

Review Unit 9: Bivariate Data

You may use a calculator.

Unit 9 Goals

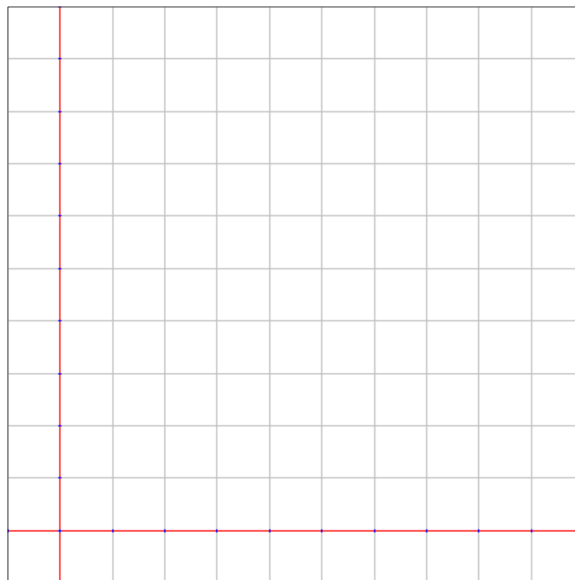
- Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. (8.SP.1)
- Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. (8.SP.2)
- Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. (8.SP.3)
- Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. (8.SP.4)

You may use a calculator.

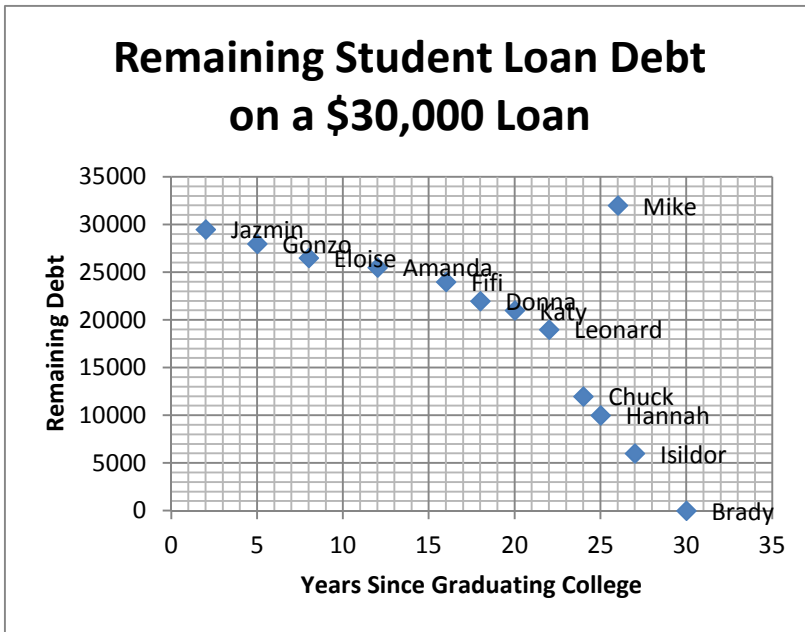
Construct a scatter plot for the following data set using appropriate scale for both the x- and y-axis.

1. This table shows the age of students and their scores on the MAP test.

	Age	MAP Score
Anna	8	180
Bob	10	200
Carly	11	215
Damien	12	220
Esther	9	195
Franco	15	235
Georgia	13	230
Hank	14	235
Innya	13	225
Jacob	14	225



