Sue Swandive

SUGGESTED LEARNING STRATEGIES: Shared Reading, Role Play

The famous bungee jumper, Sue Swandive, is coming to visit your community to promote her new doll line. There will be a bungee competition with the new doll. The winning group will get a special prize. Rumor has it that they may get to go bungee jumping with Sue herself.

The competition rules are as follows:

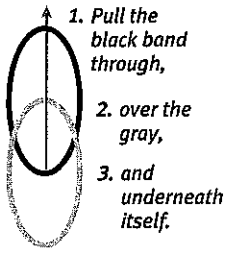
a. Attach a rock to the back of a Sue Swandive doll.
b. Make a bungee cord by connecting rubber bands and attach it to the doll.
c. Drop the doll, with bungee cord attached, from a height specified by your teacher. Height:_____.
d. The winning group's Sue doll will come as close to the ground as possible without hitting her head.

To help your group predict how long to make the bungee cord for the competition, you will collect data in your classroom first. You will use this data to make a prediction for the number of rubber bands it will take to win the competition. When it is time for your doll to bungee from the height your teacher specified, you will use the prediction your group made.

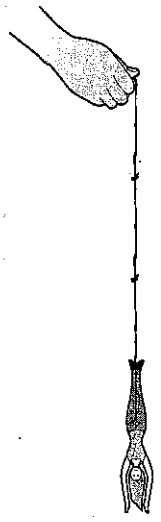
Begin the classroom part of your experiments as follows:

- With one rubber band attached to the Sue doll, have a student hold the end of the rubber band *and* the doll's feet at the 0 position on the tape measure.
- Let go of the doll's feet but not the bungee cord.
- Have your group watch carefully to record the height of the doll's head at its lowest position. (It may be helpful to tie the doll's hair back.)
- Be prepared to repeat each jump a few times to get an accurate measurement.
- Record your findings in the table on the next page.
- Add rubber bands and continue to take readings until just before Sue's head touches the floor.

My Notes



How to Tie a Slipknot



SUGGESTED LEARNING STRATEGIES: Create Representations, Think/Pair/Share

My Notes

ACADEMIC VOCABULARY

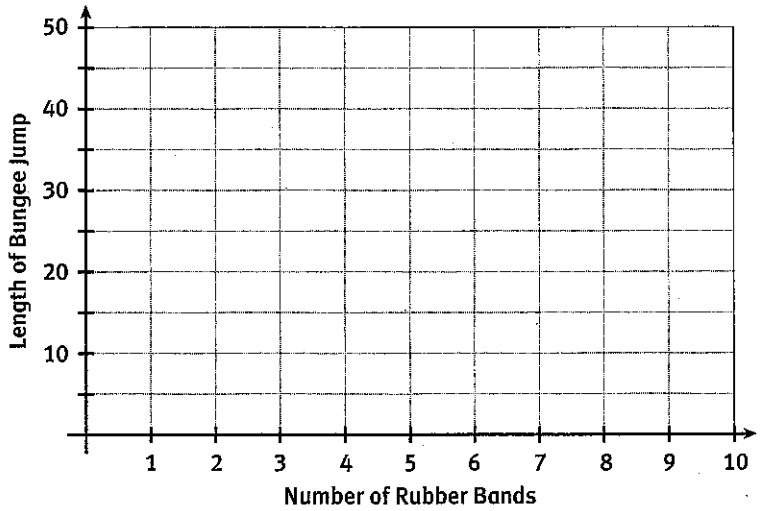
Bivariate data can be written as ordered pairs where each numerical quantity represents measurement information recorded about a particular subject.

1.

Number of Rubber Bands Attached to the Sue Doll	Length of Bungee Jump
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

The data you have recorded is an example of **bivariate data.** Bivariate data is data with two variables.

2. Create a scatter plot of the data on the grid below.



3. Does the data represent a linear relationship? Explain your answers using both the scatterplot and the table.

SUGGESTED LEARNING STRATEGIES: Quickwrite, Interactive Word Wall, Create Representations, Think/Pair/Share

4. Describe how the length of the bungee jump changes as the number of rubber bands increases.

5. What type of association does the data represent?

A **trend line** is a line that indicates the general course or tendency of data.

6. Use a tool like spaghetti or a ruler, and place it on the scatter plot in a position that has about the same number of points above and below the line. On the coordinate grid, mark two points that the line passes through. They do not have to be data points.

