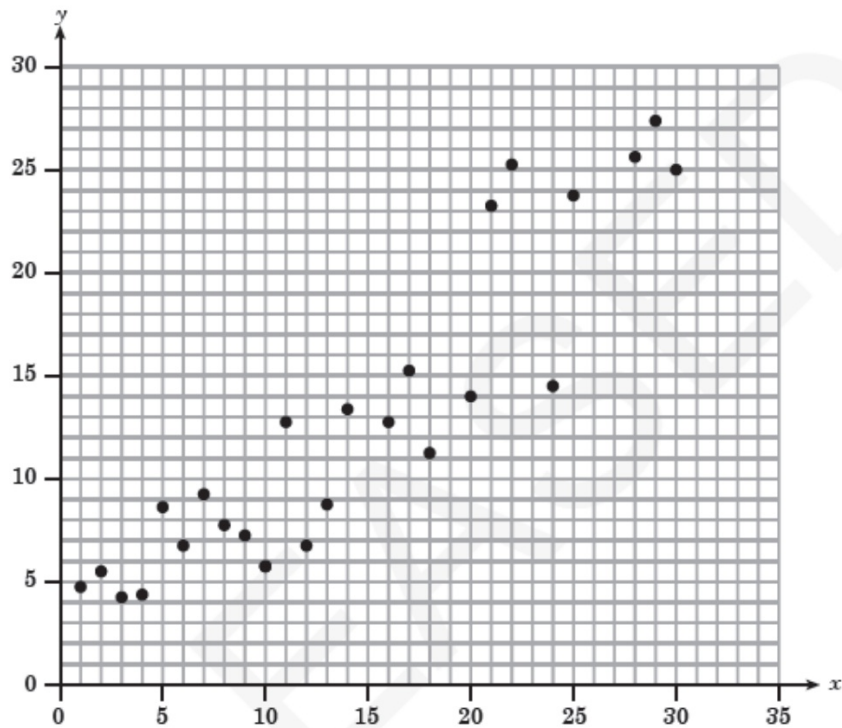
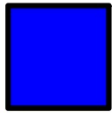


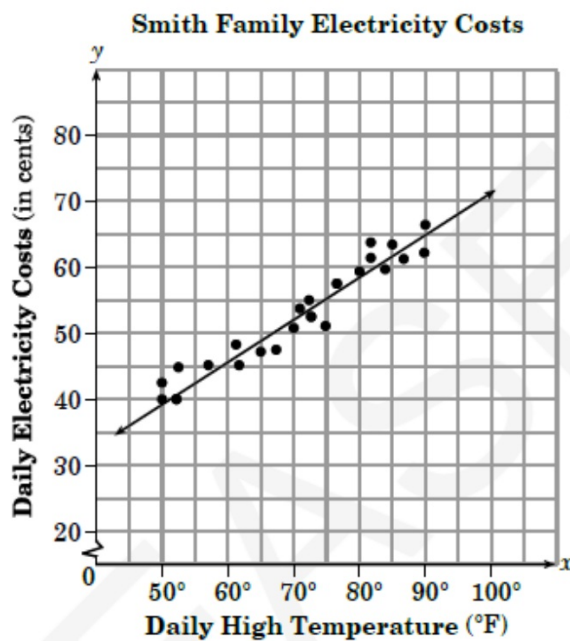
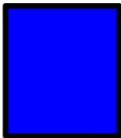
11. The data displayed represent what type of correlation?

Warm Up



- A a positive correlation where the y values are exactly predicted by the line of best fit
- ~~B~~ a negative correlation where the y values are exactly predicted by the line of best fit
- C a positive correlation where the y values are approximately predicted by the line of best fit
- ~~D~~ a negative correlation where the y values are approximately predicted by the line of best fit

12. The Smiths made a scatterplot comparing their daily electricity costs to the outside temperature.



If the high temperature on a day is 95° , *about* how much will their cost for electricity be on that day?

