Warm Up 11/8/18

1. Andre's car was bought for $35,000 in ~~2013~~ 0. Today it is worth $20,000. Write an equation to represent the total value of the car.

~~5~~

(0, 35000)
(5, 20,000)

$$\frac{20000-35000}{5-0} = \frac{-15000}{5} = -3000$$

$m = -3000$

$b = 35000$

$y = -3000x + 35000$

2. Write the equation of the line that has an x-intercept of -6 and y-intercept of 12.

(0, 12)
(-6, 0)

$$m = \frac{0-12}{-6-0} = \frac{-12}{-6} = 2$$

$m = 2$

$b = 12$

$y = 2x + 12$

Arithmetic Sequences

Finding the n^{th} term

Main Ideas/Questions	Notes
Arithmetic Sequence	A sequence in which the difference between any 2 consecutive terms is constant
Common Difference	The numerical difference, d, between any 2 consecutive terms
Identifying an Arithmetic Sequence	*Determine whether the sequences are arithmetic sequences. If yes, identify the common difference.* **1.** 1, 5, 9, 13, ... yes d=4 **2.** 1, 3, 5, 8, ... NO **3.** 8, 6, 4, 2, ... yes d=-2 **4.** -5, -8, -11, -14, ... yes d=-3 **5.** 5, 10, 20, 40, ... NO **6.** 7, 6, 5, 4, ... yes d=-1
Continuing Arithmetic Sequences	*Given the arithmetic sequence, find the next three terms.* **7.** 9, 13, 17, 21, 25, 29, 33 d=4 **8.** 5, 2, -1, -4, -7, -10, -13 d=-3 **9.** -8, -2, 4, 10, 16, 22, 28 d=6

Arithmetic Sequence Formula	The n^{th} term of an arithmetic sequence can be found using the following formula: $a_n = d(n-1)+a_1$ n = term # d = common difference a_1 = 1st term in the sequence	
Examples **Write the rule for the nth term, then find a_{19}.**	**10.** 7, 13, 19, 25, ... $a_n = 6(n-1)+7$ $a_n = 6n-6+7$ $a_n = 6n+1$ $a_{19} = 6(19)+1$ 115	**11.** 30, 26, 22, 18,... $a_n = -4(n-1)+30$ $a_n = -4n+4+30$ $a_n = -4n+34$ $a_{19} = -4(19)+34$ -42

Main Ideas/Questions	Notes	
	12. -11, -8, -5, -2 ...	**13.** -2, 0, 2, 4, ...
	14. -16, -21, -26, -31, ...	**15.** 101, 92, 83, 74, ...

Real Life Applications

16. You visit the Grand Canyon and drop a penny off the edge of the cliff. The distance the penny will fall is 16 feet for the first second, 48 feet the next second, 80 feet the third second, and so on.

16, 48, 80...

a. Write a formula to represent this sequence.

$d = 32$ $a_n = 32(n-1)+16$

$a_n = 32n - 32 + 16$

$a_n = 32n - 16$

b. How far will the penny have traveled after 6 seconds?

$a_6 = 32(6) - 16$ 176 ft

17. The total bank loan for Sarah's new car is $15,265. The bank automatically withdraws $295.80 each month to pay off the car.

a. Write a formula to represent this sequence.

$d = -295.80$

$a_1 = 15265$

$a_n = -295.80(n-1)+15265$

$a_n = 295.80n + 295.80 + 15265$

$a_n = -295.8n + 15560.80$

b. What will be the balance of the loan after 2 years?

$a_{24} = -295.8(24) + 15560.80$

$8461.60