

Civil Engineering Drawing

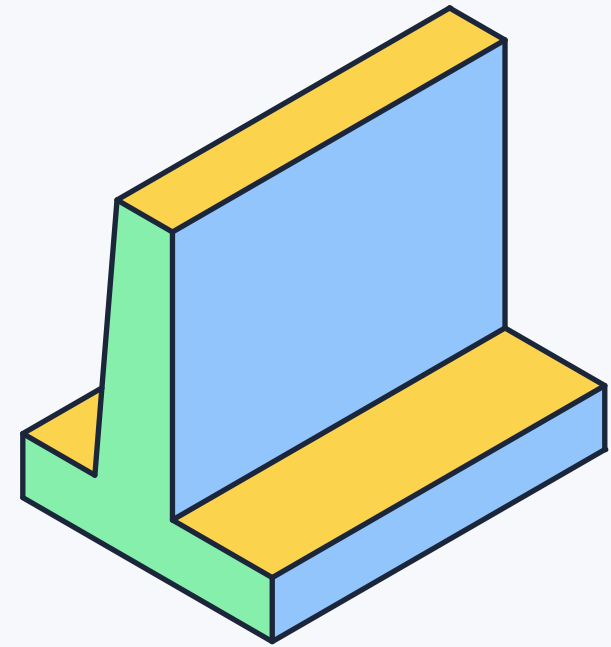
Part 3 · Practising Orthographic Views

Many objects, three views each: sketching, reading views and finding the third view.

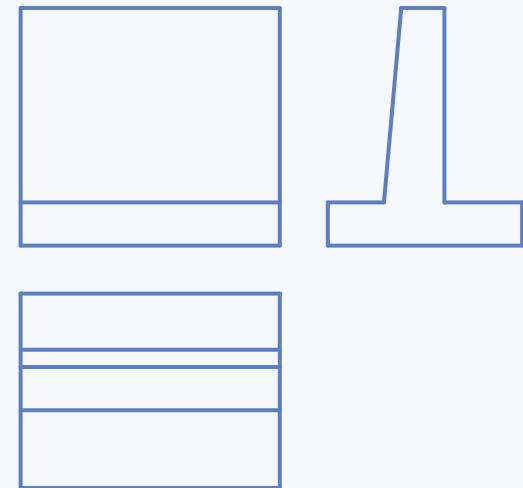
- Views of simple objects
- Freehand sketching
- Reading views
- The third view from two views
- Choosing the front view

Asst. Prof. Dr. Abdulhadi PALA

Gaziantep University · Faculty of Engineering · Civil Engineering Department · Fall 2026–2027

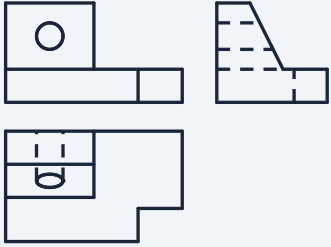


ISOMETRIC DRAWING



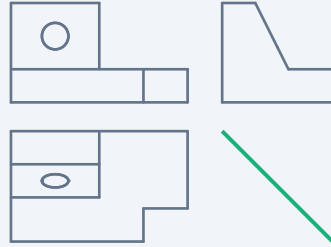
ORTHOGRAPHIC VIEWS

Part 2 in one slide



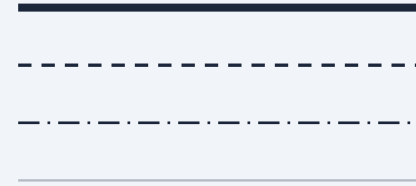
First angle

Top view BELOW the front view, left side view on the RIGHT.



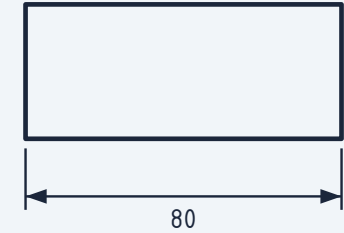
Aligned views

Same width (front–top), same height (front–side), same depth (mitre line).



Lines

Visible: thick. Hidden: dashed. Centre: chain. Construction: very light.



Dimensions

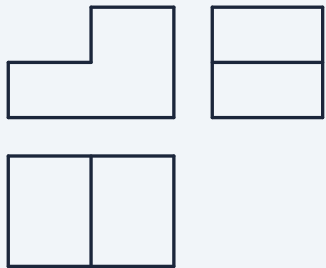
Every size once, outside the views; always the real size, whatever the scale.

Today

3.1

Views of simple objects

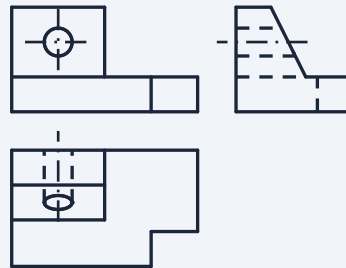
Worked examples, then many objects to sketch freehand



3.2

Reading views

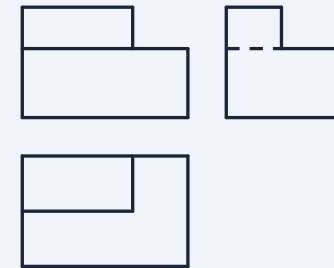
What every line and every area means



3.3

The third view

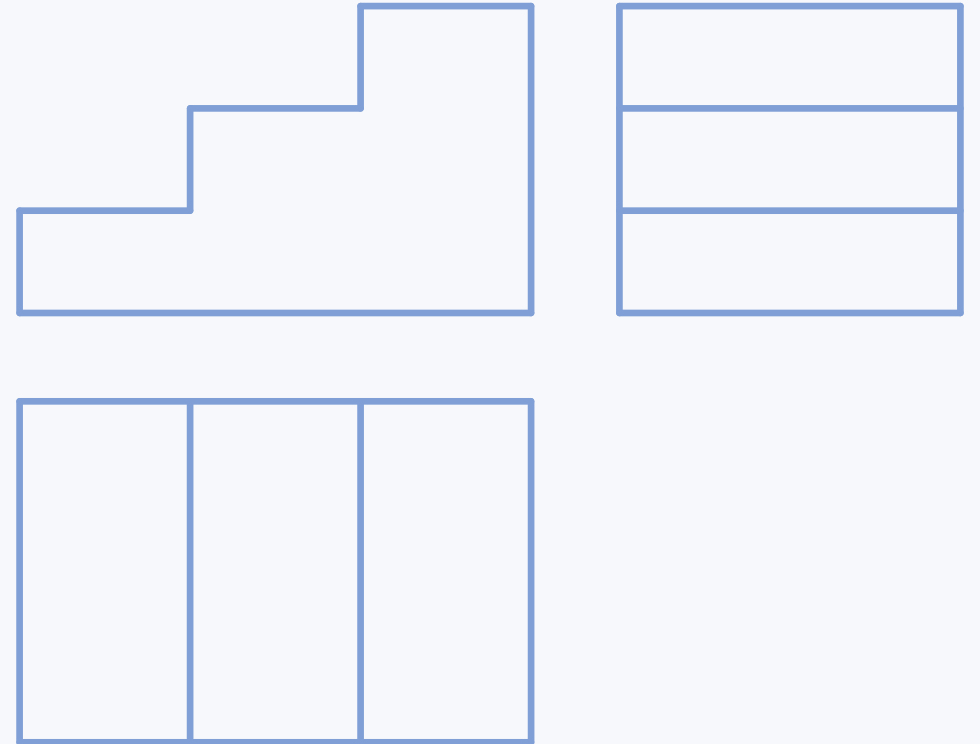
Two views given: find the third; choosing the front view



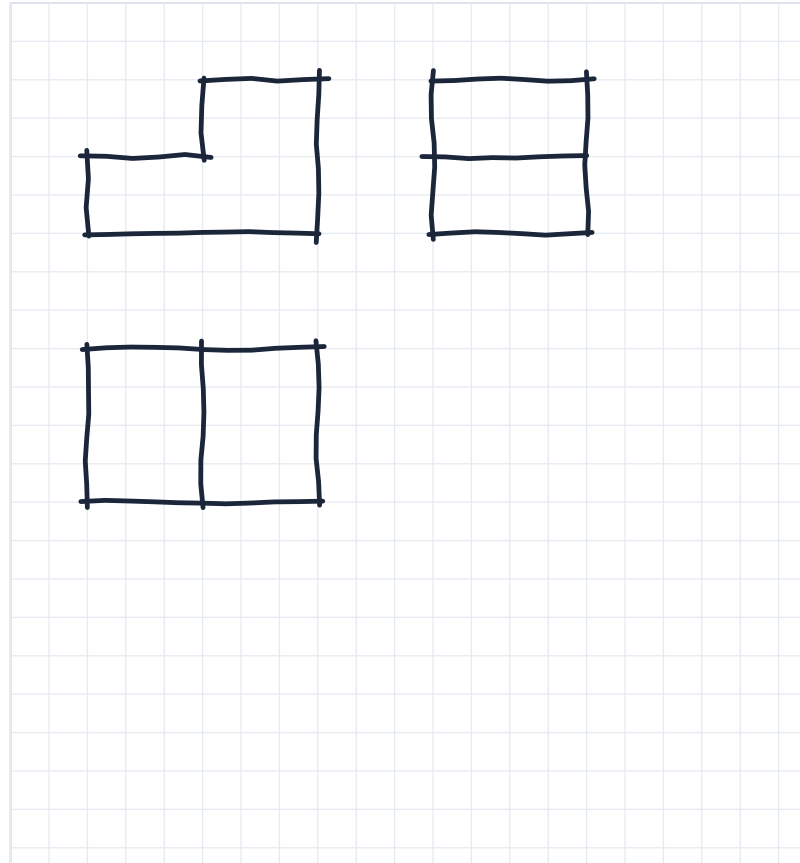
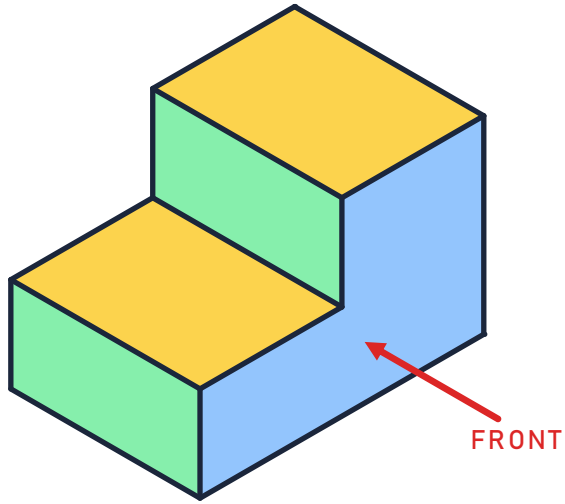
3.1

Views of simple objects

Look, imagine, sketch:
many objects, three views each.

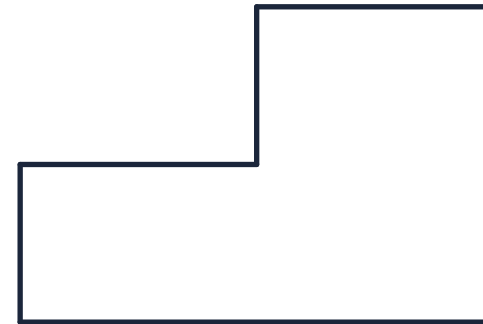
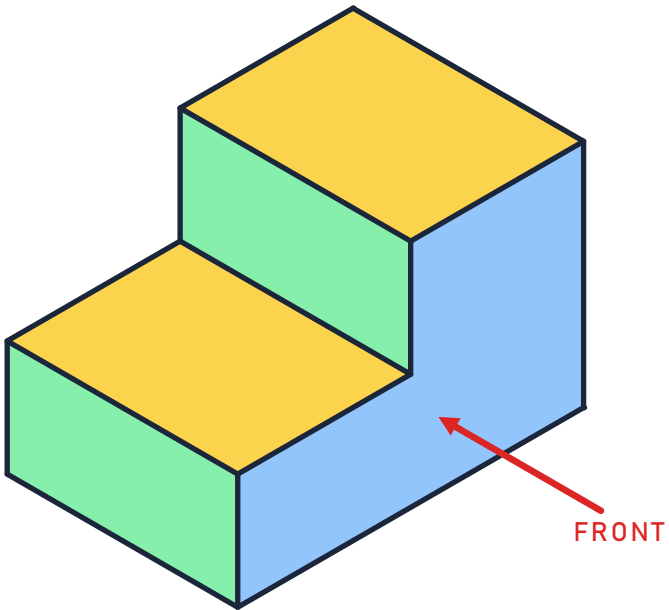


How to sketch the three views

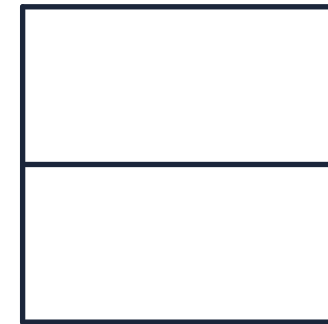


- 1 Find the FRONT arrow: that is your front view.
- 2 Sketch the front view lightly; count squares or judge proportions by eye.
- 3 Top view BELOW, side view on the RIGHT, lined up with the front view.
- 4 Add hidden lines (dashed) and centre lines.
- 5 Check the alignment, then darken the visible edges.

