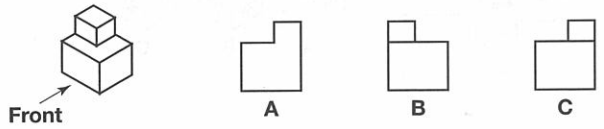
Orthogonal drawing

Orthogonal drawings provide visual information about complex objects that cannot be constructed from a single piece of material. Designers, engineers, builders, architects and manufacturers use orthogonal drawings to specify the precise details of objects to be constructed or manufactured. Orthogonal drawings show several views of an object within the one drawing and conform to prescribed Australian Standards – regulations set out by the government.

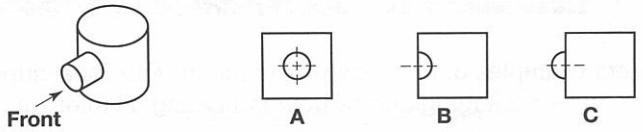
TASKS

1 Select the correct views. Indicate by circling the letter that sits below the correct third angle projection.

1
Select the correct right-hand side view

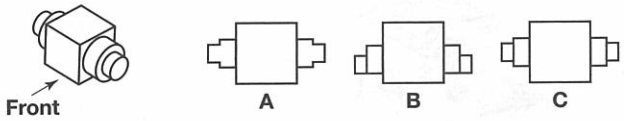


2
Select the correct front view

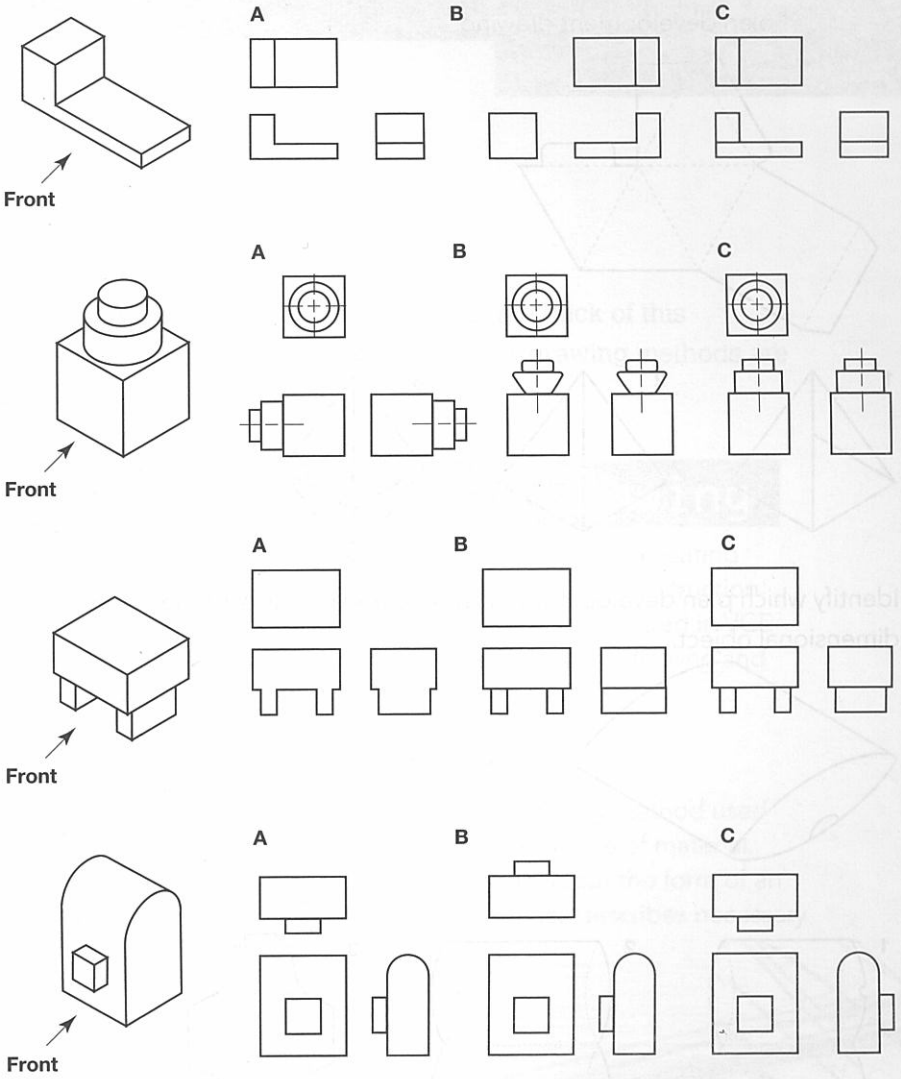


3
Select the correct top view