- A \$0.95
- B \$0.70
- C \$0.67
- D \$0.64

13. Which data will *most likely* show a negative correlation when graphed on a scatterplot?

- A the outside temperature and the number of people wearing gloves
- B the distance a student lives from school and the amount of time it takes to get to school
- C the number of visitors at an amusement park and the length of the lines for the rides
- D a student's height and grade point average

positive
positive

14. Hector's math test grades for the final quarter are 89, 93, 100, 98, and 95. He has one more test to take this quarter. All tests count equally. What is the minimum grade Hector must make on the last test in order to obtain an average of at least 93?

- A 78
- B 79
- C 83
- D 95

$$\frac{x + 89 + 93 + 100 + 98 + 95}{6} = 93$$

$$\frac{x + 475}{6} = 93$$

$$x + 475 = 558$$

$$x = 83$$

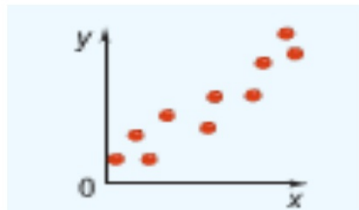
Scatter Plots and Trend Lines

A scatter plot is a graph that relates two different sets of data by displaying them as ordered pairs.

You can use scatter plots to find trends in data.

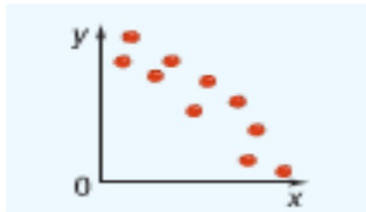
Positive
Correlation

When y tends to increase as x increases



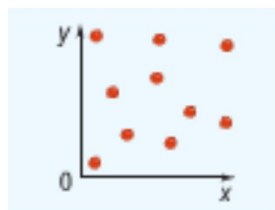
Negative
correlation

When y tends to decrease as x increases



No correlation

When x and y are not related



Making a Scatter Plot and Describing Its Correlation

Temperature The table shows the altitude of an airplane and the temperature outside the plane.

