



Pre-Leaving Certificate Examination, 2014

Design & Communication Graphics Ordinary Level

Section A (60 marks)

Time: 3 Hours

This examination is divided into three sections:

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

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

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

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

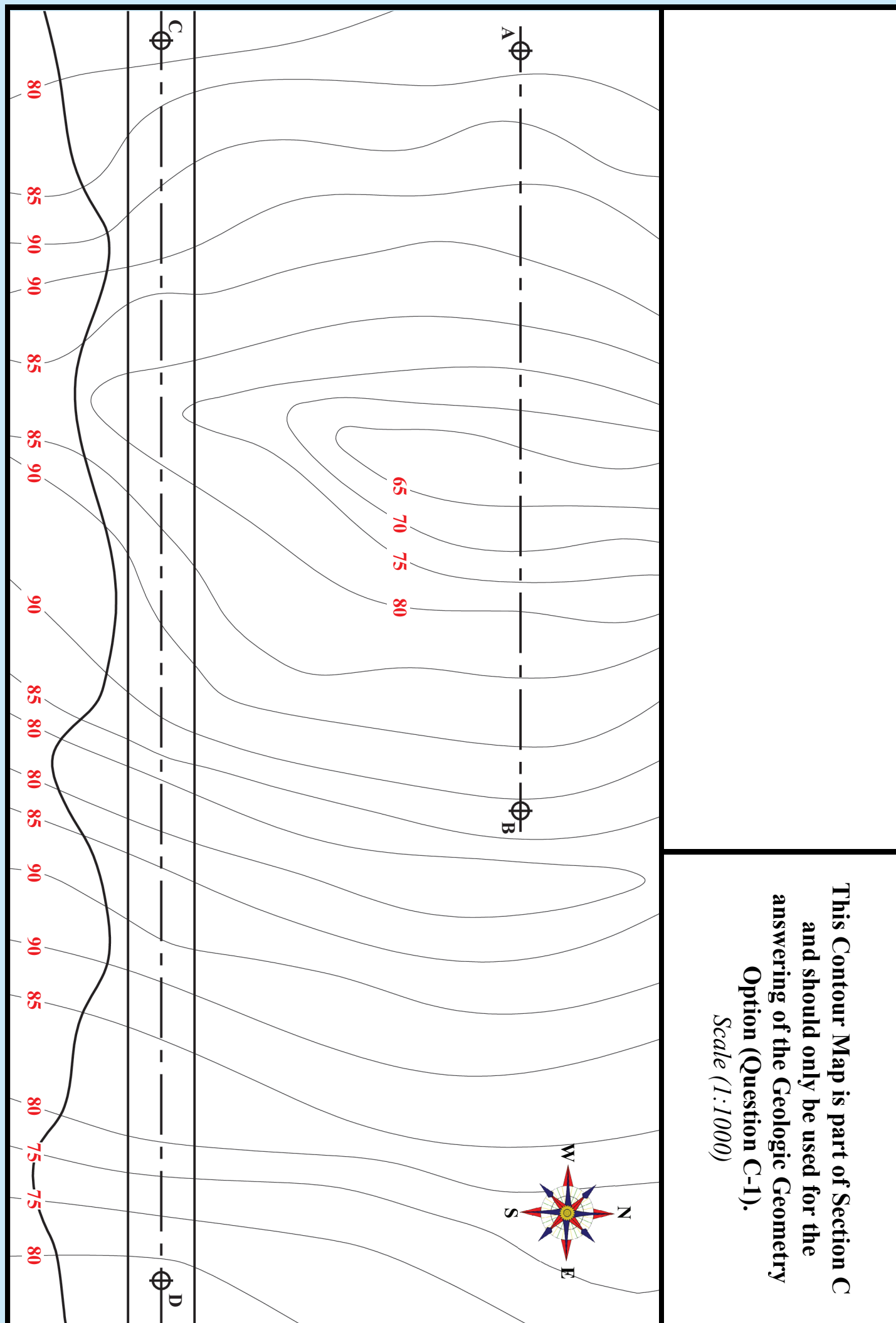
General Instructions:

- 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 Name, School Name and Teacher's Name in the box below and on all other sheets used.

