Section 3.5: Arithmetic Sequences
Practice Worksheet
Honors Algebra I

Name: Key

Date: _____

termine whether each sequences is an arithmetic sequence.

1. $0, 2, 5, 9, 14, \ldots$

No

-Not increasing by constant

2. $37, 34, 31, 28, \ldots$

$-3 \quad -3 \quad -3$

Yes

$d = -3$

3. $-\frac{1}{3}, -\frac{17}{6}, -\frac{16}{3}, \ldots$

$-2\frac{1}{2} \quad -2\frac{1}{2}$

Yes

Find the next three terms of each arithmetic sequence.

4. $10, 13, 16, 19, \ldots$

$d = 3$

22, 25, 28

5. $-14, -19, -24, \ldots$

$-5 \quad -5$

$-29, -34, -39$

6. $\frac{3}{5}, \frac{7}{10}, \frac{4}{5}, \ldots$ $\quad d = \frac{1}{10}$

$\frac{6}{10}, \frac{7}{10}, \frac{8}{10}$

$\frac{9}{10}, 1, \frac{11}{10}$

Determine the explicit formula and find the term indicated.

7. $3, 7, 11, 15, \ldots$

$d = 4$

$a_n = 3 + 4(n-1)$

$a_n = 4n - 1$

$a_{38} = 4(38) - 1 = 151$

38th term

8. $-5, -7, -9, \ldots$

$d = -2$

$a_n = -5 - 2(n-1)$

$a_n = -2n - 3$

$a_{71} = -2(71) - 3 = -145$

71st term

9. $\frac{2}{9}, \frac{5}{9}, \frac{8}{9}, \ldots$

$d = \frac{3}{9}$

$a_n = \frac{2}{9} + \frac{3}{9}(n-1)$ $\quad \frac{72}{9} - \frac{1}{9}$

$a_n = \frac{1}{3}n - \frac{1}{9}$

24th term

$a_{24} = \frac{1}{3}(24) - \frac{1}{9}$ $\quad 8$

$a_{24} = \frac{71}{9}$

*10. An arithmetic sequence has a common difference of $-4$ and its 37th term is 10. Find the first term.

$d = -4 \quad a_{37} = 10$

$a_1 = 154$

$10 = a_1 - 4(37-1)$

$10 = a_1 - 4(36)$

$10 = a_1 - 144$

***11. How many total terms are there in the following sequence? (challenge)**

$7, 10, 13, \ldots, 391, 394$

$+3 \quad +3$

$a_1 = 7 \quad d = 3 \quad a_n = 394$

$394 = 7 + 3(n-1)$

$394 = 7 + 3n - 3$

$394 = 3n + 4$

$390 = 3n$

$n = 130$

130 terms

⋆13. Write an equation in terms of y and x to represent the sequence 4, 8, 12, ...
(Hint: Use the arithmetic sequence formula, then replace $a_n$ with y and n with x).

$a_1 = 4$

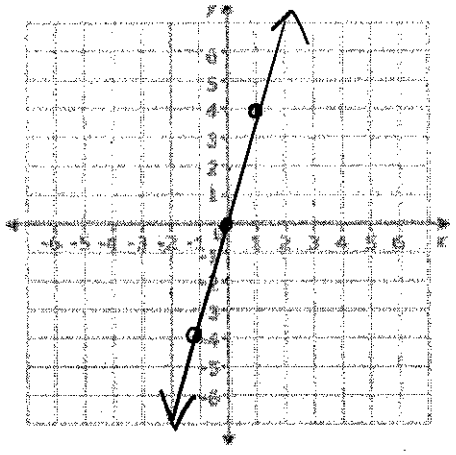
$d = 4$

$a_1 = 4 \quad d = 4$

$a_n = 4 + 4(n-1)$

$a_n = 4 + 4n - 4$

$a_n = 4n$



Explicit Formula: $a_n = 4n$

Slope intercept form of equation: $y = 4x$

14. Zariah's 100 meter dash times for her first four races were 14 seconds, 13.4 seconds, 12.8 seconds, and 12.2 seconds.

14, 13.4, 12.8, 12.2, ...

i) Assuming race times will decrease at the same rate. Write an equation for the arithmetic sequence (Hint: find $a_1$ and d first.)

$a_1 = 14$

$d = -0.6$

$a_n = 14 - 0.6(n-1)$

$a_n = 14 - 0.6n + 0.6$

$a_n = -0.6n + 14.6$

ii) What will the time for her 12th race be?

$a_{12} = -0.6(12) + 14.6$

$a_{12} = 7.4$ seconds

⋆iii) When will she have a time of 11 seconds for the 100 meter dash?

$11 = -0.6n + 14.6$

$6 = n$

The 6th race