

Lesson 1-7

Example 1 Construct a Scatter Plot

HEATING COSTS The table shows the average monthly outside temperature and the corresponding average monthly heating cost for a two story home during the fall and winter of 2000. Make a scatter plot of the data.

Temperature (°F)	58	47	34	28	38	44
Cost	\$51	\$73	\$96	\$145	\$102	\$85

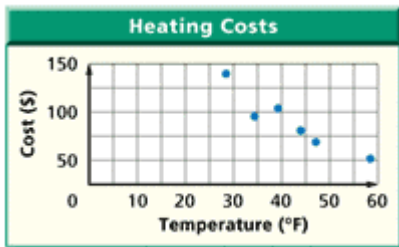
Step 1

Make a list of ordered pairs (temperature, cost).

(58, 51), (47, 73), (34, 96), (28, 145), (38, 102), (44, 85)

Step 2

Let the horizontal axis, or x -axis, represent the temperature. Let the vertical axis, or y -axis, represent the cost. Then graph the data.



Example 2 Interpret Scatter Plots

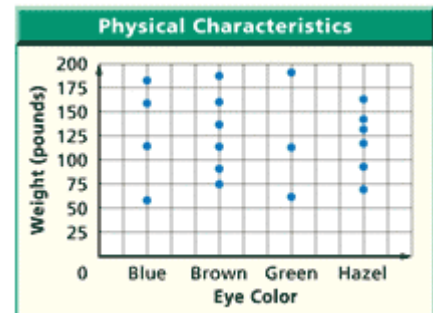
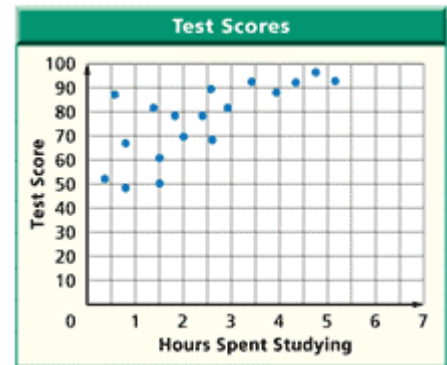
Determine whether the scatter plot for the following might show a *positive*, *negative*, or *no* relationship. Explain your answer.

- a. hours spent studying for a test and test score

As the hours spent studying increases, the test score will also increase. So, a scatter plot of the data would show a positive relationship.

- b. eye color and weight

A person's weight is not affected by their eye color. Therefore, a scatter plot of the data would show no relationship.



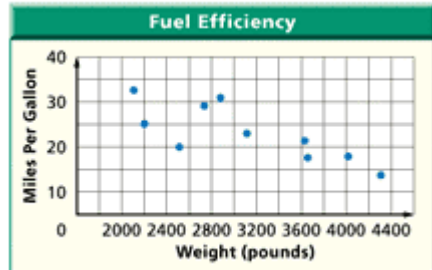
Example 3 Use Scatter Plots to Make Predictions

GAS MILEAGE A consumer products group has collected the following data on the relationship between the weight of a car and its average gas mileage. The table shows the results.

Weight (pounds)	Miles per Gallon
2750	29
3125	23
2100	33
4082	18
2690	20
3640	21
4380	14
2241	25
2895	31
3659	17

- a. **Make a scatter plot of the data.**

Let the horizontal axis represent weight, and let the vertical axis represent miles per gallon. Then graph the data.



- b. **Does the scatter plot show a relationship between the weight of a car and its gas mileage? Explain.**

As the weight of the car increases, the gas mileage decreases. So, the scatter plot shows a negative relationship.

- c. **Predict the gas mileage of a car that weighs 4500 pounds.**

By looking at the pattern in the graph, we can predict that the gas mileage of a car weighing 4500 pounds will be about 13 miles per gallon.