

PROBLEM SET – Arithmetic Sequences (Recursive and Two Term), Mr. Peralta, Class 821 and 829

Important Problems

Copy and solve in your notebooks

<p>1) Find the first three terms from the recursive formula: $A_n = A_{n-1} - 4$, where $A_1 = 8$</p> <p><u>Term 1</u>: ____ <u>Term 2</u>: ____ <u>Term 3</u>: ____</p>	<p>2) Find the explicit formula of the sequence in problem 1 by filling in the blanks.</p> <p>$A_n =$ ____ n + ____</p>
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<p>3) Find the first three terms from the recursive formula: $A_n = A_{n-1} - 1.2$, where $A_1 = 8.8$</p> <p><u>Term 1</u>: ____ <u>Term 2</u>: ____ <u>Term 3</u>: ____</p>	<p>4) Find the explicit formula of the sequence in problem 3 (no more blanks are provided).</p> <p>$A_n =$ _____</p>
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The next set of problems have you find explicit and recursive formulas where you only know two of the terms:

<p>5) First term is 9. Fourth term is 24.</p> <p><u>Term 1</u>: ____ <u>Term 2</u>: ____ <u>Term 3</u>: ____ <u>Term 4</u>: ____</p> <p>a) Common difference (slope) = b) Term 0 = c) Explicit Formula: $A_n =$ ____ n + ____ d) 100th term =</p>	<p>6) First term is 63. Fourth term is 3</p> <p><u>Term 1</u>: ____ <u>Term 2</u>: ____ <u>Term 3</u>: ____ <u>Term 4</u>: ____</p> <p>a) Common difference (slope) = b) Term 0 = c) Explicit Formula: $A_n =$ ____ n + ____ d) 100th term =</p>
<p>7) On Day 2, Maggie had \$35 in her bank account. On Day 5, Maggie had \$26 in her bank account.</p> <p><u>Term 1</u>: ____ <u>Term 2</u>: ____ <u>Term 3</u>: ____ <u>Term 4</u>: ____</p> <p><u>Term 5</u>: ____</p> <p>a) Common difference (slope) = b) Term 0 = c) Explicit Formula: $A_n =$ ____ n + ____ d) 100th term =</p>	<p>8) $A_3 = 10$ and $A_7 = 38$</p> <p><u>Term 1</u>: ____ <u>Term 2</u>: ____ <u>Term 3</u>: ____ <u>Term 4</u>: ____</p> <p><u>Term 5</u>: ____ <u>Term 6</u>: ____ <u>Term 7</u>: ____</p> <p>a) Common difference (slope) = b) Term 0 = c) Explicit Formula: $A_n =$ ____ n + ____ d) 100th term =</p>

Given one of the terms in the arithmetic sequence and the common difference, find the explicit formula and the first five terms.

9) $A_{37} = 249$ where the common difference is 8

10) $A_{40} = -1,191$ where the common difference is -30

11) $A_{38} = -53.2$ where the common difference is -1.1

Extension Activity

The Fibonacci sequence is 1, 1, 2, 3, 5, 8, 13, ... After the first two numbers, each number is the sum of the two previous numbers

1. Write down the first 12 terms of this sequence
2. Every positive integer can be written as the sum of two or more distinct, non-consecutive Fibonacci numbers, meaning no Fibonacci number appears twice and no two Fibonacci numbers are next to each other. For example, 17 can be written as $1 + 3 + 13$. However, $17 = 1 + 3 + 5 + 8$ is not allowed since 3, 5, and 8 are adjacent Fibonacci numbers.

Write each number as the sum of two or more distinct, non-consecutive Fibonacci numbers:

- a. 23 =
- b. 27 =
- c. 100 =
- d. 320 =
- e. 512 =
- f. 1,024 =
- g. 2,048 =
- h. 5,096 =
- i. Choose any other four-digit number