

Name NOTES

Writing Explicit Algebraic Formulas

$$a_n = a_1 + d(n - 1)$$

value of the n^{th} term

value of the first term

Common difference between terms

term number

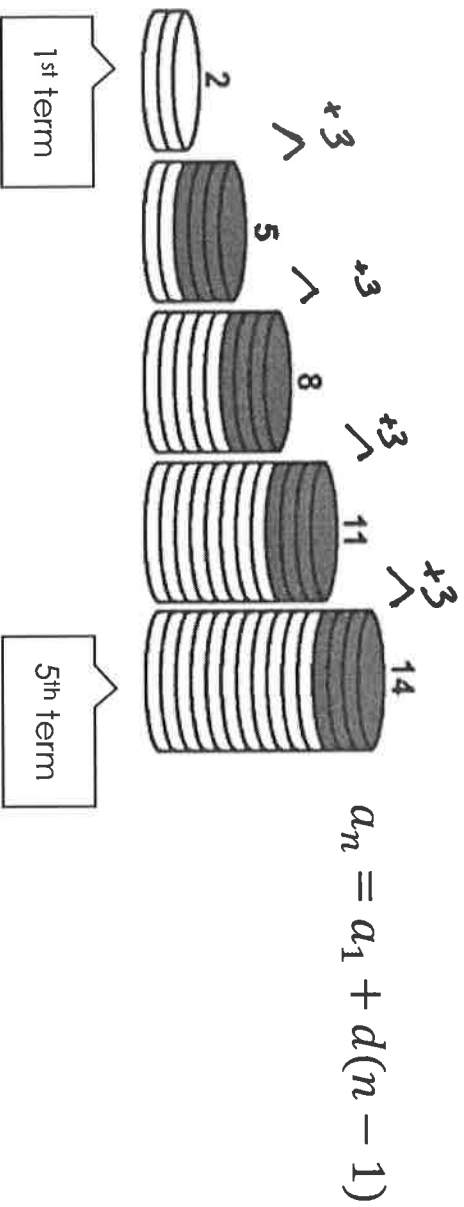
How to write an explicit formula given the beginning of the pattern:

Find the value of the first (or item) in the list.

Find the difference between the terms.

Substitute them into the formula for a_1 and d .

Example: Write the explicit formula for the following pattern.



$$a_1 = \underline{2}$$

$$d = \underline{3}$$

$$\text{Formula: } \underline{a_n = 2 + 3(n - 1)}$$

Use the formula to find the 50th term in the sequence.

$$n = \underline{50} \quad a_{50} = \underline{2 + 3(50 - 1)}$$

$$a_{50} = \underline{149}$$

Use the formula to find n if $a_n = 53$

$$53 = 2 + 3(n - 1)$$

$$\frac{53 - 2}{3} = \frac{3n - 3}{3}$$

$$53 = \underline{2} + 3n - \underline{3}$$

$$\frac{54 - 3}{3} = \frac{3n}{3}$$

$$53 = 3n - 1$$

$$\boxed{n = 18}$$