

Name: _____

Class: _____

Two-Variable Statistics Sample Examination

Question 1

The maximum height and speed of various projectiles are shown in the table below.

Maximum Speed (S), in mph	45	50	54	60	65	70
Maximum Height (H), in thousands of feet	6.3	8.0	10.5	11.8	14.1	10.7

(a) Write the linear regression equation, H , for the maximum height, in thousands of feet, of a projectile whose maximum speed is S miles per hour. Let $S = 0$ represent 50 mph. Round to the nearest *hundredth*.

(b) Using this equation, predict the maximum height, expressed in thousands, of a projectile with a maximum speed of 100 mph. Do not round. Show your reasoning.

(c) Using your linear regression equation, between what two maximum speeds would you predict the maximum height of a projectile to be 15,000? Explain or show your reasoning.

Question 2

“J Money” Raskin calculated four correlation coefficients in four separate science experiments, shown below.

Experiment 1: $r = -0.03$

Experiment 2: $r = 0.029$

Experiment 3: $r = 0.56$

Experiment 4: $r = -0.562$

Identify the experiment showing the *weakest* correlation. Then identify the experiment showing the *strongest* correlation.

Question 3

An application developer released a new app to be downloaded. The table below gives the number of downloads for the first four weeks after the launch of the app.

Number of Weeks	1	2	3	4
Number of Downloads	120	180	270	405

Predict the number of downloads after 18 days using the regression equation with the best fit. Show or explain your reasoning.

Question 4

The table below shows the residuals for a linear regression.

x	Actual y-value	Predicted y-value	Residual
0	4	-14	10
1	6	-2	8
2	8	2	6
3	10	4	4
4	12	10	2
5	14	14	0
6	16	15	0
7	18	16	2
8	20	15	5
9	22	13	9
10	24	14	10

Create a residual plot on the axes provided, and state whether the linear regression is a good fit for the data.

