Algebra 1 4.6

Write equations of best-fit lines using linear regression (technology)

best-fit line – by hand

linear regression equation app

~~median-fit line :(~~

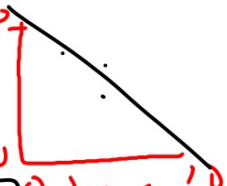
correlation coefficient (r) (decimal)

DISEASE For Exercises 3–6, use the table that shows the number of cases of mumps in the United States for the years 1995 to 1999.

U.S. Mumps Cases					
Year	1995	1996	1997	1998	1999
Cases	906	751	683	666	387

Source: Centers for Disease Control and Prevention

3. Draw a scatter plot and determine what relationship, if any, exists in the data.



$y = -112.3x + 1464.7$ mump

$r = -0.9419$

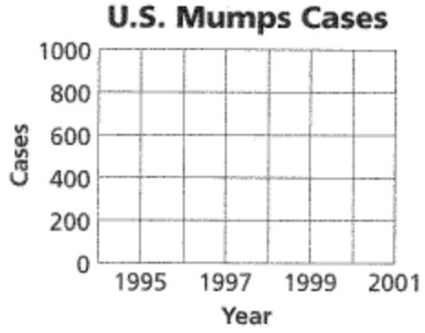
4. Draw a line of fit for the scatter plot.

mump = −112.3 (year) + 1464.7

5. ~~Write the slope-intercept form of an equation for the line of fit.~~ r =

6. Predict the number of cases in 2004.

−187.5

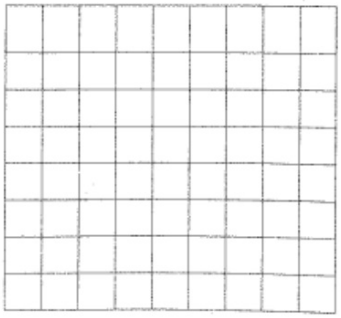


ZOOS For Exercises 7–10, use the table that shows the average and maximum longevity of various animals in captivity.

Longevity (years)								
Avg.	12	25	15	8	35	40	41	20
Max.	47	50	40	20	70	77	61	54

Source: *Walker's Mammals of the World*

7. Draw a scatter plot and determine what relationship, if any, exists in the data.



8. Draw a line of fit for the scatter plot.

9. Write the slope-intercept form of an equation for the line of fit.

10. Predict the maximum longevity for an animal with an average longevity of 33 years.

2-5 Practice

Modeling Real-World Data: Using Scatter Plots

$y = -11.1765x + 41.0588$

$r = -0.9571$

For Exercises 1–3, complete parts a–c for each set of data.

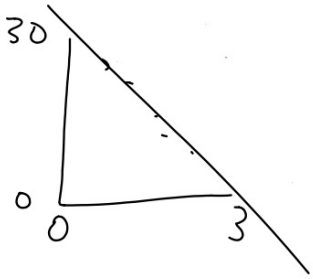
a. Draw a scatter plot.

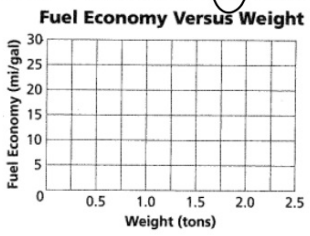
b. Use two ordered pairs to write a prediction equation.

c. Use your prediction equation to predict the missing value.

1. FUEL ECONOMY The table gives the approximate weights in tons and estimates for overall fuel economy in miles per gallon for several cars.

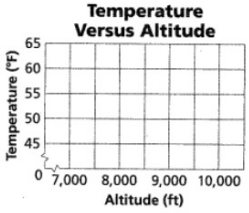
Weight (tons)	1.3	1.4	1.5	1.8	w	2.1	2.4
Miles per Gallon	29	24	23	21	19	17	15





2. ALTITUDE In most cases, temperature decreases with increasing altitude. As Anchara drives into the mountains, her car thermometer registers the temperatures (°F) shown in the table at the given altitudes (feet).

Altitude (ft)	7500	8200	8600	9200	9700	10,400	12,000
Temperature (°F)	61	58	56	53	50	46	?



3. HEALTH Alton has a treadmill that uses the time on the treadmill and the speed of walking or running to estimate the number of Calories he burns during a workout. The table gives workout times and Calories burned for several workouts.

Time (min)	18	24	30	40	42	48	52	60
Calories Burned	260	280	320	380	400	440	475	?