

MATH 311 – REVIEW FOR EXAM 4

30.3

Interpreting percentile scores

Calculating quartile scores: Q1, Q2 (median), and Q3

Inner-quartile range (IQR) and outliers

5-number summary

Graphing box-plots, reading information off box-plots

Percentages associated with box-plots

30.4

Calculating mean, median, & mode

How outliers affect means and medians, comparing means and medians

Calculating standard deviation

30.5

Identifying normal vs. skewed distributions

Percentages associated with normal distributions

Finding z-scores

Using z-scores (or percentiles) to compare between data sets

REVIEW PROBLEMS FOR EXAM 4

1. The score for a quiz in one class were: 45, 63, 67, 68, 69, 71, 72, 72, 72, 73, 75, 78, 78, 80, 81, 82, 85, 87, 92, 93, 99
 - a. Find the quartile scores for the data set:
Q1 = _____, Q2 = _____, Q3 = _____
 - b. Outliers will be scores less than _____ or greater than _____.
 - c. The 5- number summary is: _____, _____, _____, _____, _____
 - d. Draw a box-plot for this data set
 - e. Explain why the left part of the box is smaller than the right part of the box.
 - f. Find the mode of the data set: mode = _____
2. Which do you think will be larger, the mean or median age of persons taking swimming lessons at a local community pool. **Explain your answer.**
3. Explain what it means to score in the 15th percentile and if you would be pleased to hear that you scored in the 15th percentile.

4. A set of data values are normally distributed with a mean of 285 and standard deviation of 18.
- Draw a normal distribution curve for this information.
 - 68% of the data will have values from _____ to _____.
 - 99.7% of the data will have values from _____ to _____.
 - The highest 16% of the data will have values of _____ or more.
 - 303 is the _____th percentile score.
5. Kyle and Jesse are on the Jr. varsity pole vaulting team at the high school. The mean height of jumps for the boy's squad is 8 feet (96 inches) with a standard deviation of 4 inches. The mean height for the girls squad is 7 feet (84 inches) with standard deviation of 3 inches. Kyle jumped 90" at the last jump competition and Jesse jumped 80". Kyle said that he was a better jumper, but Jesse argued that she was better in comparison to other girls than he was compared to other boys. Find the better jumper. Assume the data is normally distributed.

REVIEW PROBLEMS FOR EXAM 4

1. The score for a quiz in one class were: 45, 63, 67, 68, 69, 71, 72, 72, 72, 73, 75, 78, 78, 80, 81, 82, 85, 87, 92, 93, 99

a. Find the quartile scores for the data set:

$$Q_1 = \underline{70}, \quad Q_2 = \underline{75}, \quad Q_3 = \underline{83.5}$$

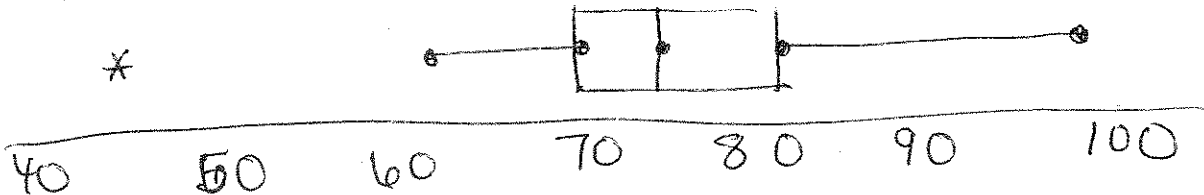
b. Outliers will be scores less than $\underline{49.75}$ or greater than $\underline{103.75}$

$$83.5 - 70 = 13.5 = 20.25 \times 1.5$$

45 is an outlier

c. The 5-number summary is: $\underline{63}, \underline{70}, \underline{75}, \underline{83.5}, \underline{99}$

d. Draw a box-plot for this data set



e. Explain why the left part of the box is smaller than the right part of the box.

Same amount of data —
less spread out

f. Find the mode of the data set: mode = $\underline{72}$

2. Which do you think will be larger, the mean or median age of persons taking swimming lessons at a local community pool. Explain your answer.

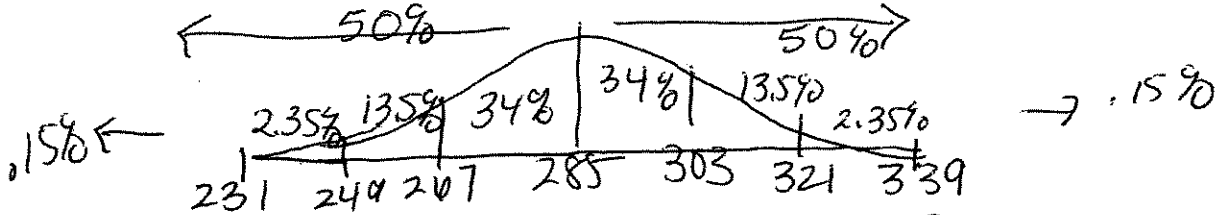
mean — lots of young kids —
the outliers would be the adults

3. Explain what it means to score in the 15th percentile and if you would be pleased to hear that you scored in the 15th percentile.

You scored above 15% of others
taking same exam — probably
not a great performance

4. A set of data values are normally distributed with a mean of 285 and standard deviation of 18.

a. Draw a normal distribution curve for this information.



- b. 68% of the data will have values from 267 to 303.
- c. 99.7% of the data will have values from 231 to 339.
- d. The highest 16% of the data will have values of 303 or more.
- e. 303 is the 84th percentile score.

5. Kyle and Jesse are on the Jr. varsity pole vaulting team at the high school. The mean height of jumps for the boy's squad is 8 feet (96 inches) with a standard deviation of 4 inches. The mean height for the girls squad is 7 feet (84 inches) with standard deviation of 3 inches. Kyle jumped 90" at the last jump competition and Jesse jumped 80". Kyle said that he was a better jumper, but Jesse argued that she was better in comparison to other girls than he was compared to other boys. Find the better jumper. Assume the data is normally distributed.

$$z_k = \frac{90 - 96}{4} = -\frac{6}{4} = -1.5$$

$$z_j = \frac{80 - 84}{3} = -\frac{4}{3} = -1.33$$

Jesse jumped relatively higher