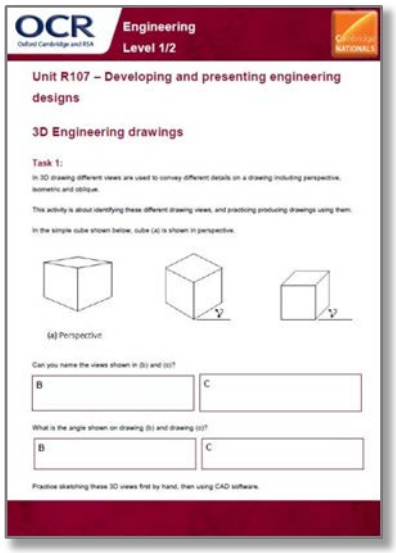
Unit R107 – Developing and presenting engineering designs

3D Engineering drawings

Instructions and answers for teachers

These instructions should accompany the OCR resource **'3D Engineering drawings'** *activity which supports OCR Cambridge Nationals in Engineering.*



The Activity:

This resource comprises of 2 tasks.

This activity offers an opportunity for English skills development.

This activity offers an opportunity for maths skills development.

Associated materials:

'3D Engineering drawings' activity sheet

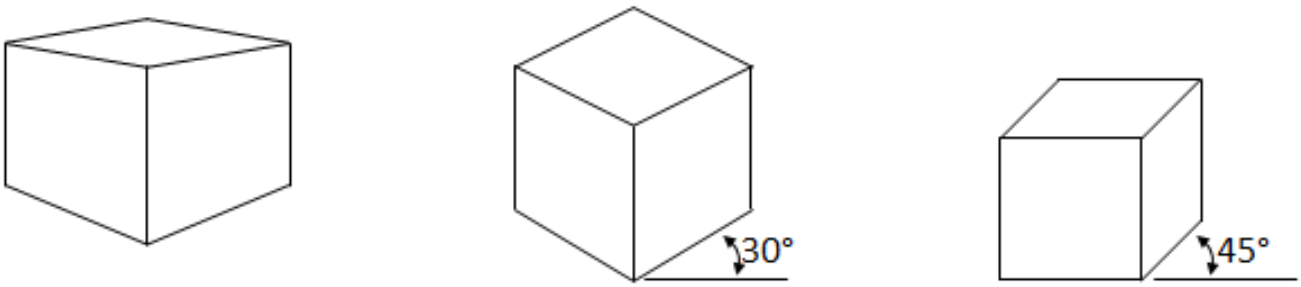
Suggested timings:

Tasks 1 and 2: 1 - 2 hours

Learning Outcome 2: Know how to develop designs using engineering drawing techniques and annotation

Task 1:

For this activity learners are required to identify three drawing views used in 3D drawing, and to specify the angle that horizontal lines are drawn to the horizontal base line.



(a) Perspective (b) Isometric (c) Oblique

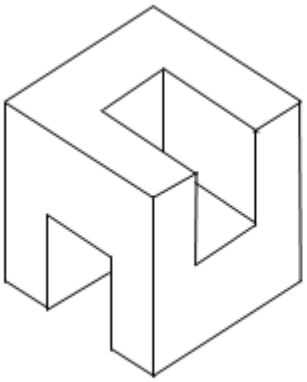
a) Shows a cube drawn in perspective
b) Shows the same cube drawn in an isometric view. The angle of horizontal lines to the base line is 30°
c) Shows the same cube drawn in an oblique view. The angle of the lines of sight to the horizontal is 45°

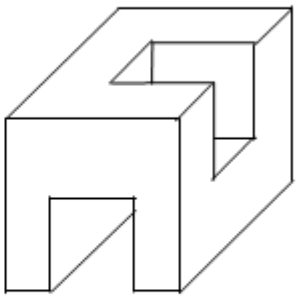
Learners will require teacher guidance at producing simple isometric and oblique 3D drawings, and may practice first using hand sketching and then using CAD. Practice will be most likely be key to learners developing accurate drawing skills.

The teacher might use internet resources in order to explain isometric and oblique drawing such as http://www.youtube.com/watch?v=fU8so10cXUo and http://195.188.87.10/schools/gcsebitesize/design/graphics/drawingformalrev1.shtml

Task 2:

In Activity 2 learners are given an isometric view of a cube with cut-outs. They are tasked to reproduce the drawing in isometric and oblique view. The solution is shown below.





As for Task 1, learners may practice producing both 3D views by hand sketching and using suitable CAD software.

The teacher might extend the activity with other suitable examples.