Example 1: A stepped block



FRONT



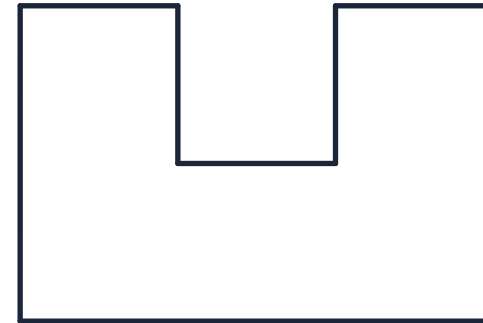
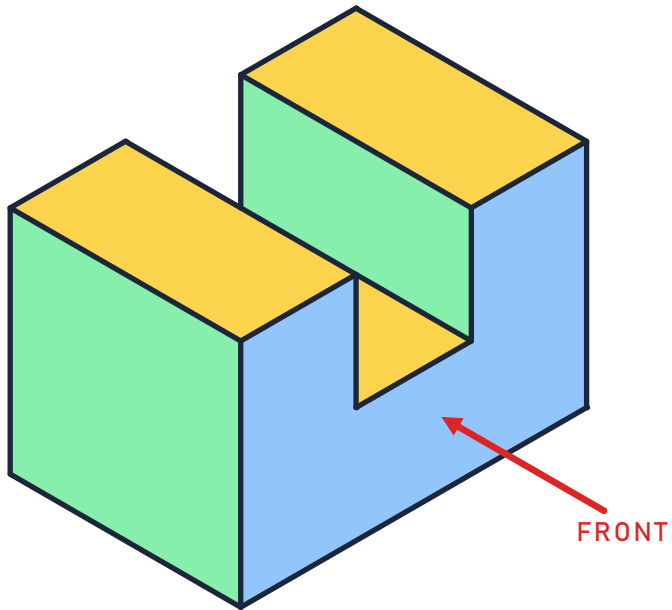
LEFT SIDE



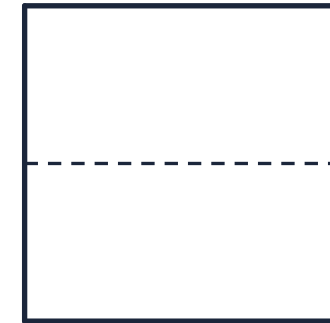
TOP

No hidden lines: every edge can be seen from each direction.

Example 2: A block with a notch



FRONT



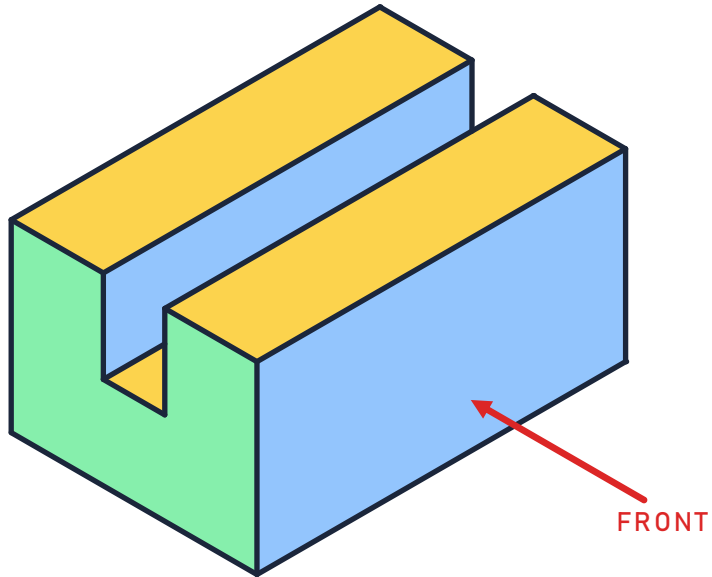
LEFT SIDE



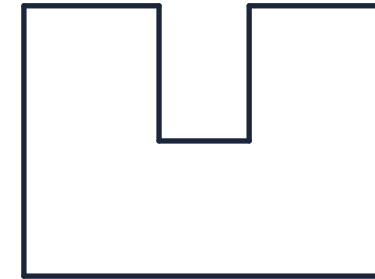
TOP

The notch is a U in the front view and only lines in the other two.

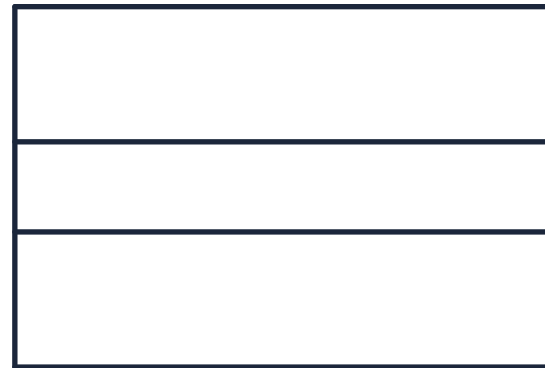
Example 3: A block with a hidden slot



FRONT



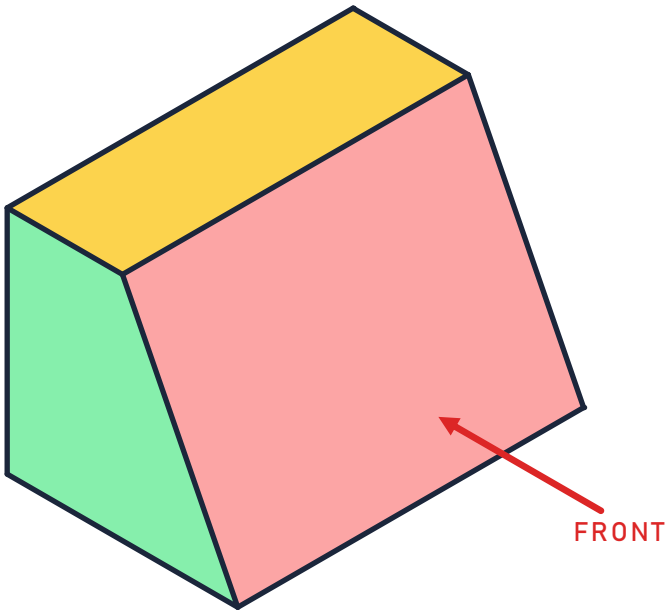
LEFT SIDE



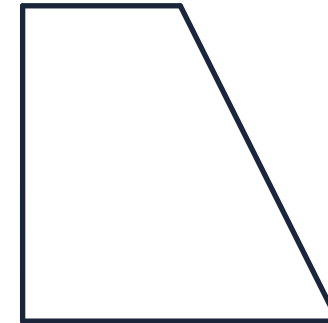
TOP

The slot cannot be seen from the front: its floor is a dashed line.

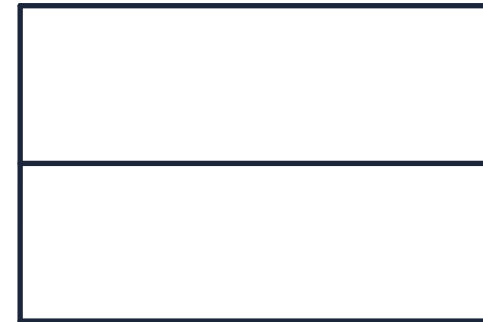
Example 4: A ramp



FRONT



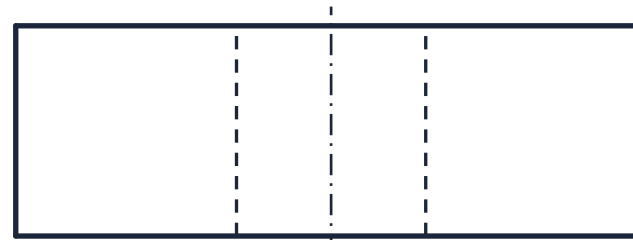
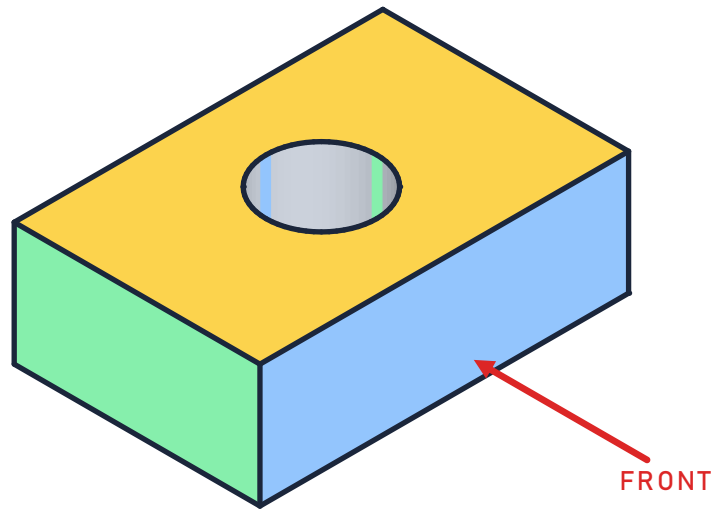
LEFT SIDE



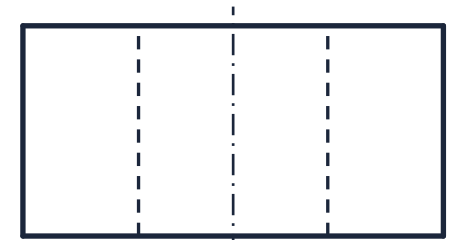
TOP

The inclined face: a line in the side view, a rectangle in the front and top views.

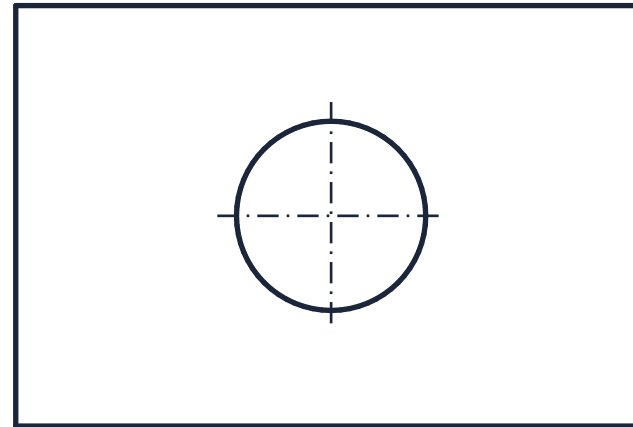
Example 5: A block with a hole



FRONT



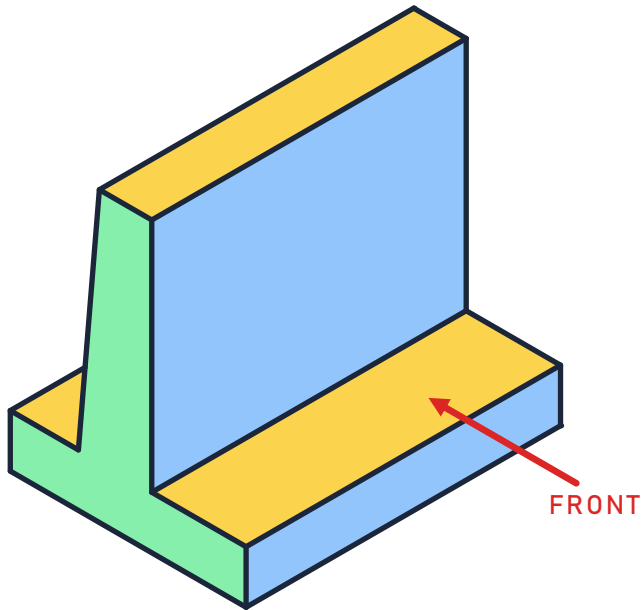
LEFT SIDE



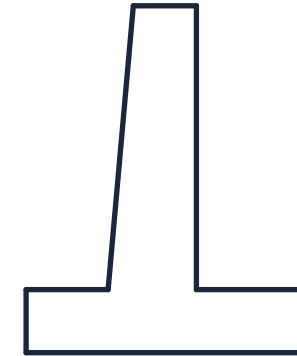
TOP

The hole is a circle only in the top view; elsewhere two dashed lines and a centre line.

