



Leaving Certificate Examination, 2017

Design & Communication Graphics ***Higher Level***

Section A (60 marks)

Wednesday, 21 June
Afternoon, 2:00 - 5:00

This examination is divided into three sections:

- SECTION A (Core - Short Questions)
SECTION B (Core - Long Questions)
SECTION C (Applied Graphics - Long Questions)

SECTION A

- Four questions are presented.
- Answer **any three** on the A3 sheet overleaf.
- All questions in Section A carry **20 marks** each.

SECTION B

- Three questions are presented.
- Answer **any two** on drawing paper.
- All questions in Section B carry **45 marks** each.

SECTION C

- Five questions are presented.
- Answer **any two** (i.e. the options you have studied) on drawing paper.
- All questions in Section C carry **45 marks** each.

General Instructions:

- *Construction lines must be shown on all solutions.*
- *Write the question number distinctly on the answer paper in Sections B and C.*
- *Work on one side of the drawing paper only.*
- *All dimensions are given in metres or millimetres.*
- *Write your Examination number in the box below and on all other sheets used.*

Examination Number:

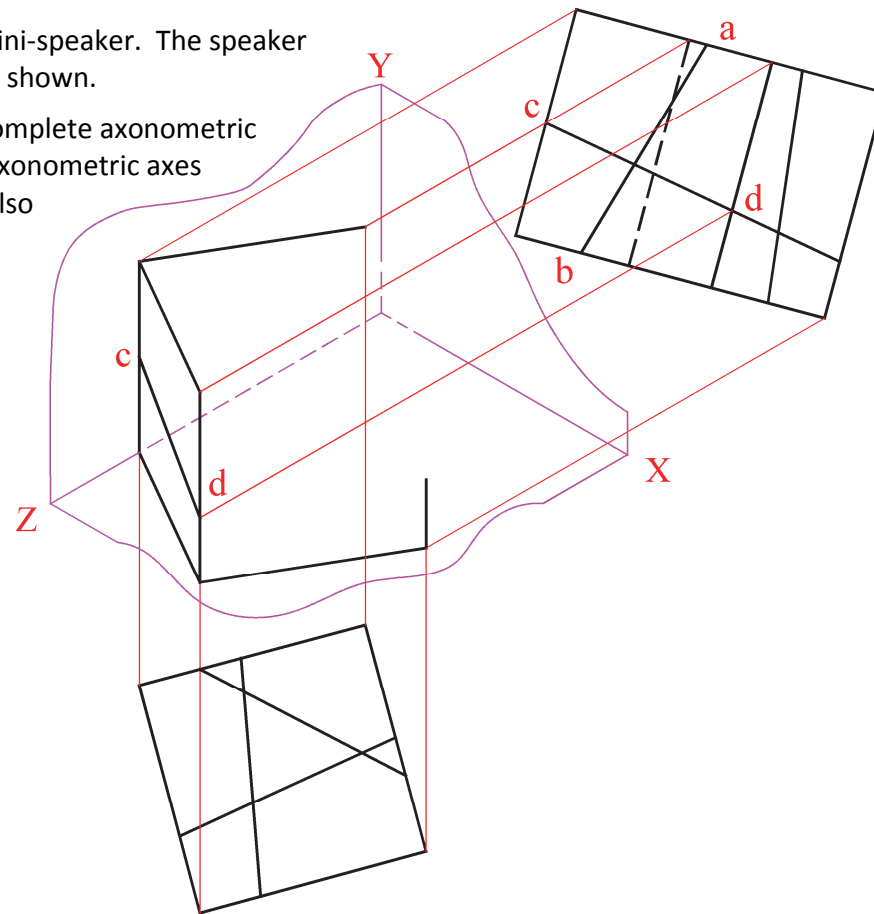
SECTION A - Core - Answer any three of the questions on this A3 sheet.

A-1. The image below shows a Bluetooth mini-speaker. The speaker is based on a cube, with its faces cut as shown.

The drawing on the right shows an incomplete axonometric projection of a similar cube using the axonometric axes method. The planes of reference are also included.

