Name: KEY

Parts of an Equation

1. Savannah is interviewing for a sales job for a company that makes swimming pools. She knows this company pays everyone its sales team a base salary plus a commission based on how much they each sell. During the interview, the company tells her she can earn a lot if she does well. For example, if she sells 60 pools in a year, she'll make $67,000. If she sells 90 pools in a year, she'll make $88,000. Write a linear function to estimate how much Savannah will earn based on how many pools she sells.

Slope: 700

$$\frac{88,000 - 67,000}{90 - 60} = \frac{21,000}{30} = 700$$

Y-Intercept: 25,000

$88,000 = 700(90) + b$

$88,000 = 63,000 + b$

$25000 = b$

X-Intercept: -35.71

Set equation equal to zero

$0 = 25,000 + 700x$

$-25,000 = 700x$

Equation: $y = 25,000 + 700x$ Should be written $y = 700x + 25000$

2. Casey baked 60 cookies. Two days later, 36 were left. Assuming people keep eating cookies at about the same rate, write a linear function to estimate how many cookies will be left over time.

Slope: -12 / 12

$60 - 36 = 24 / 12 = 12$

can be positive or negative depending on how you write the equation

Y-Intercept: 60 / -60

X-Intercept: 5 → answer question

$0 = 12x - 60$

$60 = 12x$

Equation: $y = -12x + 60$

$y = 12x - 60$

these are the two equations you could write to represent word problem

most logical equation

3. Ashley recorded her own tracks, then made an album. Her cousin works for a company where new musicians can sell their albums. He tells her that if she charges $15 for the album, it will probably sell 70 copies a day. If she charges $8 for the album, he thinks it will sell 210 copies per day. He tells her that should give her an idea of how many copies she can expect to sell no matter how much she charges for the album. Write a linear function to model this situation for her.

Slope: -20

$\frac{210-70}{8-15} = \frac{140}{-7} = -20$

Y-Intercept: 370

$210 = -20(8) + b$

$210 = -160 + b$

$370 = b$

X-Intercept: 18.5

$0 = -20x + 370$

$-370 = -20x$

Equation: $y = -20x + 370$

4. A medium soda holds about 21 ounces, while a large holds about 30 ounces. You're curious to know what a *really* big soda would cost--say a two gallon, 128 ounce soda. Let's say a medium costs $1.05, a large costs $1.50, and the cost of a soda increases steadily based on volume. Write an equation that would let you predict how much a soda of any size would cost.

Slope: 20

$\frac{30-21}{1.50-1.05} = \frac{9}{.45} = 20$

Y-Intercept: 0

$30 = 20(1.50) + b$

$30 = 30 + b$

$0 = b$

X-Intercept: 0

$0 = 20x$

Equation: $y = 20x$

5. A taxi charges $9 for a 2 mile ride, $16 for a 4 mile ride, etc. Presuming the taxi charges a consistent rate per mile, write an equation representing how much a ride will cost based on how far you go.

Slope: 3.5

$\frac{16-9}{4-2} = \frac{7}{2} = 3.5$

Y-Intercept: 2

$16 = 3.5(4)+b$

$16 = 14+b$

$2 = b$

X-Intercept: -.57

$0 = 3.5x+2$

$-2 = 3.5x$

Equation: $y = 3.5x+2$

6. Around the world, people typically measure temperature on two different scales--the Fahrenheit scale and the Celsius scale. Water freezes at 0° Celsius and boils at 100° Celsius. On the Fahrenheit scale, water freezes at 32° and boils at 212°. Given that there's a linear relationship between the Fahrenheit and Celsius scales, construct a linear model that lets you convert from one scale to the other.

Slope: 1.8

$\frac{212-32}{100-0} = \frac{180}{100} = 1.8$

Y-Intercept: 32

$212 = 1.8(100)+b$

$212 = 180+b$

$32 = b$

X-Intercept: -17.78

$0 = 1.8x+32$

$-32 = 1.8x$

Equation: $y = 1.8x+32$

↑ Not on test but basically your Fahrenheit becomes your Y cordinates and Celcius becomes your X cordinates