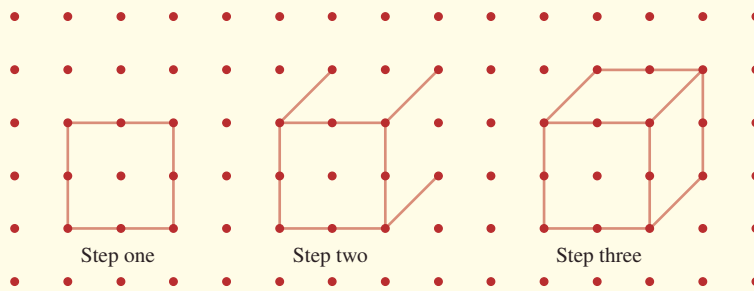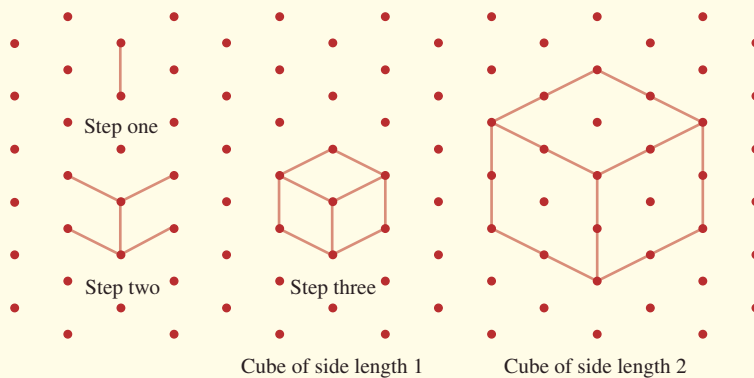# Three-dimensional shapes on dot paper

Drawing a three-dimensional shape depends on the view you wish to present.

For a **face-on view**, use *square dot paper*. Begin with the front face, then draw the diagonal sloping edge to the required depth and, finally, complete the shape.

Step one   Step two   Step three

For a **corner view**, where an edge appears closest to you, use *triangular dot paper*. Begin with the leading edge, then draw the diagonal sloping edges to the required depth and, finally, complete the shape.
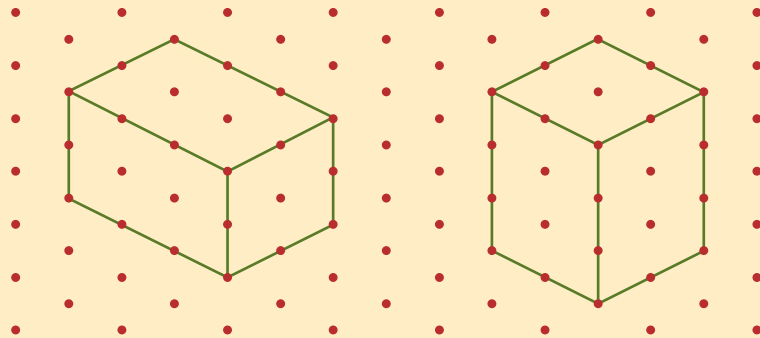

Step one

Step two   Step three

Cube of side length 1   Cube of side length 2

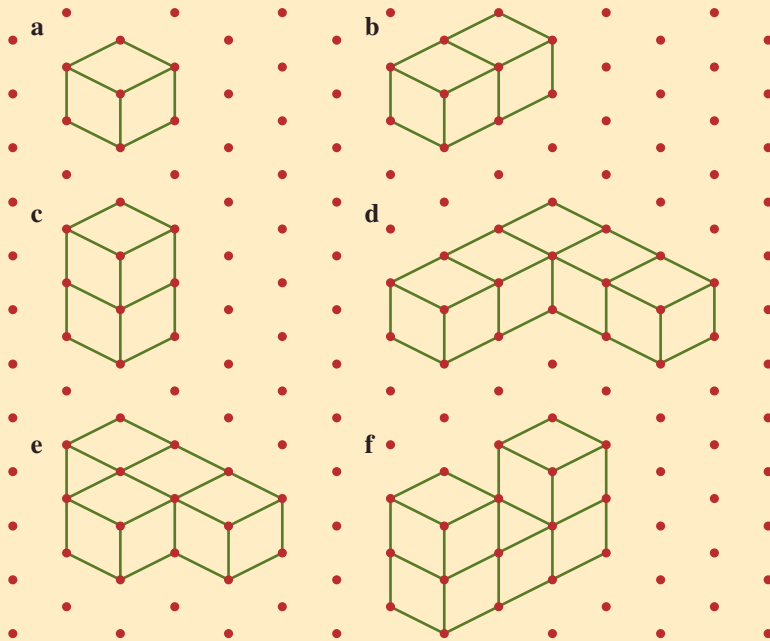## Exercise 13.3 Three-dimensional shapes on dot paper

