

1. A quart (32 ounces) of milk costs \$2.19; a gallon of milk costs \$7.69. (\*\*There are four quarts in a gallon)

a. Identify the independent and dependent variables.

Ind. Var of milk

Dep. Cost

b. Write the linear equation for this relationship.

$$y = .06x + .36$$

(32, 2.19)

(128, 7.69)

c. What is the meaning of the slope?

$\frac{.06}{\#}$  is the cost for every 1  $\frac{oz}{x}$

d. What is the meaning of the y-intercept? Why isn't it zero?

.36 is the cost when number of oz is 0.

e. Using the linear model you created, how much should you pay for a half-gallon of milk?

How much should you pay for a pint (16 ounces)?

How much should you pay for two liters (1 liter=33.8 ounces)?

$$y = .06(16) + .36 = 1.32$$

$$y = .06(33.8 \cdot 2) + .36 = 4.42$$

f. How many ounces of milk can I buy with \$15.43?

$$15.43 = .06x + .36$$

$$x \approx 251 \text{ oz}$$

3. Mr Morton is very old. In ~~1992~~<sup>0</sup>, he was born weighing 9 pounds. Now he weighs 200 pounds.

a. Determine the independent and dependent variables.

Ind: Age

Dep. Weight

b. Write an equation for the relationship between his weight and age.  $(0, 9)$   $(27, 200)$

$$y = 7.07x + 9$$

c. Why isn't the y-intercept zero? What does the y-intercept mean?

9 is the weight when age is 0.

d. Using the model, how much do you think he'll weigh in 2022? Is this realistic?   
 He weighed something @ birth?

$$y = 7.07(30) + 9 = 221 \text{ pounds yes}$$

How much does he weigh in 1988? Explain.

$$y = 7.07(-4) + 9 = -19.28$$

You cannot use regression for time before data.

4. Miss Beehive has produced 520 pounds of honey from her bees. She uses 2 pounds of honey in every jar she sells at the Farmer's Market.

Round to the nearest hundredth.

For numbers 1-6: The table to the right provides information about diamonds. The price of a diamond depends upon diamonds size (cartage).

Cartage	Price (\$)
0.17	355
0.16	328
0.17	350
0.25	642
0.16	342
0.15	322
0.19	455
0.21	483
0.15	323
0.18	432
0.28	773
0.16	336
0.2	478
0.23	595

1. What is the dependent variable? *Ind Cartage Price*
2. Find the equation for the best-fit line.

$$y = 3491.75x - 219.57$$

3. What is the meaning of the slope?

*3491.75 for every 1 cartage*

4. Use your equation to predict the price of a diamond weighing 0.37 carats.

$$3491.75(0.37) - 219.57 = 1072.38$$

5. If a diamond costs \$1525, estimate the diamond's size.

$$1525 = 3491.75x - 219.57$$

6. Use your equation to find the residual for 0.21 carats. What does this number mean?

Residual: \_\_\_\_\_

Meaning: \_\_\_\_\_

For numbers 7-11: In 2000, Claire Annette was hired at Cisco with a salary of \$48,000 per year. By 2006, her annual salary had increased to \$66,300. Assume that her salary increases linearly.

7. Write the information above as a set of ordered pairs. Be careful to think about which variable is independent and which is dependent!

*(0, 48000) and (6, 66300)*

8. Find an equation that relates her annual salary and the number of years that she has worked for Cisco.

$$y = 3050x + 48000$$

9. What does the slope represent?

*\$3050 in salary for every 1 year*

10. What does the y-intercept represent?

*48000 in salary when year is 0.*

11. What will be her annual salary in 2012?

*84,600*