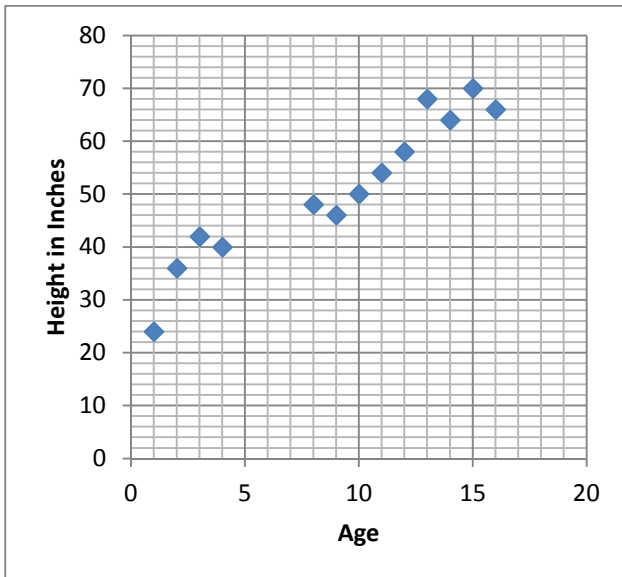
Use the following scatter plot to answer each question. The scatter plot shows the number of years each person invested ten thousand dollars versus the end value of that investment in thousands of dollars.



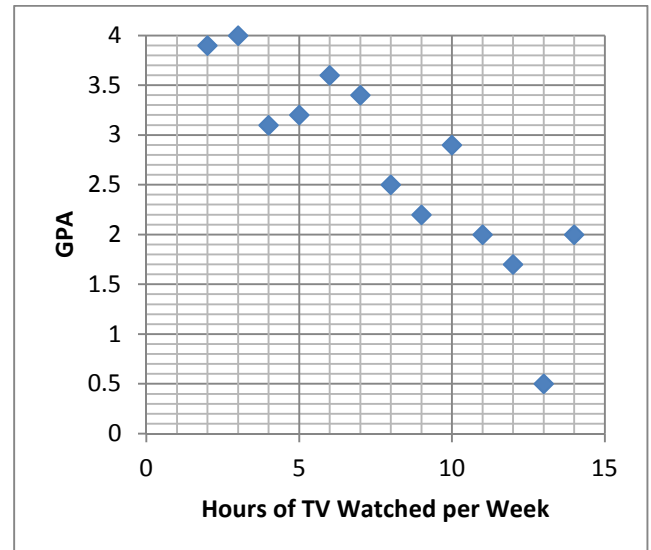
- Does this scatter plot represent a positive association, negative association, or no association? Why?
- Which person paid off their debt? About how long did it take?
- Does this appear to be a linear or non-linear association? Why?
- Which person is the outlier in this data set? Why?

Draw an informal line of best fit for the given scatter plots.