4
Select the correct front view



2 Select the correct set of views. Indicate by circling the letter that sits above the correct third angle projections.

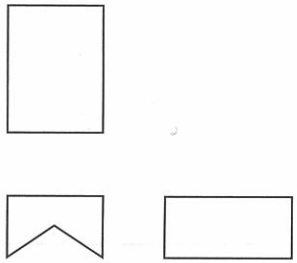


Hidden detail

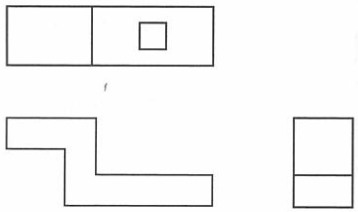
TASKS

1 Using correct line conventions, indicate where *hidden details* should be shown.

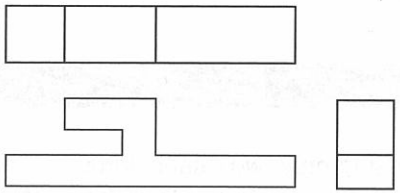
1



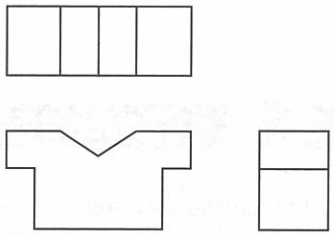
2



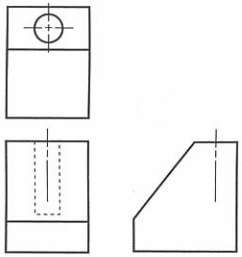
3



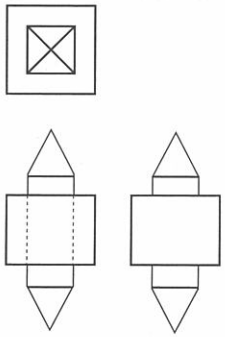
4



5

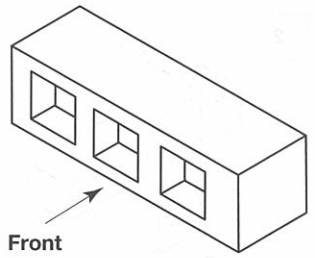


6

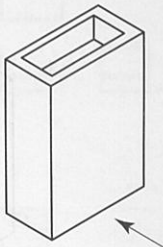


2 Draw the following three-dimensional objects as third angle projection orthogonal drawings. Apply Australian Standards conventions and represent three regular views, including all hidden detail as appropriate. Draw your images at a scale of 1:1.