1 Draw these solids on:
   a square dot paper
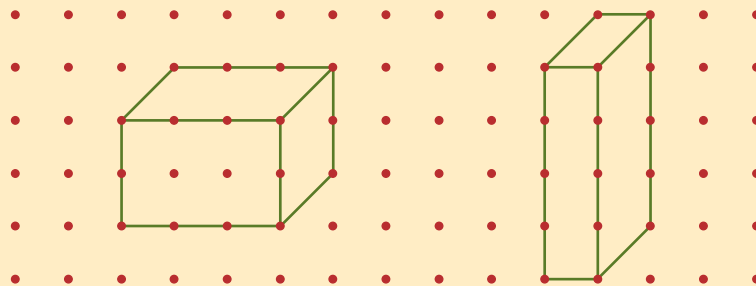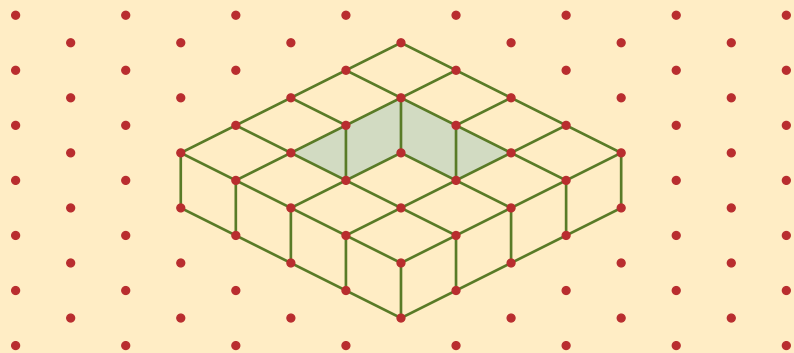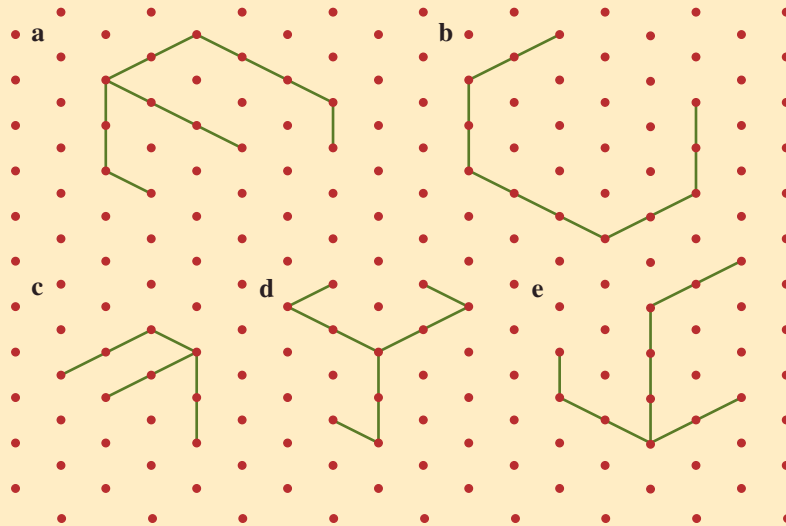
b triangular (isometric) dot paper

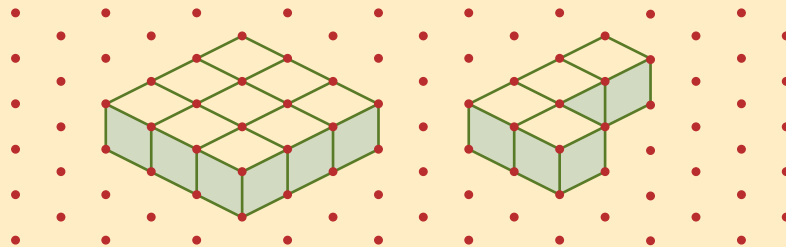2 Use triangular (isometric) dot paper to help you draw the following solids made from cubes.