Example 6: A retaining wall



FRONT



LEFT SIDE

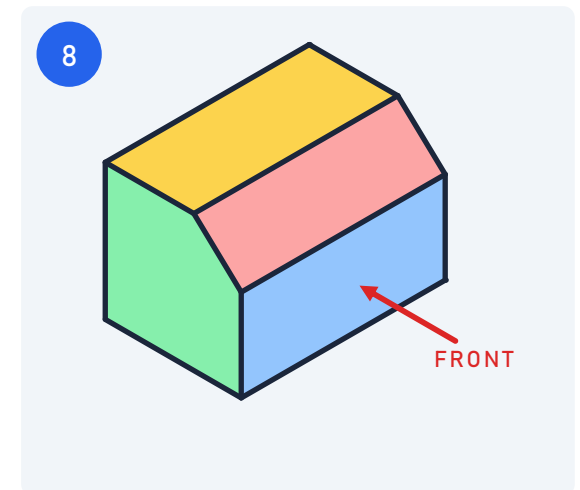
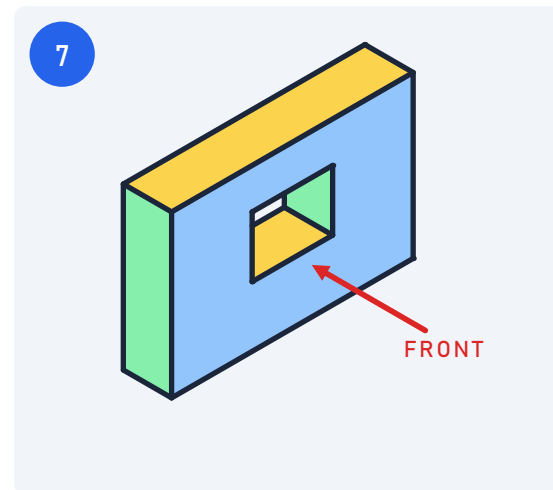
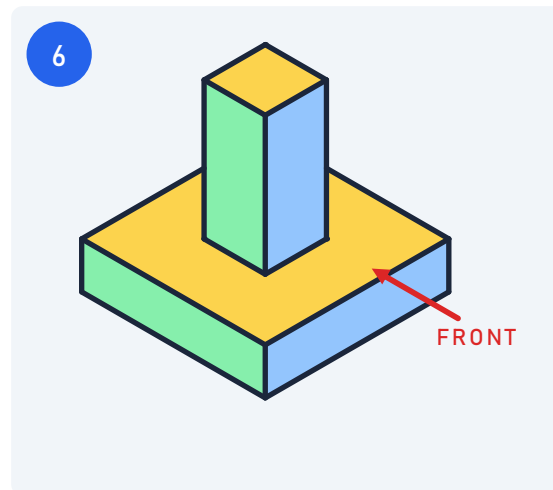
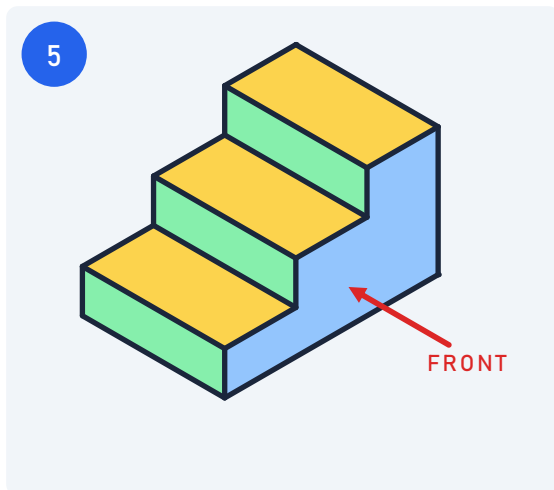
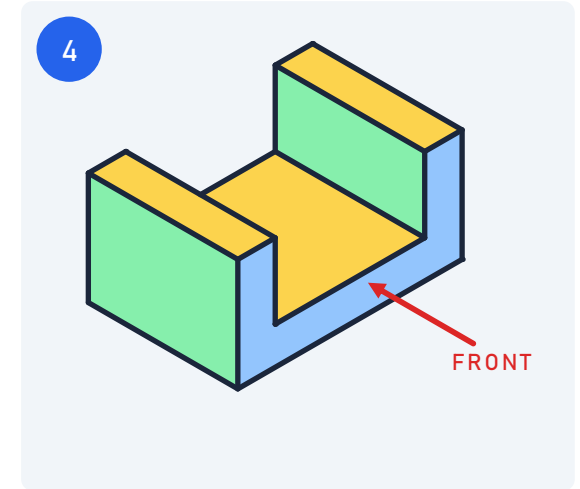
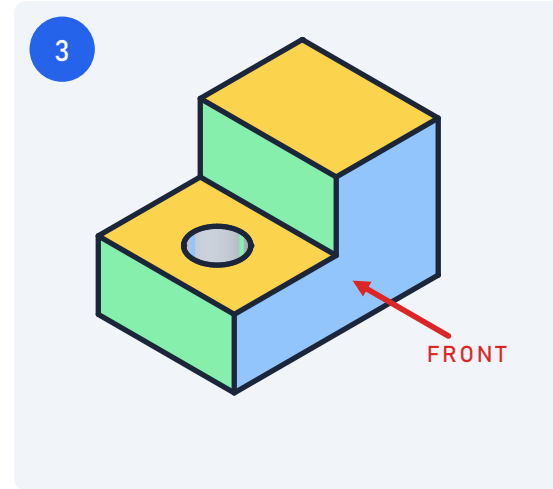
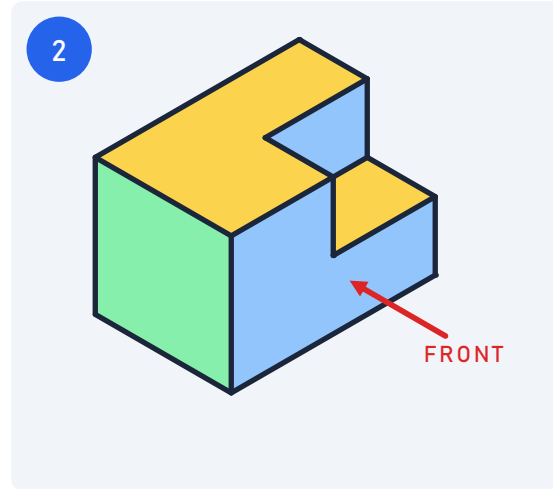
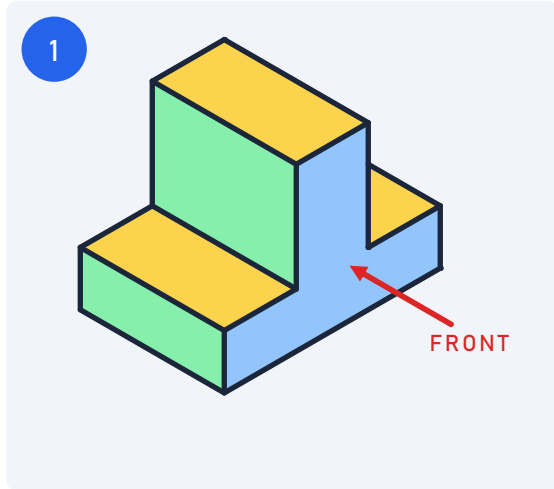


TOP

The side view shows the real shape of the wall: this is what engineers look at.

Your turn: sketch the three views (A)

Freehand · first angle · FRONT = red arrow



Answers (A)

1

2

3

4

5

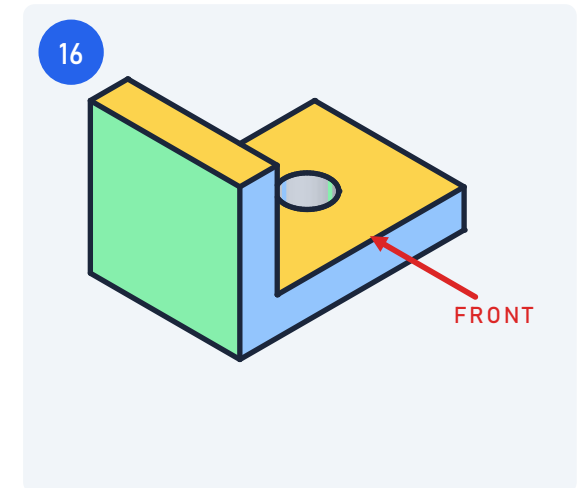
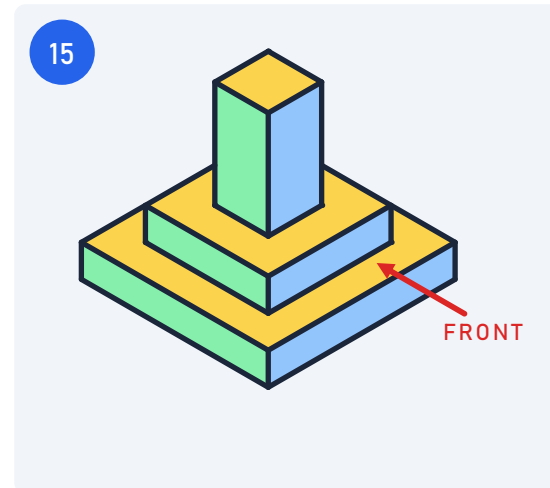
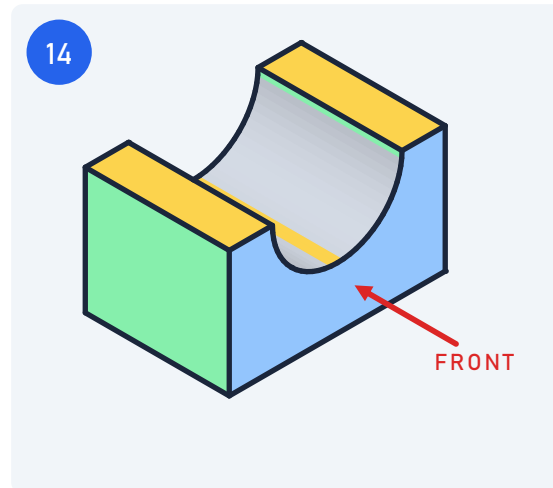
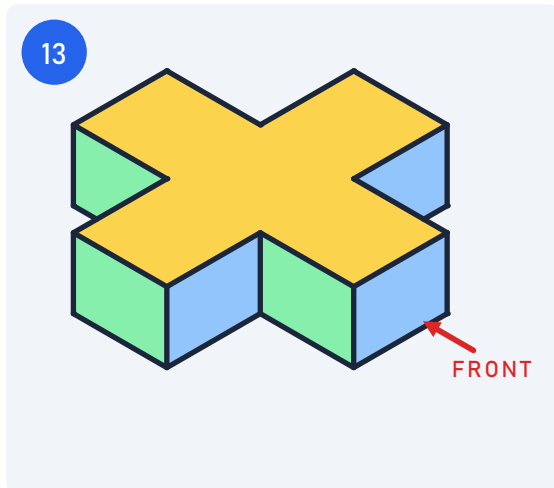
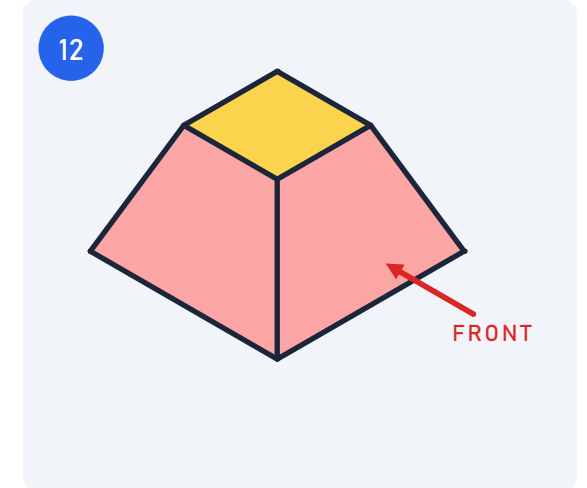
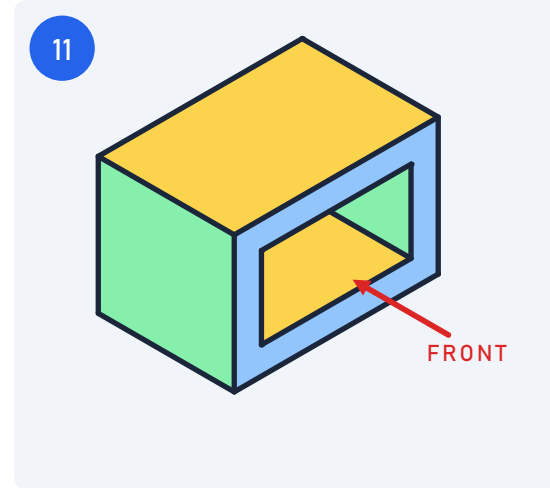
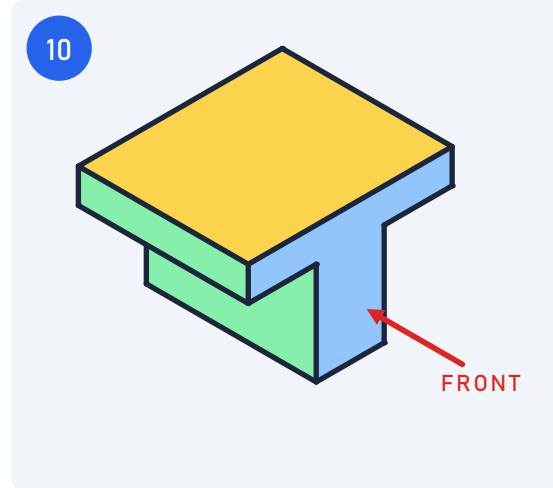
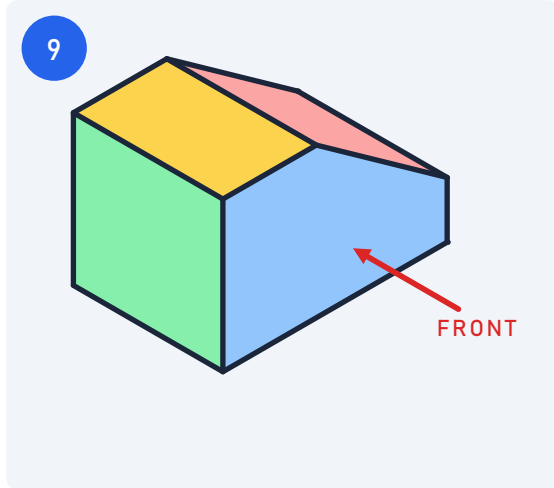
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7

