Math 263
Quiz 13 **Name**_____

The table below shows the regression of the winning time, in seconds, of the women's 100-metter dash in the Olympics against year since 1900.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.8943
R Square	0.7997
Adjusted R Square	0.7879
Standard Error	0.2149
Observations	19

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.13492	3.13492	67.87675	2.44E-07
Residual	17	0.785153	0.046185		
Total	18	3.920074			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	12.449	0.154252	80.70822	2.05E-23	12.124	12.77489
Year since 1900	-0.017	0.002066			-0.02138	-0.01266

(a) Fill in the two missing entries in the table.

(b) What is the equation of the regression line? If you use x and y, please define them!

(c) Interpret the slope of the line in terms of the Olympics. Include units.

(d) Interpret the intercept of the line in terms of the Olympics. Include units.

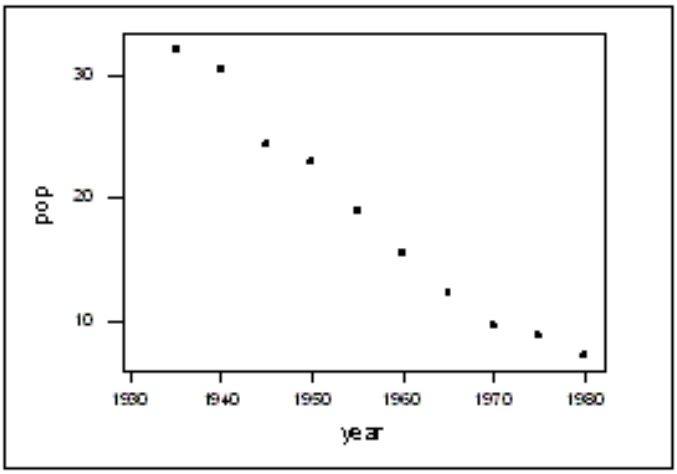
To decide whether the winning time has been changing significantly with time, we use a hypothesis test.

(e) What are H_0 and H_a?

(f) What can you conclude from the P-value? (Answer in words about the Olympics.)

Extra Quiz 6 **Name**_____
Math 263, Spring 2009

The number of people living on American farms declined steadily during the last century. The plot shows data on the farm population (millions of persons) from 1935 to 1980.



The regression equation is population = 1167 - .587 year

Predictor	Coef	StDev	T	P
Constant	1166.93	62.26	18.74	0.000
year	-0.58679	0.03180		

Use the regression output to decide whether there is a statistically significant relationship between year and the number of people living on farms. Use the following steps.

(a) What are the null and alternative hypotheses? Write both in words and in symbols.

(b) What is the missing *T*-value in the table?

(c) What is the number of degrees of freedom of the *T*- statistic that you have just calculated?

(d) What is missing *P*-value in the table?

(e) What is your conclusion about farms?

Quiz 2 **Name**_____
Math 263, Spring 2010

A scatter plot is drawn of the weights, in pounds, of a random sample of male college students against their heights, in inches. (Adapted from *Elementary Statistics,* by N. Pfennig, Brookes/Cole 2011.)

(a) The regression line drawn through this scatter plot could have equation: (check one, no reasons needed)

_____ $\text{Weight} = -43.8 - 87.2 \cdot \text{Height}$

_____ $\text{Weight} = 43.8 - 87.2 \cdot \text{Height}$

_____ $\text{Weight} = -43.8 + 87.2 \cdot \text{Height}$

_____ $\text{Weight} = 43.8 + 87.2 \cdot \text{Height}$

_____ $\text{Weight} = -438 - 8.72 \cdot \text{Height}$

_____ $\text{Weight} = 438 - 8.72 \cdot \text{Height}$

_____ $\text{Weight} = -438 + 8.72 \cdot \text{Height}$

_____ $\text{Weight} = 438 + 8.72 \cdot \text{Height}$

(b) What is the explanatory variable?
(c) What is the response variable?
(d) Interpret the slope of the line in terms of heights and weights. *Give units!*

(e) If $r^2 = 0.417$, what is the value of r?

(f) If heights are measured in centimeters instead of inches, does the equation of the regression line change? (check one; no reasons needed)

Yes_____ No _____ Depends on the actual data_____

(g) If heights are measured in centimeters instead of inches, does the correlation coefficient change? (check one; no reasons needed)

Yes_____ No _____ Depends on the actual data_____

(h) If the roles of explanatory and response variables are interchanged, does the correlation coefficient change? (check one; give a reason)

Yes_____ No _____ Depends on the actual data_____

Reason:

(i) Use the equation to predict the weight of a 20 inch newborn boy. Comment on the result.
(j) Use the equation to predict the height of a 290 pound football player. Comment on the result.