Stat 1040   Name_____
Quiz 4, Fall 2014   **Recitation Instructor**_____

1. The summary statistics for the female runners at a recent marathon are:

$$x = height \qquad AV_x = 65 \qquad SD_x = 3$$
$$y = weight \qquad AV_y = 120 \qquad SD_y = 10$$
$$r = 0.6$$

a) What does r, the correlation, measure?   (1 point)

   The degree of clustering about the SD line, the linear association between the variables.

b) Find the slope of the SD line.   (1 point)

$$+\frac{SD_y}{SD_x} = \frac{10}{3}$$

c) Find the slope of the regression line.   (1 point)

$$+r\frac{SD_y}{SD_x} = (.6)\frac{10}{3} = 2$$

d) Find the equation of the regression line.   (3 points)

   It contains the point of averages and has slope 2.
   Use $y - y_1 = m(x - x_1)$.
   $y - 120 = 2(x - 65)$ *or* $y = 2x - 10$

e) Use the regression method to estimate the weight of a runner who is 70 inches tall.
   (3 points)

   Using the regression equation, when $x = 70$, $y = 2(70) - 10 = 130$.

   1. $x = weight$ 4. $(.6)\times\frac{5}{3} = 1$
   2. $x = 70$ 5. $10 \times 1 = 10$
   3. $\frac{70-65}{3} = \frac{5}{3}$ 6. $10 + 120 = 130$

f) The regression estimate in part e) is an estimate of what value?   (1 point)

   It estimates the average of all of the y-values associated with $x = 70$.