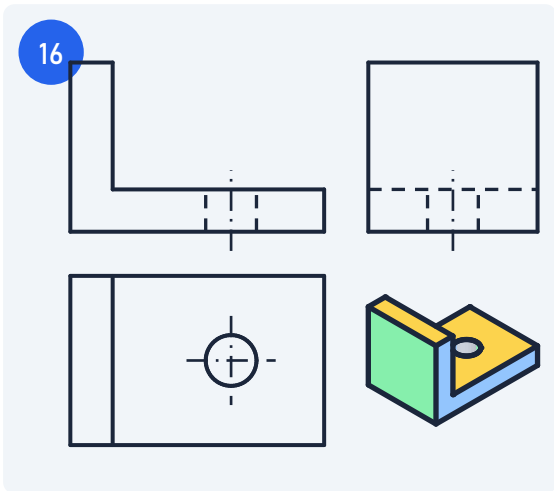
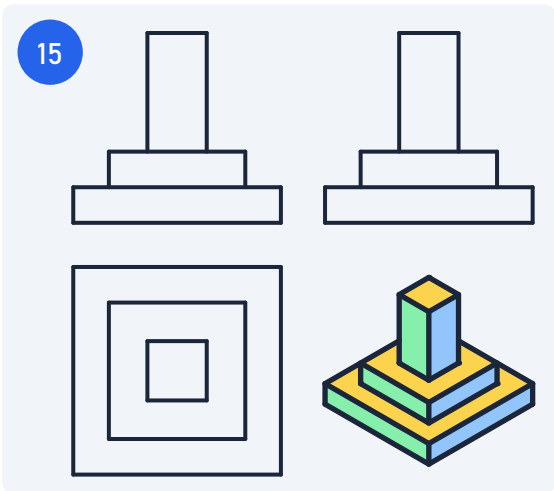
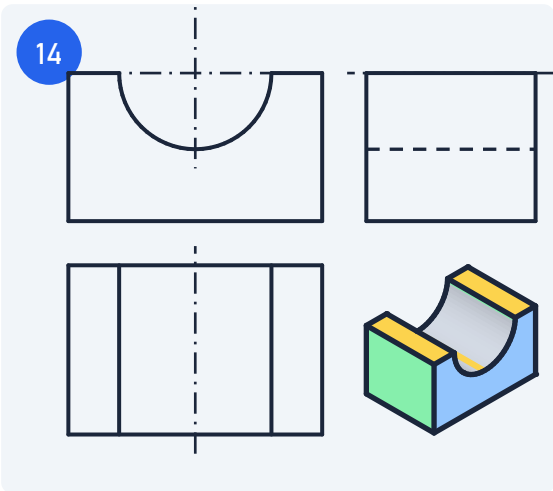
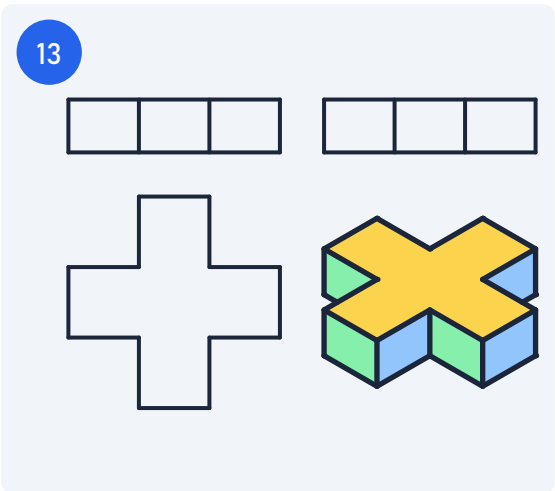
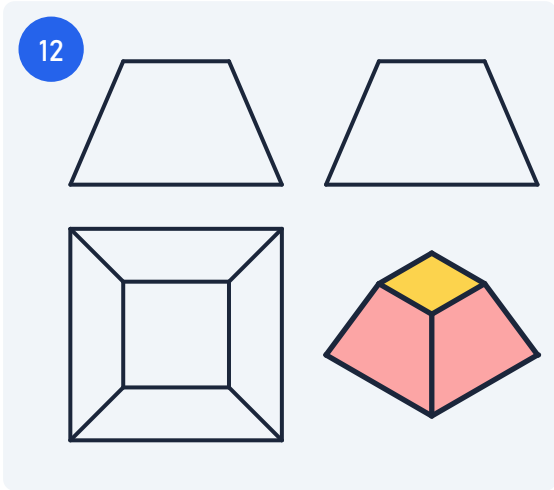
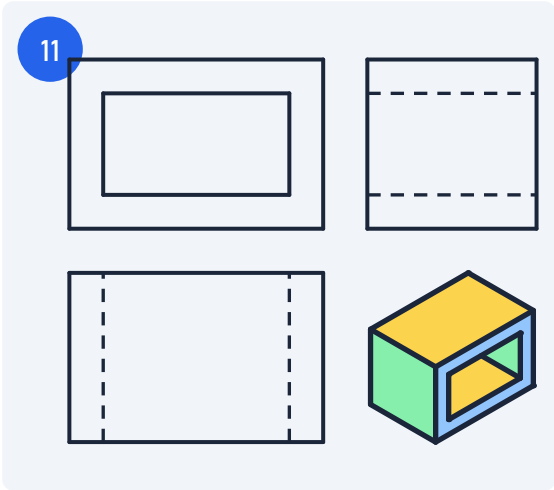
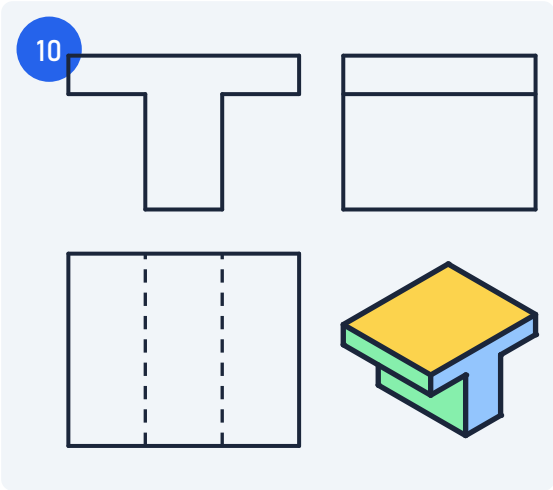
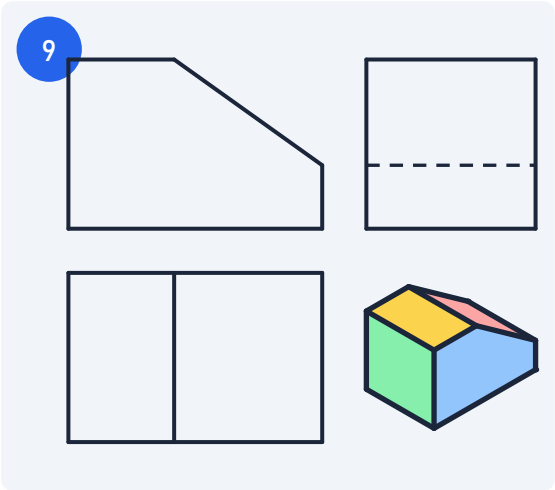
8

Your turn: sketch the three views (B)

Freehand · first angle · FRONT = red arrow



Answers (B)

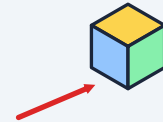


Key terms



Freehand sketch

Drawn with a pencil only, no instruments; proportions kept by eye.



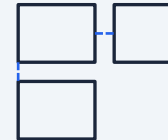
Viewing direction

The FRONT arrow on a picture: the direction you look from for the front view.



Proportion

The ratio of sizes. On squared paper, count squares to keep it right.



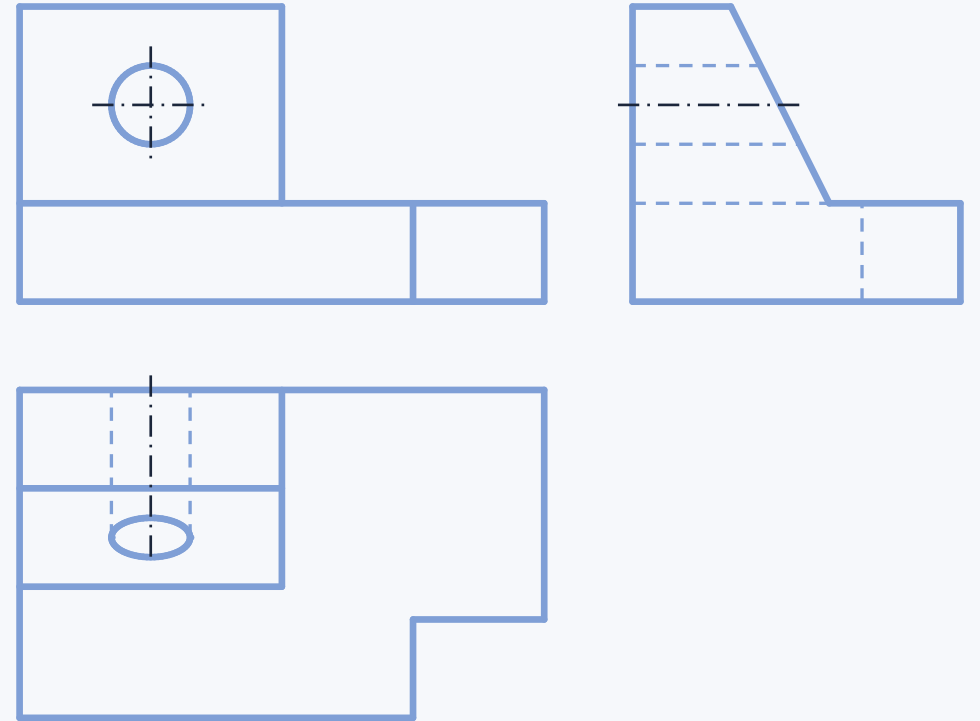
Alignment

Views line up: front above top, front beside side view.