a

b

c

d

e

f

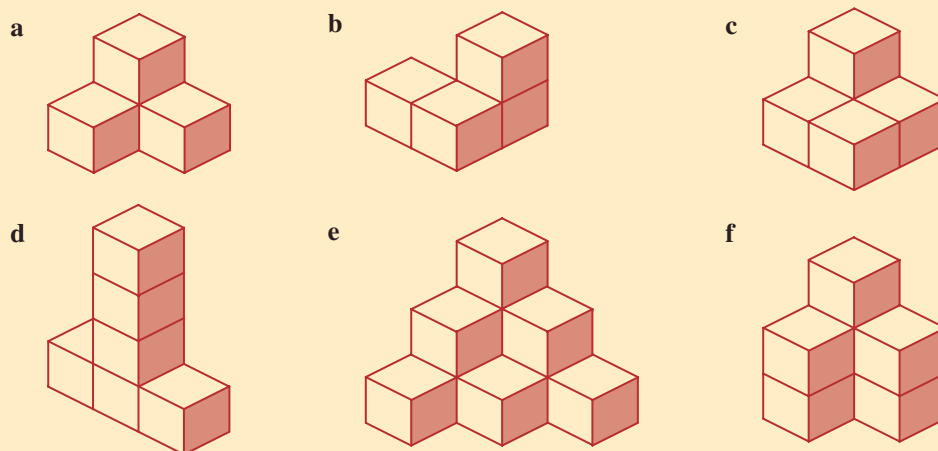3 Draw the following shape on triangular (isometric) dot paper.

4 On triangular (isometric) dot paper, draw three different solids of your own design using five cubes.

5 Each of the following is the start of a drawing of a solid. Copy each drawing on to triangular (isometric) dot paper and complete it.
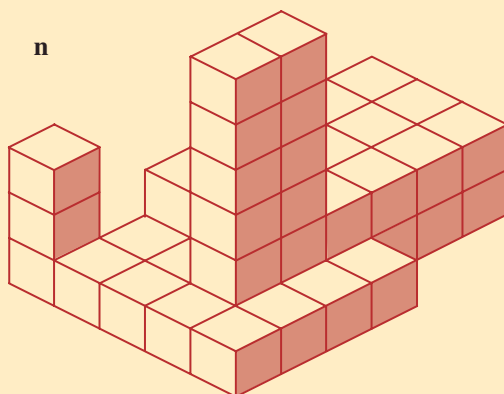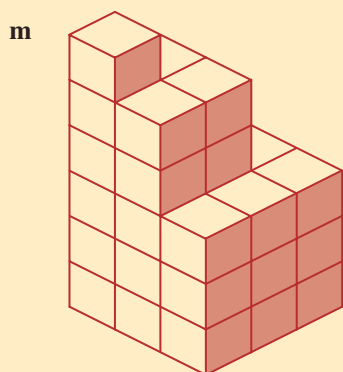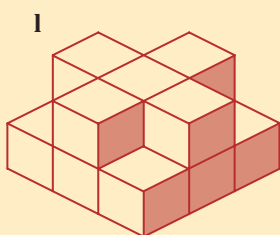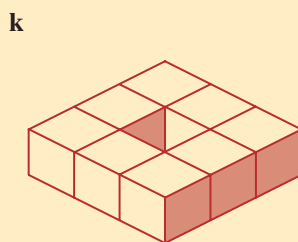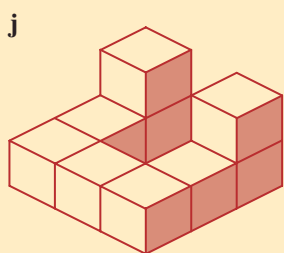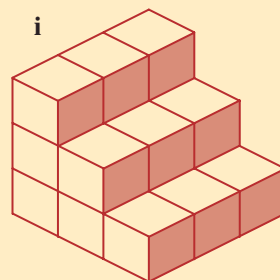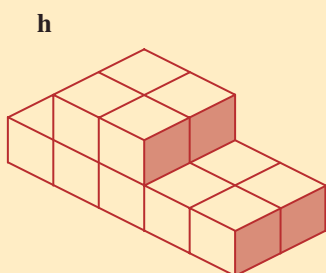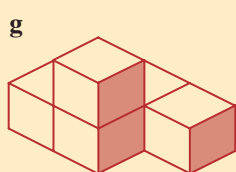

6 Imagine and then draw what would remain of the large block below if the smaller block, shown, is taken away from it. Use triangular (isometric) dot paper.

