Name **KEY**

Row # (from the door) __0__ , Seat # (from the front) __0__

Quiz (Help for Exam 1)

Always show enough of your set up and work to indicate how you arrived at your answer. If it is not clear how you got your answer, you may not get full credit for the problem.

(20)   I.   A large farm has a reservoir it uses for irrigation. It is filled each night, when electricity is cheap, by pumping water from a canal. It is filled by 6:00 A.M. when the farm begins to use its water for irrigating its fields. The volume of water (V, in cubic yards, yd) in the reservoir is related to time (T, in hours) since irrigating begins at 6:00 A.M.. Based on data collected over several years the volume of water in the reservoir on any day at time T is given by the regression equation $\hat{V} = 5400 - 360T$ for T from 0 to 14 with $R^2 = 66\%$.

(2)   1.   Identify the   response variable __Volume, V__

                                        explanatory variable __Time, T__

(3)   2.   give the slope (*include units*) $-360 \text{ yd}^3/\text{hr}$

(3)   3.   interpret the slope *with respect to this situation and this regression* (your response should have to do the volume and time, be explicit)

For each hour after 6:00 A.M. the volume of water in the reservoir goes down by an average of 360 yd³.

(2)   4.   give the y-intercept (include units) 5400 yd^3

(2)   5.   Interpret (if possible) the y-intercept *with respect to this situation and this regression*

The mean volume of water in the reservoir at 6:00 AM is 5400 yd³.

(3)   6.   Find the correlation coefficient, r

$$r = -\sqrt{.66} \approx -.81240...$$ $r = \underline{-.81}$

(3)   7.   Find the predicted volume at 11 A.M. ($T = 5$).

$$\hat{V} = 5400 - 360 \cdot 5$$
$$5400 - 1800$$

3600 yd^3

(2)   8.   On June 16, 2019 the volume at 11:00 A.M. was measured at 3400 yd³. Find the residual for this date and time.

$$V - \hat{V} = 3400 - 3600$$

-200 yd^3