Names (pair) _____ Date _____

Patterns and Generalising



Figure 1

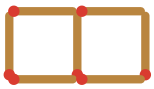


Figure 2

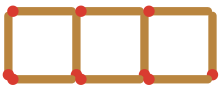


Figure 3

Figure 4

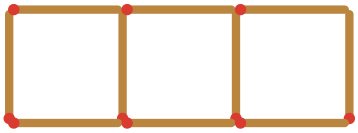
Remember

The letter n stands for **any** figure number. An expression such as $3n + 1$ is a short way of writing a rule that works for **every** figure: put in $n = 10$ and we know straight away how many sticks figure 10 has.

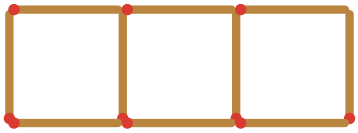
1 ON YOUR OWN Draw figure 4 and complete the table.

Figure n	**1**	**2**	**3**	**4**	**5**	**10**	**100**	**n**
Number of sticks								

2 IN PAIRS **How do you see the pattern?** Each of you colours figure 3 to show how you count the sticks and writes an expression. Compare your expressions.



My expression:



My partner's expression:

Do your expressions give the same number for $n = 3$? And for $n = 10$?

Names (group) _____ Date _____

3 ON YOUR OWN **The letter L.** Complete the table and write an expression for the number of tiles in figure n.



Figure 1

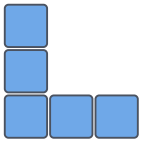


Figure 2

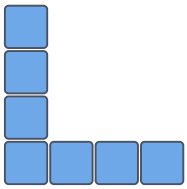


Figure 3

Figure n	**1**	**2**	**3**	**4**	**10**	**n**
Number of tiles						

4 IN A GROUP **One pattern, different expressions?** A group found four expressions for the letter L. Substitute numbers and decide which ones describe the pattern.

	$n = 1$	$n = 2$	$n = 3$	$n = 10$	**Describes the pattern?**
$2n + 1$					**yes / no**
$n + n + 1$					**yes / no**
$2(n + 1) - 1$					**yes / no**
$2n + 2$					**yes / no**

Expressions that give the same number for every n are called **equivalent**.

The Growing Patterns app · otooly.com/growing-patterns

Choose a pattern, type your expression and look at the ways of seeing A, B and C.

★ ON YOUR OWN **Exit card.** How many sticks does figure 50 of the stick squares have? ____