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| **Explicit Formulas** * Arithmetic Formula:
	+ $a\_{n}=a\_{1}+d(n-1)$
* Geometric Formula:
	+ $a\_{n}=a\_{1}\left(r\right)^{n-1}$
 | **Recursive Formulas*** Arithmetic Formula:
	+ $a\_{n}=a\_{n-1}+d$
* Geometric Formula:
	+ $a\_{n}=\left(r\right)a\_{n-1}$
 |

1) Given the sequence {-1, 3, 7, 11, …}, find $a\_{25}$.

1. 95 B) 91 C) 103 D) 99

2) What is the common ratio of the geometric sequence below?

-5, -10, -20, -40, …

1. -2 B) 2 C) $-\frac{1}{2}$ D) $\frac{1}{2}$

3) The first five terms in a pattern are shown below:

 -0.5, -0.25, 0, 0.25, 0.5, …

 If this pattern continues, which expression can be used to find the $n^{th}$ term?

1. -0.25*n* – 0.25 B) 0.75*n* – 1.25 C) -0.5*n* + 0.25 D) 0.25*n* – 0.75

4) Which function could be used to represent the sequence 8, 20, 50, 125, 312.5, …, given that $a\_{1}=8?$

 Find $a\_{8}$: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. $a\_{n}=a\_{1}+a\_{n-1}$ B) $a\_{n}=1.5∙\left(a\_{n-1}\right)$ C) $a\_{n}=\left(a\_{1}\right)∙\left(a\_{n-1}\right)$ D) $a\_{n}=2.5∙\left(a\_{n-1}\right)$

5) Which of the following represents a rule to this sequence:

-27, -12, 3, 18, …

1. -27 + 15n B) 15 – 27(n – 1) C) 15 – 27n D) -27 + 15(n – 1)

6) In a sequence, the first term is 4 and the common difference is 3. The fifth term of the sequence is …

1. -11 B) -8 C) 16 D) 19

7) Which sequence is arithmetic?

1. 6, 4, 2, 0, -4 B) -190, -90, 10, 110, 210
2. 18, 6, 2, $\frac{2}{3}, \frac{2}{9}$ D) -9, -2, 5, 12, 18

8) What is the next term in the sequence below?

2, 10, 50, 250, …

9) Identify the type of sequence (arithmetic or geometric) and the common difference or ratio.

$$a\_{n}=4∙\left(\frac{5}{2}\right)^{n-1}$$

 Type of sequence: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ common difference/ratio: \_\_\_\_\_\_\_\_\_\_\_

10) Write the ***recursive*** formula for the sequence below.

5, -15, 45, -135

11) Write the ***recursive*** formula for the sequence below.

2, -1, -4, -7, …

12) What are the fourth and fifth terms of the following sequence?

$-\frac{1}{2}, -\frac{1}{4}, 0$, \_\_\_\_\_\_\_, \_\_\_\_\_\_

13) Find $a\_{8}$ if $a\_{n}=7+(n-1)∙3$

14) Which sequence has a common difference of 2?

1. {n + 2, n + 4, n + 8, …} B) {n, 2n, 4n, …}
2. {n + 3, n + 5, n +7, …} D) {n, 4n, 8n, …}

15) What are the first 4 terms of the sequence: \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_\_

$$a\_{n}=3∙\left(\frac{5}{2}\right)^{n-1}$$

16) The table shows the price of shoes over several months.

|  |  |
| --- | --- |
| Month | Price |
| 1 | $80.00 |
| 2 | $72.00 |
| 3 | $64.80 |

1. Write an ***explicit*** rule for the table: B) Find the price of shoes after

 8 months:

17) Tabitha began working at a coffee shop. She made $9.15 her first hour working. Every six months

 she makes $0.40 as a raise. Write a formula for this situation ***explicitly***.

18) Tabitha began working at a coffee shop. She made $9.15 her first hour working. Every six months

 she makes $0.40 as a raise. How much does she make per hour after 3 years?