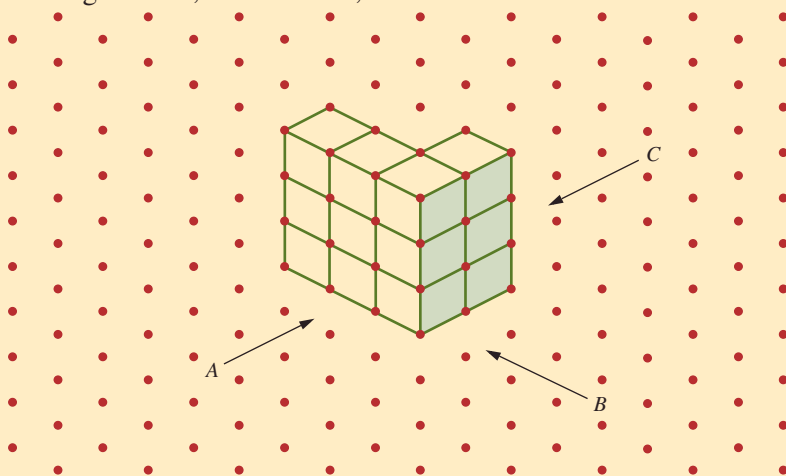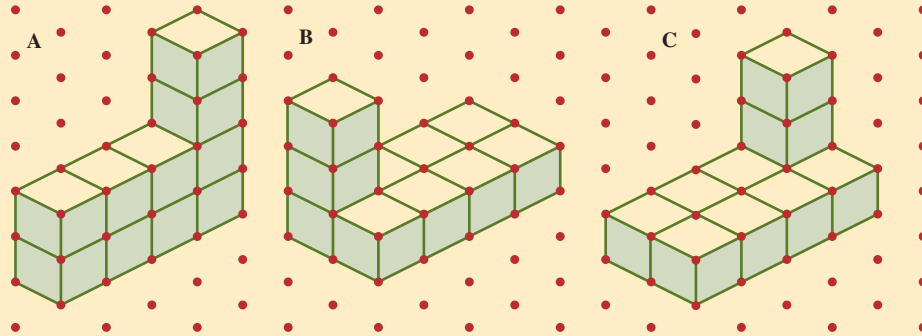**7** How many cubes make up each of the following solids (**a** to **n**)?

g

h

i

j

k

l

m

n

8 Imagine, then draw, what you would see of the following shape if you were looking from A, then from B, and then from C.

