

5. The following data shows the classwork/homework averages and the quiz/test averages of several students.

CW/HW	T/Q
51	65
81	84
72	77
94	96
89	92
99	100
76	79

a. Let x =CW/HW average and y =Quiz/Test average. Create a linear model of the data and describe the correlation (weak/strong, positive/negative).

$$Y(x) = .75x + 24.5$$

Correlation: Strong positive correlation ($r = .99$)

b. What does the y-intercept mean in the context of this problem?

If your classwork/homework average is 0, the model predicts you will have a 24.5% test/quiz average.

c. What does the slope mean in the context of this problem?

When your classwork/homework average goes up by 1%, your test/quiz average will go up by 0.75%.

d. According to the model, what Quiz/Test average would we expect from a student with a CW/HW average of 73?

Table: $\begin{array}{r|l} x & y \\ \hline 73 & 79.25 \end{array}$ Q/T average will be about 79%.

Where you should go for more review on this concept: See the Queens Data Project (there's a post on this from 9/12/12 and it should be in your file). Go over your Linear Functions Quiz and Linear Functions Quiz Review. See post online from 9/26/12 for the key to that review.

★ Standard 1.02, "Summarize and analyze univariate data to solve problems," was covered in the Statistics Unit from 4th quarter. Review your Statistics Quiz and Statistics Test, as well as the reviews for both. The key to the Stats Test review was posted 4/23/13, and the key to the Stats Quiz review was posted 4/16/13.

★ Standard 1.03, "Use theoretical and experimental probability to model and solve problems," was covered in the Probability Unit from 4th quarter. Review your Probability Quiz and quiz review. The key to the probability quiz review was posted 5/9/13.

6. You can determine which model is the best fit by looking at the value of R^2 . The closer this number is to 1, the better the fit. To see this value on your calculator, hit 2nd, 0, and scroll down to Diagnostic On. Hit Enter, Enter. Now when you calculate the regression you will see " r^2 =" along with the coefficients a, b, c, etc. in the equation.

x	y
0.5	1
0.8	2
1.6	33
1.9	89
2.5	280
2.8	452
3.5	1150

a. Does a linear, exponential, or power function best fit this data?

power

b. Record your model and the value of R^2 below.

$$Y(x) = 8,041x^{3.795}$$

$$R^2 = .982$$

c. What is the y-intercept of the function you chose in part a?

$$\begin{array}{r|l} x & y \\ \hline 0 & 0 \end{array} \quad \text{y intercept is } (0, 0).$$

d. Using your chosen function, find the value of y when $x=3$.

$$\begin{array}{r|l} x & y \\ \hline 3 & 520 \end{array} \quad Y \approx 520 \text{ when } x = 3.$$

e. Using your chosen function, find the value of x when $y=300$

$$Y = 300 \text{ (2nd, Trace, Intersect)}$$

$$X = 2.595 \text{ when } y = 300.$$

Where you should go for more review on this concept: See the Power Functions Notes (3/15/13 post), the Comparing Power Functions Investigation (3/19/13 post includes key), and the Pendulum Lab (3/21/13 post).