Math 1

2-2 Review

Name KEY

Learning goals:

- I can convert a sequence into a recursive or explicit formula.
- I can use a formula to find missing terms in a sequence.
- I can determine the common difference/ratio from a sequence.
- I can compare properties of two functions and/or sequences when represented in different ways (algebraically, graphically, numerically in tables, or by verbal descriptions).

Find the next four terms of each arithmetic sequence.

1. 26, 20, 14, ... 8, 2, −4, −10

-6 -6

2. 2.5, 6.8, 11.1, ... 15.4, 19.7, 24, 28.3

4.3 4.3

Find the first three terms of each sequence.

3. $a_n = 3 - 5(n-1)$ 3, −2, −7

a_1 d

4. $\begin{cases} a_0 = 2.6 \\ a_n = a_{n-1} + 2.7 \end{cases}$ 2.6, 5.3, 8

Find the first three terms of each arithmetic sequence described and write both the explicit and recursive formulas.

	Explicit	Recursive
5. $a_1 = 3 \quad d = -2$ 3, 1, −1	$a_n = 3 + (n-1)(-2)$	$\begin{cases} a_1 = 3 \\ a_n = a_{n-1} - 2 \end{cases}$
6. $a_1 = \frac{2}{3} \quad d = -\frac{1}{3}$ $\frac{2}{3}$, $\frac{1}{3}$, 0	$a_n = \frac{2}{3} + (n-1)(-\frac{1}{3})$	$\begin{cases} a_1 = \frac{2}{3} \\ a_n = a_{n-1} - \frac{1}{3} \end{cases}$
7. $a_1 = 0.8 \quad d = -0.3$ 0.8, 0.5, 0.2	$a_n = 0.8 + (n-1)(-0.3)$	$\begin{cases} a_1 = 0.8 \\ a_n = a_{n-1} - 0.3 \end{cases}$

Find the desired term of each arithmetic sequence. ★ Need explicit formula ★

8. $a_1 = 6 \quad d = 0.75 \quad n = 11$

$a_{11} = 6 + (11-1)0.75$

$\boxed{a_{11} = 13.5}$

9. $a_1 = 16 \quad d = -\frac{3}{2} \quad n = 20$

$a_{20} = 16 + (20-1)(-\frac{3}{2})$

$\boxed{a_{20} = -12.5}$

10. $a_1 = 20 \quad d = 4 \quad n = 37$

$a_{37} = 20 + (37-1)4$

$\boxed{a_{37} = 164}$

Complete each statement.

Solve for n

11. 462 is the 59 th term of -2, 6, 14, ...

$a_1 = -2$

$d = 8$

$462 = -2 + (n-1)8$

$+2 \quad +2$

$464 = (n-1)8$

$\div 8 \quad \div 8$

$58 = n-1$

$\boxed{59 = n}$

12. 67 is the 119 th term of 8, 8.5, 9, ...

$a_1 = 8$

$d = 0.5$

$67 = 8 + (n-1)0.5$

$-8 \quad -8$

$\frac{59}{0.5} = (n-1)\frac{0.5}{0.5}$

$118 = n-1$

$\boxed{119 = n}$

Find the missing values in each arithmetic sequence.

Solve for d

13. 5, 3, 1, -1, -3

$a_1 = 5$

$a_5 = -3$

$-3 = 5 + (5-1)d$

$-5 \quad -5$

$-8 = 4d$

$-2 = d$

14. -7, -5, -3, -1, 1

$a_1 = -7$

$a_5 = 1$

$1 = -7 + (5-1)d$

$8 = 4d$

$2 = d$

15. Mrs. Surdy and her family drove to Florida for a vacation over the summer. She determined that their A_{roc} for the trip was 61.2 mph. She decides to write a sequence showing how many miles they should have driven on average after each hour.

a. What would a_1 represent in this situation?

How many miles she drove after 1 hour.

b. After how many hours would they have traveled 1346.4 miles?

$$\frac{1346.4}{61.2} = 22 \text{ hours}$$

c. List the total amount of miles driven after each of the first four miles.

0, 61.2, 122.4, 183.6

d. Write an explicit formula that models the miles driven by Mrs Surdy's family.

$y = 61.2x$ or $a_n = 61.2 + (n-1)61.2$

e. Write a recursive formula that models the miles driven by Mrs Surdy's family.

$$\begin{cases} a_1 = 61.2 \\ a_n = a_{n-1} + 61.2 \end{cases} \quad \text{or} \quad \begin{cases} a_0 = 0 \\ a_n = a_{n-1} + 61.2 \end{cases}$$

f. Which formula would be best to use to answer the following question: How many total miles has Mrs. Surdy's family driven after 19 hours? Solve it.

They explicit formula.

$y = 61.2(19)$

$y = 1,162.8$ miles.

g. How long has Mrs. Surdy's family been driving for if they have traveled 367.2 miles?

$367.2 = 61.2x$

$6 = x$

hours