



Lines of Best Fit: Writing & Interpreting Equations (page 1)

Example: The table shows the number of calories burned by a student walking around a track.

Laps Completed	1	2	3	4	5	6	7
Calories Burned	35	75	85	130	150	175	220

Part A: Construct a scatter plot. Then draw a line of best fit. *The points are plotted on the graph. A line was drawn that placed 3 points above the line and 3 points below the line.*

Part B: Write an equation in slope-intercept form for the line of best fit. *To find the equation,*

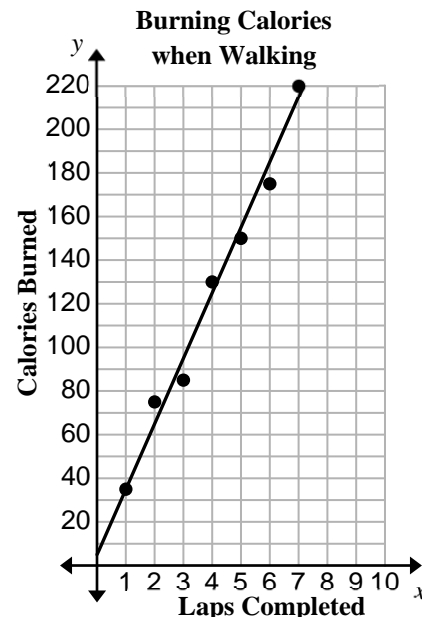
- ✓ *Identify 2 points on the graph. The line appears to go through points (1, 35) and (4, 125).*
- ✓ *Determine slope: $\frac{125-35}{4-1} = \frac{90}{3} = 30$.*
- ✓ *Plug in (x, y) you used to find slope and m (slope) to solve for the y-intercept, b:*

$$y = 30x + b$$

$$35 = 30(1) + b$$

$$5 = b$$
- ✓ *Using $y = mx + b$, we arrive at the equation*

$$y = 30x + 5$$



Part C: Interpret the slope and y-intercept. *The slope of 30 says that 30 calories are burned for every lap completed. 5 calories were burned before walking started.*

Part D: Use the equation to make a conjecture about the number of calories burned in Lap 10. *Using the equation, we get:*

$$y = 30x + 5$$

$$y = 30(10) + 5$$

$$y = 305$$

The estimate is that 305 calories will be burned on Lap 10.

Is this extrapolation or interpolation? *Extrapolation*

Extrapolation: to estimate the value of the variable outside the given data (make guesses for the future)

Interpolation allows you to estimate within a data set.

Lines of Best Fit: Writing & Interpreting Equations (page 2)

1. The table below shows the amount of time several student spent watching TV during the week and their test grades.

Hours Spent Watching TV	5	12	18	25	30	36	45
Grade (%)	79	77	60	55	43	45	26

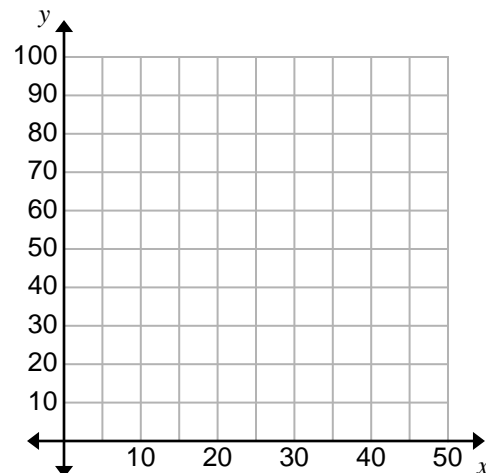
Part A: Construct a scatter plot. Label the graph. Draw a line of best fit.

Part B: Write an equation in slope-intercept form for the line of best fit.

Part C: Interpret the slope and y-intercept.

Part D: Use the graph to make a conjecture about test score if the student watched TV for 20 hr.

Is this extrapolation or interpolation?



2. The table shows the relationship between the time a student spends working out each week and his percent improvement on race times.

Time Studying (hrs)	1	2	3	3	4	4	5	5
Test Scores (%)	50	60	65	74	78	89	91	85

Part A: Construct a scatter plot. Label the graph. Draw a line of best fit.

Part B: Write an equation in slope-intercept form for the line of best fit.

Part C: Interpret the slope and y-intercept.

Part D: Use the equation to make a conjecture about the score a student will earn by studying for 6 hours. Is this extrapolation or interpolation?

