Name: Key

Date: _____ Per: _____

Unit 3: Relations and Functions

Homework 6: Arithmetic Sequences

Determine whether each sequence is an arithmetic sequence. If yes, identify the common difference.

1. 4, 7, 9, 12, ... d=3 No

2. 15, 13, 11, 9, ... d=-2 yes

3. 7, 10, 13, 16, ... d=3 yes

4. -6, -5, -3, -1, ... No

5. -13, -6, 1, 8, ... d=7 yes

6. -9, -14, -19, -24, ... d=-14--9=-5 yes

Determine whether each sequence is an arithmetic sequence. If yes, identify the common difference.

7. 3, 7, 11, 15, 19, 23, 27

8. 22, 20, 18, 16, 14, 12, 10

9. -13, -11, -9, -7, -5, -3, -1

10. -2, -5, -8, -11, -14, -17, -20

Write an equation to find the n^{th} term of each sequence. Then find a_{24}

11. 1, 3, 5, 7, ...
d = 3-1 = 2
$a_n = 1+2(n-1)$
$a_n = 1+2n-2$
$a_n = 2n-1$
$a_{24} = 2(24)-1$
$a_{24} = 47$

12. -1, -4, -7, -10, ...
d = -4--1 = -3
$a_n = -1+-3(n-1)$
$a_n = -1-3n+3$
$a_n = -3n+2$
$a_{24} = -3(24)+2$
$a_{24} = -70$

13. -4, -9, -14, -19, ...
d = -9--4 = -5
$a_n = -4+-5(n-1)$
$a_n = -4-5n+5$
$a_n = -5n+1$
$a_{24} = -5(24)+1$
$a_{24} = -119$

14. 7, 13, 19, 25, ...
d = 13-7 = 6
$a_n = 7+6(n-1)$
$a_n = 7+6n-6$
$a_n = 6n+1$
$a_{24} = 6(24)+1$
$a_{24} = 145$

15. Charlie deposited $115 in a savings account. Each week thereafter, he deposits $35 into the account. +35, 150 115, 150

a. Write a formula to represent this sequence.
$a_1 = 115$ $d = 35$
$a_n = 115+35(n-1)$
$a_n = 115+35n-35$
$a_n = 35n+80$

b. How much total money has Charlie deposited after 30 weeks?
$a_n = 35n+80$
$a_{30} = 35(30)+80$
$a_{30} = \$1130$

16. As manager of the soccer team, Wendy is to hand out cups of water at practice. Each cup of water is 4 ounces. She begins practice with a 128-ounce cooler of water.

a. Write a formula to represent this sequence.
a_1 128 $d = -4$
$a_n = 128-4(n-1)$
$a_n = 128-4n+4$
$a_n = -4n+132$

b. How much water is remaining after she hands out the 14th cup?
$a_n = -4n+128$
$a_{14} = -4(14)+128$
$a_{14} = 72$ oz (76)

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