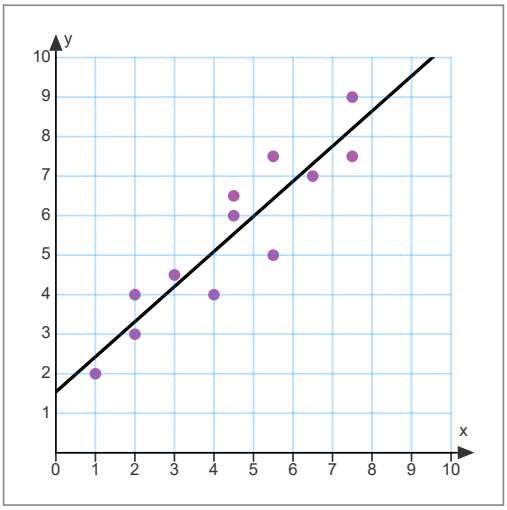
Scatter Plots and Lines of Best Fit



Learning Goal:

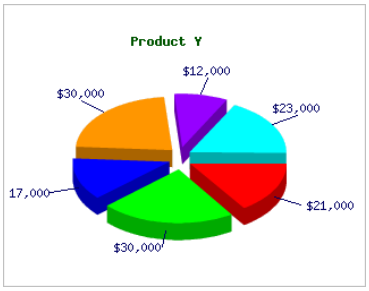
By the end of today, I will be able to plot a line of best fit on a scatter plot and use it to read information off the graph.

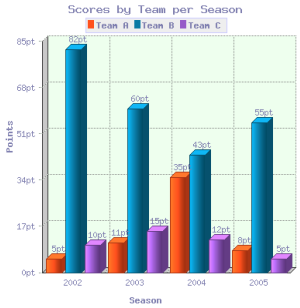
Bar graphs, pie charts, histograms, broken line graphs, etc. are methods of visually showing relationships between data.

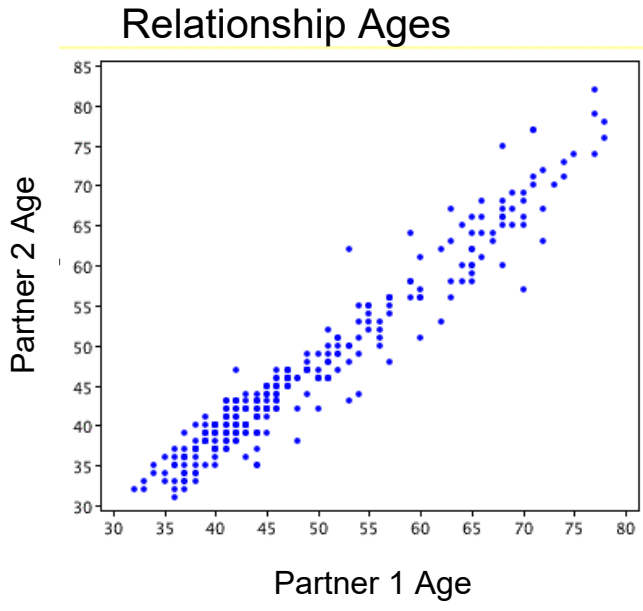
Scatter plots are another method of illustrating collected data.

Continuous Data is data that can have partial amounts, ie $3.45

Discrete Data is data that can only have whole values, ie. 2 pigs, 6 people







Scatter Plot Setup Guide

1. The Independent Variable is plotted along the bottom axis. The Dependent Variable is plotted along the vertical axis. Axis should be labelled appropriately with titles and units.

2. When setting up your axis it is wise to find the largest and smallest data entries BEFORE creating your graph. Use these two values to establish an upper and lower boundary for your axis. Its a good idea to have some extra space above and below these values. This is referred to as the RANGE of the data. Determine which quadrants the data exists within; only graph the necessary quadrant(s).

3. On your graph paper, count the number of squares available to set up each axis BEFORE creating your graph. The range of numbers found in step #2 should fit neatly into the number of squares available on the graph paper.

A guide for scale is to take the RANGE of data and divide it by the number of squares on the graph paper.

4. Double data points are usually circled to communicate that more than one piece of information is present on that point.