7. Draw the line that passes through the two points.

8. Write an equation for your trend line in slope intercept form.

9. Explain what the variables in the equation of your trend line represent.

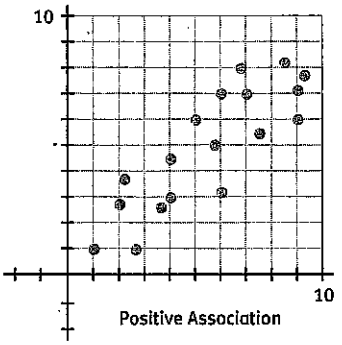
10. How does the slope relate to the Sue Doll situation?

ACADEMIC VOCABULARY

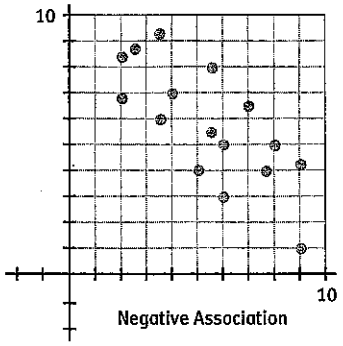
trend line

MATH TERMS

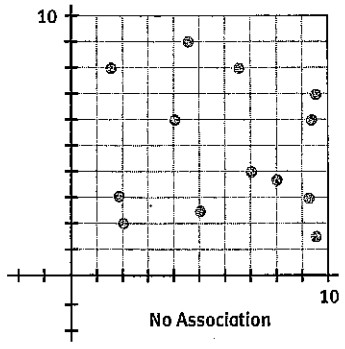
A collection of data points has a **positive association** if it has the property that y tends to increase as x increases. It has a **negative association** if y tends to decrease as x increases. If the data have no clear relationship, they have **no association.**



Positive Association



Negative Association



No Association

SUGGESTED LEARNING STRATEGIES: Quickwrite, Think/Pair/Share, Work Backwards

My Notes

11. Could you use the equations you wrote to predict the length of the bungee jump with 3.5 rubber bands?

12. Use your equation to predict how many rubber bands it will take to give Sue a maximum bungee jump without touching the ground in the contest.

The following data was collected on a group of students. There are many possible ways to pair the data: TV to homework, homework to TV, TV to test scores, test scores to TV, homework to test scores, test scores to homework.

Hours of TV per Week	32	13	28	19	11	21	15	11	15	12	17	20
Percent of Homework Completed	58	82	65	87	98	78	75	92	75	91	90	81
Test Score	66	85	75	85	100	88	85	90	90	95	85	85

13. Which pairs of data seem to have a positive association? Explain your reasoning.

14. Which pairs of data seem to have a negative association? Explain your reasoning.

15. Which pairs of data seem to have no association? Explain your reasoning.

My Notes

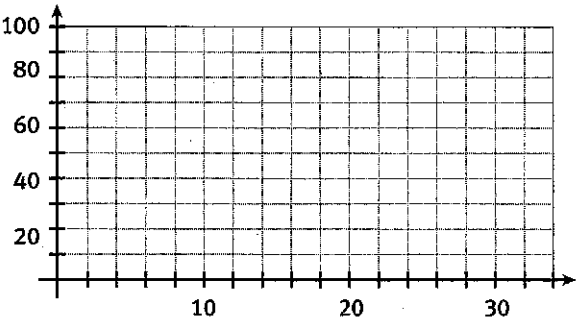
16. For each pair of variables listed below, create a scatter plot with the first variable shown on the x-axis and the second variable on the y-axis. Find a trend line that represents the data.

a. Hours of TV per week versus the percent of homework completed

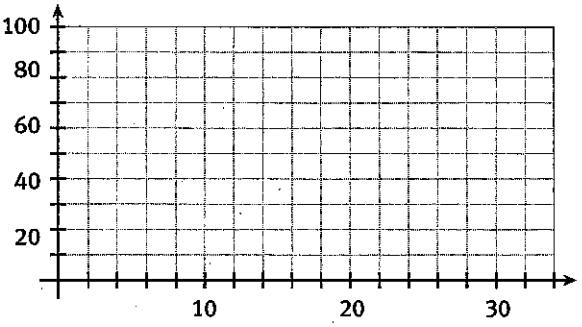
b. Hours of TV per week versus Test Score

