

## Activity 2B

Grab some triominos.

We want to know whether we can lay the triominos on a square board such that the triominos don't overlap and the entire board is covered except for one corner.

Clearly we can do so for a 2 by 2 board with just one triomino.

Try to do so for a 4 by 4 board. It will take 5 triominos to do it.

Try to do so for an 8 by 8 board. Hint: Take 4 of your 4 by 4 solution and one extra triomino and arrange them for an 8 by 8 board.

Now we want to *prove* that we can tile *any* board of size  $2^n$  by  $2^n$  by using induction.

You have already proved the base case when  $n$  is 1 since we can tile  $2^1$  by  $2^1$  board.

*If* you can tile a  $2^{n-1}$  by  $2^{n-1}$  board, explain how you can also tile a  $2^n$  by  $2^n$  board. The key to induction proofs is showing how having a smaller solution can give you a bigger solution. (If you think this sounds a lot like recursion, you are right!)