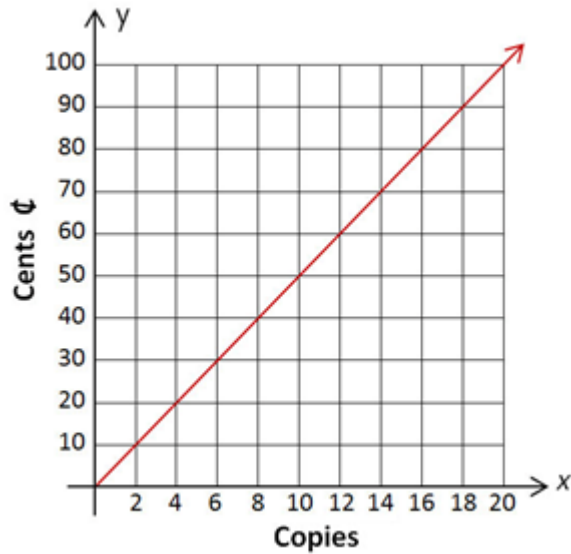


Practice Exam 2 on Modules 11-13 and 15 as well as Math Interludes VI – VII

6) Interpret the slope of the line in the graph below in the context of a real life situation



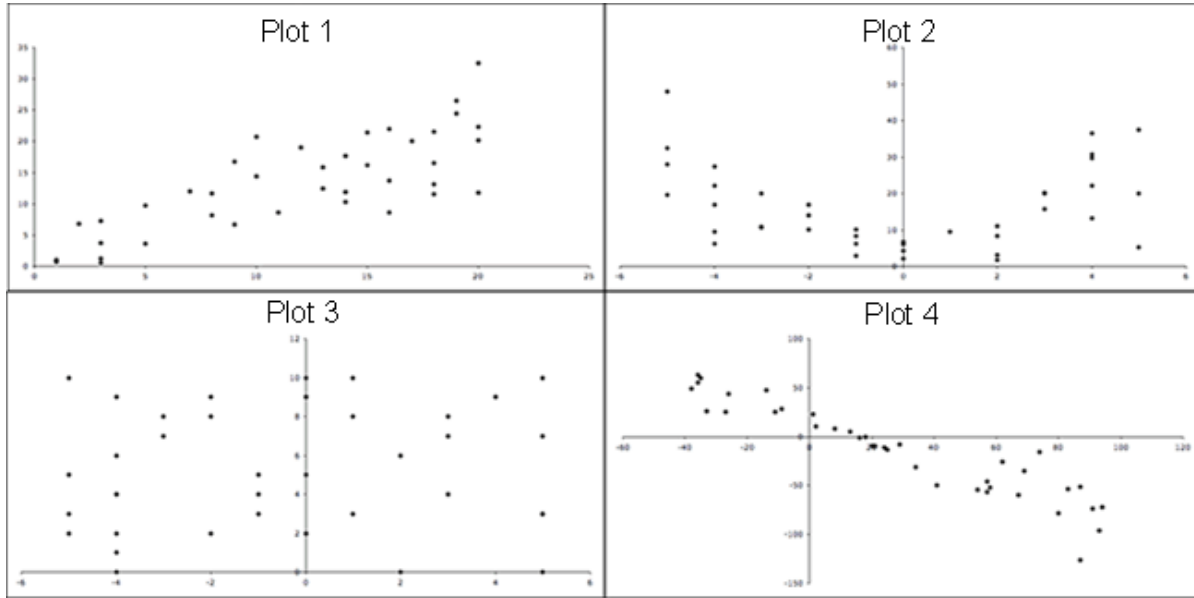
7) Find the slope of the line between the following points:

$$(-1, 1) \text{ \& } (2, -5)$$

8) Find the equation of the line that passes through the points

$$(3, 2) \text{ and } (5, -5)$$

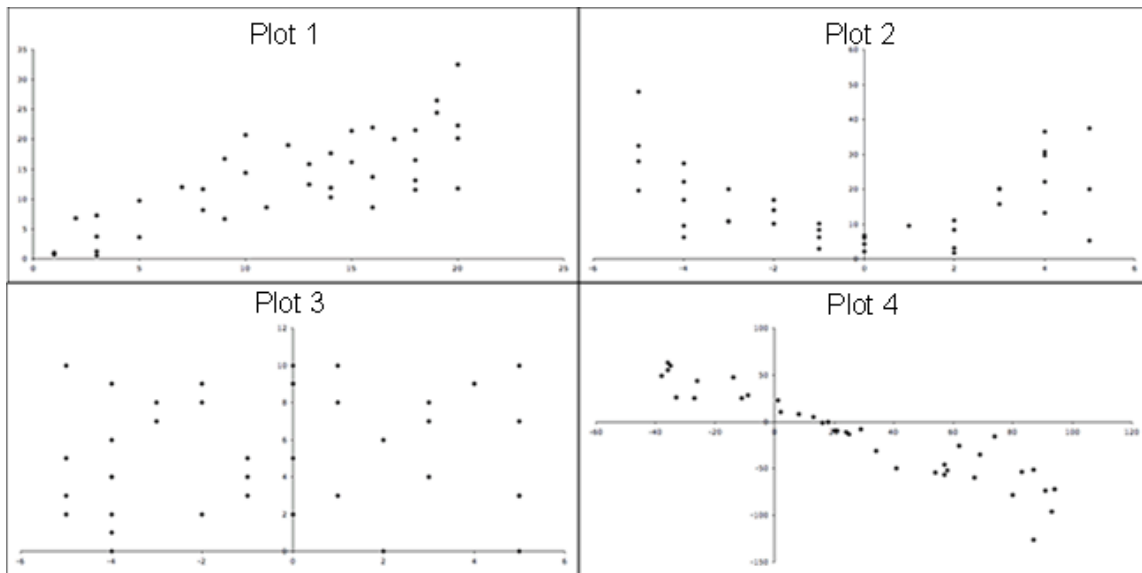
12)



Which of the plots has negative linear association?

- A) Plot 1 B) Plot 2 C) Plot 3 D) Plot 4

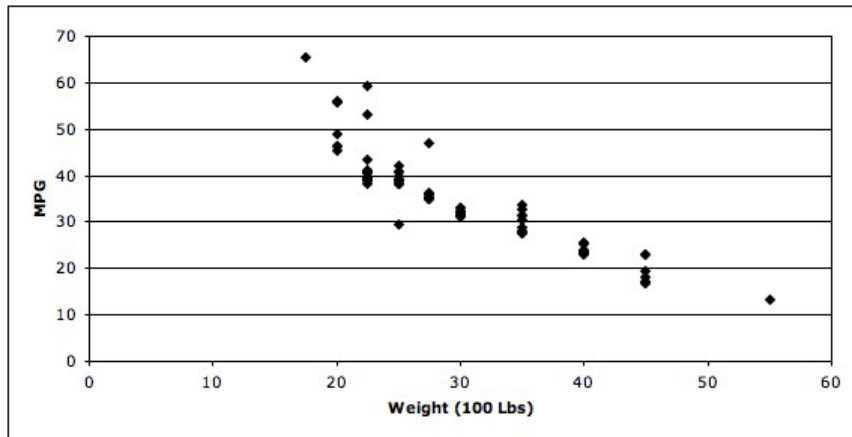
13)



Which of the plots has the strongest *nonlinear* association?

- A) Plot 1 B) Plot 2 C) Plot 3 D) Plot 4

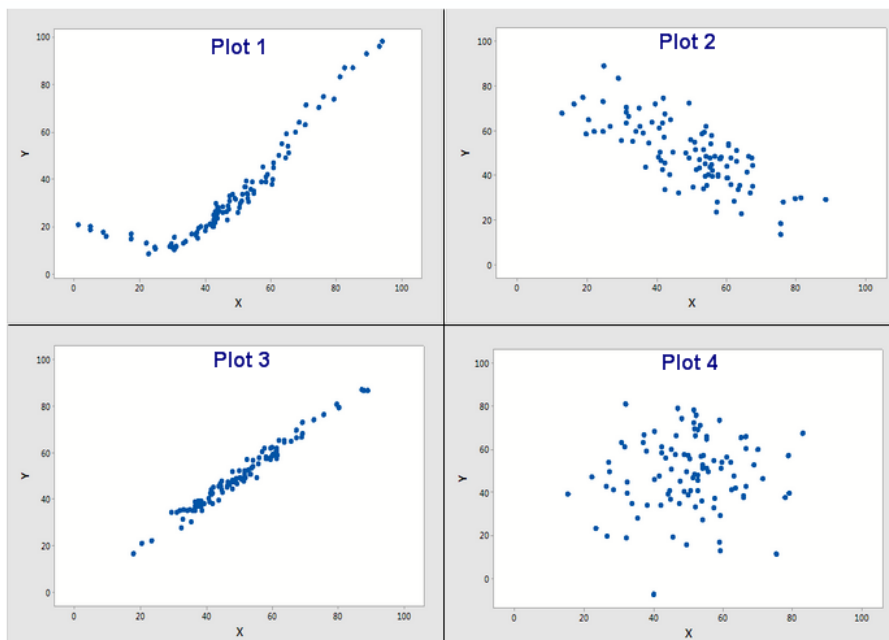
14)



Is the following statement valid or invalid?