c. Percent of homework done versus Test Score

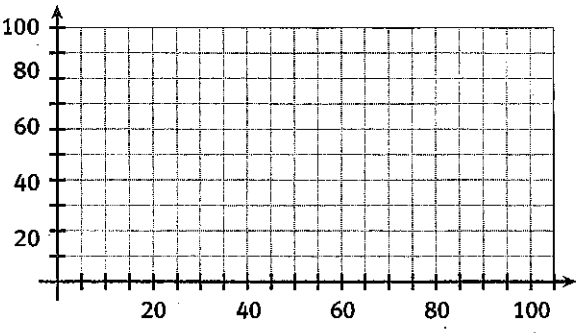
a.



b.



c.



17. One student came in late to take the test. He had watched 30 hours of TV during the week, but he scored 100 on the test. How would adding this student's data change the trend line?

CONNECT AP

In AP Statistics, you will find trend lines for bivariate data using a line called the Least Squares Regression.

SUGGESTED LEARNING STRATEGIES: Discussion Group, Think/Pair/Share

My Notes

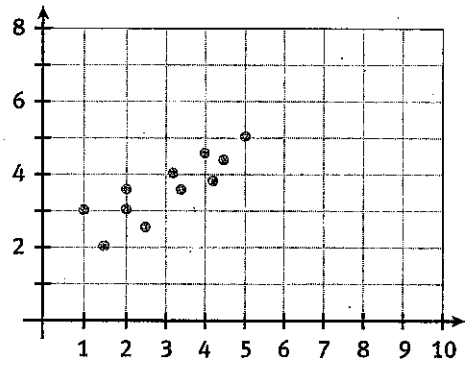
18. Does the data tell you that watching TV causes you to score lower on tests? Explain your reasoning.

CHECK YOUR UNDERSTANDING

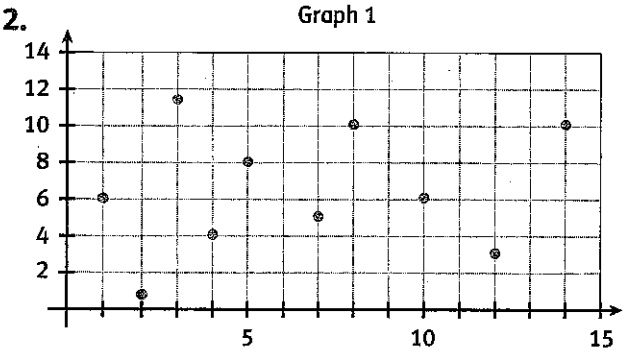
Write your answers on notebook paper. Show your work.

Determine if the following graphs have a positive, negative, or no association.

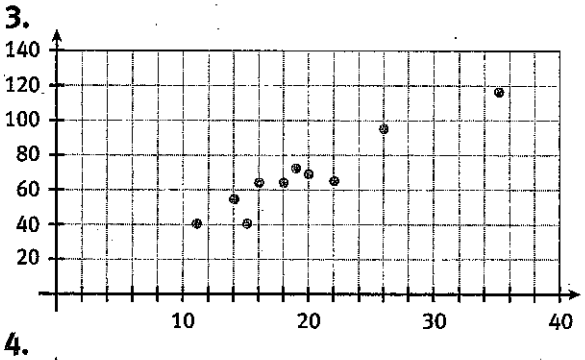
1.



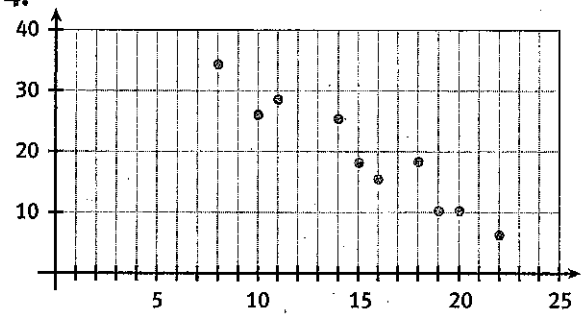
2.



3.



4.



5. Find the equations of the trend lines for any of the questions, 1–4, that had a positive or negative association.

6. MATHEMATICAL REFLECTION What does the association of a set of bivariate data indicate about the slope of the trend line?