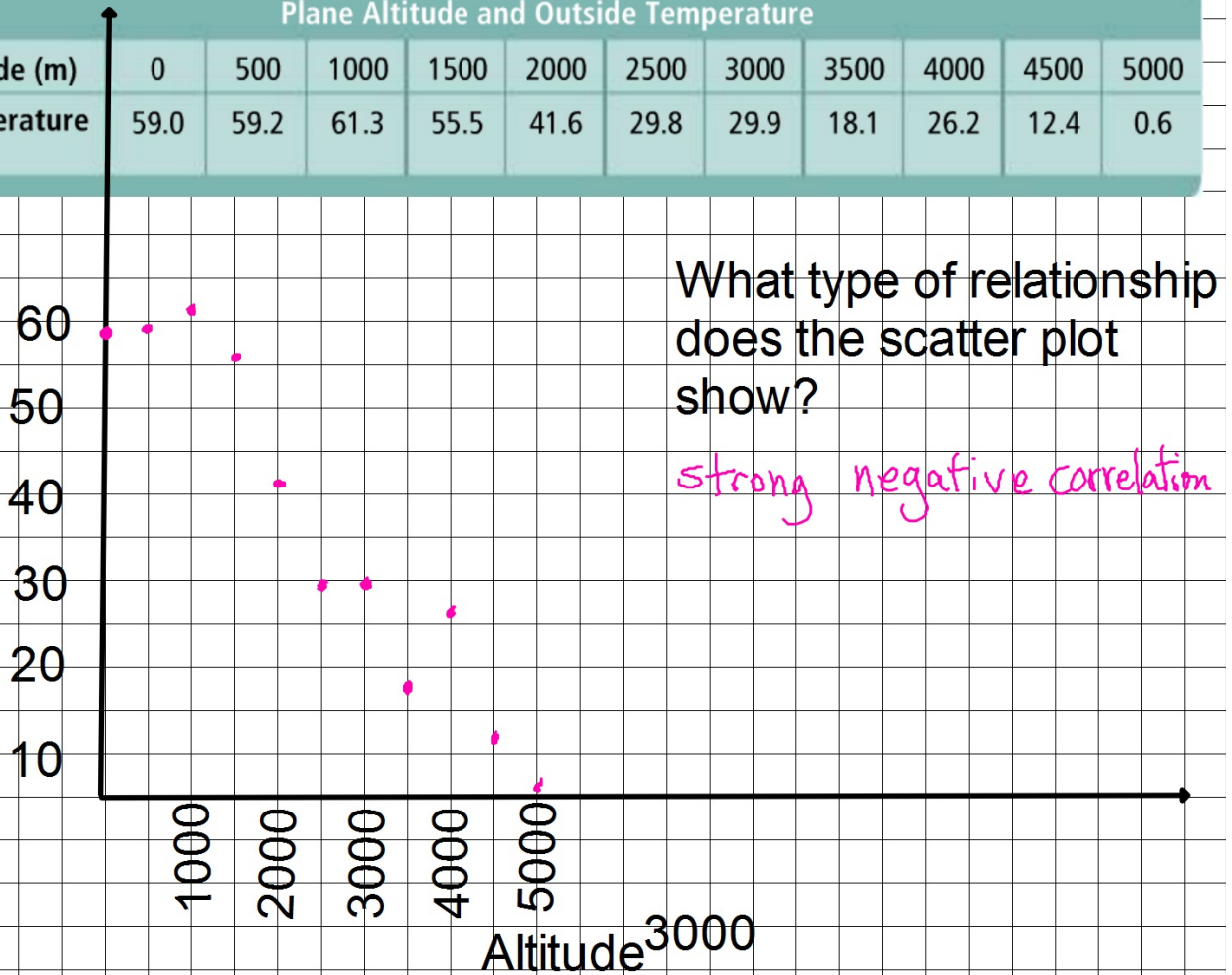
Plane Altitude and Outside Temperature											
Altitude (m)	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
Temperature (°F)	59.0	59.2	61.3	55.5	41.6	29.8	29.9	18.1	26.2	12.4	0.6

A Make a scatter plot of the data.

Treat the data as ordered pairs. For the altitude of 1500 m and the temperature of 55.5°F , plot (1500, 55.5).

Plane Altitude and Outside Temperature

Altitude (m)	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000
Temperature (°F)	59.0	59.2	61.3	55.5	41.6	29.8	29.9	18.1	26.2	12.4	0.6



Your Turn!

Do in the calculator

Make a scatter plot and determine the type of relationship.

Gasoline Purchases								
Dollars Spent	10	11	9	10	13	5	8	4
Gallons Bought	2.5	2.8	2.3	2.6	3.3	1.3	2.2	1.1

Analyzing Data

Trend Line

A line on a scatter plot, drawn near the points that show a correlation.

Interpolation

Estimating a value between two known values

Extrapolation

Predicting a value outside the range of known values.

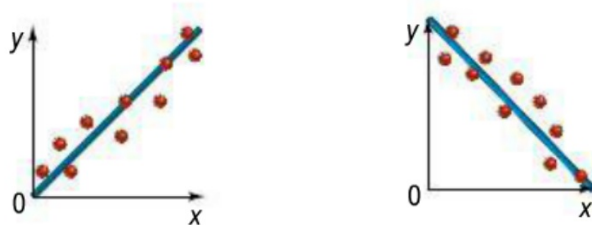
line of best fit

The trend line that shows the relationship between two sets of data most accurately

correlation coefficient

a number from -1 to 1 that tells you how closely the equation models the data. This is shown on the graphing

A **trend line** is a line on a scatter plot, drawn near the points that show a correlation.



A trend line to estimate a value between two known data values or to predict a value outside the range of known data values.