The elevation and plan are shown in their required positions with lines drawn on the three visible faces.

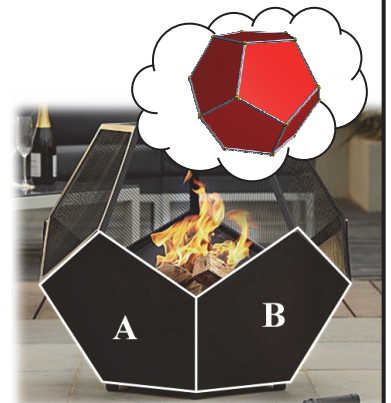
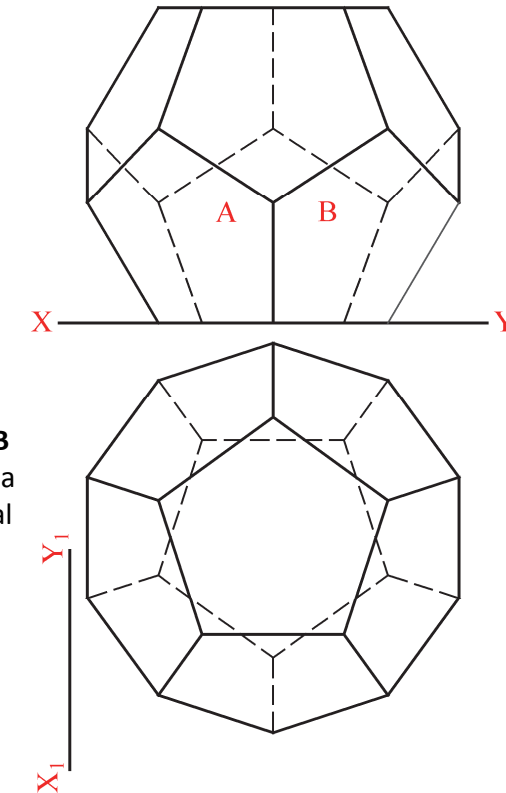
- Complete the axonometric projection of the cube and the given lines.
- Determine the true angle between the lines **ab** and **cd**.



A-3. A design for a patio fireplace based on a regular solid is shown. The drawing shows the elevation and plan of a similar solid.

All faces are regular pentagons.

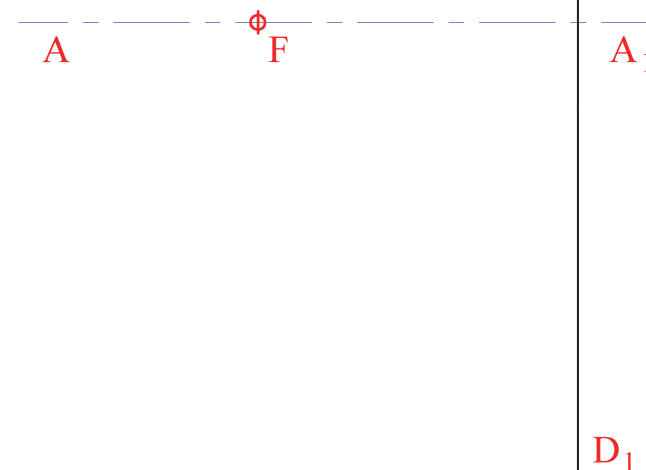
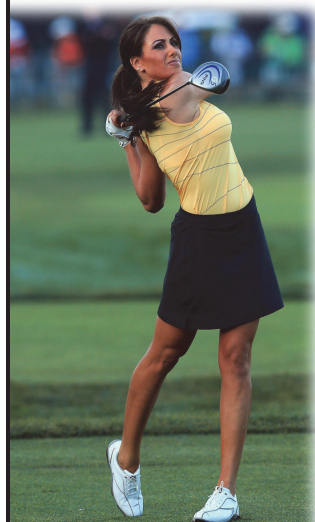
- Using the given X_1Y_1 , draw the true length of the line of intersection between faces **A** and **B**, and hence determine the dihedral angle between the two faces.
- Determine the centrepoint of face **B** in plan and draw the projections of a sphere which rests on the horizontal plane and is also in tangential contact with the centre point of face **B**.



