

# Building 3-D shapes



## Build 3-D shapes from 2-D drawings

You will need:

- interlocking cubes in two colours

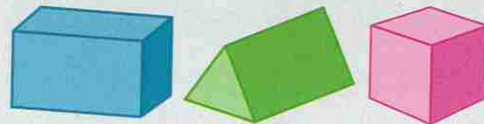
Challenge 1

- 1 Look at the shapes below and write how many of each 2-D face the 3-D shapes have.

2-D faces



3-D shapes



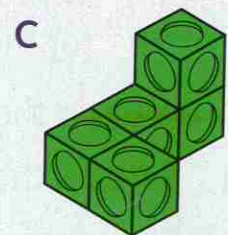
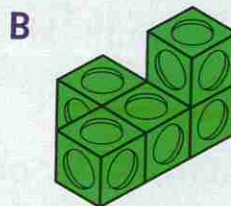
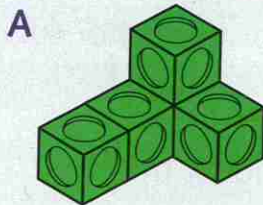
a cuboid

b triangular prism

c cube

- 2 Build each shape below, in turn, with interlocking cubes of the same colour. Follow the instructions for each shape.

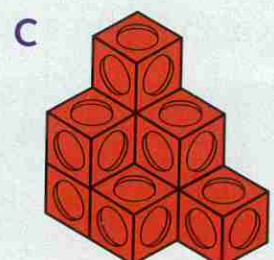
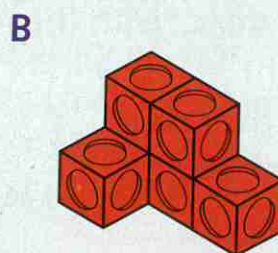
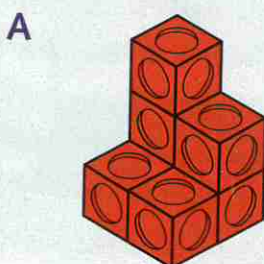
- Work out the least number of additional cubes you will need to make the shape into a cuboid.
- Using a different colour, add that number of cubes to the shape to check that you are correct. Write how many cubes you needed.



Challenge 2

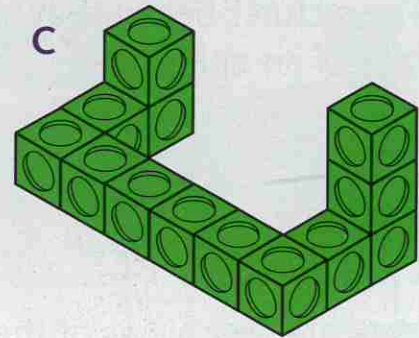
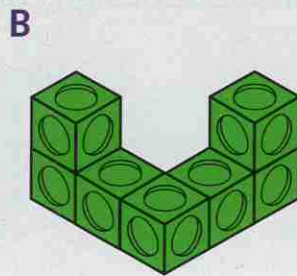
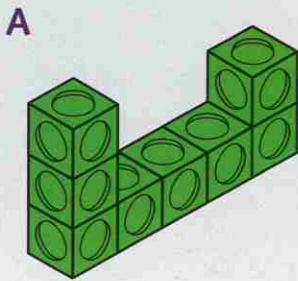
- 1 Build each shape below, in turn, with interlocking cubes of the same colour. Follow the instructions for each shape.

- Work out the least number of additional cubes you will need to make the shape into a cuboid.
- Using a different colour, add that number of cubes to the shape to check that you are correct. Write how many cubes you needed.



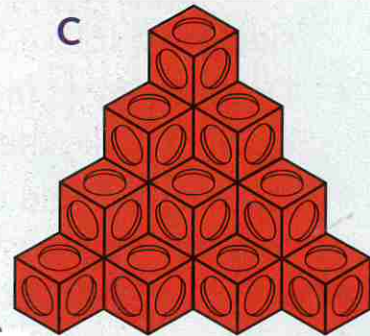
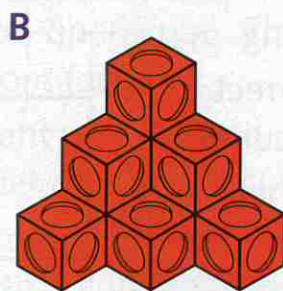
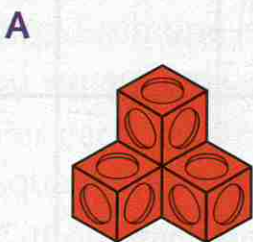
2 Build each shape below, in turn, with interlocking cubes of the same colour. Follow the instructions for each shape.

- For each shape, predict the least number of additional cubes you will need to build all the layers of the shape up to one level higher than the highest end.
- Using a different colour, add that number of cubes to the shape to check that you are correct. Write how many cubes you needed.



1 Work with a partner. Build each tower, in turn, with interlocking cubes of the same colour. Follow the instructions for each shape.

- Work out the least number of additional cubes you will need to make each tower into a cube.
- Using a different colour, add that number of cubes to the tower to check that you are correct.



2 Use your work from Question 1 to answer the questions.

a Copy and complete the table.

Shape	Number of cubes in tower	Number of cubes added	Total number of cubes
A			8 or $2 \times 2 \times 2$
B			
C			

b Look for a pattern. Work out the total number of cubes needed to build cube D.

