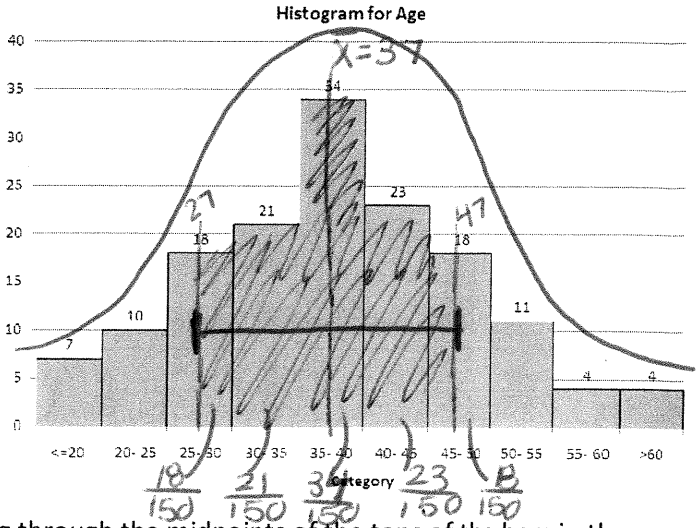
Name: _____ Quiz 10 Review: Modeling Data Distributions

The histogram below shows the distribution of heights (to the nearest inch) of 150 individuals living on 1st Street.

a. Mark the approximate mean on the graph, and mark approximately *one* deviation above and below the mean. Approximately what proportion of the values in this data set are within one standard deviation of the mean?

$\bar{x} = 37$ $\sigma = 10$

Approx. .70 b/w 1 S.D.



b. Draw a smooth curve that comes reasonably close to passing through the midpoints of the tops of the bars in the histogram. Describe the shape of the distribution.

bell shaped, normally distributed

c. Shade the area of the histogram that represents the proportion of ages that are within one standard deviation of the mean.

2) The annual salaries of employees in a large company are approximately normally distributed with a mean of $50,000 and a standard deviation of $20,000. Determine the probability of each instance.

a. A randomly selected employee makes less than $40,000.

normalcdf(-99999, $40,000, $50,000, $20,000)

= .308

b. The salary of a randomly selected employee is greater than $70,000.

normalcdf($70,000, 99999, 50000, 20000)

= .159

c. The salary of a randomly selected employee is between $48,000 and $65,500 ~~pounds~~.

normalcdf(48000, 65500, 50,000, 20000)

= .321

3) The time taken to assemble a car in a certain plant is normally distributed with a mean of 20 hours and a standard deviation of 2 hours. What is the probability that a car can be assembled at this plant in a period of time

a. less than 19.5 hours?

normalcdf(-999, 19.5, 20, 2)

= .401

b. between 20 and 22 hours?

normalcdf (20, 22, 20, 2)

= .341

4) A large group of students took a test in Physics and the final grades have a mean of 70 and a standard deviation of 10. If we can approximate the distribution of these grades by a normal distribution, what percent of the students

a. scored higher than 80?

normalcdf(80, 999, 70, 10)

= .159

b. should pass the test (grades≥60)?

normalcdf(60, 999, 70, 10)

= .841

c. should fail the test (grades<60)?

normalcdf(-999, 60, 70, 10)

= .159