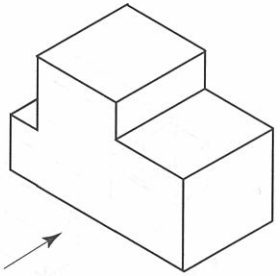
1



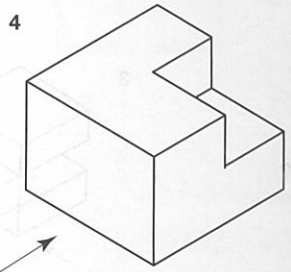
2



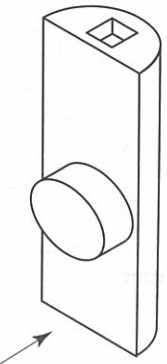
3



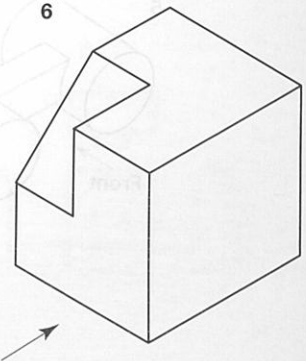
4



5



6



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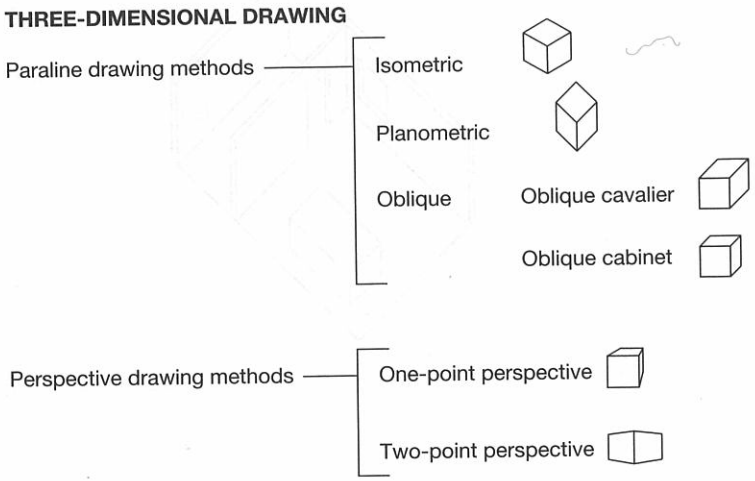
Takeaway >>>

Find an example of visual communication that clearly indicates scale. Hint: research maps or architectural drawings. Place it in your book and annotate how and where scale has been applied. Why is it important in the visual communication?

1.2 Three-dimensional drawing

Three-dimensional drawing more clearly represents how we see objects, as we are accustomed to observing the length, width and depth of objects. In VCE Visual Communication and Design there are several three-dimensional drawing methods covered in detail:

- isometric
- planometric
- oblique.

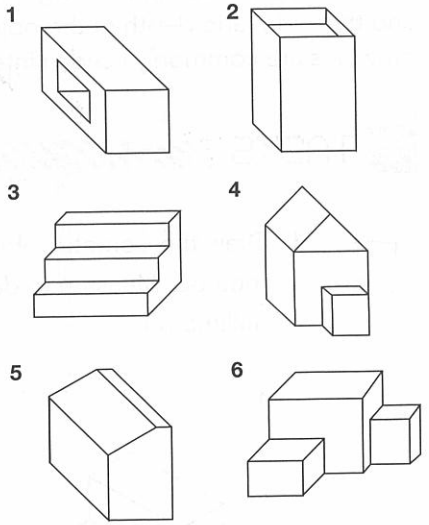


Isometric drawing

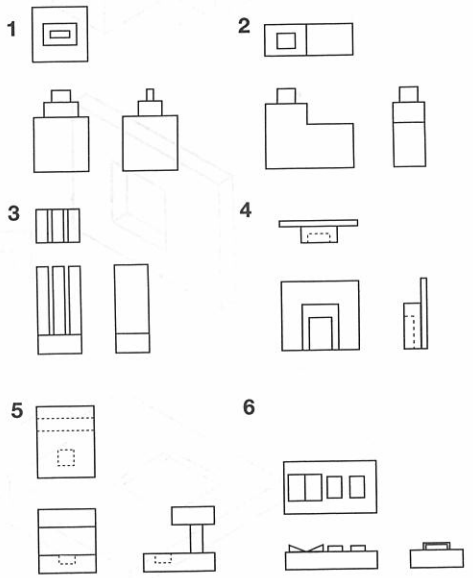
In isometric drawing the height (or corner) of the object faces the viewer and the width and depth of the object are drawn parallel at 30°.

TASKS

1 Draw the following simple objects using the isometric drawing method. Photocopy and enlarge to 200 per cent. Measure to determine the dimensions.



2 Draw the following orthogonal drawings in the isometric drawing method. Photocopy and enlarge to 200 per cent. Measure to determine the dimensions.



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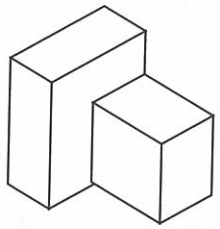
Planometric drawing

In planometric drawing the height (or corner) of the object faces the viewer and the width and depth of the object are drawn parallel at 45°. Planometric drawings are commonly used in interior design and architecture.