Line of Best Fit Guide

1. The line of best fit should have an equal number of data points above and below it, whenever possible.

2. The line of best fit DOES NOT HAVE TO GO THROUGH THE ORIGIN (0,0).

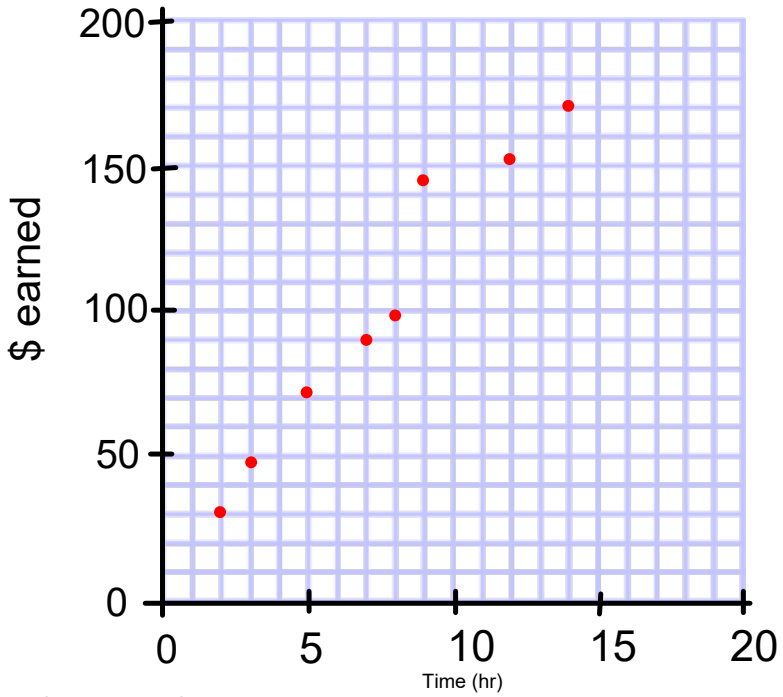
3. The equation of the Line of Best Fit is found using points found ON THE LINE (not necessarily data points).

4. The line of best fit is used to INTERPOLATE (investigate "IN" between data points) and EXTRAPOLATE (investigate "EXTRA" or Outside of your data range).

(Note; the edge of your graph is not necessarily where the "y axis" and y intercept are located.)

Bill tracked his earnings from his waitering job at a local restaurant.
Create a scatter plot for the following data.
Apply a line of best fit once the data has been plotted.

Time (hr)	$ earned
3	48
5	72
2	30
9	144
12	152
14	170
7	90
8	96



Follow the instructions page (previous).

Using Full Sentences, describe the relationship between the hours Bill worked and his income. As the number of hours worked increases, the amount of $ earned increases.

Use the Line of Best Fit to determine the amount earned when working:

(a) 5.5 hours (b) 13 hours (c) 18 hours

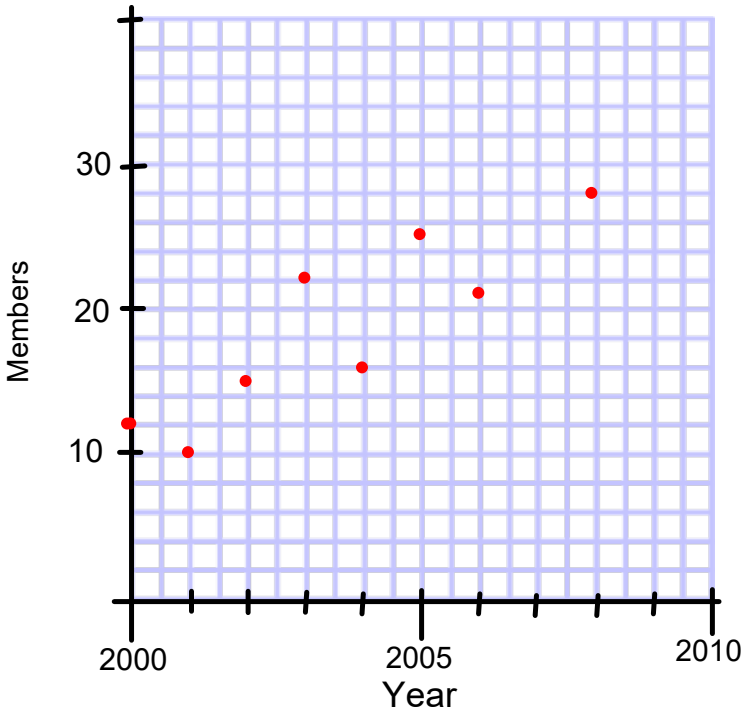
Use the Line of Best Fit to determine the amount time spent working when:

(a) $100 (b) $54 (c) $188

Determine the Equation of the Line of Best Fit.

The Rock climbing Club tracked its membership for the last few years. Create a scatter plot for the following data.
Apply a line of best fit once the data has been plotted.

Year	Members
2,000	12
2,001	10
2,002	15
2,003	22
2,004	16
2,005	25
2,006	21
2,008	28



Using Full Sentences, describe the relationship between the year and the number of members in the rock climbing club.

How many members might there have been in 2007?

How many members might there be in 2010?

What is the equation of the Line of Best Fit for this relationship?

Consolidation Questions:

Sec. 6.1, 6.2

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