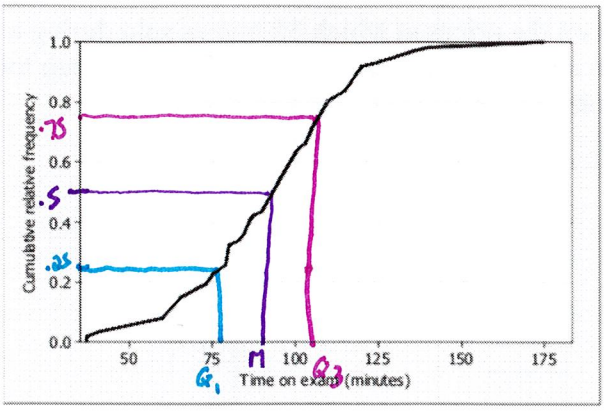
$$z_{350\text{ thousand}} = \frac{350 - 260.8}{145.6} = \frac{89.2}{145.6} \approx .61$$

The house sold @ 350 thousand is .61 standard deviations above the mean.

3. What was the "typical" price for a home in this county during the month in which these data were collected? Justify your answer.

The "typical" price is \$220 thousand. The median is the best measure of center since the data distribution is skewed.

Below is a cumulative relative frequency graph for the length of time a group of 62 students spent on a no-time-limit final exam in Algebra II.



4. What are the median and interquartile range for the amount of time these students spent on the exam? Draw lines on the graph to show how you arrived at your answers.

median ≈ 92 minutes

$Q_1 \approx 76$ min

$Q_3 \approx 106$ min

IQR ≈ 106 − 76 = 30 min

5. According to these data, the mean time students spent on the exam was 94.1 minutes, and the standard deviation was 24.23 minutes. Suppose the exam proctor realized after compiling these data that he had used the wrong start time in his calculation, so that each value for time spent on exam needs to be reduced by 15 minutes. He also wants to express the times in hours, rather than minutes. Find the mean and standard deviation of the transformed data.

mean

orig time min · $\frac{1 \text{ hr}}{60 \text{ min}}$

Subtract original times by 15 minutes 1st, then ÷ by 60 to convert minutes to hours

$\text{mean} = \frac{(94.1 - 15)}{60} = \frac{79.1}{60} = \boxed{1.318 \text{ hours}}$ mean

S.D is not changed by subtraction, but is affected by ÷, so standard deviation is $\frac{24.23}{60} = \boxed{.404 \text{ hours}}$ SD

6. What are the mean and standard deviation of the z-scores of time spent on the exam for all the students who took this exam? Justify your answer.

$\bar{x} = 1.318$ hours $S_x = .404$ hours

$z\text{-score} = \frac{x - \text{mean}}{\text{standard deviation}}$

if mean of x is 1.318, the mean of z is $\frac{1.318 - 1.318}{.404} = \frac{0}{.404} = 0.$

if standard deviation of x is .404, then stand deviation of z = $\frac{.404}{.404} = 1.$