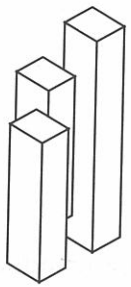
TASKS

1 Draw the isometric objects (below) using the planometric drawing method. Measure to determine dimensions (round to the nearest millimetre).

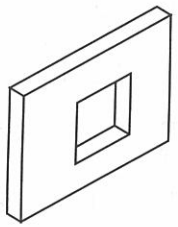
1



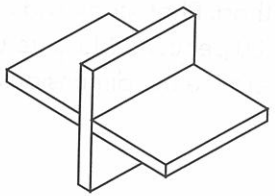
2



3



4



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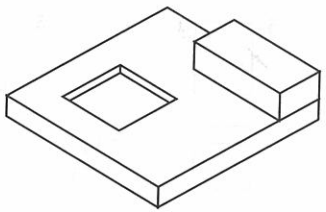
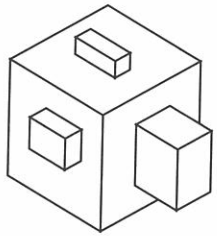


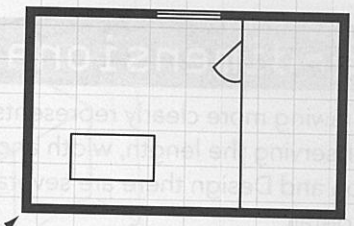
6



2 Draw the plan views (on the opposite page) in the planometric drawing method. Use the example below as a guide. Measure to determine dimensions (round to the nearest millimetre).

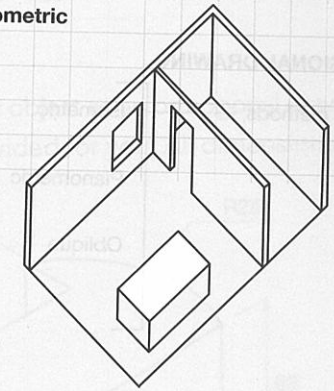
Example

Plan



From this direction

Planometric



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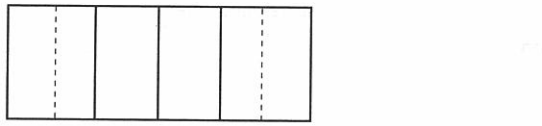
Oblique drawing

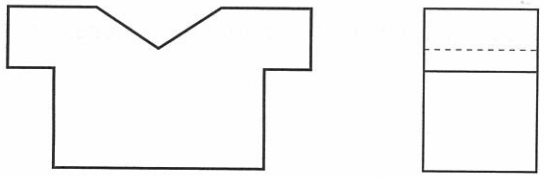
Oblique drawing differs significantly from both isometric and planometric drawing as both the height and width of the oblique object face the viewer and only the depth recedes at an angle of 45°. In depicting the exact front view of an object, oblique drawings offer the opportunity to show substantial frontal detail.

TASKS

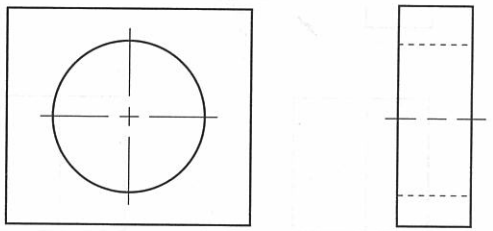
1 Draw the following orthogonal drawings as oblique cabinet drawings. Measure to determine dimensions (round to nearest 5 millimetres).