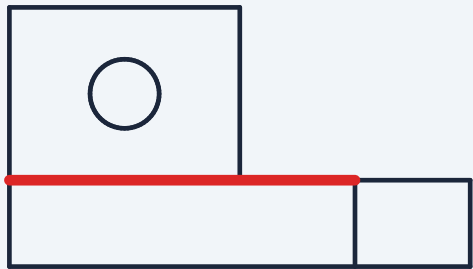
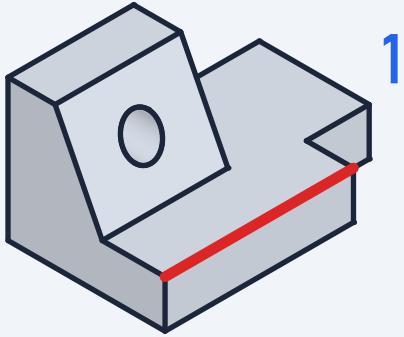
3.2

Reading views

Every line and every area
tells you something.

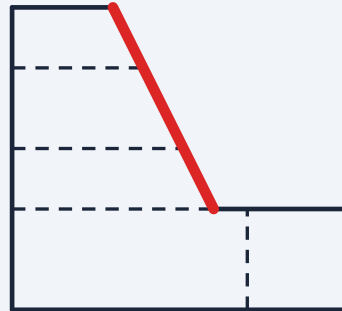
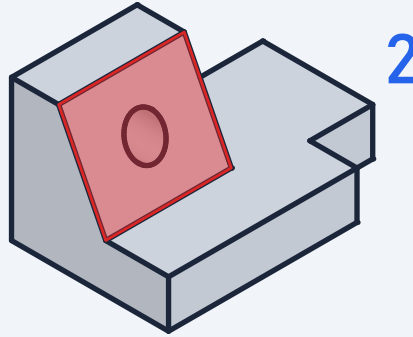


Every line means something



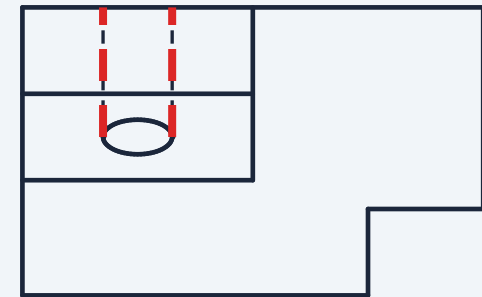
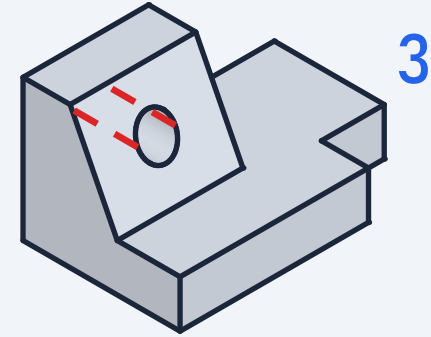
An edge

where two surfaces meet



A surface seen on edge

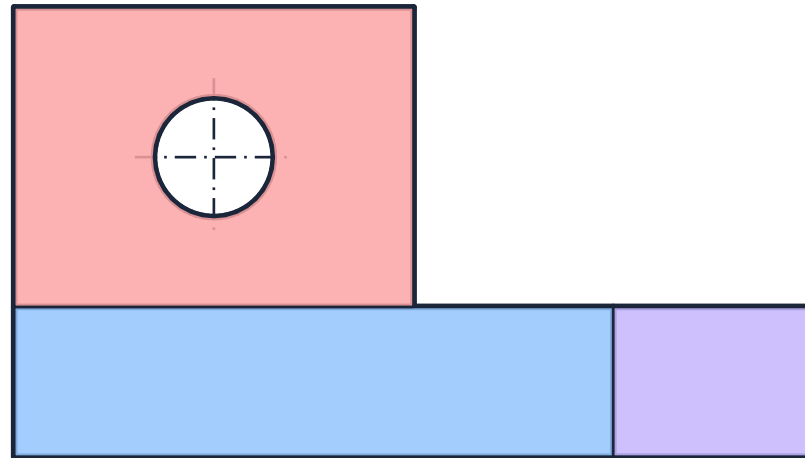
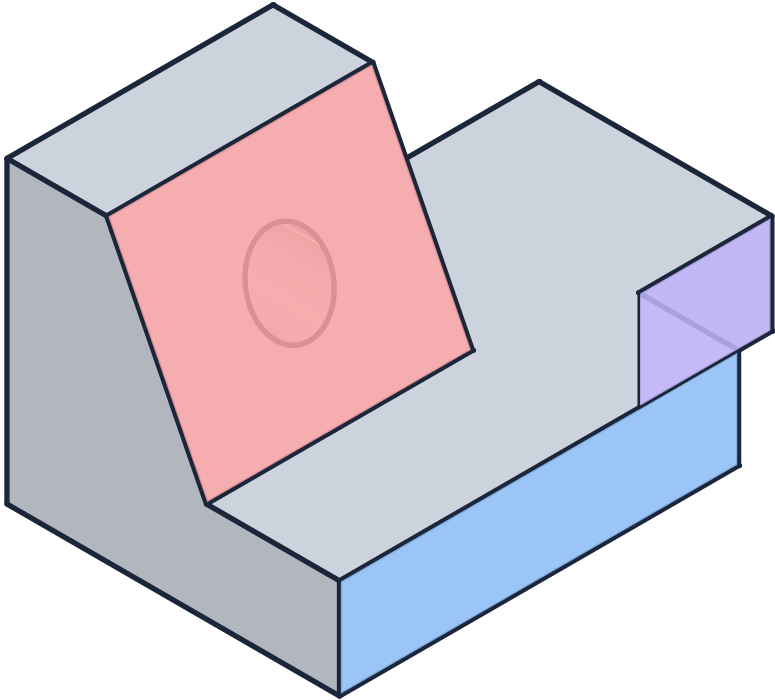
a flat face that points sideways



The limit of a curved surface

the outline of a hole or a cylinder

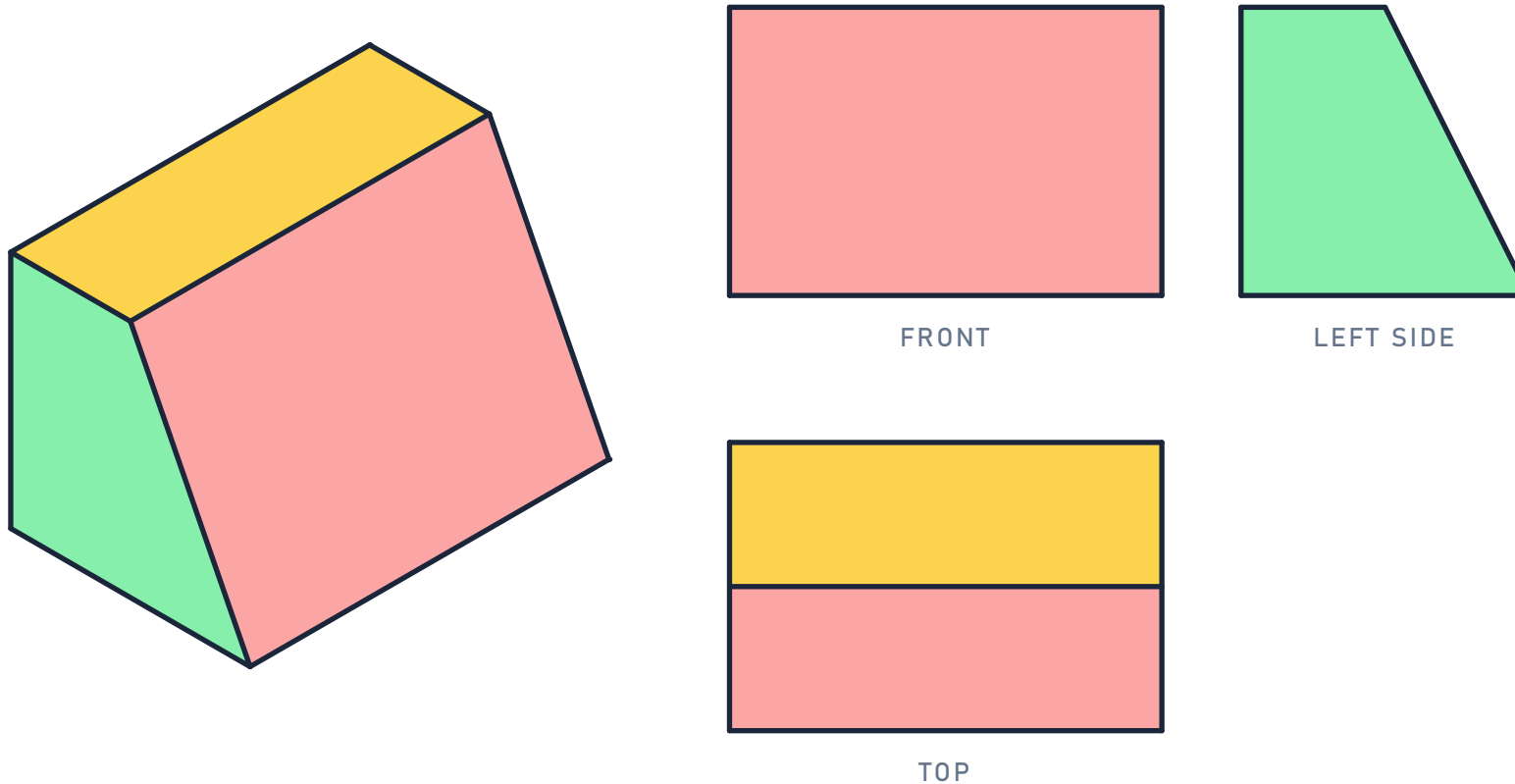
Every closed area is a surface



- Blue:** The front face of the base
- Purple:** The back wall of the corner cut: 15 mm deeper
- Pink:** The inclined face

Two areas that touch are two different surfaces: at a different depth or a different angle.

