Name: Key

4-6 *Regression and Median-Fit Lines*
Application Practice

1. University of Georgia running back Todd Gurley ran for 1392 total yards in the 2012 season. The table below shows his cumulative total number of yards ran after select games.

Game Number	1	3	6	9	12	14
Cumulative Yards	100	276	582	864	1145	1392

Source: University of Georgia Athletics

a. Use a calculator to find an equation for the regression line showing the total yards y scored after x games.

$y = 98.31x - 10.85$

b. What is the real-world meaning of the value returned for *a*?

Number of yards (or 'm') expected to run per game.

c. What is the value of the correlation coefficient and how reliable is the regression line?

$r = .99$

Very reliable.

2. Ounces of gold are traded by large investment banks in commodity exchanges much the same way that shares of stock are traded. The table below shows the cost of a single ounce of gold on the last day of trading in given years.

Year	2002	2003	2004	2005	2006
Price	$346.70	$414.80	$438.10	$517.20	$636.30

Source: Global Financial Data

a. Use a calculator to find an equation for the regression line.

$y = 68.16x + 197.98$

b. Then predict the price of an ounce of gold on the last day of trading in 2009. Is this point an interpolation or extrapolation point? Is this a reasonable prediction? Explain.

3 ways: (1) plug in (2) graph (3) table

In 2009, an extrapolation point of about $811.42 is reasonable given the correlation coefficient.

c. Graph and analyze the residual plot for the data. Explain if the best-fit line models the data well.

Yes, because the data is scattered

3. Matt is practicing golf as part of his school's golf team. Each week he plays a full round of golf and records his total score. His scorecard after five weeks is below.

Week	1	2	3	4	5
Golf Score	112	107	108	104	98

a. Use a calculator to find an equation for the median-fit line.

$y = -2.83x + 114.67$

b. Then estimate how many games Matt will have to play to get a score of 86.

about 10

output

$86 = -2.83x + 114.67$

$-114.67 \quad -114.67$

$-28.67 = -2.83x$

$\frac{-28.67}{-2.83} = \frac{-2.83x}{-2.83}$

4. The vote totals for five of the candidates participating in Oswego East High School's student council elections and the number of hours each candidate spent campaigning are shown in the table below.

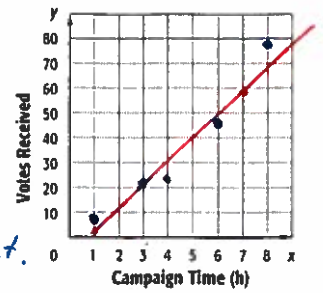
$x = 10.13$

Hours Campaigning	1	3	4	6	8
Votes Received	9	22	24	46	78

a. Use a calculator to find an equation for the median-fit line.

$y = 9.3x - 6.47$

b. Plot the data points and draw the median-fit line on the graph below.



c. Suppose a sixth candidate spends 7 hours campaigning. Is this point an interpolation or extrapolation point? Estimate how many votes that candidate could expect to receive.

Used calc → value on the graph

(7, 58.63) so, about 59 votes