1

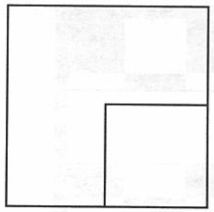


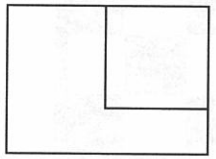


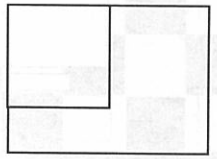
2



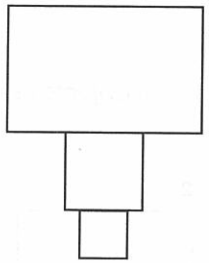
3

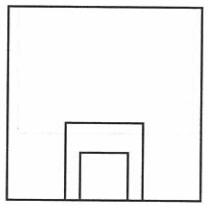


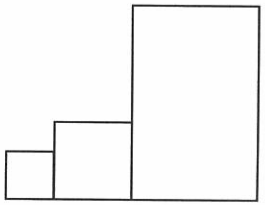




4







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Chapter 2
Freehand drawing and rendering

Unit 1 Outcome 2

In this chapter you will develop skills in perspective drawing and learn to apply surface details and tonal variations to represent form and texture realistically.

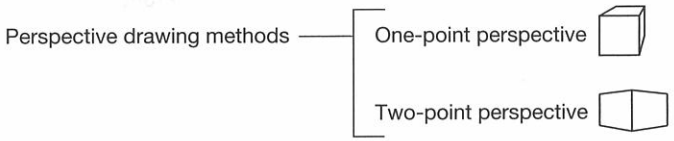
You will find that chapters 1 and 2 of *Nelson Visual Communication and Design VCE Units 1–4*, pages 18–40, will help you with this chapter.

By the end of this chapter, you will have developed skills in the following areas:

- the creation of one-point and two-point perspective freehand drawings from direct observation
- the visual representation of form and the relationships of objects to one another
- the use of a range of media to render texture of materials and to show light and shade
- the rendering of form to show surface detail of materials and texture.

2.1 Perspective drawing

In any perspective drawing, how an object is placed in relation to the horizon line affects the point of view of the depicted object. The horizon line sits at the level of the viewer's eyes. This is called the *eye level*. An object placed below the horizon line – below eye level – gives the viewer more information about the top of the object. An object placed above the horizon line provides visual information about the underneath area. An object placed directly on the horizon line will create a realistic eye-level view.

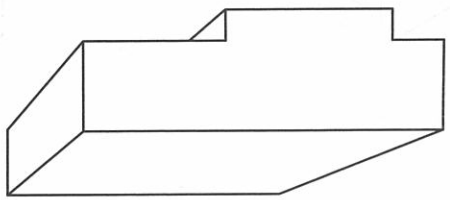


One-point perspective drawing

One-point perspective is sometimes referred to as *linear perspective*. In one-point perspective, an entire plane (side) of an object faces the viewer.

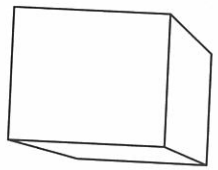
Key concepts to remember when drawing in one-point perspective:

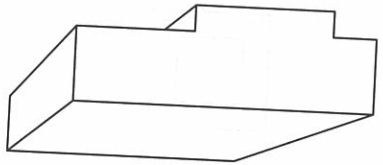
- **the height and width of the object face the viewer**
- **all depth (or the sides of the object) recedes to *one* point on the horizon line.**

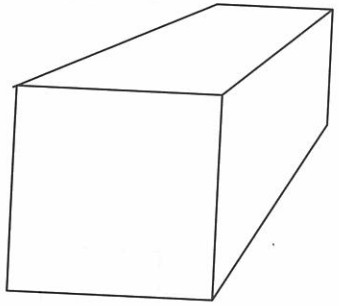


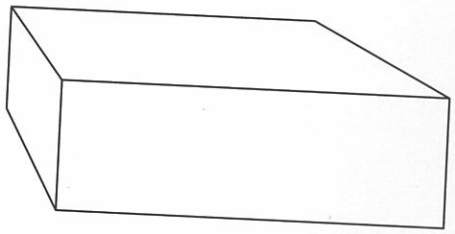
TASKS

1 Observe the following one-point perspective drawing. Using a ruler or freehand, identify where the vanishing point and horizon line are situated and draw them.









2 Add five simple objects of your own using the same vanishing point. (The depth of the object towards the horizon line is not specified.)