Name:

School Name:

Teacher's Name:



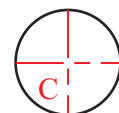
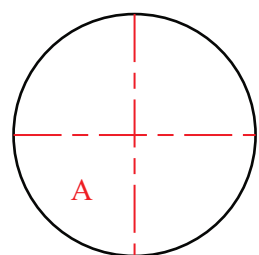
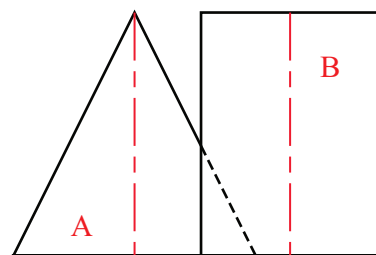
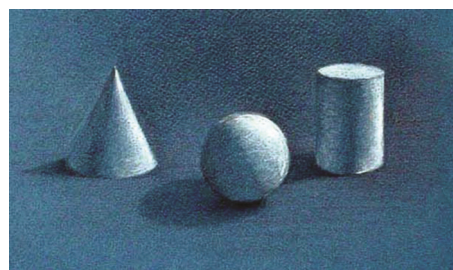
**This Contour Map is part of Section C
and should only be used for the
answering of the Geologic Geometry
Option (Question C-1).
Scale (1:1000)**

SECTION A - Core - Answer Any Three of the questions on this A3 sheet

A-1. The 3D graphic below shows a cone, a cylinder and a sphere.

The drawing on the right shows the plan and elevation of the cone **A**. The elevation of the cylinder **B** which is in contact with the cone **A** and the plan of sphere **C** are also shown.

- (a) Draw the plan of the cylinder **B**.
- (b) Draw the plan and elevation of the sphere **C** when it has been moved into position **C₁** in contact with cone **A** and cylinder **B**.

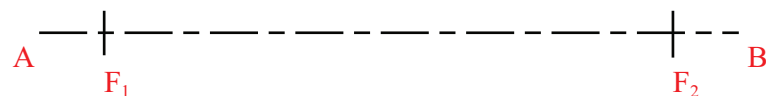


C₁

A-2. The 3D graphic below shows a building. The plan of a portion of the building is elliptical.

In the drawing on the right shows the major axis **AB** of the ellipse. The focal points of the ellipse are also shown.

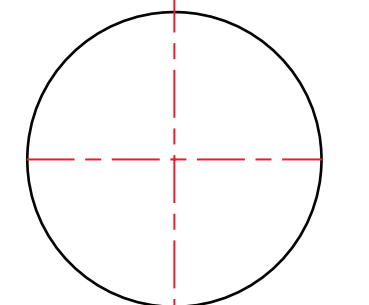
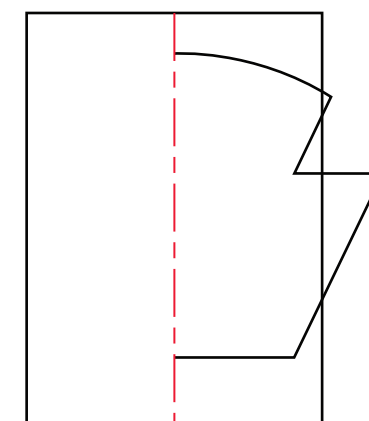
- (a) Locate the minor axis of the ellipse.
- (b) Draw the complete ellipse.



A-3. The 3D graphic below shows a tin of beans with a label wrapped around it.

The drawing on the right shows the plan and elevation of the tin and the label before it is wrapped around the tin.

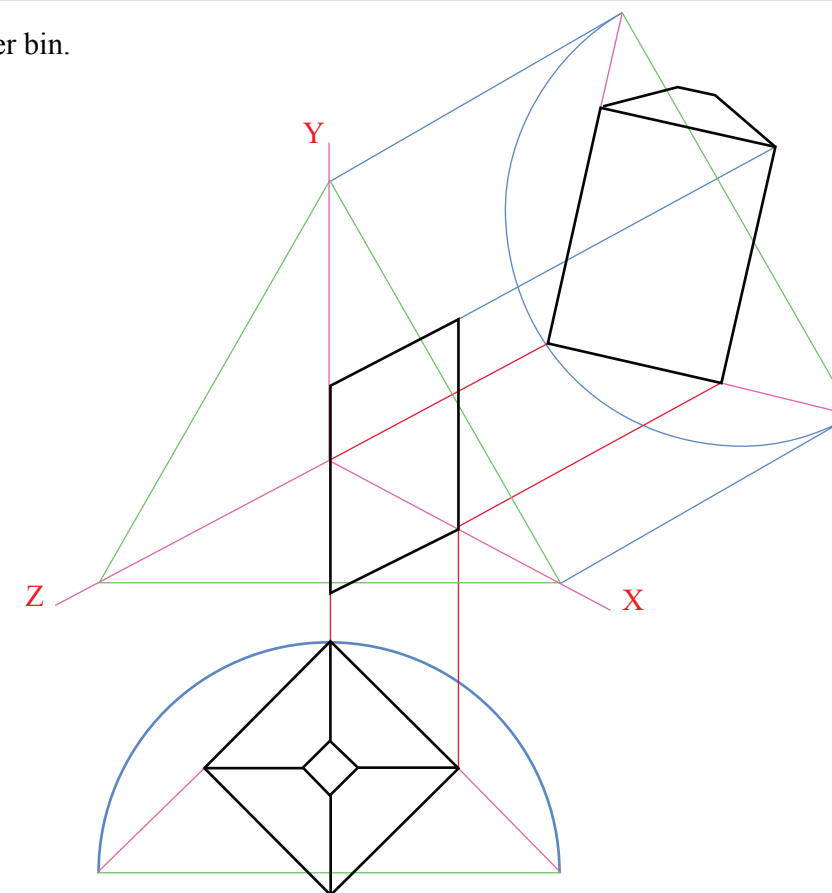
Complete the elevation showing the label in the wrapped position.



