

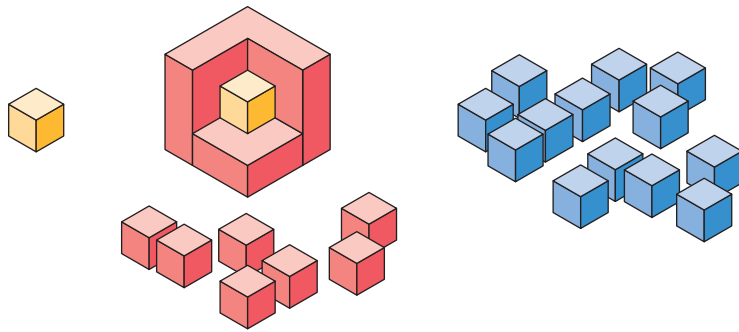
Cubes within cubes

Problem sheet

Imagine you have an unlimited supply of interlocking cubes (all the same size) in different colours.

Now imagine starting with one yellow cube.

This is covered all over with a single layer of red cubes.



This is then covered with a layer of blue cubes.

- How many red cubes would you use?
- How many blue cubes would you use?

Find an easy way of working this out – a way that you could explain to a friend over the telephone. Make a storyboard of your method so that someone else can follow it.

Now add a layer of green cubes.

- How many green cubes are needed? Convince yourself that you are right.

Now add layers of black, brown, white, orange, pink, purple, ...

Once you have decided how many cubes of each colour you will need, draw a new storyboard of your findings. You will have 8 or 16 spaces in which to tell your story – think carefully about what is important.

- Plan your storyboard and decide what to put in each frame before you begin.
- Ask a friend to check your ideas with you.
- Complete your storyboard for display.

If you have time, try to find quick methods for working out the number of inner cubes that touch the outer layer of cubes:

- face wise;
- edge wise;
- corner wise.