The strong association proves that more weight causes a lower mpg rating.

15)



Which one of these correlation coefficient values is the most appropriate choice for the data shown in Plot 4?

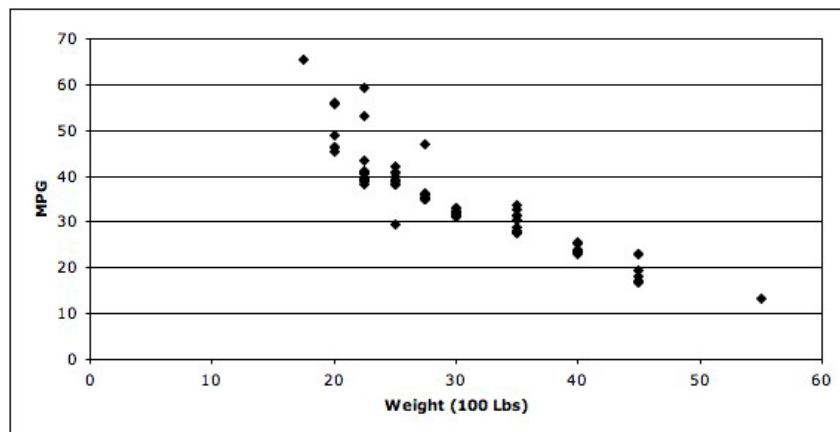
- A) -0.75
- B) 0.09
- C) 0.88
- D) 0.99

16) **Student debt:** Financial aid staff at a local university are studying issues affecting student debt. They noticed that students who own more credit cards tend to have larger combined debt balances. Which variable (number of credit cards owned or combined debt balance) is the explanatory (predictor) variable in this context?

- a. Number of credit cards owned
- b. Combined debt balance

17) A researcher wants to study the effects of daily caloric intake on blood pressure in obese patients. Name at least one lurking variable they should consider in such a study.

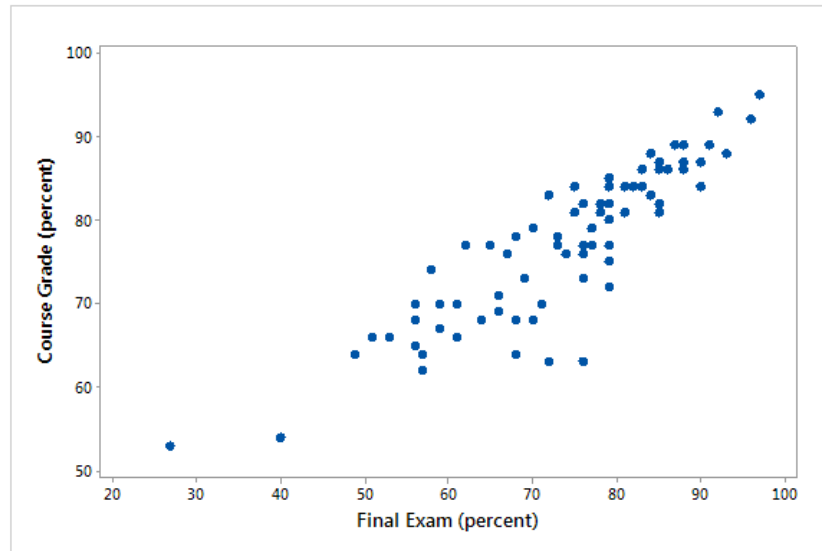
18)



Note that automobile fuel efficiency is often measured in miles that the car can be driven per gallon of fuel (mpg). Suppose we have a collection of cars, we measure their weights and fuel efficiencies, and generate the following graph of the data. (Source: <http://lib.stat.cmu.edu/DASL/Datafiles/carmpgdat.html>) Which of the following can possibly be the regression line for this data set.

- A) $Y = -1.11X + 5.17$
- B) $Y = 1.11X + 68.17$
- C) $Y = -1.11X + 68.17$
- D) $Y = 1.11X + 5.17$

19) **Final and course grade:** For this data set, the least squares regression line is $Y = 31.72 + 0.62X$, where X represents the final exam score as a percent and Y represents the predicted course grade as a percent.



Notice that the regression line for this data set has slope 0.62. What is the most precise and accurate interpretation of the slope?

