

## Plans and elevations

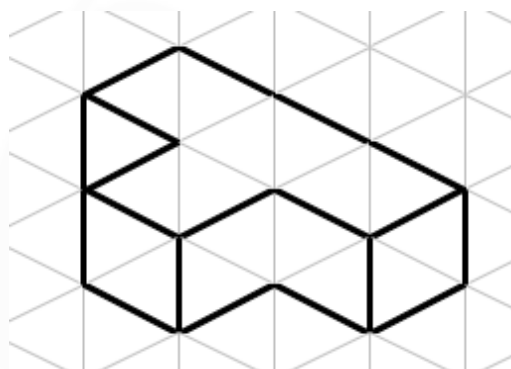
### Starter

1. A wire in the shape of an equilateral triangle with sides of length 9 cm is placed on a flat piece of paper. A pencil is held in the hole at the centre of a disc of radius 1 cm, and the disc is rolled all the way around the outside of the wire.
  - (a) Sketch the loci drawn by the pencil.
  - (b) How long is the line drawn by the pencil as it travels all the way round the equilateral triangle?
  - (c) How would the loci be different if the disc was inside the triangle

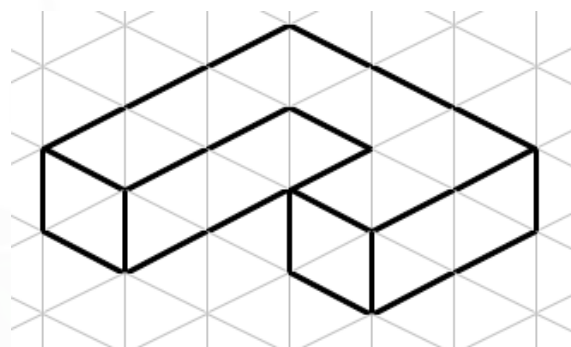
### Work in pairs.

2. Use the multilink cubes on your desk to build these 3-D solids.

(a)



(b)



3. How many 2-dimensional diagrams do we need to define them? Draw all the diagrams that you think you need.

**N.B.** Dotted lines are again used to indicate hidden edges.

### Notes

**Three** 2-dimensional diagrams are used to define a 3-dimensional shape

1. **Front elevation** — the view standing in front of the solid
2. **Plan view** — the view from the above the solid (i.e. the bird's eye view)
3. **Side elevation** — the view from a side. It is a good idea to state whether it is left or right side elevation.

### Visible vs. hidden edges

- **Visible edges** (i.e. edges that can be seen) — **solid line**
- **Hidden edges** (i.e. edges that cannot be seen) — **dotted line**

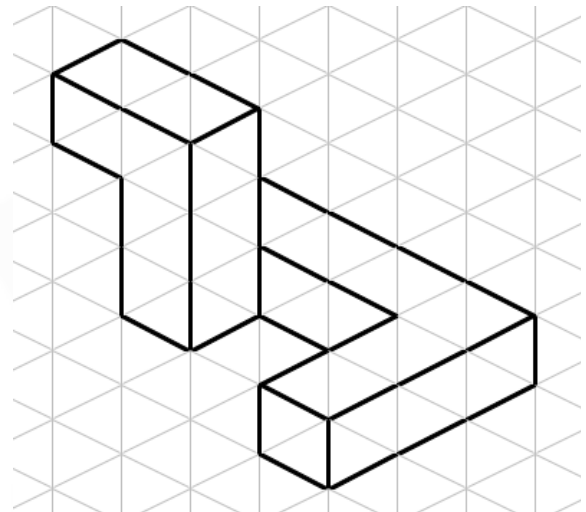
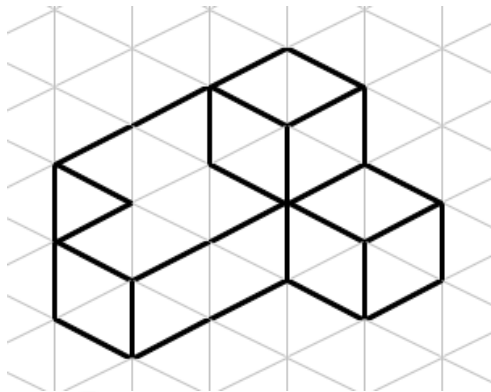
**Hint:** Always draw the outline of the shape first and then fill in the visible and hidden edges inside the outline last.

**E.g. 1** Draw the three plans and elevations needed to define these 3-D solids.

**Hint:** Use your multilink cubes to build the solid before attempting to draw the diagrams.

(a)

(b)



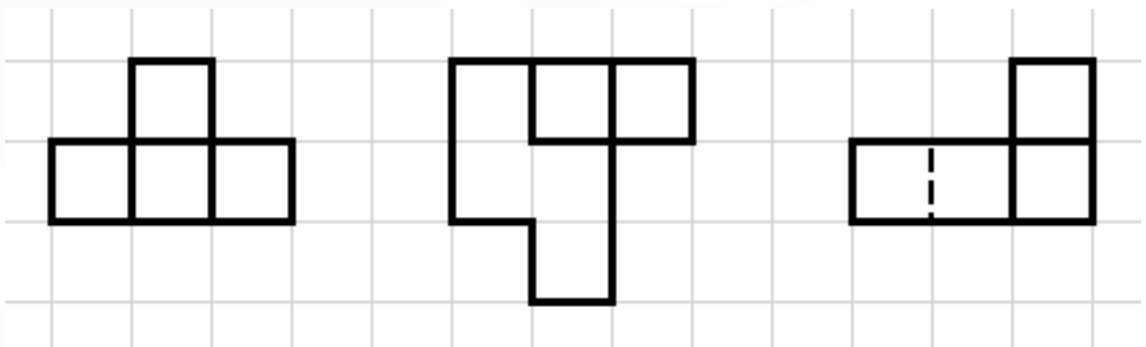
**Working:**

(a)

Front elevation

Plan view

Side elevation (right)



**N.B.** When drawing on isometric paper, make sure the dots or lines are vertical.

**Video:** [Plans and elevations](#)

[Solutions to Starter and E.g.s](#)

### Exercise

9-1 class textbook:	p566 M18.1 Qu 1-11 (isometric paper needed)
A*-G class textbook:	p527 M18.1 Qu 1-11 (isometric paper needed)
9-1 homework book:	p189 M18.1 Qu 1-6
A*-G homework book:	p144 M18.1 Qu 1-5

### Summary

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**Homework book answers (only available during a lockdown)**