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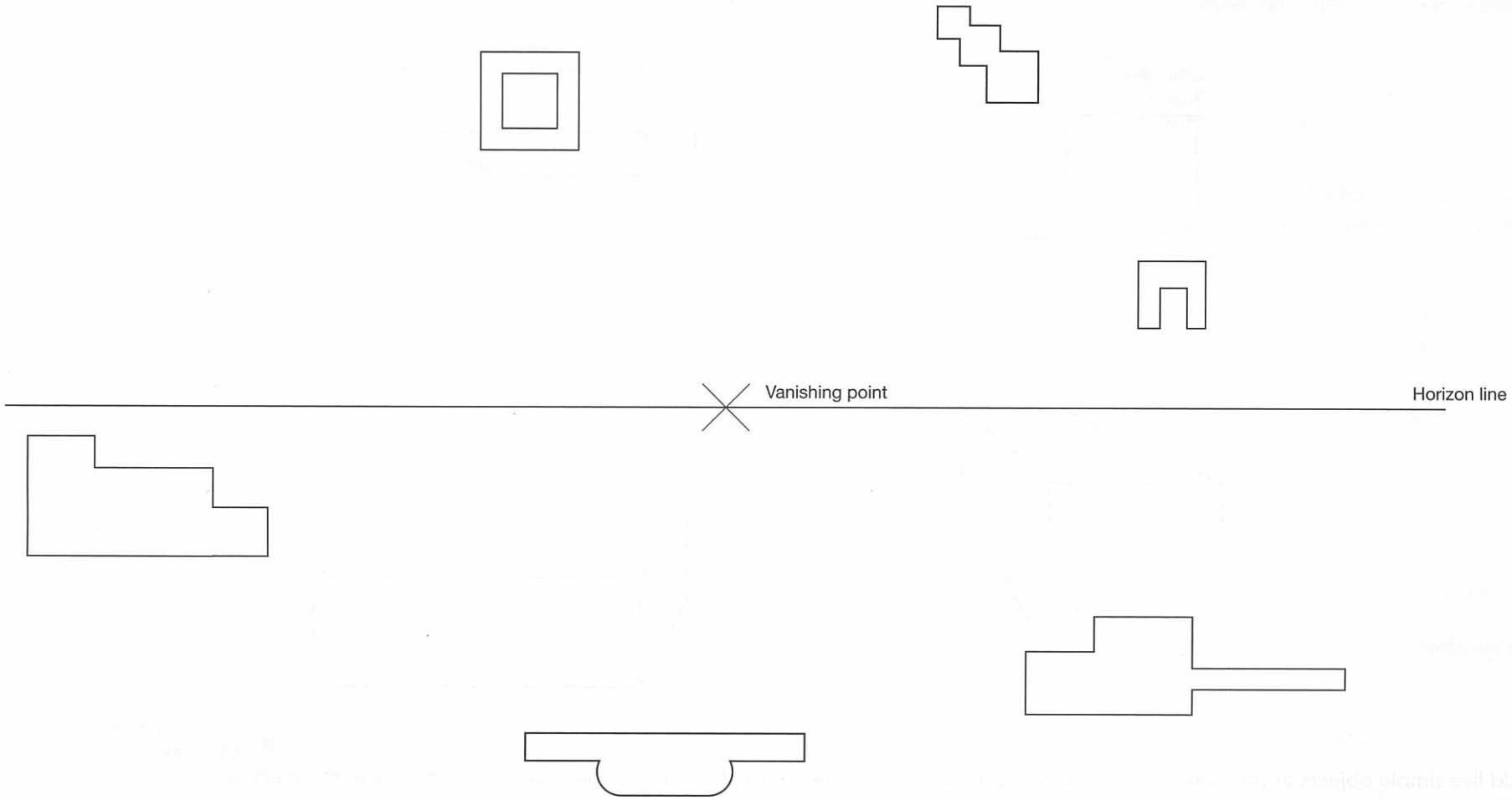
3 Complete the objects into their three-dimensional perspective forms using the provided horizon line and the vanishing point. (The depth of the object towards the horizon line is not specified.)



