Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination, 2015

Design & Communication Graphics

Higher Level

Section A (60 marks)

Wednesday, 17 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:

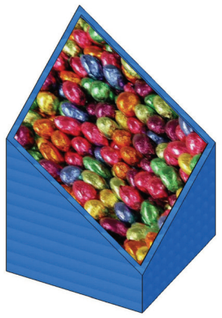
SECTION A - Core - Answer **any three** of the questions on this A3 sheet.

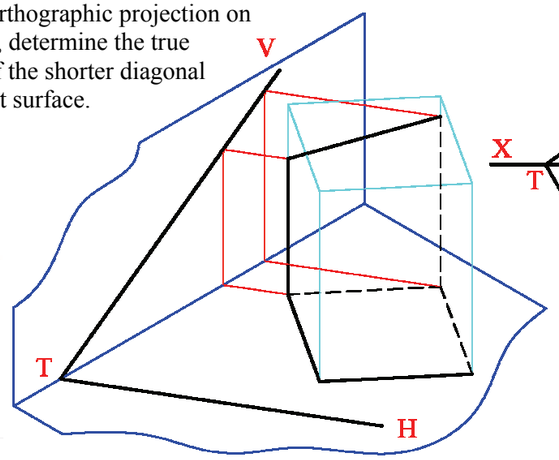
A-1. The 3D graphic below shows a display box, for chocolate eggs, which is based on a truncated prism. The drawing below shows the incomplete pictorial and orthographic projections of a square-based prism which has been cut by the oblique plane **VTH**.

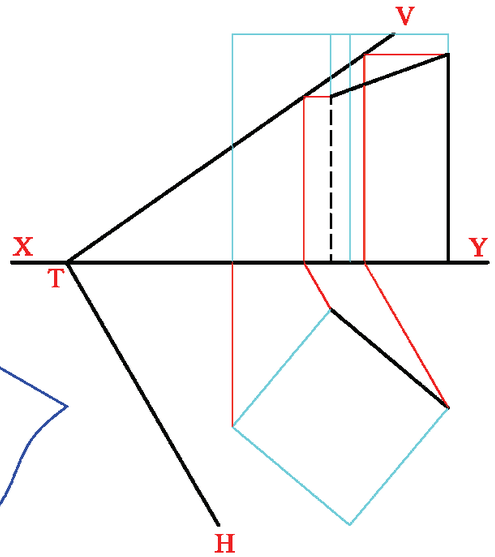
(a) On the orthographic projection on the right, complete the plan and elevation of the cut prism.

(b) Complete the pictorial projection of the cut prism.

(c) On the orthographic projection on the right, determine the true length of the shorter diagonal of the cut surface.



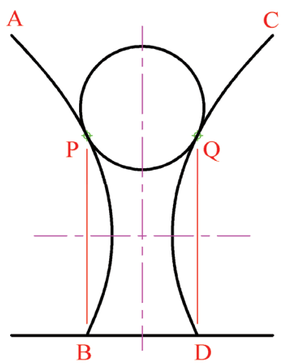


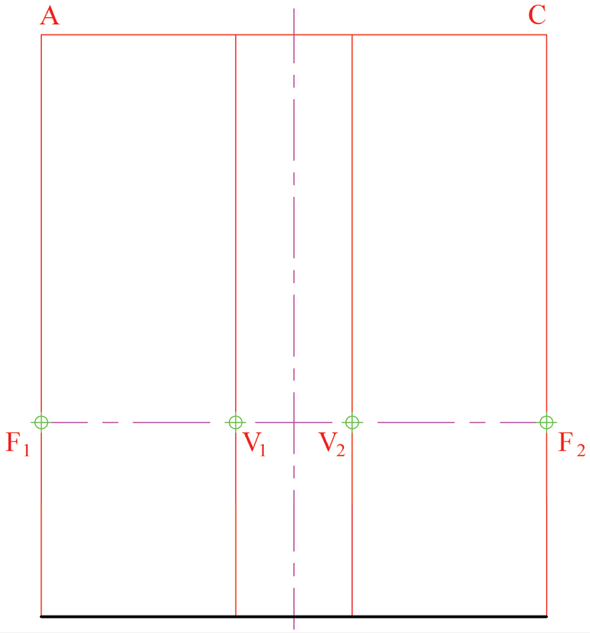


A-2. The graphic below shows the trophy for the *FIFA Club World Cup*. The small outline elevation, which is also given, shows that the trophy is based on two identical parabolic curves, **AB** and **CD**. The circle shown is tangential to the curves. The drawing on the right shows the incomplete outline elevation of the trophy.