Normal and inclined surfaces



Yellow: a normal surface

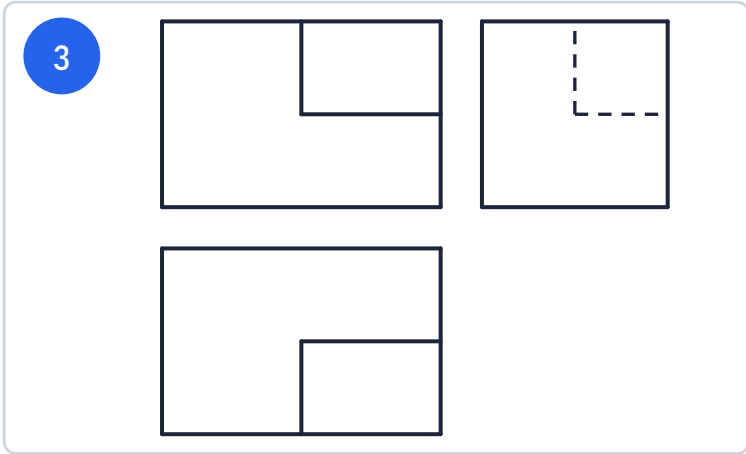
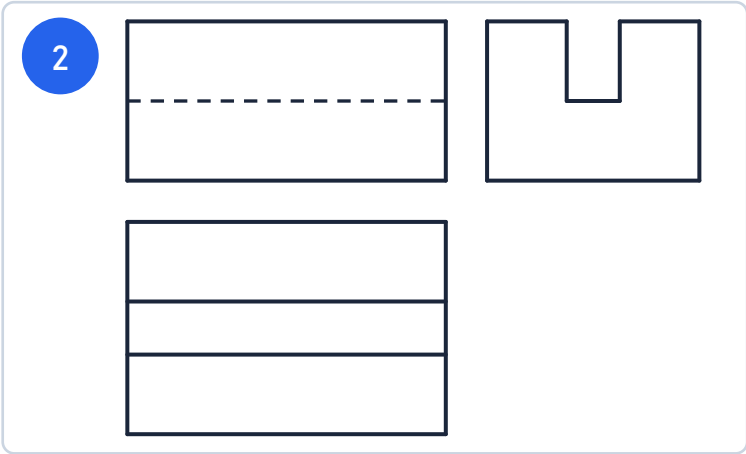
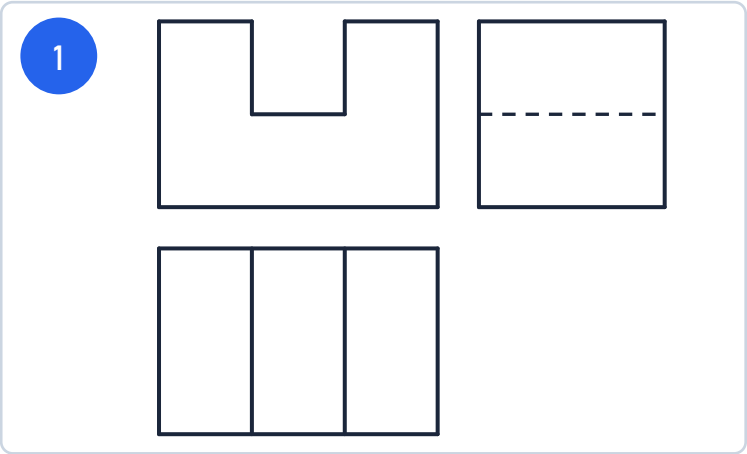
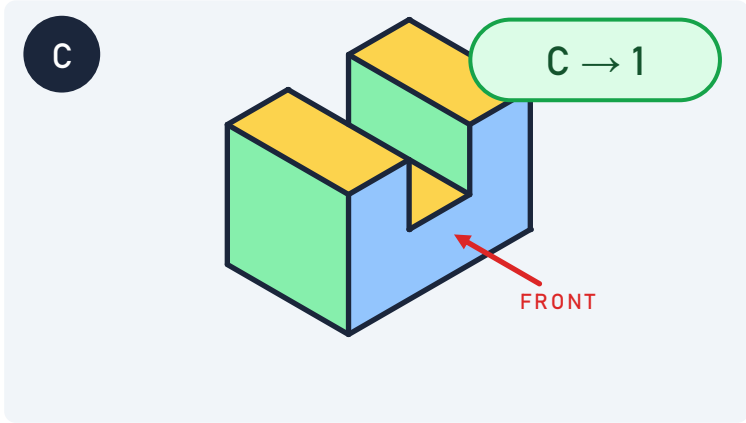
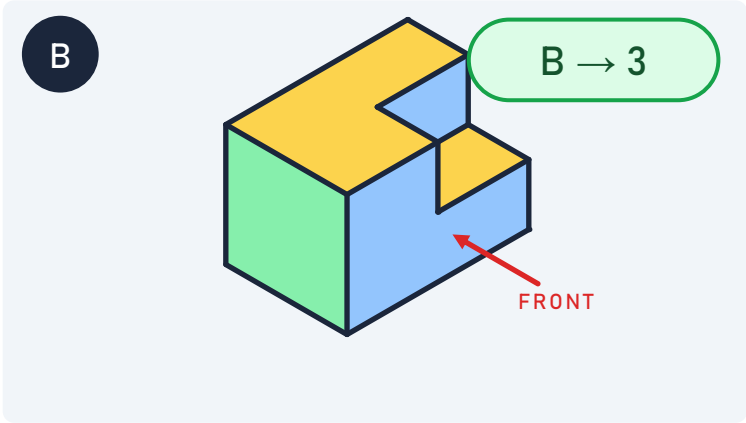
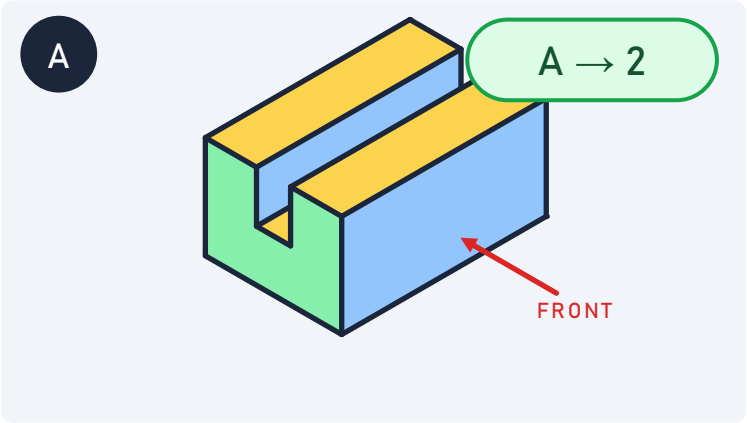
Parallel to a projection plane: TRUE SHAPE in one view (top), a LINE in the other two.

Pink: an inclined surface

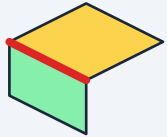
Tilted in one direction: a LINE in one view (side), a SMALLER SIMILAR SHAPE in the other two.

A flat surface is either a line or a shape in a view, never bigger than its true size.

Which views belong to which object?



Key terms



Edge

The line where two surfaces of an object meet.



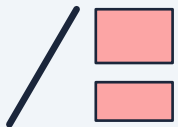
Surface

A face of the object. In a view, every closed area is a surface.



Normal surface

Parallel to a projection plane: true shape in one view, a line in the others.



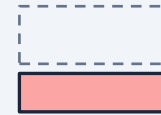
Inclined surface

Tilted in one direction: a line in one view, a smaller shape in the others.



True shape

A surface seen straight on, at its real size and shape.



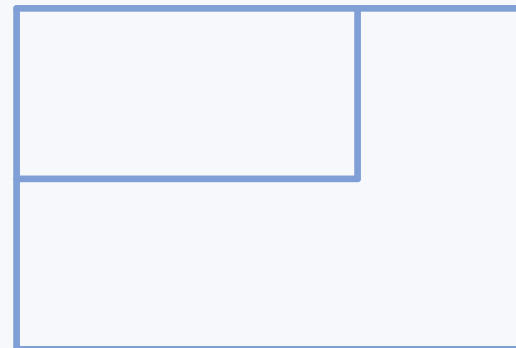
Foreshortened

Seen at an angle, so it looks shorter than it really is.

3.3

The third view

Two views are given:
find the third.



Finding the third view: the method

1

Read

Read the two views: what is each line, each area?

2

Imagine

Picture the object. A quick sketch helps.

3

Project

Carry heights across and depths through the 45° mitre line.

4

Draw

Draw each edge where its lines cross; hidden edges dashed.

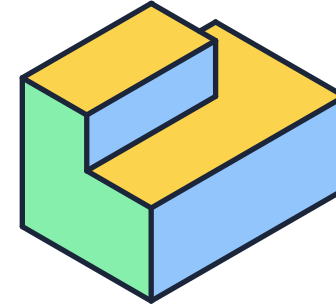
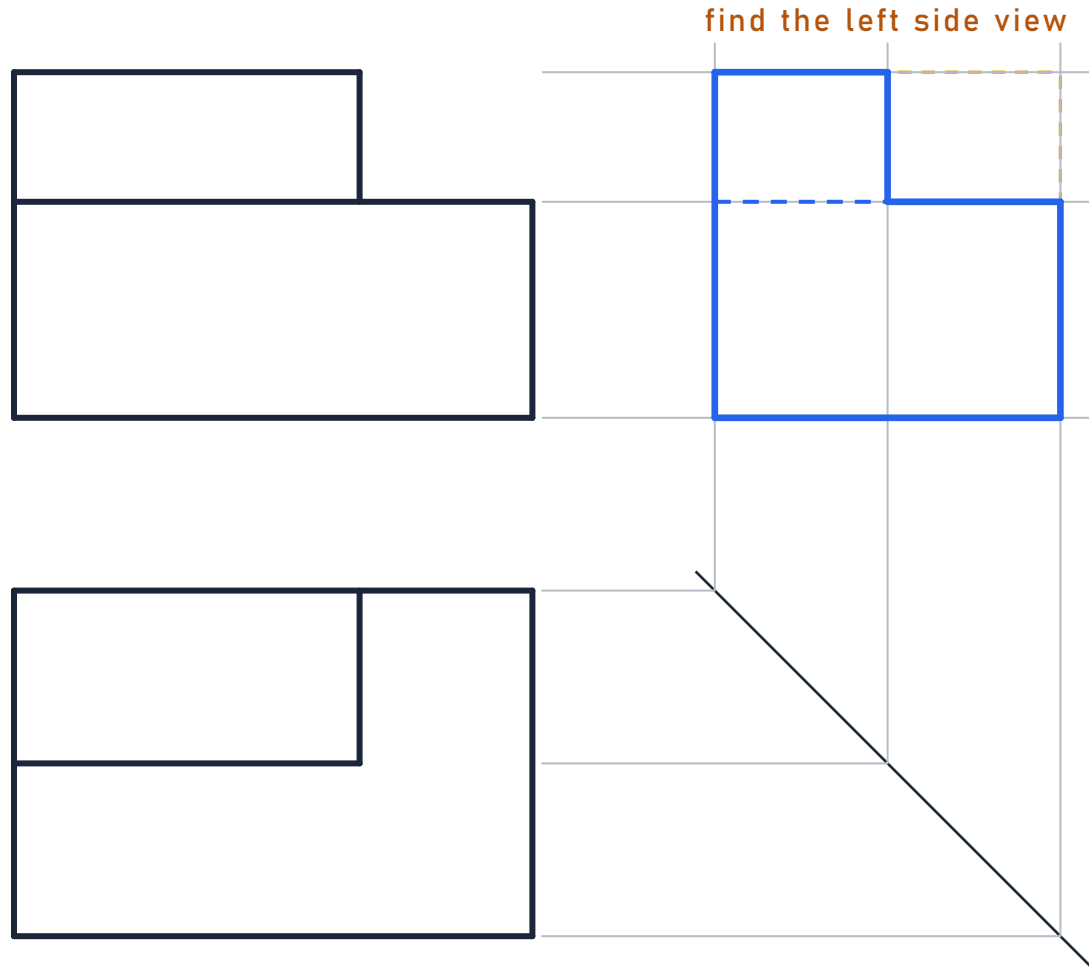
5

Check

Every line in one view has a partner in the other two.

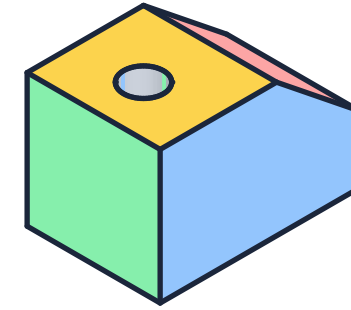
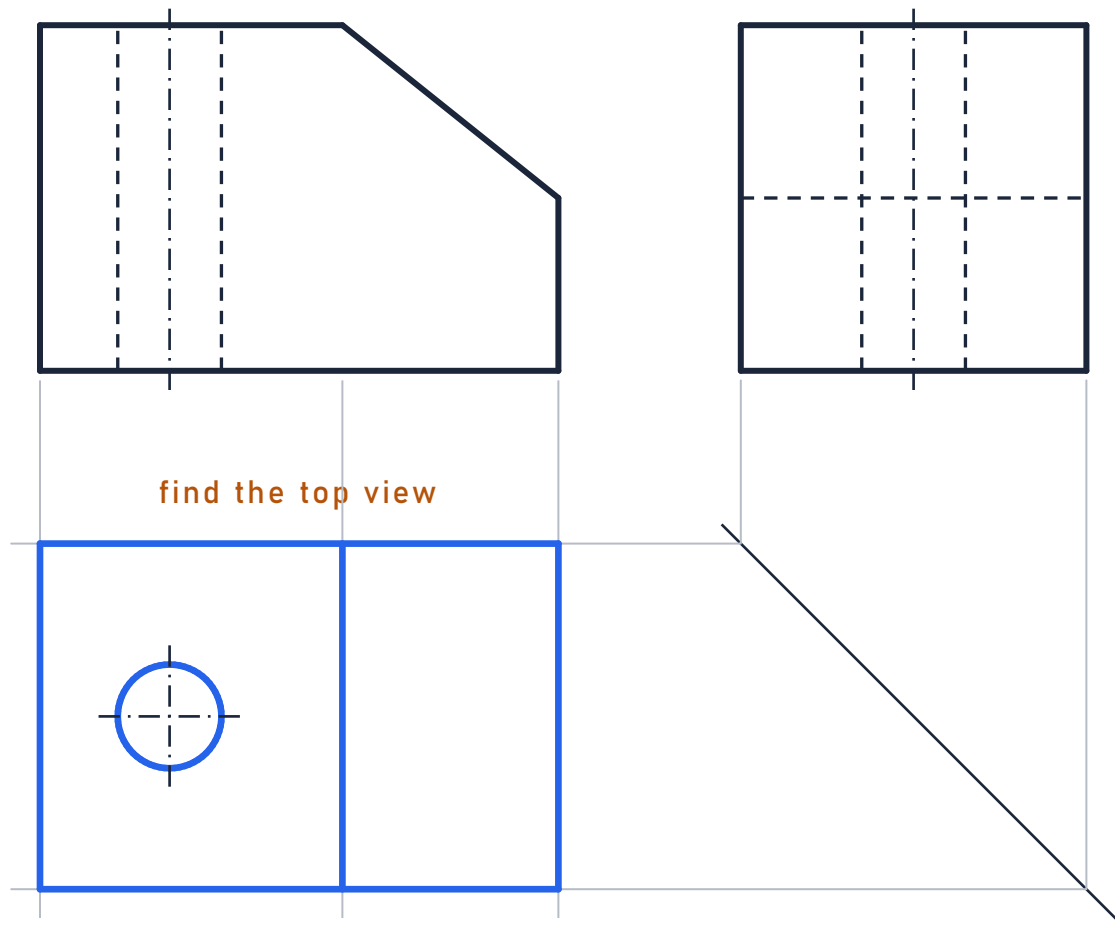
Never guess a line: every line must come from the other views.