A-4. The 3D graphic below shows a litter bin.

A set of isometric axes and a partially completed outline drawing of a similar litter bin are shown on the right. The elevation and plan of the litter bin have been positioned relative to the axes as shown.

Complete the axonometric projection.



This examination paper must be returned at the end of the Examination – You must include your Name, School Name and Teacher's Name on the front cover

Pre-Leaving Certificate Examination, 2014

Design & Communication Graphics

Ordinary Level

Sections B and C (180 marks)

Time: 3 Hours

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 accompanying A3 examination paper.
 - 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 name, school name and teacher's name in the box provided on Section A and on all other sheets used.*

SECTION B - Core

Answer **any two** questions from this section on drawing paper

B-1. The 3D graphic on the right shows a portion of a child's play centre. It consists of an entrance tunnel leading to a play area which is square in plan.

Fig. B-1 shows the plan and elevation of the play area and tunnel.



(a) Draw the given plan and elevation of the structure and show all lines of interpenetration.

(b) Draw an end view of the structure.

Scale 1:1

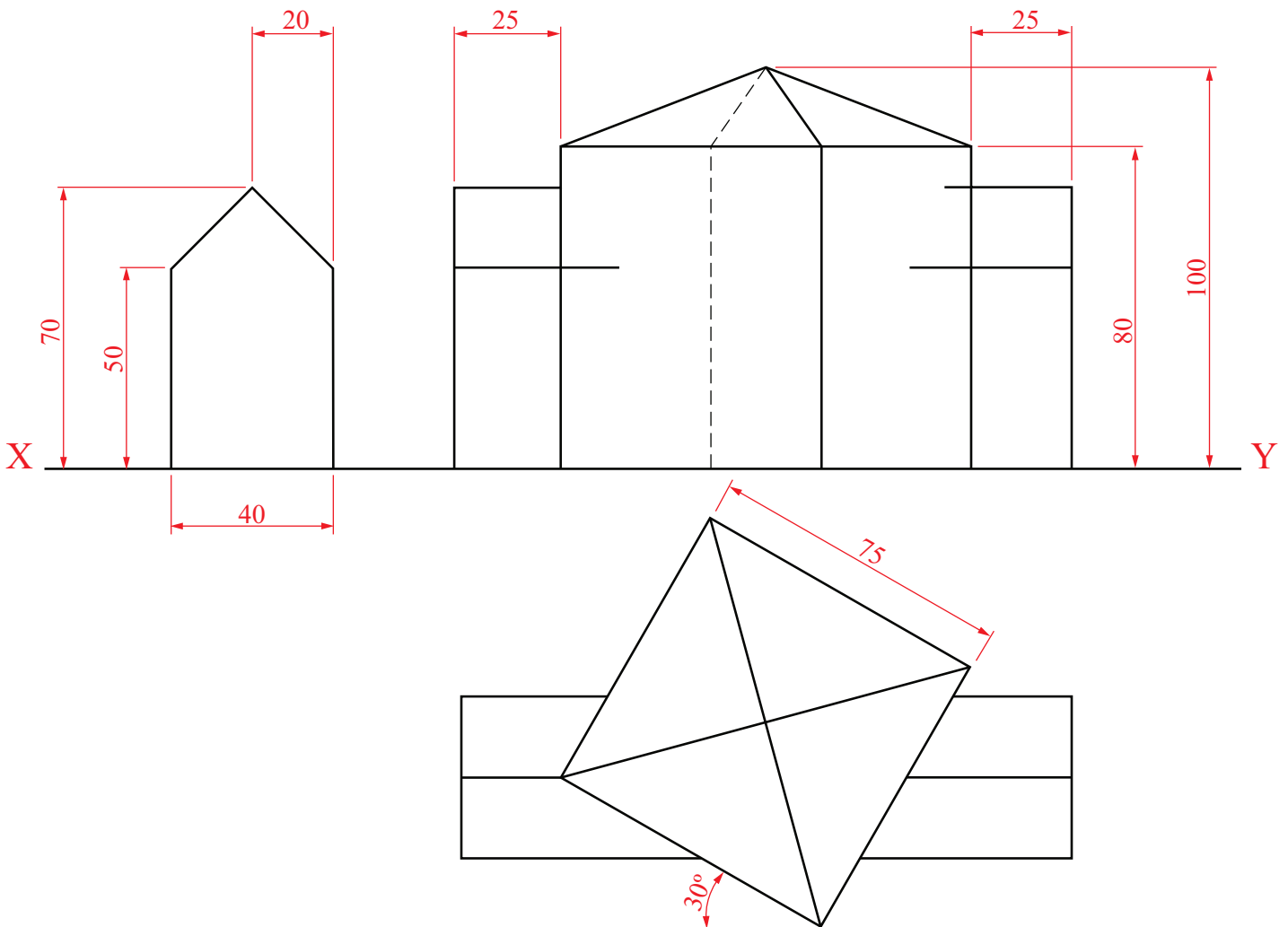


Fig. B-1

B-2. The graphic on the right shows a pitch dugout.

Fig. B-2 shows the plan and elevation of a model dugout.



Make a perspective drawing of the model given the following:

- The picture plane passes through corner A
- The spectator S is 90mm from corner A
- The horizon line is 75mm above the ground line.

Scale 1:1

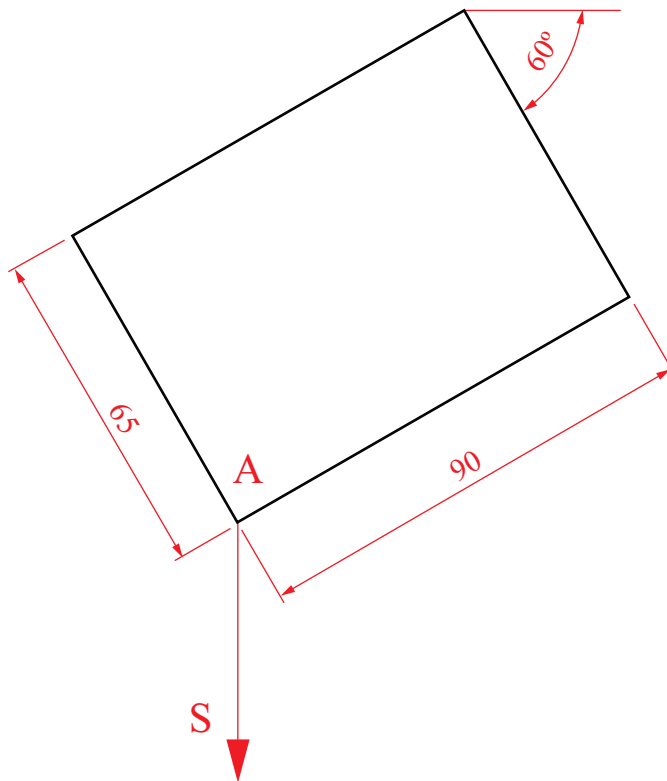
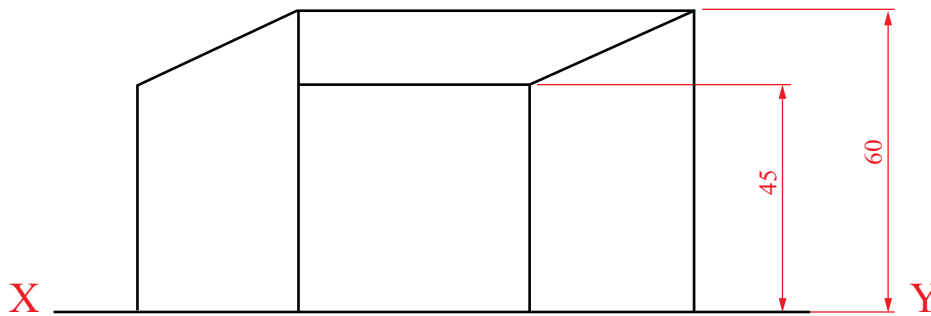


Fig. B-2

B-3. The 3D graphic on the right shows a concrete table and two seats.

Fig. B-3 shows the plan and elevation of a model table.



(a) Draw the given plan and elevation.

(b) Draw an auxiliary elevation of the model table, projected from the plan in the direction of the arrow.

