Name:

**10.2 Notes: Arithmetic Sequences (Explicit Formula)**

The formulas we have found so far are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ formulas which means each term will be determined by one or more of the previous terms.

We will now learn about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ formulas which means each term is determined only by using the formula and the term’s position in the sequence.

**How might you remember the difference in these terms?**

**Explicit formula for arithmetic sequences:**

Example 1: Find the 12th term of the arithmetic sequence 9, 16, 23, 30,…

You Try 1: Find the indicated term of each arithmetic sequence.

1. $a\_{1}=-4$, $d=6$, $n=9$
2. $a\_{20}$ for $a\_{1}=15$, $d=-8$

Example 2: Write an equation for the *n*th term of each arithmetic sequence.

1. 5, -13, -31,…
2. $a\_{5}=19$, $d=6$

You Try 2: Write an equation for the *n*th term of each arithmetic sequence.

1. 12, 3, -6,…
2. $a\_{6}=12$, $d=8$

Example 4: Jose averaged 123 total pins per game in his bowling league this season. He is taking bowling lessons and hopes to bring his average up by 8 pins each new season.

1. Write an equation to represent the *n*th term of the sequence.
2. If the pattern continues, during what season will Jose average 187 per game?

You Try 4: A certain company pays its employees according to their performance. Belinda is paid a flat rate of $200 per week plus $24 for every unit she completes.

1. Write an equation to represent the amount of money she earns after *n* weeks.
2. If she earned $512 in one week, how many units did she complete?