A-2. The graphic below shows the logo for the *Ladies Professional Golf Association*. It contains a combination of geometric curves depicting a female golfer. The main curve is a parabola and the club shaft is a **normal** to the parabola.

The drawing on the right shows the axis AA_1 , the directrix DD_1 and the focus **F**, of a similar parabola.

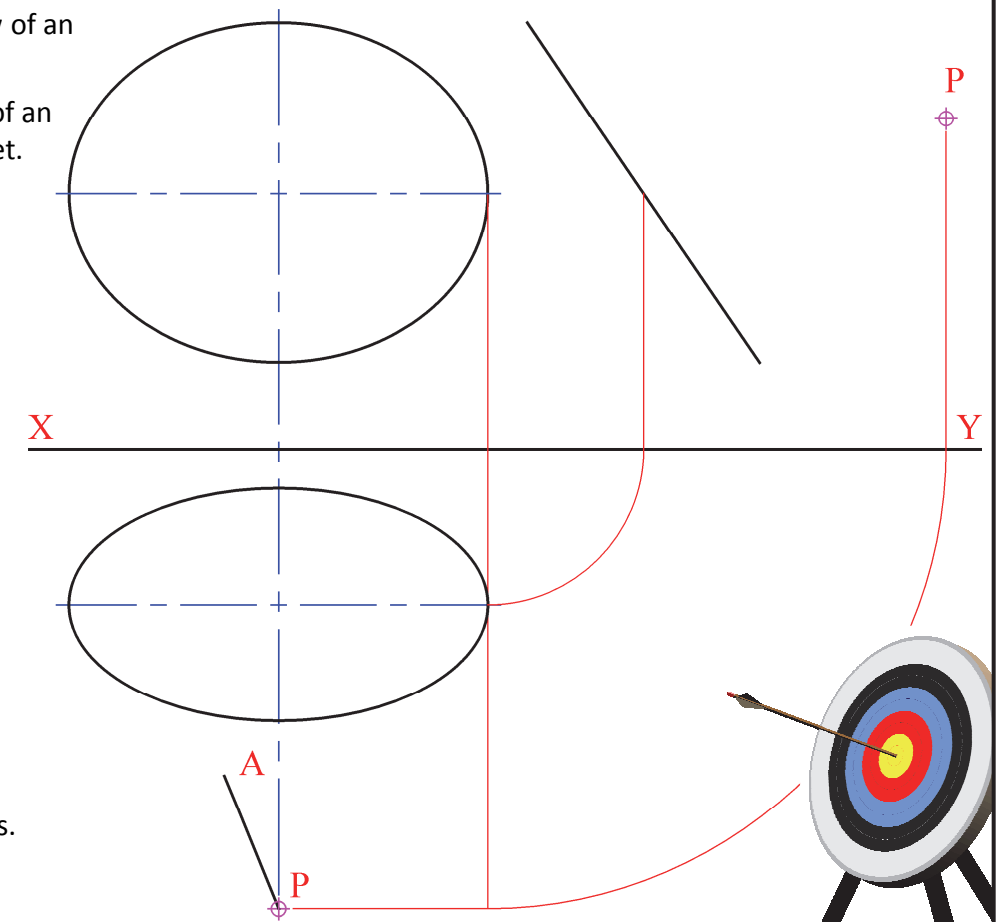
- Locate the vertex and draw a portion of the parabola.
- Locate a point **P** on the curve which is 30mm from the directrix and construct a normal to the curve at point **P**.



A-4. The plan, elevation and end view of an archery target are shown.

The line **PA** represents the plan of an arrow just before it hits the target. The arrow travels horizontally in a straight flight path.

- Draw the arrow **PA** in the end view and in the elevation.
- Determine the projections of the arrow when it hits the target.
- A second arrow, travelling in a straight line, also passes through point **P** and hits the target at the bull's eye (centre point). Determine the true angle between the two flight paths.



(Scale 1:1000)

