

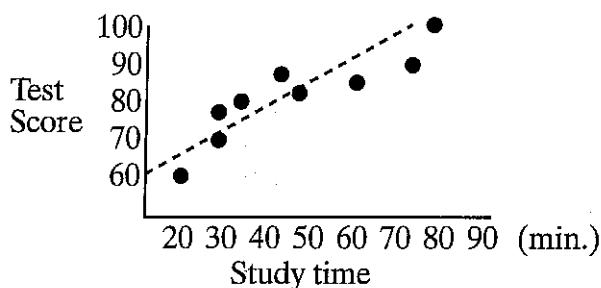
Activity 1: Making a Scatter Plot

Materials: Ruler, tape measure

In this activity, you will make a scatter plot to show the relationship between two variable quantities.

To understand the procedure read the table below, listing the number of minutes several students spent studying for a math test and the scores they achieved on the test. Then look at the *scatter plot* based on this table.

	Students								
	1	2	3	4	5	6	7	8	9
Study time (in min.)	20	65	30	90	45	30	80	50	35
Test score	60	85	70	100	88	77	90	82	80



The straight dotted line in the scatter plot shows the *line of best fit* of the given data. It is the line that the data points cluster about. Since the slope of this line is positive, there is a *positive* correlation between study times and test scores. A negative slope indicates a *negative* correlation between the times and scores. If the data do not cluster about any single line, they are *unrelated*.

Split into groups of between 7 and 9 students. Each group will make a scatter plot of foot length and height (in either centimeters or inches) of the students in the group.

- With a ruler, measure the length of the right foot of each group member, and with a tape measure, determine the height of each student. Fill in the data you find in the following table.

	Students								
	1	2	3	4	5	6	7	8	9
Foot length									
Height									

- Make a scatter plot of the data: Mark foot lengths on the vertical axis and heights on the horizontal axis. Plot the values you wrote down in the table above.
- From your scatter plot, is there a correlation between foot length and height?
 _____ If so, is it positive? _____
- Measure the height and the circumference of the head of each group member and make a scatter plot of these data. Is there a positive correlation between the data? _____

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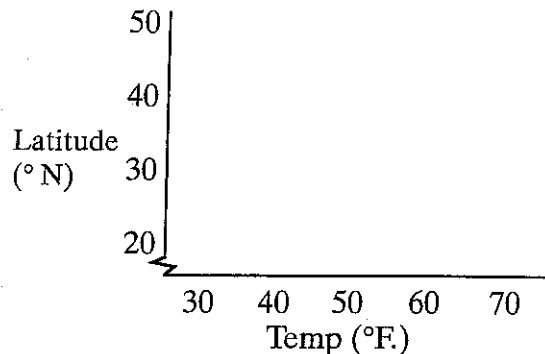
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Activity 2: Making a Scatter Plot

In this activity, you will make scatter plots using some climatological data from U.S. cities. The table below gives the average temperature and average precipitation in the month of March for various U.S. cities, together with the latitude of those cities.

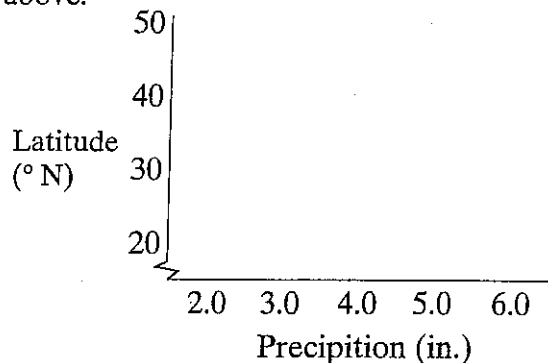
City	Av. March Temp (°F)	Av. March Precip. (in.)	Latitude (°N)
Atlanta, GA	53	5.9	34
Boston, MA	38	4.1	42
Buffalo, NY	33	3.0	43
Dallas, TX	56	2.4	33
Houston, TX	61	2.7	30
Kansas City, MO	42	2.1	39
Lexington, KY	44	4.8	38
Los Angeles, CA	60	2.4	34
Miami, FL	72	1.9	26
Nashville, TN	49	5.6	36

1. Make a scatter plot of temperature against latitude, using the data from the table.



2. Is there a correlation between temperature and latitude? _____
If so, is it positive? _____

3. On the axes below, make a scatter plot of precipitation against latitude, using the data above.



4. Is there a correlation between precipitation and latitude? _____
If so, is it positive? _____

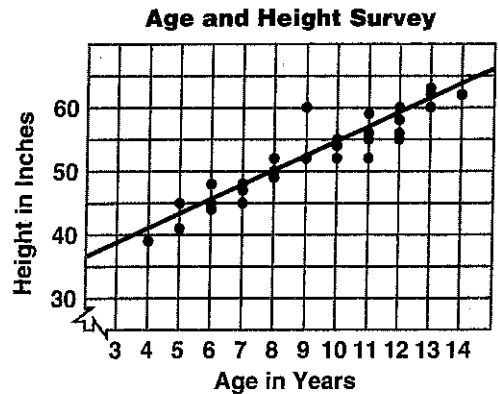
Reteaching: Scatter Plots and Trends

To make a scatter plot and find a trend for the data below:

- ① Choose a scale along each axis to represent the two sets of data.
- ② Locate the ordered pairs on the graph for the data.
- ③ Is there a trend? Do both sets of values increase? Does one decrease as the other increases? If neither occurs, there is no trend.
- ④ If there is a trend, draw a trend line that closely fits the data.