Scale 1:1

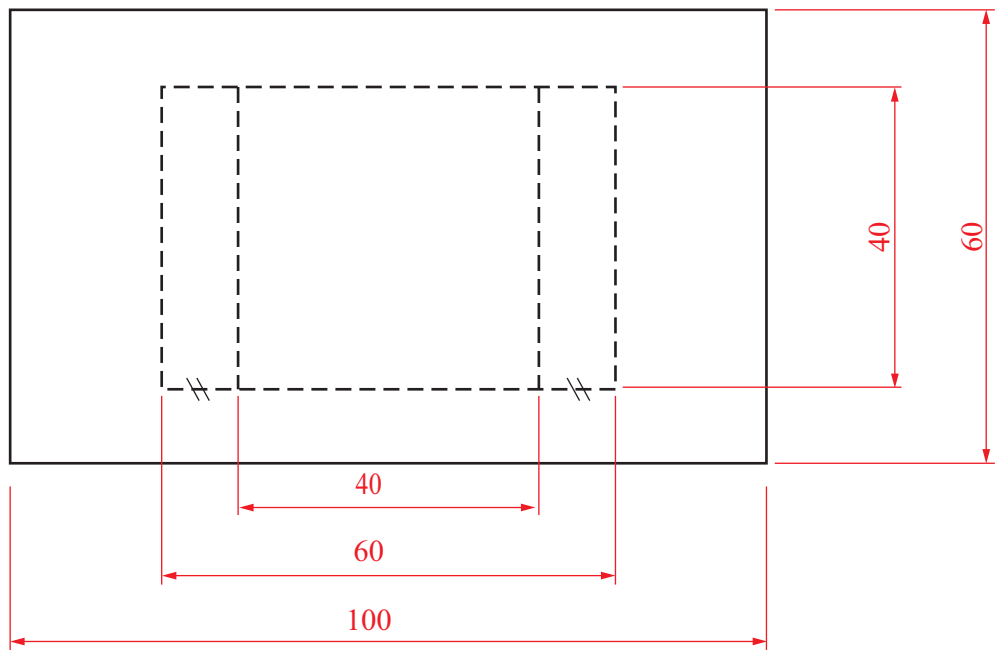
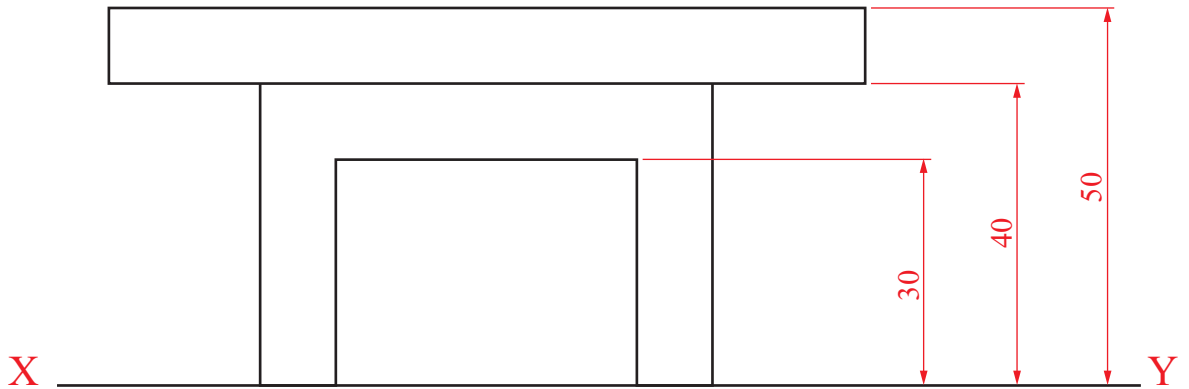


Fig. B-3

SECTION C - Applied Graphics

Answer **Any Two** questions (i.e. the options you have studied)
from this section on drawing paper

Geologic Geometry

C-1. The accompanying map, located on the back page of Section A, shows ground contours at 5m vertical intervals.

(a) On the drawing supplied, draw a vertical section (profile) on the line **AB**.

(b) The valley to the right of **A** floods during heavy rain.

Draw a line on the profile to indicate the surface of the water when it is 15m in depth.

(c) The line **CD** is the centreline of a proposed level roadway which is at an altitude of 95m.

Using side slopes of 1 in 1 for the embankments, complete the earthworks on the northern side that are necessary to accommodate the roadway.

(Note: The earthworks on the southern side of the roadway have already been completed.)

Scale 1:1000

Structural Forms

C-2. The graphic on the right shows a storage shed. Its roof is in the form of a hyperbolic paraboloid.



Fig. C-2 shows the plan and elevation of the roof.

- Draw the given plan and elevation of the hyperbolic paraboloid surface.
- Project an end view of the hyperbolic paraboloid surface.

