Point Slope Word Problems

1) You are an avid coin collector. You decide to start keeping better track of your coin collection: After 15 days you count and find out you have 155 coins. After 22 days you have a total of 218 coins.

A) Write an equation in POINT-SLOPE form that represents this situation (define your variables)

$$m = \frac{\Delta y}{\Delta x} = \frac{Coins}{day}$$

$(15, 155)$
$(22, 218)$

$(days, coins)$

$$m = \frac{218-155}{22-15} = \frac{63}{7} = 9$$

$$\boxed{y - 155 = 9(x - 15)}$$

B) Convert your equation to Slope-Intercept form

$$y - 155 = 9x - 135$$

$$\boxed{y = 9x + 20}$$

C) What does your Slope represent?

How many coins you collect per day.

D) How many Coins did you start with?

you started with 20 coins

E) After how many days would you have 425 coins?

$$425 = 9x + 20$$
$$405 = 9x$$
$$45 = x$$

you would have 425 coins after 45 days

2) You figured out that you could make $50 per pool to clean pools during the summer. You did, however, need to purchase some equipment to get started. After cleaning 3 pools you still were down a total of 15 dollars.

A. Write an equation in POINT SLOPE form that represents this situation

$$m = \frac{\$}{pool} = \frac{\$50}{1\ pool}$$

$(\#\ of\ pools, \$)$
$(3, -15)$

$$\boxed{y + 15 = 50(x - 3)}$$

B. Convert your equation into SLOPE INTERCEPT form:

$$y + 15 = 50x - 150$$

$$y = 50x - 165$$

C. What does the y-intercept represent? → The money to purchase the equipment to clean pools ☺

D. How much money will you have made after cleaning 12 pools.

$$y = 50(12) - 165$$
$$y = 435$$

Extra Practice (if you need it)

14. A zoo keeper things there is a problem with the Naked Mole-Rat population at the zoo. He starts keeping track of the animals in the tunnels. 7 days into his monitoring he counts 120 mole rats, 13 days in he counts 108.

A) Write an equation in POINT-SLOPE form that represents this situation (define your variables)

$$m = \frac{\Delta y}{\Delta x} = \frac{mole\ rats}{day}$$

(days, molerats)
(7, 120)
(13, 108)

$$m = \frac{120 - 108}{7 - 13} = \frac{12}{-6} = -2$$

$$\boxed{y - 120 = -2(x - 7)}$$

B) Convert your equation to Slope-Intercept form

$$y - 120 = -2x + 14$$
$$\boxed{y = -2x + 134}$$

C) What does your Slope represent?

The molerats are decreasing by 2 per day

D) If nothing changes, how many days will go by before the mole-rats are gone?

$$0 = -2x + 134$$
$$-134 = -2x$$
$$x = 67\ days$$

E) How many Mole-Rats where there when he started monitoring?

$$y = -2(0) + 134$$
$$y = 134\ molerats$$