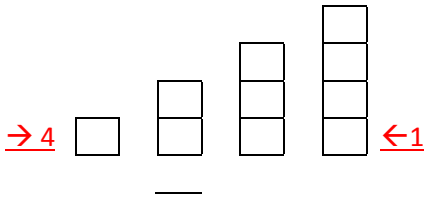
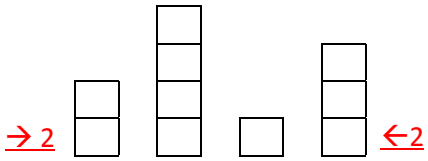
Introducing Towers to a class

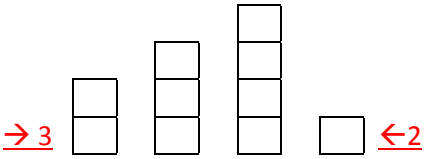
This works best using manipulatives (described separately)
and with 2 or 3 in each group; 4 can be okay, depending on the students.

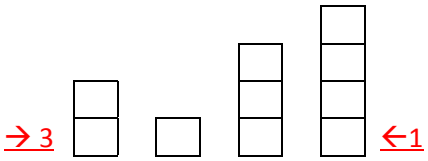
I usually stress: NO PENCILS! That's so we can re-use the grids and the puzzles. Also, I find that many people are more relaxed when they can just sweep away evidence of any errors, rather than trying to erase them. This makes it more like a game than a math problem.

- Start by drawing the towers and practicing with what we can see from either side in these examples. (The numbers in red are the ones you want the students to tell you. I have them hold up the number of fingers, so everyone can show me what they've figured out.)









- Make up some more. Discuss which numbers can have the towers arranged in only one way (only 4) and which ones have lots of ways. What do we know if we can see only one tower?

- Draw this solved puzzle on the board.

- Ask what they notice about the numbers inside the heavy square. (Each tower height appears only once in each row and in each column.)

	3	4	1	2	
	2	1	3	4	
	1	2	4	3	
	4	3	2	1	

- Have the class fill in the number of towers that can be seen from each position. The result should look like this:

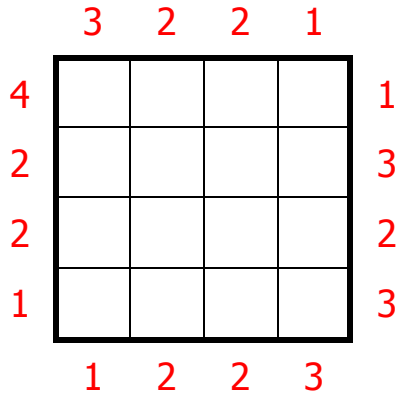
	2	1	3	2	
2	3	4	1	2	2
3	2	1	3	4	1
3	1	2	4	3	2
1	4	3	2	1	4
	1	2	2	3	

- Some people will find this harder to visualise than others; reassure the class that they will have physical towers to work with.

- Get the class started on solving the following puzzle as a group, but don't finish it.

- Then give out the grids and the bags with the blocks. **Stress that they should not take apart the blocks! They should have four colours, each colour a different height.**

- Their first puzzle is to finish the one started on the board. Once they've done that correctly, give them the first sheet of puzzles.



- Some groups will get the idea very quickly; others will need encouragement to put pieces in only where they are *absolutely sure* they must go. Guessing is a very poor approach that generally leads to frustration.

- If a group gets seriously mixed up, it's usually because they have guessed at some point, often without realising it, and then tried to fix things up by switching pieces around. This is not an effective strategy; it's best to clear the board and start again. Have them tell you the reason for each block they place.

- You may need to repeat several times that "This could go here" is **not** a good reason!

- The answer (step-by-step solution available separately):

	3	2	2	1	
4	1	2	3	4	1
2	3	4	2	1	3
2	2	1	4	3	2
1	4	3	1	2	3
	1	2	2	3	