

Math 1431 Spring 2003 – Test #1 – Practice

You are allowed to use your calculator. Explain all answers – answers with no explanation will receive only partial credit. Use complete sentences. All questions are 11 points each.

Joe DiMaggio played center field for the Yankees for 13 years. He was succeeded by Mickey Mantle, who played for 18 years. Here is the number of home runs hit each year by DiMaggio:

29 46 32 30 31 30 21 25 20 39 14 32 12

Here are Mantle's home run counts:

21 23 21 27 37 52 34 42 31 40 54 30 15 35 19 23 22 18

1. Compute the five-number summary for each player, and make side-by-side boxplots of the home run distributions. What does your comparison show about DiMaggio and Mantle as home run hitters?
2. Make a stemplot showing the distribution of home runs hit by DiMaggio. Describe the distribution.
3. Make a histogram (with a class width of 5) showing the distribution of home runs hit by Mantle. Describe the distribution.

4. Find the mean, median and standard deviation of the data below:

12 38 58 26 36 56 38 34 52 41 44 42 32 48 32

Is there an outlier? If so, how does it affect the mean, median and standard deviation?

5. IQ scores on the Weschler Adult Intelligence Scale for the 20 to 34 age group are approximately normally distributed with $\mu = 110$ and $\sigma = 25$.

- a. What percent of people aged 20 to 34 have IQ scores above 100? Sketch the area.
- b. What IQ scores fall in the lowest 25% of the distribution? Sketch the area.
- c. How high an IQ score is needed to be in the highest 2.5%?

The following are the test scores and ages of students in a calculus II class:

Age, x	19	20	21	20	19	20	21	27	20	20	23
Score, y	87	83	89	59	82	76	63	65	71	89	35

6. Describe the overall pattern of the scatterplot. Compute the correlation coefficient.
7. Find the least-squares regression line. What percent of the observed variation in the test scores is explained by a straight-line relationship with student age? Predict the score of a 25-year-old student.

8. The distribution of heights of adult men is approximately normal with mean 69 inches and standard deviation 2.5 inches. Use the 68–95–99.7 rule to answer the following and sketch the areas:

- a. What percent of men are taller than 74 inches?
- b. Between what two heights do the middle 95% of men fall?
- c. What percent of men are shorter than 66.5 inches?

9. Given below are the winning times in seconds for the men's 1500-meter run in the Olympics from 1900 to 1968:

Year, x	1900	1904	1908	1912	1920	1924	1928	1932	1936	1948	1952	1956
Time, y	246.0	245.4	243.4	236.8	241.8	233.6	233.2	231.2	227.8	229.8	225.2	221.2

- a. Describe the overall pattern.
- b. Compute the correlation r .
- c. Predict the winning time for 2020. Do you agree with the prediction? Why or why not?