

## Unit 4 Day 12 notes on Interpreting a Line of Fit



Create scatter plots and write equations to model data.

1. The following function represents home prices in Siesta Key, FL (in thousands of dollars) and the distance of those homes from the beach (in miles):  $y = -35x + 315$

Define the independent and dependent variables. *Be specific.*

$x = \text{distance (in miles)}$

$y = \text{cost (in thousands of \$)}$

Interpret the meaning of the slope.

$$-\frac{35}{1} = \frac{\$}{\text{mile}}$$

for every 1 mile further, costs of homes  $\downarrow$  by \$35K

Describe the correlation (positive, negative, no correlation).

as the distance from the beach  $\uparrow$ , prices of homes  $\downarrow$  (negative)

Interpret the meaning of the y-intercept.

$(0, 315)$   
 $\uparrow$  0 miles  $\uparrow$  \$315

houses on the beach cost \$315K (on average)

2. The following function represents the percent of adults married before the age of 25 in the US since the year 1980:  $y = -.61x + 36.92$

Define the independent and dependent variables. *Be specific.*

$x = \# \text{ of years since 1980}$

$y = \% \text{ of adults married before 25}$

Interpret the meaning of the slope.

$$-\frac{.61}{1} = \frac{\% \text{ adults}}{\text{years}}$$

the  $\%$  of adults who are married before 25  $\downarrow$  by .61% every year

Describe the correlation (positive, negative, no correlation).

as time goes on, the  $\%$  of adults who get married before 25  $\downarrow$  (NEGATIVE)

Interpret the meaning of the y-intercept.  $(0, 36.92)$

in 1980, 36.92% of adults under 25 were married

3. The following linear function represents the number of people who have attended Chicago's popular Old Town Art Fair over an eight-year period:  $y = 272x - 72$ .

Define the independent and dependent variables. *Be specific.*

$x = \# \text{ of years}$

$y = \# \text{ of people}$

Interpret the meaning of the slope.

$\frac{272}{1} = \frac{\# \text{ people}}{\# \text{ years}}$  every year, 272 more people attend the Old Town Art fair

Describe the correlation (positive, negative, no correlation).

as time goes on... attendance increases (positive slope!)

Interpret the meaning of the y-intercept.

the year the festival began, -72 people attended...

SAY WHAT?!? no meaning!

**Another Example:** The table below highlights the cost of a pizza (sizes vary) from three different pizza chains: Dominos, Pizza Hut, Papa John's.

Size(in)	10	12	14	16	10	12	12	14
Cost(\$)	7.99	9.69	11.69	13.69	8.00	10.00	10.95	12.95



a) Identify the independent and dependent variables.

Independent: Size of pizza

Dependent: Cost of pizza

b) Label your axes and then make a scatter plot.

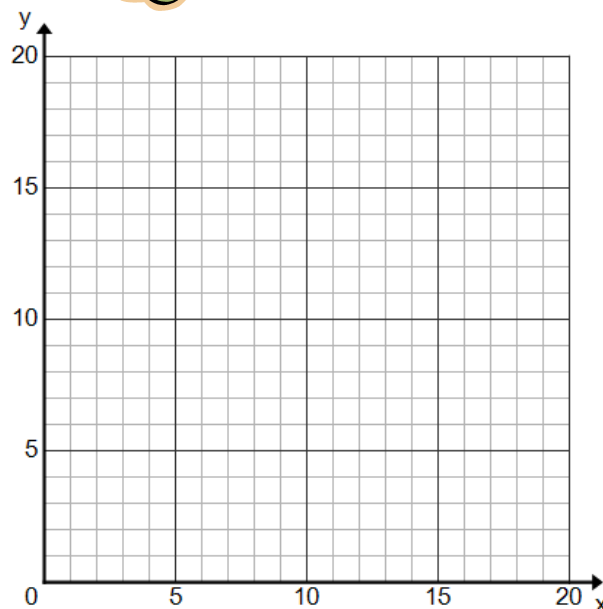
c) Describe the correlation of the data:

As the size of the pizza increases, the cost of the pizza increases.

d) Using (10, 7.99) and (14, 12.95), write an equation of a line of fit.

$$m = \frac{12.95 - 7.99}{14 - 10} = 1.24$$

$$y - 7.99 = 1.24(x - 10) \quad \text{OR} \quad y = 1.24x - 4.41$$



e) Explain the meaning of the y-intercept.

Cost of the pizza with a diameter of zero inches (means nothing in the real world)

f) Explain the meaning of the slope.

For every inch the pizza increases, the cost of the pizza increases \$1.24

g) If you wanted to buy a 20 in pizza, what would the cost of the pizza be?

$$y = 1.24(20) - 4.41$$

$$\$20.39$$

h) If you spent \$11.71, what size pizza did you buy?

$$11.71 = 1.24x - 4.41$$

$$x = \boxed{13 \text{ in pizza}}$$