9.2

Lines of Best Fit

SLOPE FORMULA

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Find the slope between the two points:

1) $(0,7)$ ***and*** $(-4,-1)$

2) $(-2,5)$ ***and*** $(9,5)$

Review: Slope-Intercept Form

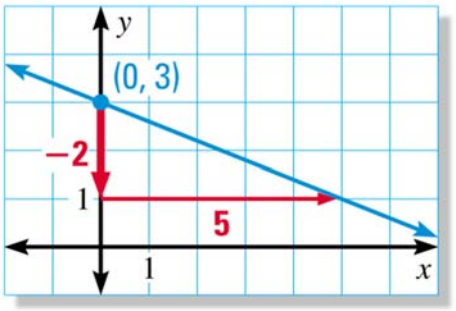
What is the equation of a line in slope-intercept form?

Example

3) Write an equation of the line with a slope of -2 and a *y*-intercept of 5.

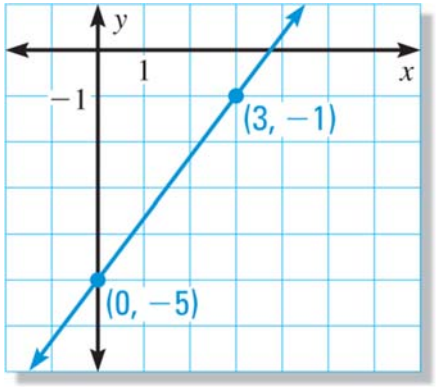
Example

4) Write an equation of the line shown.



Example

5) Write an equation of the line shown.



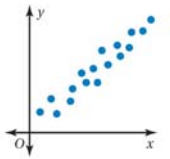
Writing an Equation of Line from Two Points

Step 1) Find the slope between the two points
Step 2) Plug the slope into slope-intercept form
Step 3) Find the y-int. using one of the two points

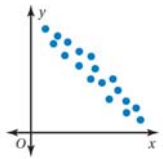
Example

6) Write an equation of the line that passes through the points (2, -1), (0, 6).

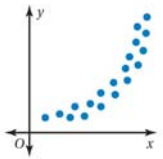
Kinds of Scatter Plots Review



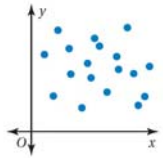
The points lie close to a line. As x increases, y increases.



The points lie close to a line. As x increases, y decreases.



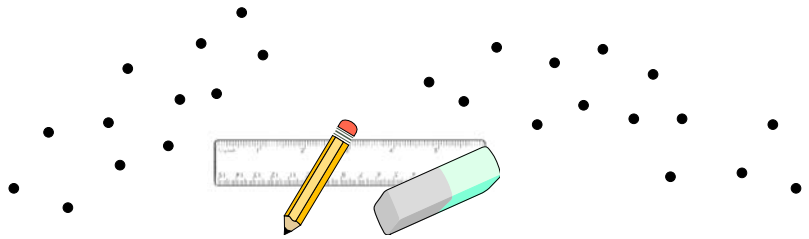
The points lie in the shape of a curve.



The points show no pattern.

Line of Best Fit

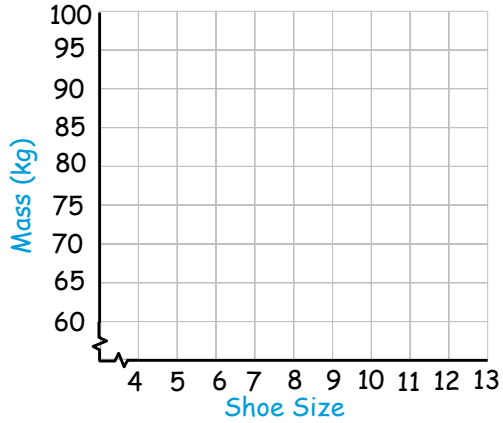
A trend line can be drawn to data that shows a correlation. The stronger the correlation between the data, the easier it is to draw the line. The line can be drawn by eye and should have roughly the same number of data points on either side.



Deriving information from a scatter plot

The table below shows the shoe size and mass of 10 men.
Plot a scatter graph for this data.

Size	5	12	7	10	10	9	8	11	6	8
Mass	65	97	68	92	78	78	76	88	74	80



For the previous scatter plot:

1) To the best of your ability, draw a trend line between the points.

2) What kind of correlation is the scatter plot?

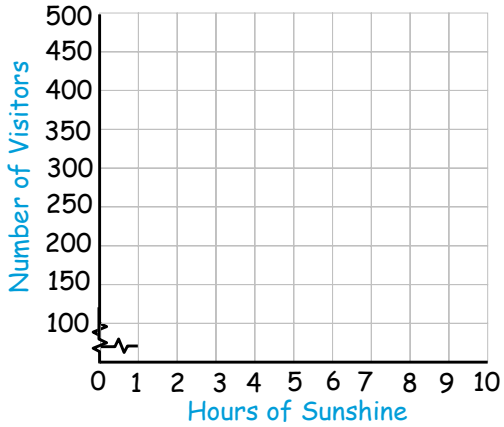
3) With the help of the trend line, estimate the mass of man with a shoe size of 10.5.

4) With the help of the trend line, estimate the shoe size of a man with a mass of 70kg.

Deriving information from a scatter plot

The table below shows the number of people who visited a museum over a 10 day period last summer together with the daily sunshine totals.
Plot a scatter graph for this data.

Hours Sunshine	6	0.5	8	3	8	10	7	5	3	2
Visitors	300	475	100	390	200	50	175	220	350	320



For the previous scatter plot:

1) To the best of your ability, draw a trend line between the points.

2) What kind of correlation is the scatter plot?

3) With the help of the trend line, estimate the number of visitors for 4 hours of sunshine .

4) With the help of the trend line, estimate the numbers of sunshine for 250 visitors.

Month, x	Depth (feet), y
0	20
1	19
2	15
3	13
4	11
5	10
6	8
7	7
8	5

The table shows the depth of a river x months after a monsoon season ends. (a) Make a scatter plot of the data and draw a line of fit. (b) Write an equation of the line of fit. (c) Interpret the slope and the y-intercept of the line of fit. (d) Predict the depth in month 9.