

As outcomes, Year 8 pupils should, for example:

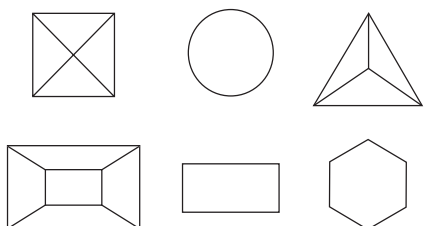
Orient an isometric grid and use conventions for constructing isometric drawings:

- Vertical edges are drawn as vertical lines.
- Horizontal edges are drawn at 30°.

Identify the position of hidden lines in an isometric drawing.

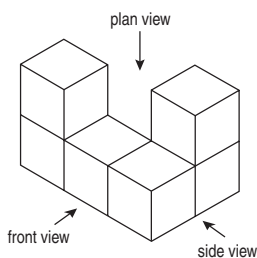
Begin to use plans and elevations. For example:

- The diagrams below are of solids when observed directly from above.

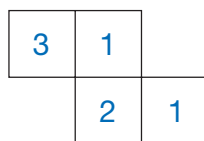


Describe what the solids could be and explain why.

- Draw the front elevation, side elevation and plan of this shape.

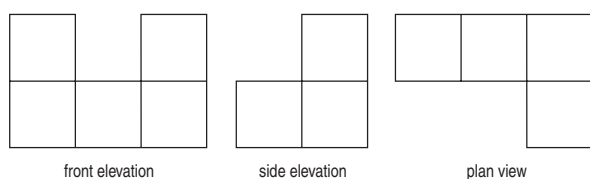


- This diagram represents a plan of a solid made from cubes, the number in each square indicating how many cubes are on that base.



Make an isometric drawing of the solid from a chosen viewpoint.

- Construct this solid, given the front elevation, side elevation and plan.



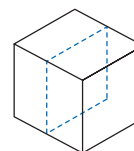
As outcomes, Year 9 pupils should, for example:

Visualise and describe sections obtained by slicing in different planes.

For example:

- Compare horizontal cross-sections of a square-based right pyramid at different heights. Repeat for vertical cross-sections at different points.

- This cube has been sliced to give a square cross-section.



Is it possible to slice a cube so that the cross-section is:

- a rectangle?
- a triangle?
- a pentagon?
- a hexagon?

If so, describe how it can be done.

- For eight linked cubes, find the solids with the smallest and the largest surface area. Draw the shapes on isometric paper. Extend to 12 cubes.

- Imagine you have a cube. Put a dot in the centre of each face. Join the dots on adjacent sides by straight lines. What shape is generated by these lines?

- Visualise an octahedron. Put a dot in the centre of each face. Join the dots on adjacent sides by straight lines. What shape is generated by these lines?

- Imagine a slice cut symmetrically off each corner of a cube. Describe the solid which remains. Is there more than one possibility? Repeat for a tetrahedron or octahedron.

- Triangles are made by joining three of the vertices of a cube. How many different-shaped triangles can you make like this? Draw sketches of them.

[Link to plane symmetry \(pages 206–7\).](#)