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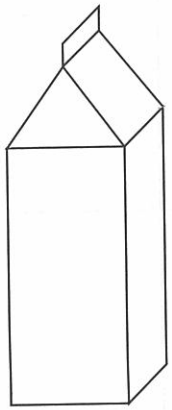
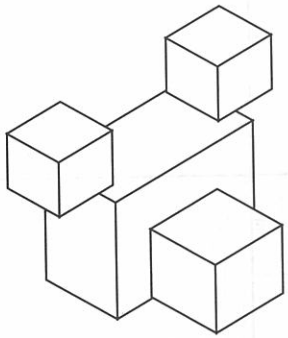
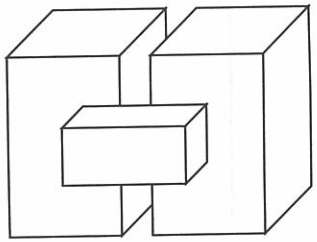
Takeaway >>>

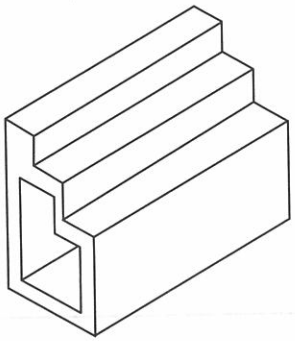
Create a one-point perspective view of your bedroom from an unusual angle: for example, from the ceiling looking down or looking through a window. Include essential details, such as doors, furniture and windows.

6 Redraw the following paraline drawings in one-point perspective.







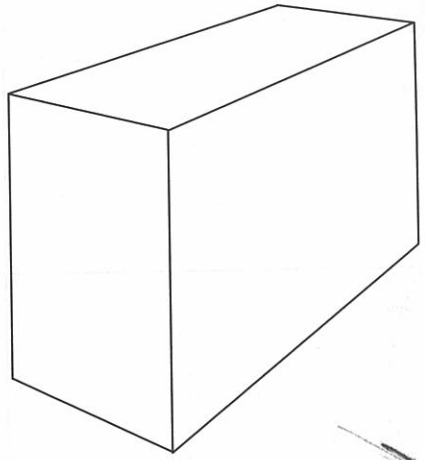


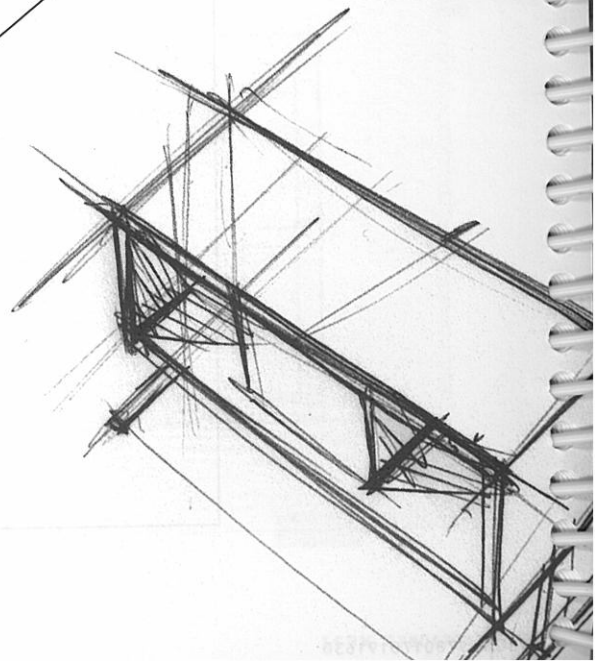
Two-point perspective drawing

Two-point perspective is sometimes referred to as *angular perspective*. In two-point perspective, only the height faces the viewer; the depth (or sides) of the object recedes to two vanishing points on the horizon line.

