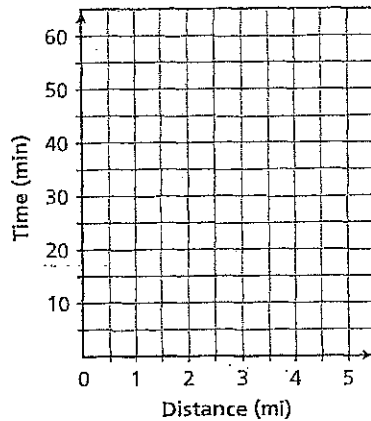# Scatter Plots and Predictions

Essential question: *How can you use a trend line to make a prediction from a scatter plot?*

When a scatter plot shows a linear association, you can use a line to model the relationship between the variables. A trend line is a straight line that comes closest to the points on a scatter plot.

1 EXPLORE   Drawing a Trend Line

Joyce is training for a 10K race. For some of her training runs, she records the distance she ran and how many minutes she ran.

Distance (mi)	Time (min)
4	38
2	25
1	7
2	16
3	26
5	55
2	20
4	45
3	31

A   Make a scatter plot of Joyce's running data.

B   To draw a trend line, use a straight edge to draw a line that has about the same number of points above and below it. Ignore any outliers.

C   Use your trend line to predict how long it would take Joyce to run 4.5 miles.

_____

REFLECT

1a. How well does your trend line fit the data?

_____

_____

1b. Do you think you can use a scatter plot that shows no association to make a prediction? Explain your answer.

_____

_____

Angela recorded the price of different number of ounces of bulk grains.
She made a scatter plot of her data. Use the scatter plot for 1–5.

1. Draw a trend line for the scatter plot.

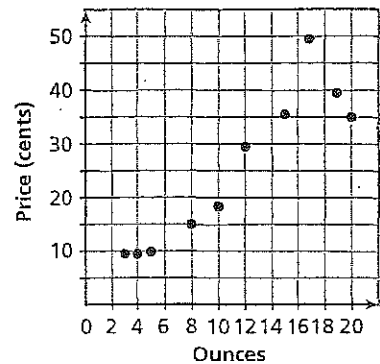2. How do you know whether your trend line is a good fit for the data?

_____

_____

_____

_____

3. Write an equation for your trend line. _____

4. Use the equation for your trend line to interpolate the price of 7 ounces.

_____

5. Use the equation for your trend line to extrapolate the price of 50 ounces.

_____

6. A scatter plot shows the relationship between a baby's length and age.
   Why might an extrapolated data point not be very accurate?

_____

_____

_____

7. **Error Analysis** Carl graphed the data shown in the scatter plot and then drew a trend line. Why is a trend line not a good fit for this data?

_____

_____

_____

_____