(a) $\mathbf{V_1}$ and $\mathbf{V_2}$ are the vertices of the parabolas and $\mathbf{F_1}$ and $\mathbf{F_2}$ are the focal points. Draw the parabolas. Show clearly how to determine the position of the points **B**, **D**, **P** and **Q**.

(b) Draw the circle tangential to the curves at points **P** and **Q** respectively.

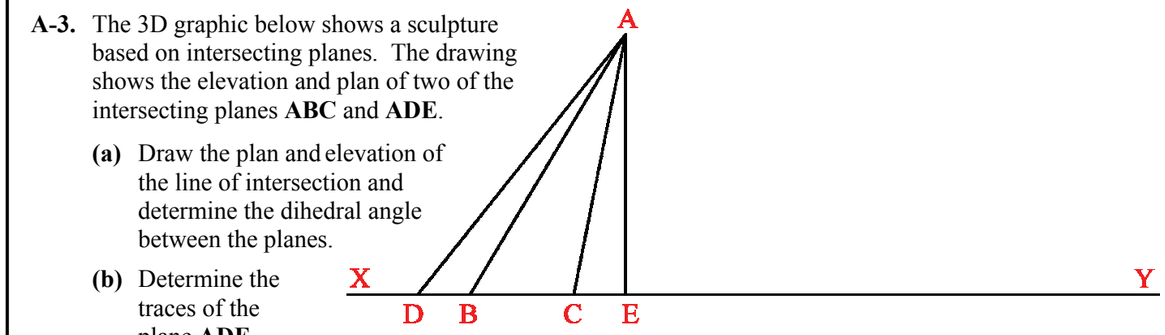


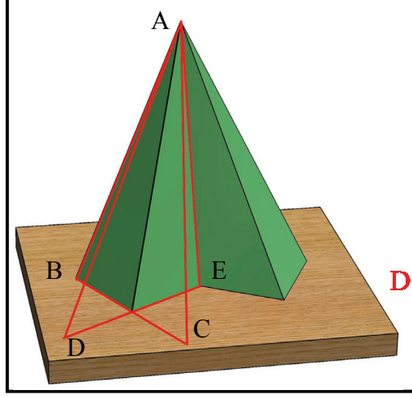


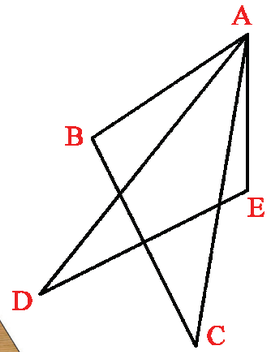
A-3. The 3D graphic below shows a sculpture based on intersecting planes. The drawing shows the elevation and plan of two of the intersecting planes **ABC** and **ADE**.

(a) Draw the plan and elevation of the line of intersection and determine the dihedral angle between the planes.

(b) Determine the traces of the plane **ADE**.





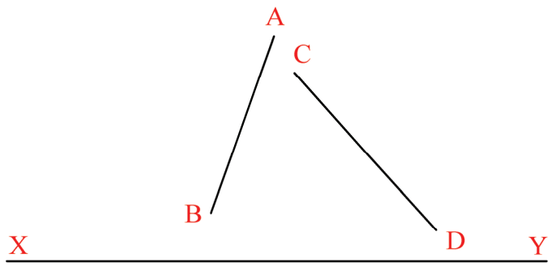


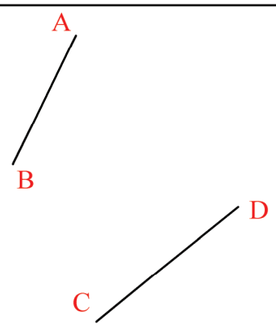
A-4. The graphic below shows the *Derry Peace Bridge,* which contains two inclined pylons supporting the cable structure.

The two pylons are represented by the skew lines **AB** and **CD** on the right.

(a) Determine the projections of the shortest horizontal line between the two skew lines.

(b) Determine, and indicate in degrees, the true angle between this horizontal line and the vertical plane.





This examination paper must be returned at the end of the examination – You must include your Examination Number on the front cover.

This Contour Map is part of Section C and should only be used for the answering of the Geologic Geometry Option (Question C-1).

(Scale 1:1000)