

Finding differences and identifying patterns

A. Sequences - a string of numbers or terms which follow a pattern

Constant
1st differences

$$\begin{array}{cccc} 80, & 73, & 66, & 59, & 52 \\ \vee & \vee & \vee & \vee & \\ -7 & -7 & -7 & -7 & \end{array}$$

to find the next terms just keep subtracting 7.

$$52 - 7 = \underline{45} - 7 = \underline{38} - 7 = \underline{31}$$

Constant
2nd differences

$$\begin{array}{ccccccc} 1, & 4, & 9, & 16, & 25 \\ \vee & \vee & \vee & \vee & \\ 3 & 5 & 7 & 9 \\ \vee & \vee & \vee & \\ 2 & 2 & 2 \end{array}$$

to find pattern add +2 to the 1st differences and then add that 1st diff to the number

$$2 + 9 = 11 + 25 = \underline{36} + 2 + 11 = \underline{49} + 2 + 13 = \underline{64}$$

1.2 Variables, expressions, and Equations

Variable - a letter used to represent quantities, known or unknown, in Algebra

Expression - Combinations of variables, numbers, and operations.

Equations - Equations are expressions with an equal sign (=)