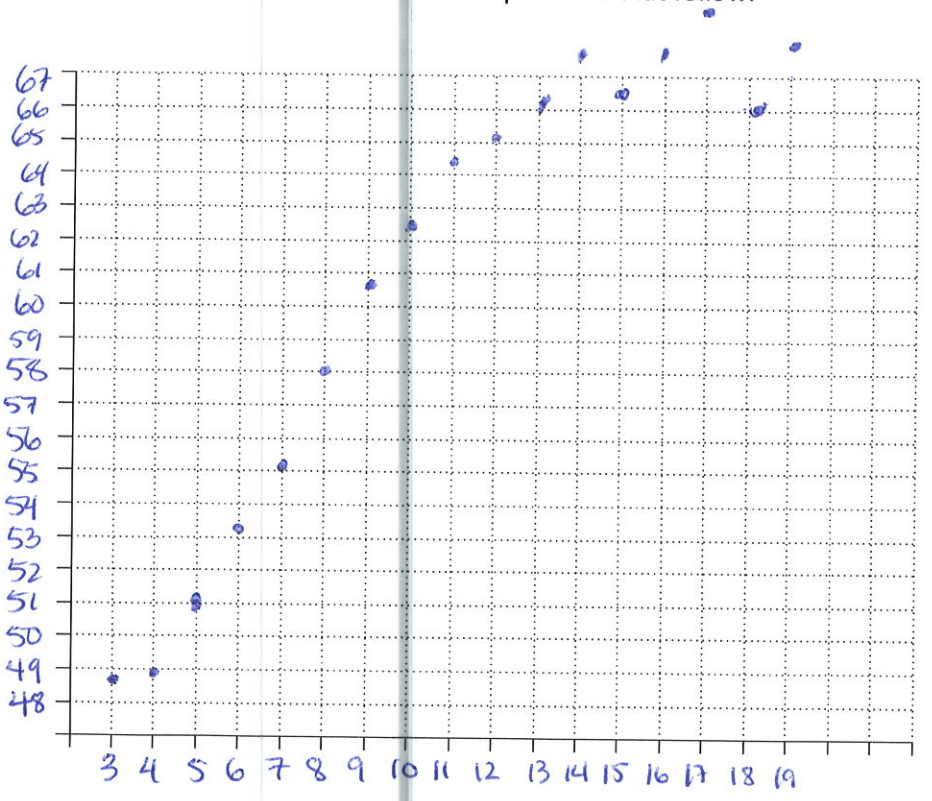
MAT 135, Quiz #6, Spring 2016 Name KEY

Instructions: Show all work to receive full credit. You should note any formulas used or calculator functions used, their inputs and outputs. I cannot grade work if I don't know where an answer came from. Be sure complete all parts of each questions, including requests for interpretation and explanations. Be as thorough as possible.

1. Below is the mean height in inches for children of the specified age. Create a scatterplot of this data on the graph next to the table. Then use the data to answer the questions that follow.

Height (inches)

Age (years)	Mean
3	48.750
4	40.770
5	51.536
6	53.311
7	55.250
8	58.306
9	60.012
10	62.475
11	64.450
12	65.202
13	66.172
14	67.520
15	66.368
16	67.385
17	68.938
18	66.000
19	67.000
Total	61.144



a. Plot the data on the graph. Would you describe the relationship between the variables age and height as i) positive, negative or zero; ii) strong, moderate or weak?

mostly linear (goes flat around 14-15)

positive

strong-moderate (strong in the beginning but tail end makes it weaker)

b. Find the linear regression line that best fits the data. Write the **equation** of the line.

$y = 1.30885x + 46.713$

$y = 1.31x + 46.71$

c. What is the correlation coefficient? Does it agree with your answer in part (a)? Why or why not?

$r = .938$

Yes, it is strong, though tail end did not have as much impact as I expected

d. What proportion of the variation in height can be explained by the relationship of height with age?

$r^2 = .88$

88% of the change in height can be explained by the change in age.

— we could get higher correlation (like .99) if we eliminated values after around age 15.