3.5 Notes
Day 7

MORE LINEAR MODELS

THE CANDY PROBLEM

1. At your favorite candy store, you can buy 30-ounce bags of a certain kind of candy for \$1.83 and 20-ounce bags for \$1.57. Assume that the cost of the candy varies linearly with the number of ounces.

Define the variables:

x = # of oz of candy

y = cost

Set-up the ordered pairs

(30, 1.83)

(20, 1.57)

a. Write the particular equation, expressing cost in terms of ounces.

$$m = \frac{1.83 - 1.57}{30 - 20} = \frac{.26}{10} = .026$$

$$y - 1.57 = .026(x - 20)$$

$$y - 1.57 = .026x - .52$$

$$\boxed{y = .026x + 1.05}$$

b. You saw a 45-ounce bag that cost \$2.49. Is the bag over-prices or under-priced? EXPLAIN.

$x = 45$

$y = .026(45) + 1.05$

$y = 2.22$

A 45 oz bag should cost only \$2.22, so it is overpriced!

c. Suppose a "snack-sized" bag was priced at \$1.25. How many ounces of candy would you expect to get?

$y = 1.25$

$1.25 = .026x + 1.05$

$.20 = .026x$

$x = 7.69$

About 7.7 oz of candy.

d. What are the units of slope? What does the number mean in the real world?

$\frac{\text{price}}{\text{\# of oz}}$ → This is the amount you pay (\$.026 or 2.6¢) for every additional ounce of candy.

e. Find the intercepts and tell what they mean in the real world.

x int: let $y=0$

$y = .026x + 1.05$

$0 = .026x + 1.05$

$x = -40.38$ $(-40.38, 0)$

At -40.38 oz of candy, I pay \$0. This makes no sense in the real world. It is irrelevant.

y int: let $x=0$

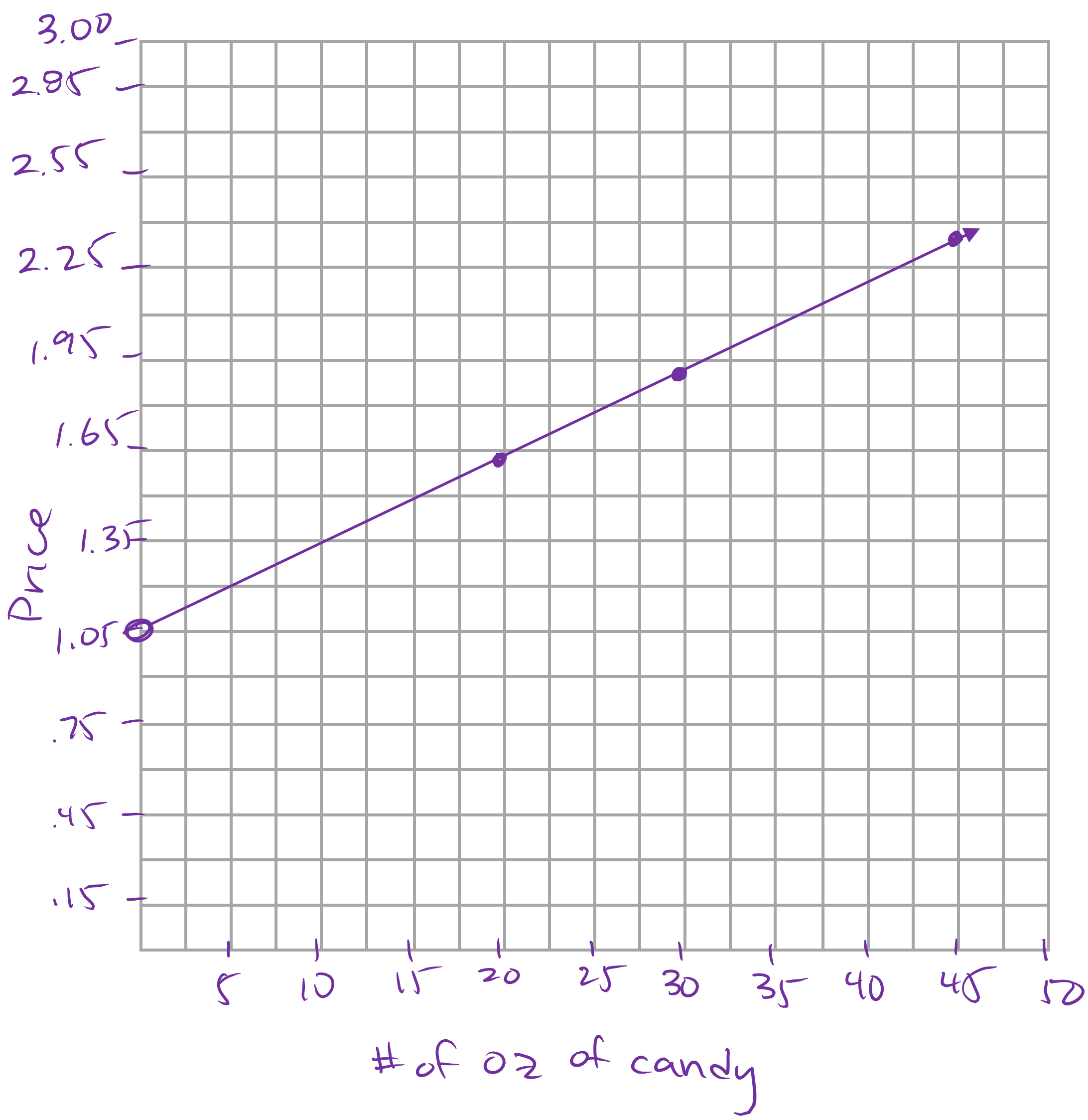
$y = .026(0) + 1.05$

$y = 1.05$

$(0, 1.05)$

At 0 oz, you pay \$1.05. So it's probably the cost of packaging.

f. Sketch a graph of this linear function.



(0, 1.05)

(45, 2.22)

(20, 1.53)

(30, 1.87)