C

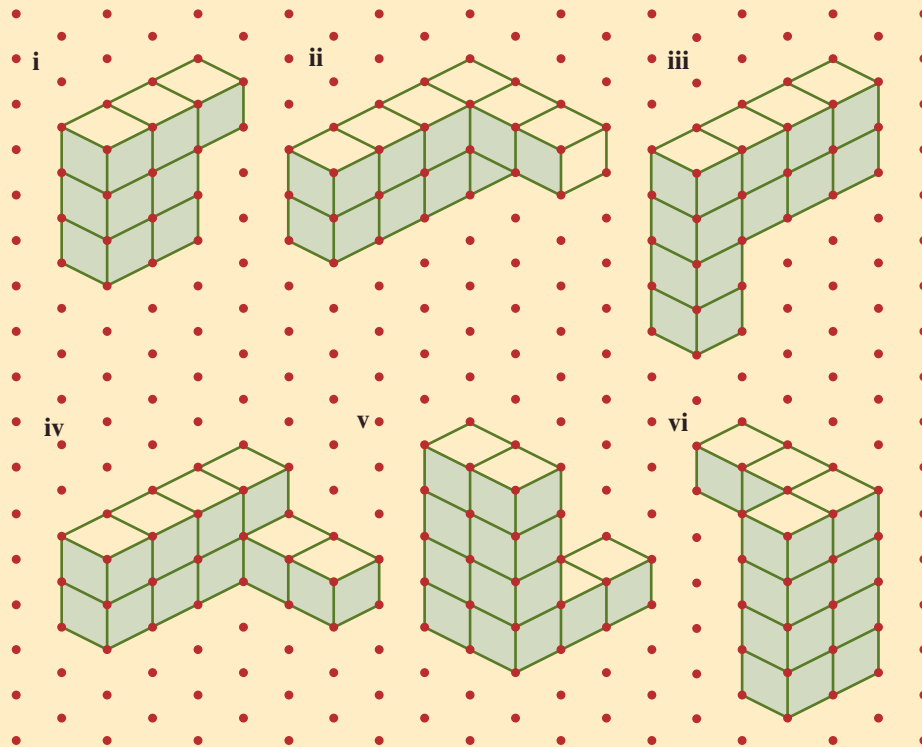*A*

B

9 Here are three different shapes, called A, B and C.

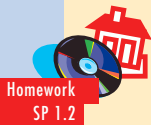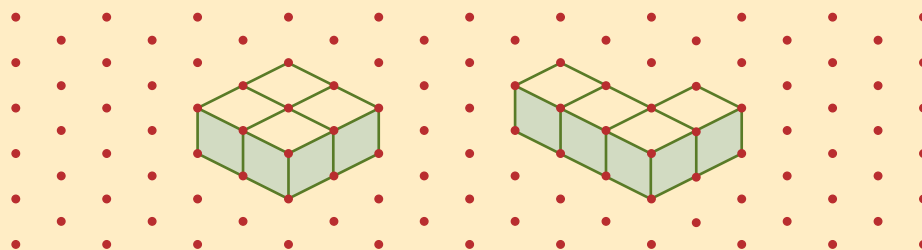Which of the following shapes are the same as:
**a** A? **b** B? **c** C?

10 Use triangular (isometric) dot paper to draw all the different solids that can be made if four cubes are joined together. (Two have already been drawn for you.) How many different four-cube solids are there? Joins along edges only not allowed.
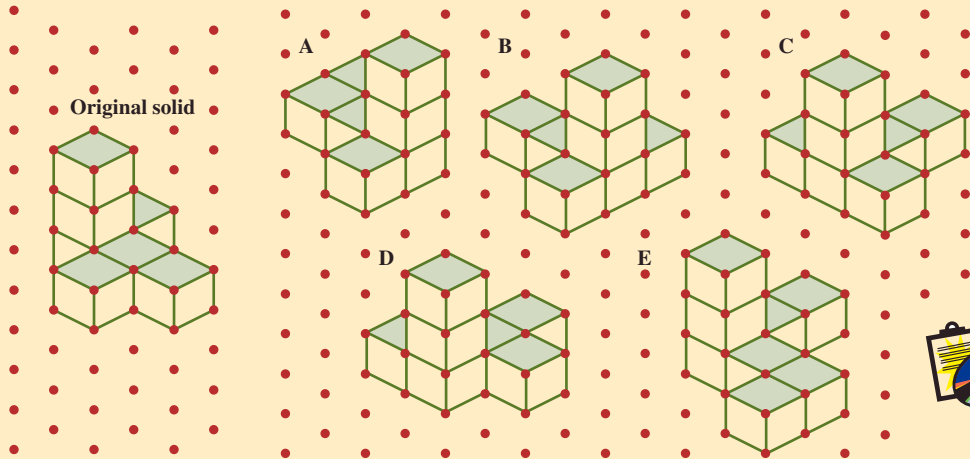
11 a Which of the solids A, B, C, D and E, could be made by joining the two original pieces labelled, below left?

Original pieces

A

B

C

D

E
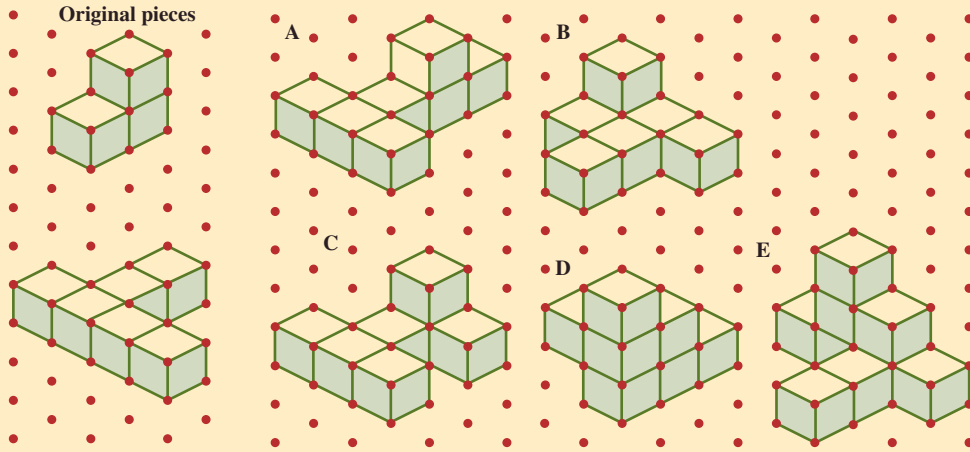
b Which of the solids A, B, C, D or E, is the same as the original solid labelled, below left?

A

B

C

Original solid

D

E

Plans and cross-sections

Plan views (or **perspectives**) are produced when looking from the top, front and sides of a shape. A cross-section is produced from taking a planar slice through the solid. Below are some two-dimensional drawings of a three-dimensional shape. We use square paper to draw the two-dimensional drawings. We use isometric paper to sketch the solid shapes.

top   front   side

Plan views

top

side

front

Solid shape