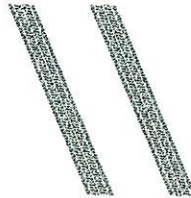


Your Turn

Police investigating traffic accidents often estimate the speed of a vehicle by measuring the length of the tire skid distance. The following table gives the average tire skid distance for an automobile with good tires on dry pavement.

Tire Skid Distance (in feet)	Speed (in miles per hour)
25	28
54	35
89	45
132	55
184	65
244	75
313	85



1. Find the linear regression equation: $y = .2004x + 25.77$

2. Estimate the speed of a vehicle with the following tire skid mark distances:

(are you finding x or y?)

a) 150 feet

$$= .2004(150) + 25.77$$

$$= 55.83 \text{ mph}$$

b) 200 feet

$$= .2004(200) + 25.77$$

$$= 65.85 \text{ mph}$$

3. Find the tire skid distance of a car travelling at the following speeds:

(are you finding x or y?)

a) 52 miles per hour

$$52 = .2004(x) + 25.77 \quad x = 130.89 \text{ ft}$$

$$26.23 = .2004x$$

b) 105 miles per hour

$$105 = .2004x + 25.77$$

$$79.23 = .2004x$$

$$395.36 = x$$

$$\text{ft}$$

Example 2

Listed below are the yearly total enrollment (number of students) figures in Loudoun County Public Schools for the last 10 years.

Year	Enrollment
0 2005	47,361
1 2006	50,478
2 2007	54,047
3 2008	57,009
4 2009	60,096
5 2010	63,220
6 2011	65,668
7 2012	68,289
8 2013	70,858
9 2014	73,461



1. What is the linear regression equation for the data above?

$$y = 2896.19x + 48015.85$$

2. Using your linear regression equation, what is the predicted enrollment for:

a. 2015 10 years = 76,977.75

b. 2018 13 years = 85,666.32

3. In what year can we expect the LCPS enrollment to surpass 95,000 students? (Hint: is "year" the x or the y?)

$$2896.19x + 48015.85 > 95000$$

$$2896.19x > 46984.15$$

$$x > 16.2 \text{ years}$$

$$17 \text{ years}$$

$$2022$$