

- Many real life situations can be represented using arithmetic sequences.

6m tall

Ex. A tree was planted in 2012. The tree grew an average of 15 in each year.

- List the tree's height for the next 6 years.
- Determine the general formula for the sequence.
- If the tree continues to grow @ the same rate what year will it reach a height of 216 in?

Solution:

a)	n	1	2	3	4	5	6	7
	t_n	6	21	36	51	66	81	96
	(year)	2012	2013	2014	2015	2016	2017	2018

$$\begin{aligned}
 b) \quad a &= 6 & t_n &= a + (n-1)d \\
 d &= 15 & t_n &= 6 + (n-1)15 \\
 & & t_n &= 6 + 15n - 15 \\
 & & t_n &= -9 + 15n
 \end{aligned}$$

$$\begin{aligned}
 c) \quad n &= ? & 216 &= -9 + 15n \\
 t_n &= 216 & \frac{225}{15} &= \frac{15n}{15}
 \end{aligned}$$

$$n = 15 \quad \leftarrow \text{But not the year!}$$

$$15 + 2011 = \boxed{2026}$$