Example: front and top given, find the side view



- 1 Imagine the object
- 2 Carry the heights across
- 3 Draw the 45° mitre line
- 4 Carry the depths up
- 5 Draw the visible edges
- 6 Add the hidden edge

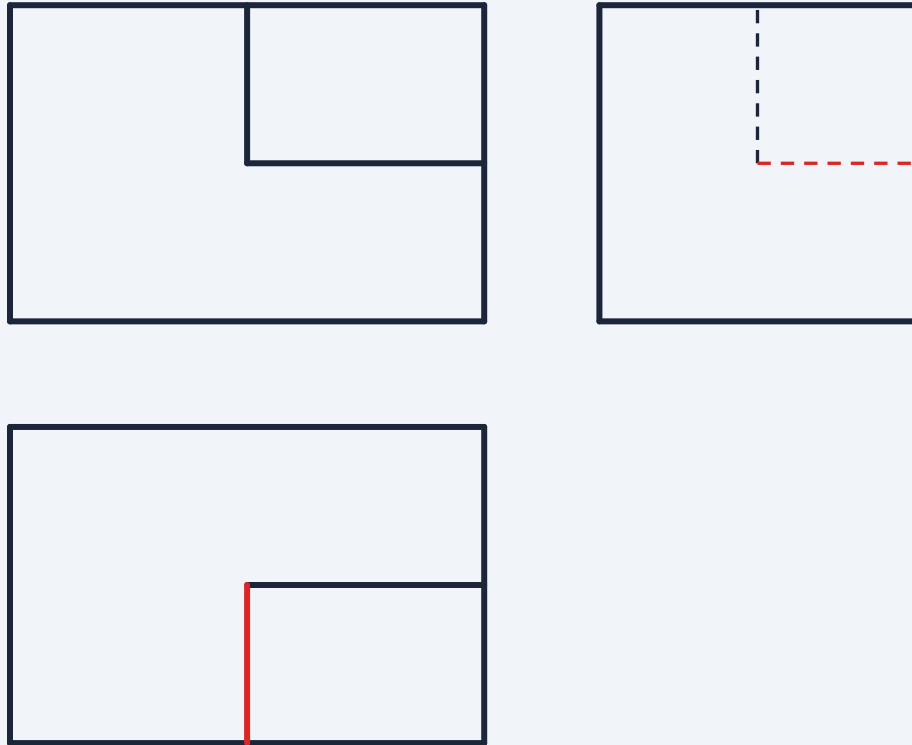
Example: front and side given, find the top view



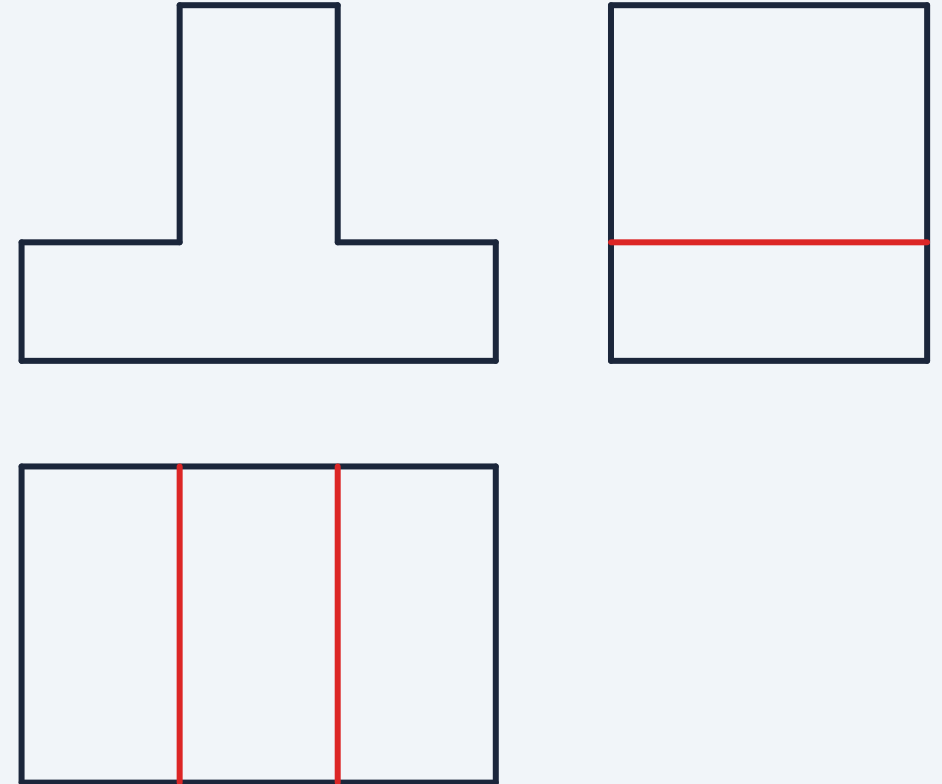
- 1 Imagine the object
- 2 Carry the widths down
- 3 Draw the 45° mitre line
- 4 Carry the depths across
- 5 Draw the visible edges
- 6 Add the hole