Age and Height Survey

Age (y)	Height (in.)	Age (y)	Height (in.)	Age (y)	Height (in.)
11	55	4	39	12	55
10	55	13	62	10	54
8	49	11	52	7	47
6	45	5	41	13	63
10	52	14	62	9	60
11	59	12	56	9	52
7	45	8	52	12	58
12	60	6	44	13	60
6	48	7	48	8	50
5	45	4	39	11	56



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Use the data below to complete Exercises 1–5.

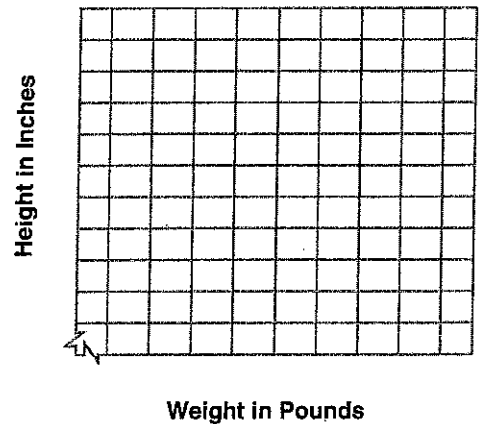
Weight (lb)	78	63	67	52	81	92	60	34	83	47	73	98	45	31	95	71	76	41
Height (in.)	56	52	55	47	58	60	50	39	58	45	54	61	45	36	60	54	56	41

1. Draw the scatter plot and a trend line.
2. Use your graph to estimate the height of a person who weighs about 90 lb.

3. Use your graph to estimate the weight of a student 51 in. tall.

4. Is there a relationship between height and weight? _____
5. Write a sentence to explain your answer to Exercise 4.

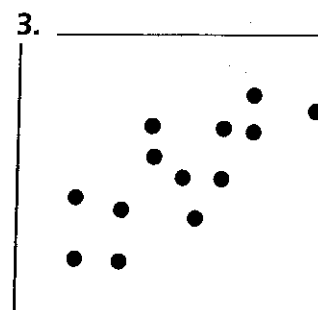
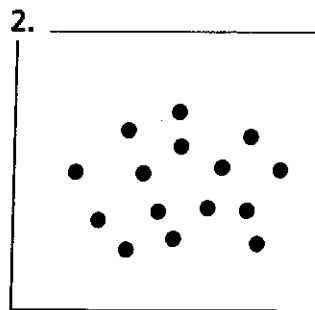
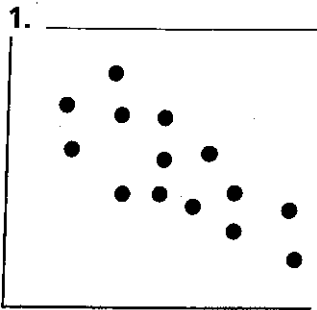
Weight and Height Survey



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Analyzing Scatter Plots

Tell whether the variables in each scatter plot are positively correlated, negatively correlated, or unrelated.



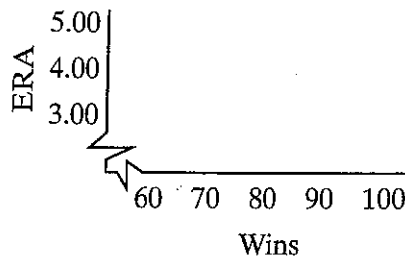
Tell whether each pair of quantities is positively correlated, negatively correlated, or not related.

4. traffic volume and commuting time _____
5. average outside temperature and amount of fuel used to heat a house _____
6. hat size and average of math test scores _____

The table below lists combined earned run average (ERA) for each team's pitching staff in 2002 and the number of games each team won during the year.

Team	ERA	Wins	Team	ERA	Wins
Anaheim	3.69	99	Montreal	3.97	83
Arizona	3.92	98	Philadelphia	4.17	80
Boston	3.75	93	St. Louis	3.70	97
Chicago	4.55	81	Seattle	4.07	93
Cleveland	4.91	74	Tampa Bay	5.21	62
Houston	4.00	84	Texas	5.15	72

7a. Make a scatter plot of the data in the table above.



b. Are the variables in your scatter plot positively correlated, negatively correlated, or unrelated? _____

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