Key concepts to remember when drawing in two-point perspective:

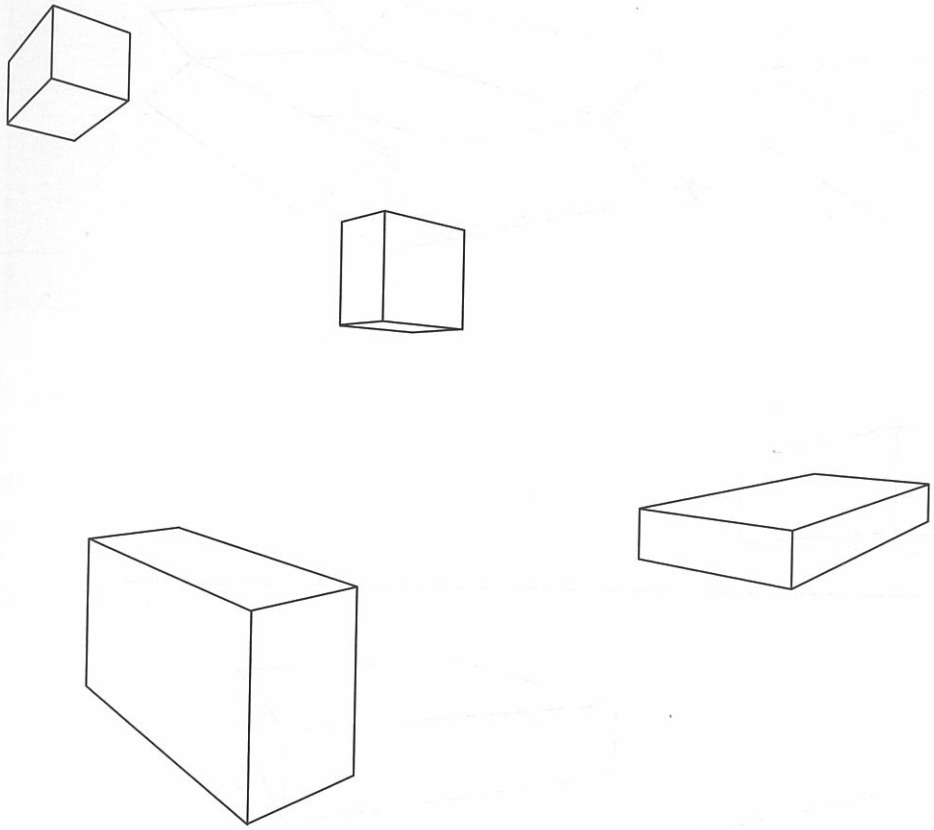
- **the height of the object faces the viewer**
- **all other dimensions recede to *two* points on the horizon line.**





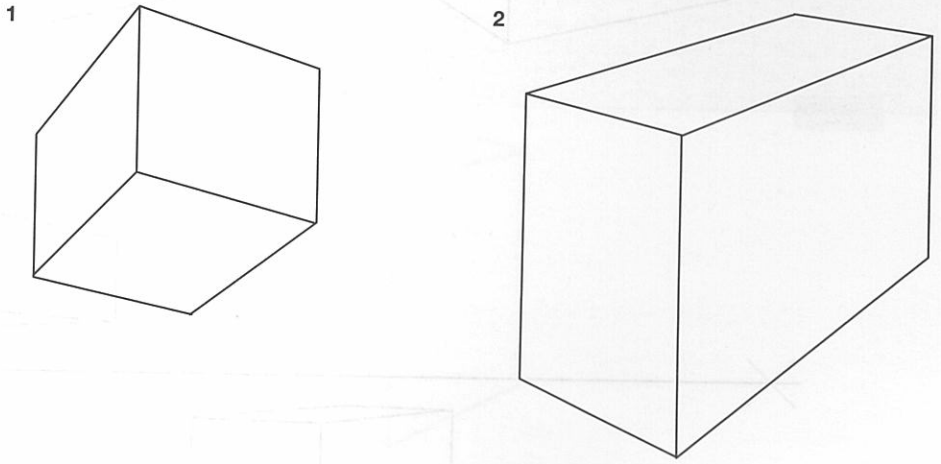
TASKS

1 Look at the following two-point perspective drawing. Using a ruler or freehand, identify where the two vanishing points and horizon line are situated and draw them.



2 Add five simple objects of your own using the same vanishing points. (The depth of the object towards the horizon line is not specified.)

3 Change the two solid perspective shapes below to transparent ones by finding the horizon line and vanishing points. Draw in the interior detail.



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