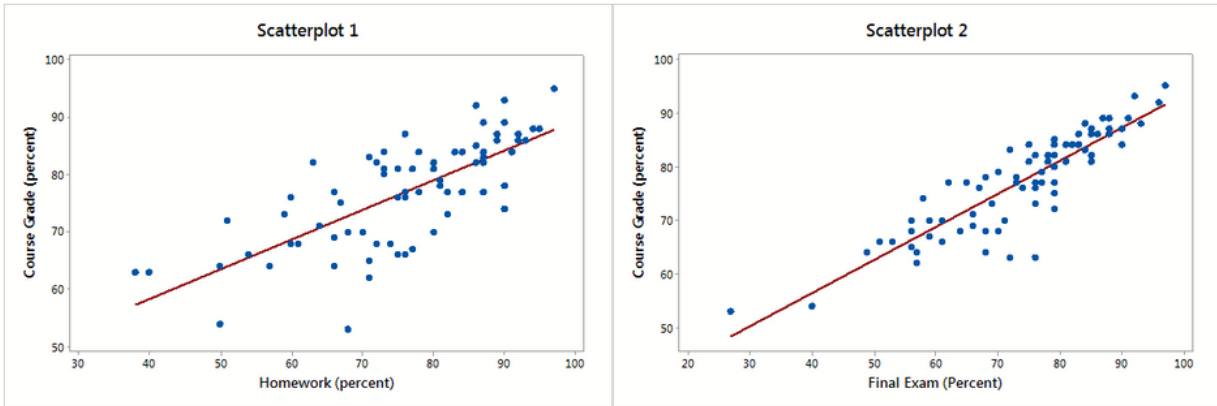
- A) Students with higher final exam scores tend to have higher course grades.
- B) For every 1% increase in a student's final exam score, we expect to see a 0.62% decrease in the course grade.
- C) For every 1% increase in a student's final exam score, we expect to see a 0.62% increase in the course grade.
- D) For every 1% increase in a student's final exam score, we expect to see a 62% increase in the course grade.

20) Suppose that we have found that the least squares regression line for a set of data set where X represents the weight of the cars in hundreds of pounds and Y represents the mpg rating to be $Y = -1.11X + 68.17$.

Use the given equation of the regression line given to predict the mpg rating of a car that weighs 3700 lbs.

- A) 27.1 mpg
- B) 64.063 mpg
- C) 4175.17 mpg
- D) -4038.83 mpg

26) **Pre-Statistics Grades:** We recorded the homework (in percent), final exam (in percent) and course grade (in percent) for 75 statistics students. Then we generated the following scatterplots of the data.



The for plot 1 is $r = .73$ and for plot 2 $r = .88$. Which is a better predictor of a student’s course grade: homework or final exam?

- A) Homework
- B) Final exam

30) A local Honda dealership collects data on customers. Here is data from 311 customers who purchased a Honda Civic.

	Hybrid Honda Civic	Standard-engine Honda Civic	Row totals
Male	77	117	194
Female	34	83	117
Column totals	111	200	311

What does the data suggest about the relationship between gender and engine type?

- A) Women are more likely to purchase a Honda Civic with a standard engine than men.
- B) Women are less likely to purchase a Honda Civic with a standard engine than men.
- C) Women and men are equally likely to purchase a Honda Civic with a standard engine.

31) Here are the results of a survey that students conducted at a mall. The students conducted this survey as part of a statistics project to determine if younger adults are more likely to have tattoos.

	At least one tattoo	No tattoo	Row Totals
Age 18 - 29	170	320	490
Age 30 - 50	60	445	505
Column Totals	230	765	995

If we randomly select a person in the sample who is 30 to 50 years old, what is the probability that this person has a tattoo?

- A) 0.12 B) 0.26 C) 0.06 D) 0.46

32) In 1912, the RMS Titanic, a British passenger ship, sank in the North Atlantic Ocean after colliding with an iceberg. Historians do not know the exact passenger list, so the death toll is estimated. Here is data from the 2201 passengers on board, by cabin class.

	First Class	Second Class	Third Class	Crew	Row totals
Died	122	167	528	673	1490
Survived	203	118	178	212	711
Column Totals	325	285	706	885	2201

Wikipedia, RMS Titanic. (2015). Retrieved from:

http://en.wikipedia.org/wiki/RMS_Titanic#Survivors_and_victims

If we randomly select a passenger, what is the probability that the passenger is in a first class cabin and survived the Titanic?

- A) 0.09 B) 0.62 C) 0.29 D) 0.14