Scale 1:1

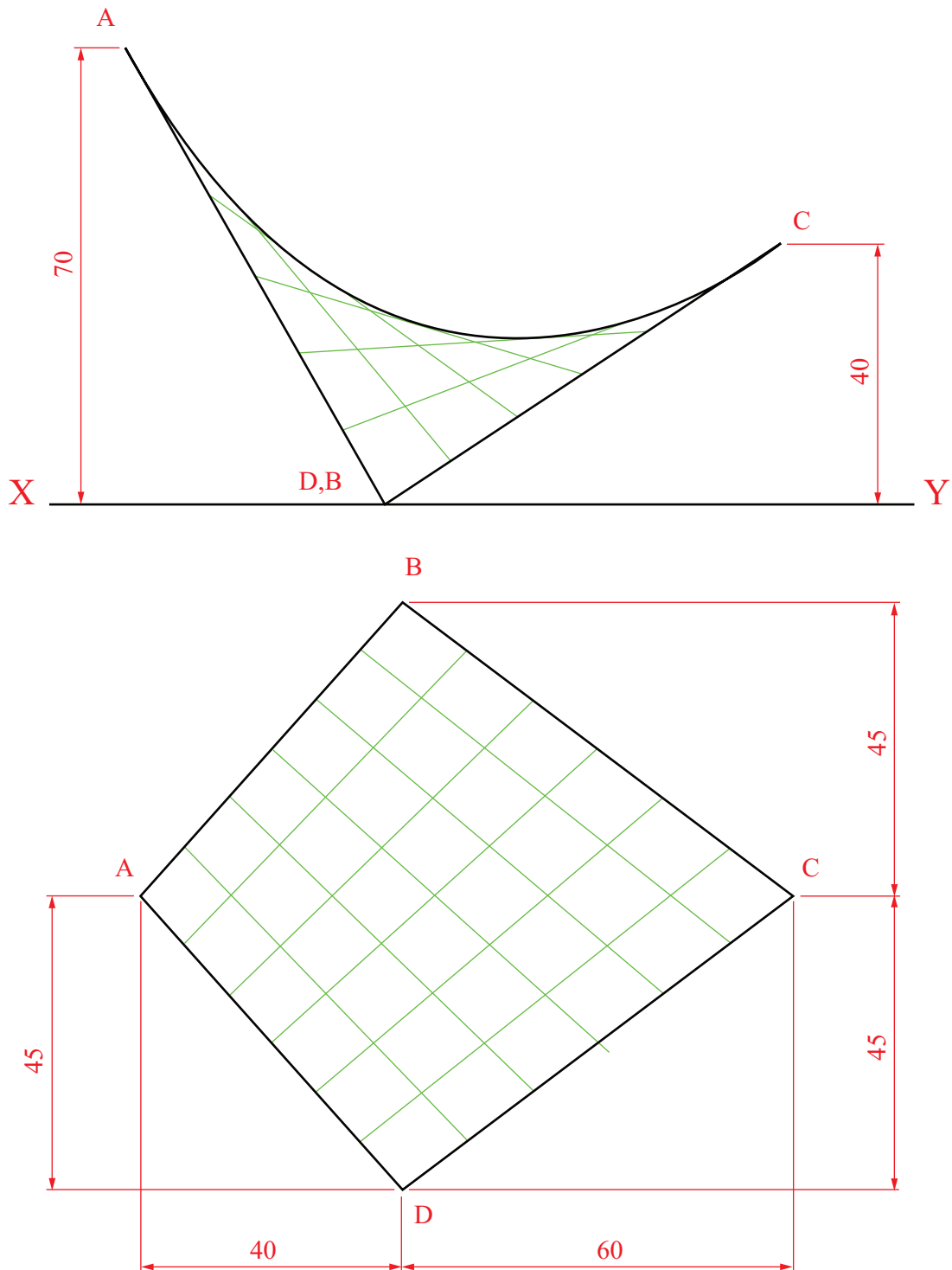


Fig. C-2

Surface Geometry

C-3. The 3D graphic on the right shows a jewellery box. The lid is shown in the open position.

The plan and elevation, of a similar jewellery box with its lid in a closed position, are shown in Fig. C-3.

- (a) Draw the given views of the jewellery box.
- (b) Draw a one-piece surface development of the jewellery box.