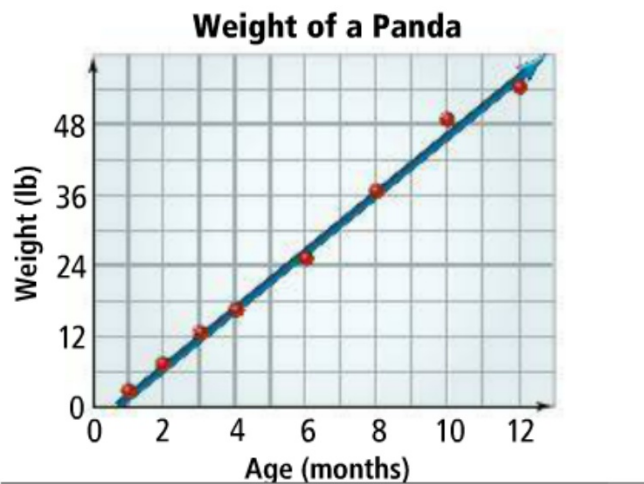
Interpolation is estimating a value between two known values

Extrapolation is predicting a value outside the range of known values.

Writing an Equation of a Trend Line Complete on Calculator

Biology Make a scatter plot of the data at the right. What is the approximate weight of a 7-month-old panda?

Step 1 Make a scatter plot and draw a trend line. Estimate the coordinates of two points on the line.



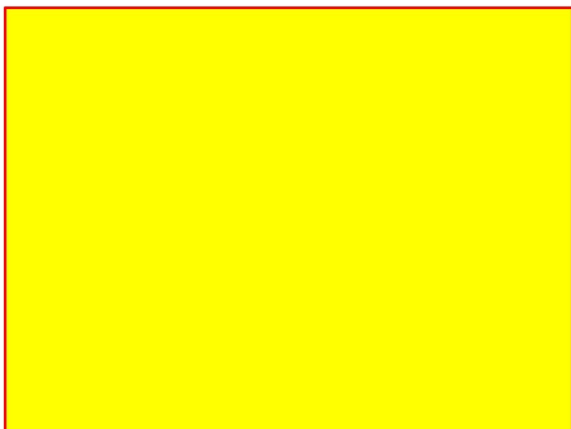
Weight of a Panda

Age (months)	Weight (lb)
1	2.5
2	7.6
3	12.5
4	17.1
6	24.3
8	37.9
10	49.2
12	54.9

Your Turn!

Make a scatter plot of the data below. Draw a trend line and write its equation. What is the approximate body length of a 7-month-old panda?

Body Length of a Panda								
Age (month)	1	2	3	4	5	6	8	9
Body Length (in.)	8.0	11.75	15.5	16.7	20.1	22.2	26.5	29.0



How to clear your calculator
TI- 83 or TI-84

2nd + 7 1 2 Enter

* You will be using this often, because anytime you enter data or graphs your calculator will save this information. You will want to clear out the information between every problem.

How to graph a scatter plot on your calculator TI-83 or 84

- 1) STAT; EDIT; ENTER
- 2) Enter x's in L1 column and y's in L2 column
- 3) 2nd STAT PLOT; ENTER
- 4) press ENTER when ON is blinking
- 5) make sure the 1st graph is selected
- 5) Graph

* If you do not see your graph then your window needs adjusted. Use the ZOOM, 9 (Zoom Stat) button.

The trend line that shows the relationship between two sets of data most accurately is called the line of best fit.

A graphing calculator computes the equation of the line of best fit by using a method called linear regression

How to graph the equation of the line of best fit

TI-83

- 1) STAT, CALC, LinReg;
- 2) L₁, L₂, (Yellow Keys)
- 3) VARS, Y-VARS, ENTER, ENTER, ENTER
- 4) Graph

How to graph the equation of the line of best fit

TI-84

- 1) STAT, CALC, LinReg
- 2) Scroll down to Store RegEQ:
- 3) VARS, Y-VARS, ENTER, ENTER
- 4) Calculate, ENTER
- 5) Graph