Missing lines

1



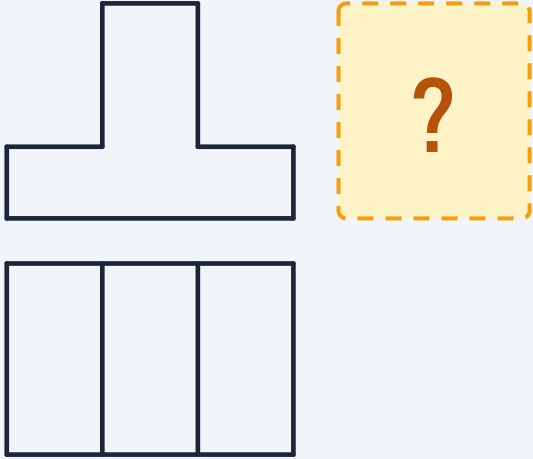
2



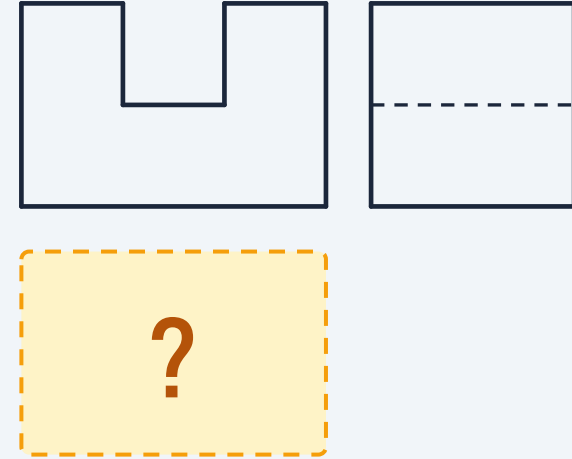
Your turn: find the third view

Two views given · find the third

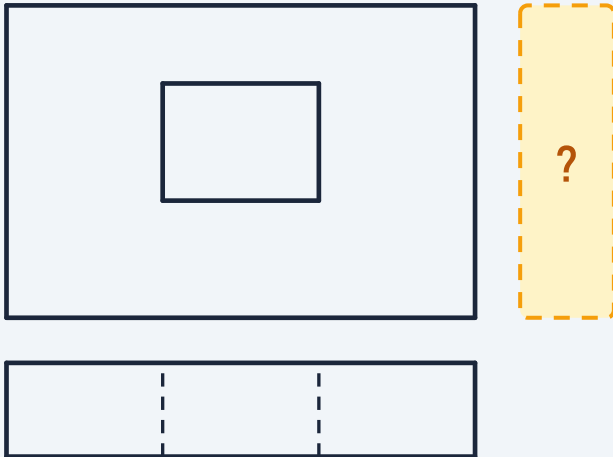
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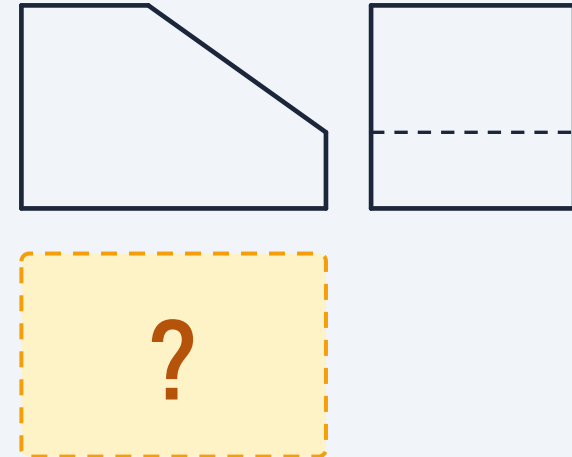
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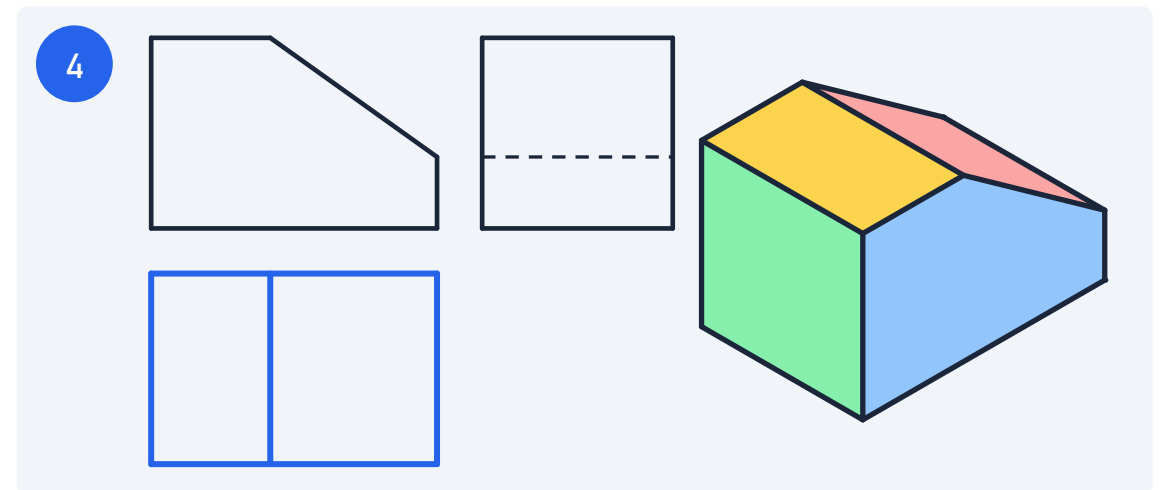
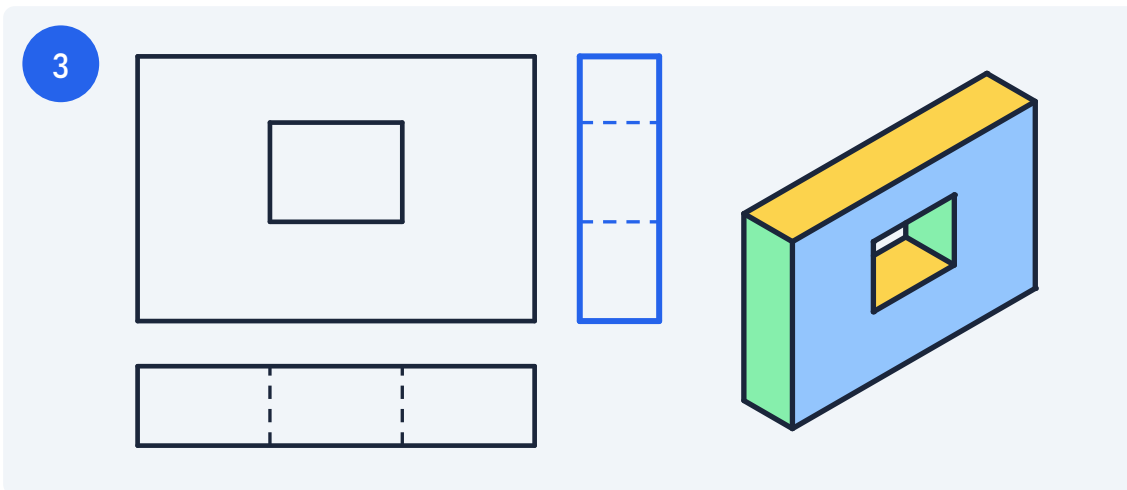
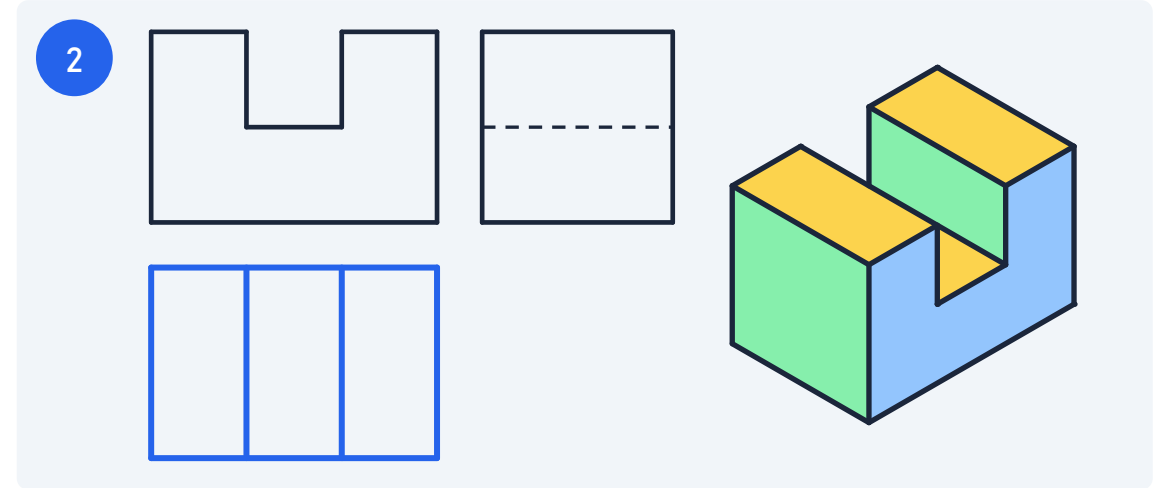
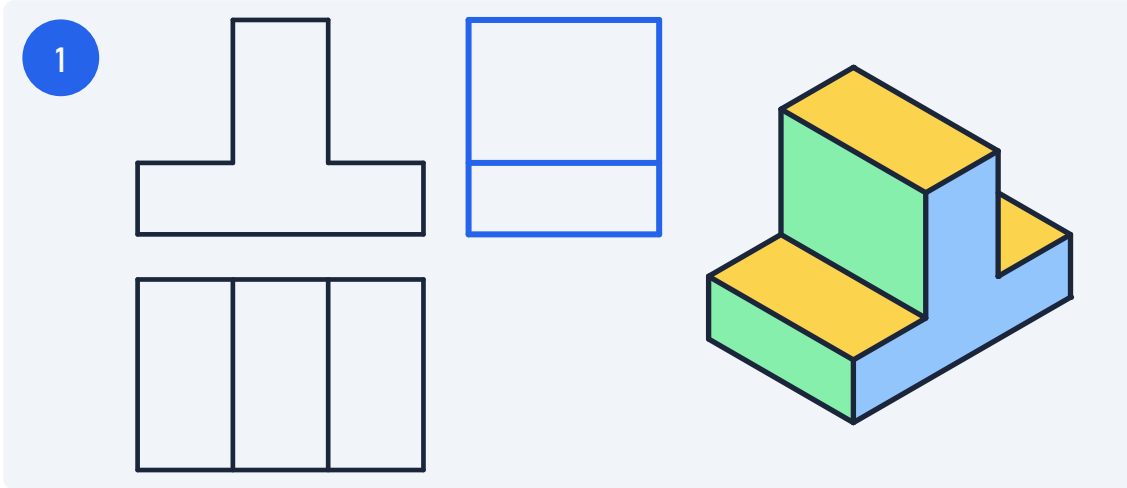
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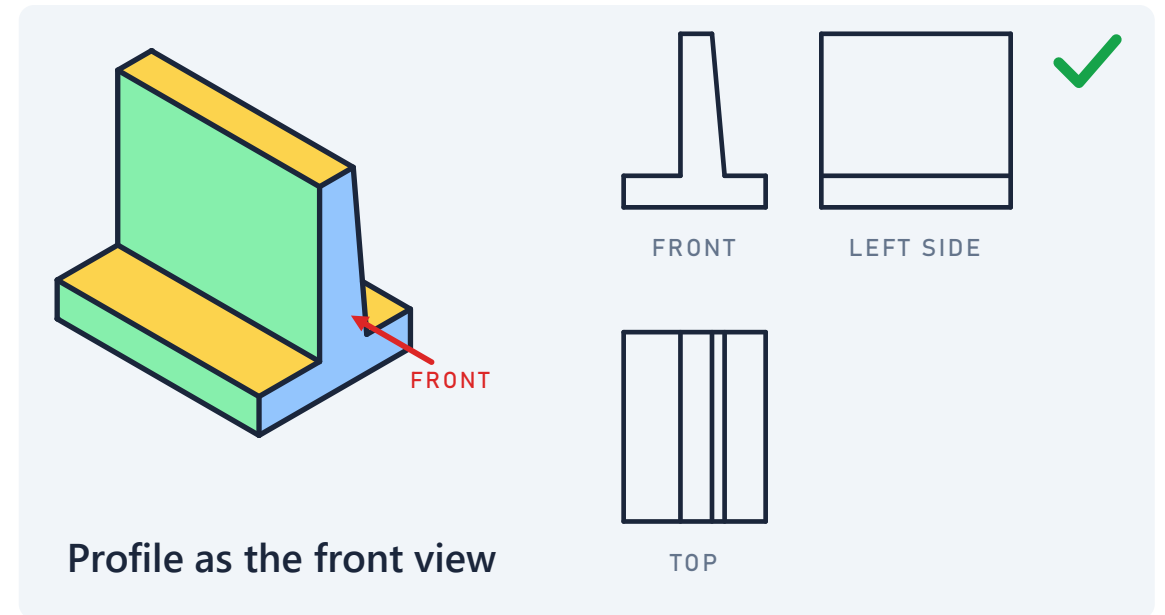
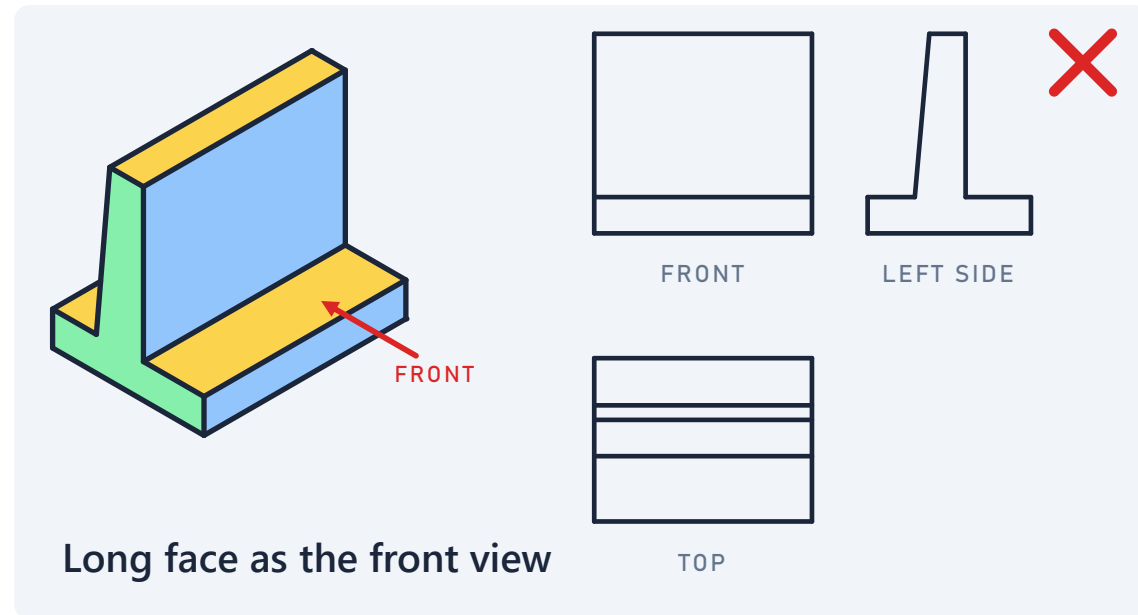
4



Answers: the third view



Choosing the front view



Characteristic shape

The view that shows the shape best.

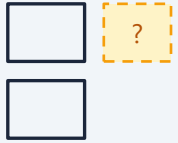
Fewest hidden lines

Put the most features in sight.

Natural position

As it is built or used: walls stand, beams lie.

Key terms



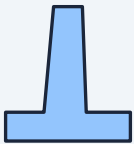
Third view

The view you find from two given views, using projection lines.



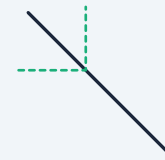
Missing line

A line left out of a view; every feature must appear in all views.



Characteristic view

The view that shows the shape of the object best: use it as the front view.



Mitre line

The 45° line that carries depths between the top and side views.

Quick check

1

In a view, a closed area is ...

a) an edge

b) a surface

c) a hidden line

d) a centre line



2

An inclined surface appears in the other two views as ...

a) true shape

b) larger shape

c) smaller similar shape

d) a point



3

To carry depth from the top view to the side view you use ...

a) the scale

b) a 45° mitre line

c) a centre line

d) the compass



4

The best front view shows ...

a) most hidden lines

b) smallest face

c) characteristic shape

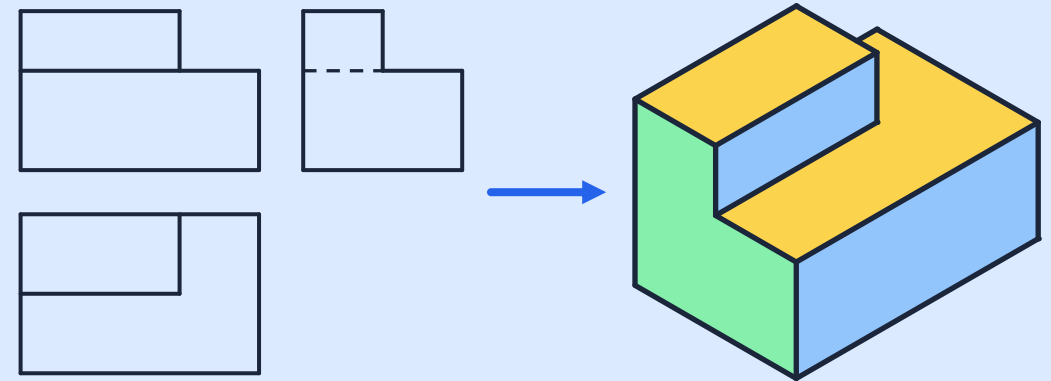
d) top of the object



Next: Part 4

Isometric drawings: 2D → 3D

- The three isometric axes
- The box method, step by step
- Inclined edges and circles
- From the views back to the object



Practise at home: sketch the views of objects around you, a book, a chair, a step.