6. This scatter plot shows the age in years versus the height in inches of a group of children.

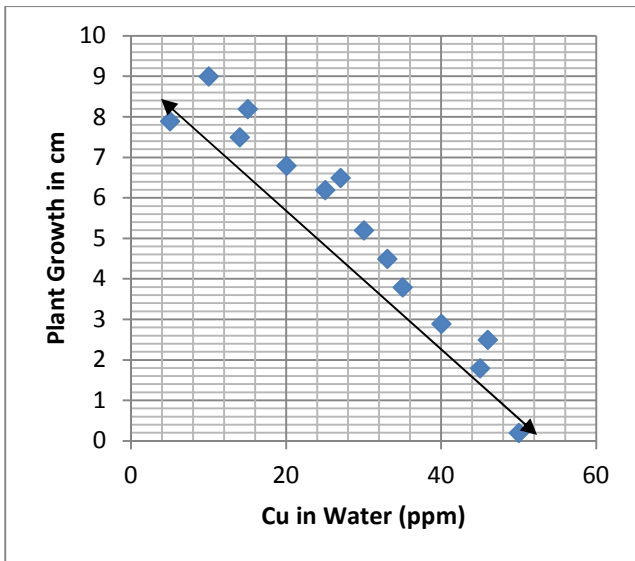


7. This scatter plot shows the hours of TV watched per week versus the GPA on a 4.0 scale for a group of students.

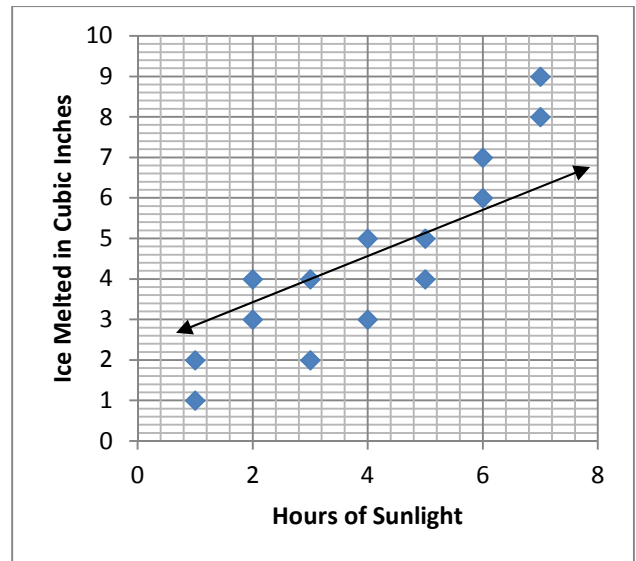


Explain why the drawn line of best fit is accurate or why not.

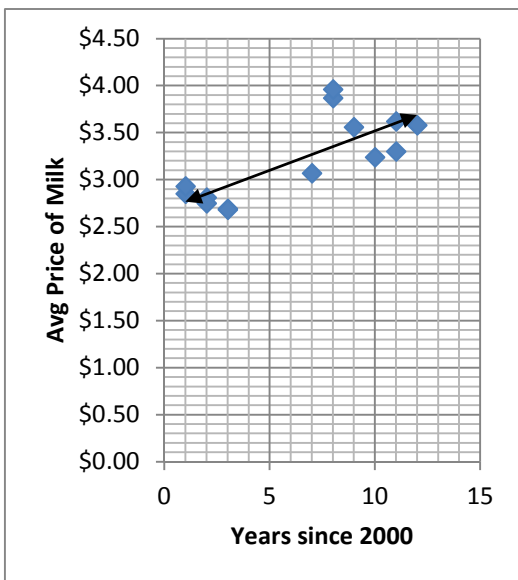
8. This scatter plot shows the amount copper in water in ppm versus plant growth in cm over three months.



9. This scatter plot shows the hours a cubic foot of ice was exposed to sunlight versus the amount of ice that melted in cubic inches.



The scatter plot shows the price of a gallon of milk from 2001 to 2012. The equation of the line of best fit is approximately $y = \frac{21}{250}x + 2.68$.



10. Predict what price of a gallon of milk would have been in 2005 using both the equation and the graph.

Equation Work:	Graph Prediction:
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11. Predict what year it would have been when a gallon of milk cost approximately \$3.00 using both the equation and the graph.

Equation Work:	Graph Prediction:
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Using the same scatter plot and equation of the line of best fit of $y = \frac{21}{250}x + 2.68$, answer the following questions.

12. What does the slope of this equation mean in terms of the given situation? In other words, explain what the rise and run mean for this problem.

13. What does the y -intercept of this equation mean in terms of the given situation? In other words, explain what the y -intercept means when considering the price of a gallon of milk and the year.

Answer the following questions about two-way tables.

14. Construct a two-way table from the following data about whether or not students own an iPhone and whether or not they own an iPad.

Own an iPhone?	Y	N	Y	Y	N	Y	N	N	Y	Y	Y	N	N	Y	N	N	Y	N	Y	N
Own a iPad?	Y	N	Y	N	N	Y	Y	N	Y	N	Y	Y	N	Y	N	N	Y	Y	N	N

15. Do you think there is a relationship between owning a iPhone and owning an iPad? Based on the data, why or why not?

Answer the following questions using the given two-way table.

	Support Year-Round School	Do Not Support Year-Round School
Students	250	2150
Teachers	80	70

16. How many teachers were surveyed?

17. How many students were surveyed?

18. How many people support year-round school?

19. How many teachers do not support year-round school?

20. How many students do not support year-round school?

21. As a percent to the nearest hundredth (two decimal places) what is the relative frequency of the teachers compared to all those surveyed?

22. As a percent to the nearest hundredth (two decimal places) what is the relative frequency of the students who support year-round school compared to all students?

23. As a percent to the nearest hundredth (two decimal places) what is the relative frequency of the teachers who do not support year-round school compared to all teachers?