

Cube Signs

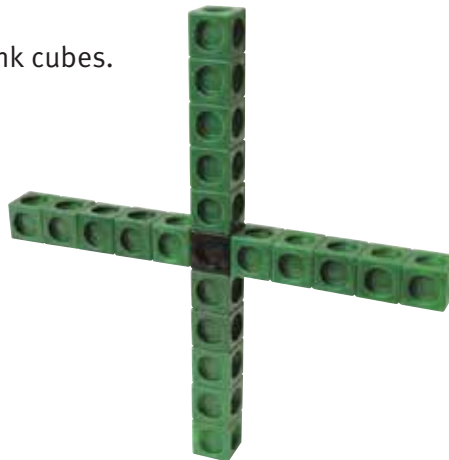
You need: multilink cubes

ACTIVITY

- Alan builds plus signs with multilink cubes.



Alan's third plus sign



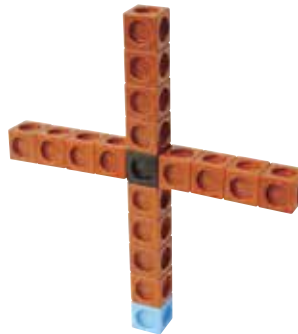
Alan's fifth plus sign

He uses $4 \times 3 + 1$ as a short cut to work out the number of cubes in his third plus sign.

- Write Alan's short cut for his fifth plus sign.
 - Explain how the short cut works.
 - Predict the number of cubes in the seventh plus sign.
 - Build the seventh plus sign with multilink cubes and check your prediction.
- Kali uses $2 \times 7 - 1 = 13$ as a short cut to work out the number of cubes in Alan's third plus sign.
 - Explain how Kali's short cut works.
 - Use Kali's short cut to predict the number of cubes in the ninth plus sign.
 - Complete the table below.

Plus sign	Number of cubes	
	Alan's short cut	Kali's short cut
3rd	$4 \times 3 + 1 = 13$	$2 \times 7 - 1 = 13$
5th		
7th		
9th		
20th		
100th		
56th		

4. Alan decides to put an additional cube at the bottom of each plus sign.
- a. Write a short cut for the number of cubes in this new fourth plus sign.
Explain how the short cut works.

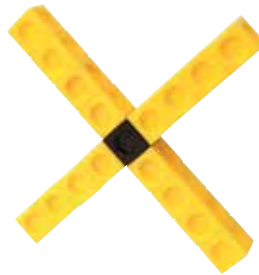


Fourth plus sign

- b. Predict the number of cubes in the 75th plus sign with this extra cube.
5. Kali changes the plus signs into times signs.



Kali's first times sign



Kali's third times sign



She predicts that $4 \times 6 + 1$ is a short cut for the number of blocks in the fifth times sign.

- a. Build the fifth times sign and check that Kali's short cut works.
- b. Explain how the short cut works.
- c. Write another short cut for the fifth times sign.
- d. Complete the table below and check that your short cut works.

Times sign	Number of cubes	
	Kali's short cut	Your short cut
1st		
3rd		
5th	$4 \times 6 + 1 = 25$	
10th		
30th		
500th		