Scale 1:1

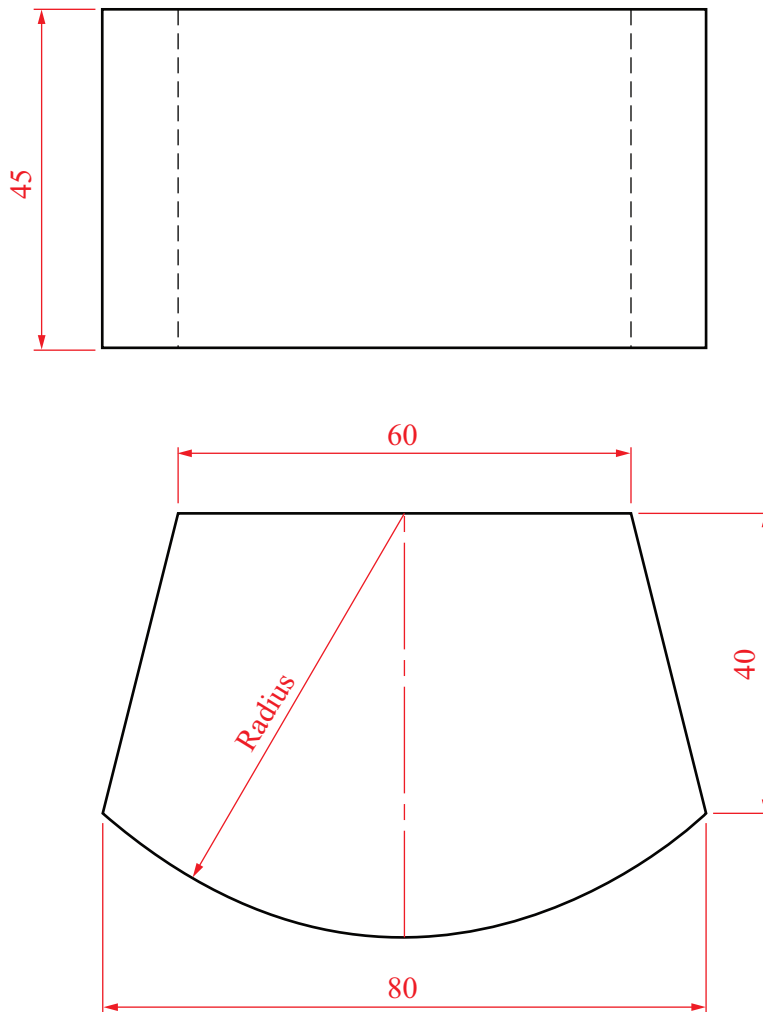


Fig. C-3

Dynamic Mechanisms

C-4. (a) The 3D graphic on the right shows a pull along toy. A cam and in-line knife edge follower are used inside the toy to move the head up and down as the toy rolls along.

The cam imparts the following motion to the follower:

- 0° to 150° Rise 45mm with uniform velocity
- 150° to 240° Dwell
- 240° to 360° Fall 45mm with simple harmonic motion.



Draw the displacement diagram.

Note: It is not necessary to draw the outline of the cam.

Scale 1:1

(b) The graphic on the right shows a unicycle.

Fig. C-4 shows a circle **C** which represents the wheel of a unicycle. Circle **C** rolls clockwise along the line **AB** for one full revolution.

Plot the locus of the point **P** for this movement.



Scale 1:1

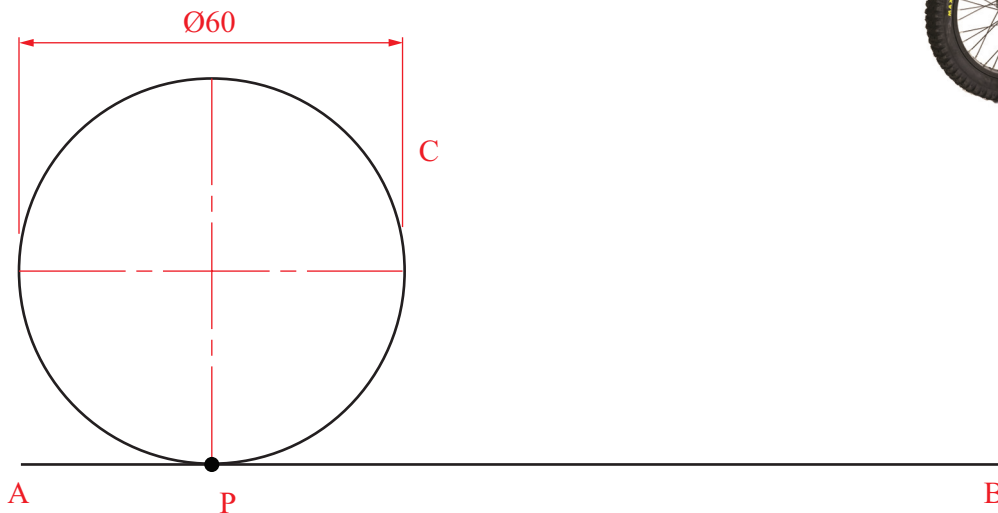
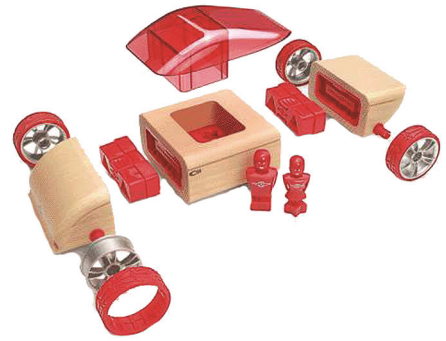


Fig. C-4

Assemblies

C-5. The 3D graphic on the right shows the individual parts which are used to form a Toy Car.

Details of a similar car are given in Fig. C-5 with the parts list tabulated below.



Note: For clarity, some centrelines have been omitted.

Draw the elevation, plan and **sectional elevation A-A** of the assembled Toy Car.

(Any omitted dimensions may be estimated.)

Scale 1:1

Part	Name	Qty.
1	Body	1
2	End	2
3	Wheel	4
4	Canopy	1
5	Wedge	2
6	Axel	2

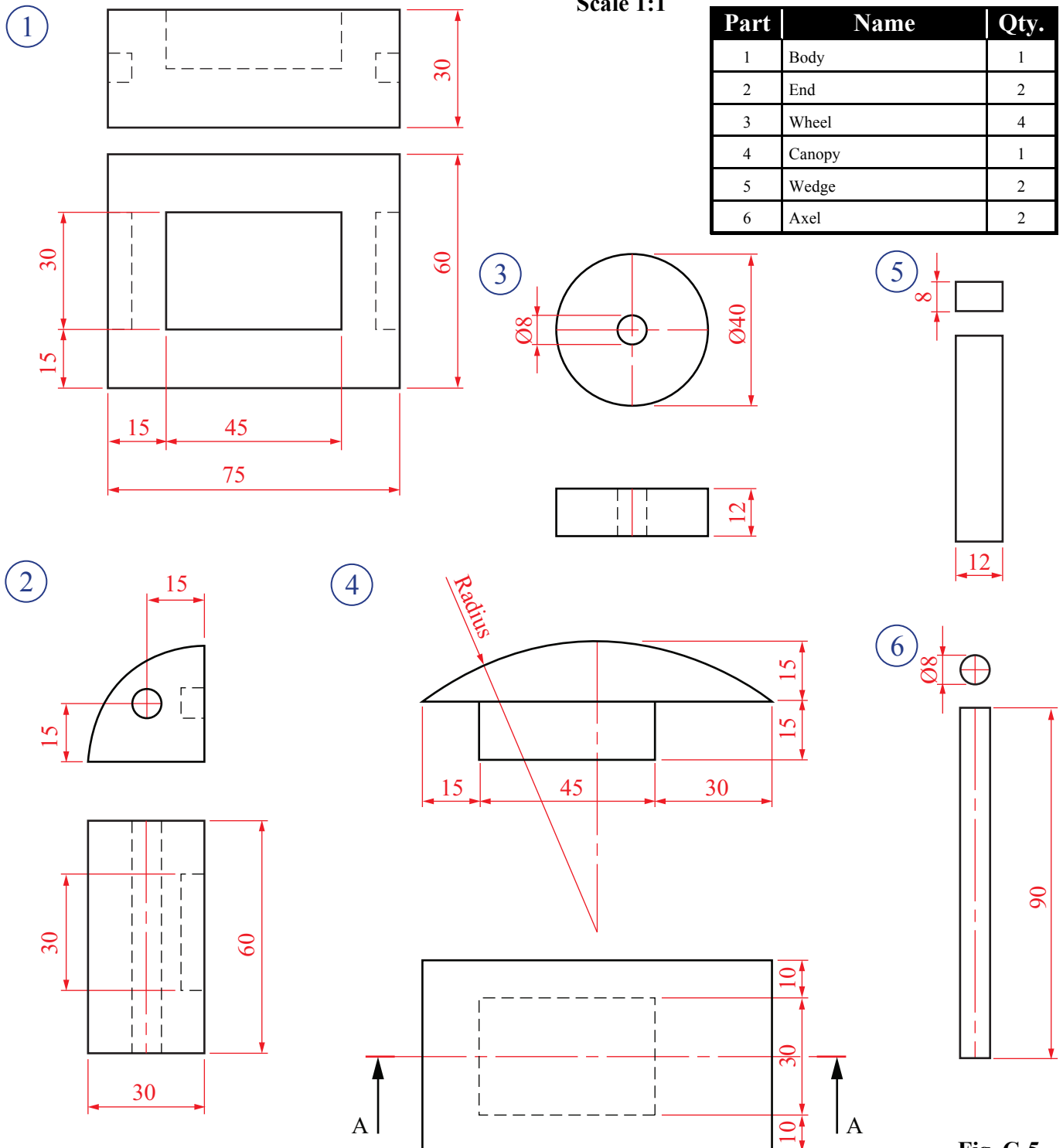


Fig. C-5

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