2025. M80BC 2025L562G2EL

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination, 2025

Design & Communication Graphics

Ordinary Level
Section B and C (180 marks)

Thursday, 19 June
Morning, 9:30 - 12:30

This examination has three sections:	
Section A	Core - Short Questions
Section B	Core - Long Questions
Section C	Applied Graphics - Long Questions

Section B	• Three questions are presented. • Answer **any two** questions on drawing paper. • All questions in Section B carry **60 marks** each.

Section C	• Five questions are presented. • Answer **one** question (i.e. the option you have studied) on drawing paper. • All questions in Section C carry **60 marks** each.

General Instructions:

- Construction lines must be shown on all solutions.
- The graphics presented are not necessarily drawn to scale and must not be used for scaling purposes.
- 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 provided in Section A and on all other sheets used.

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Section B - Core

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

B-1. The image on the right shows a modern house. The design of the house consists of three intersecting structures.

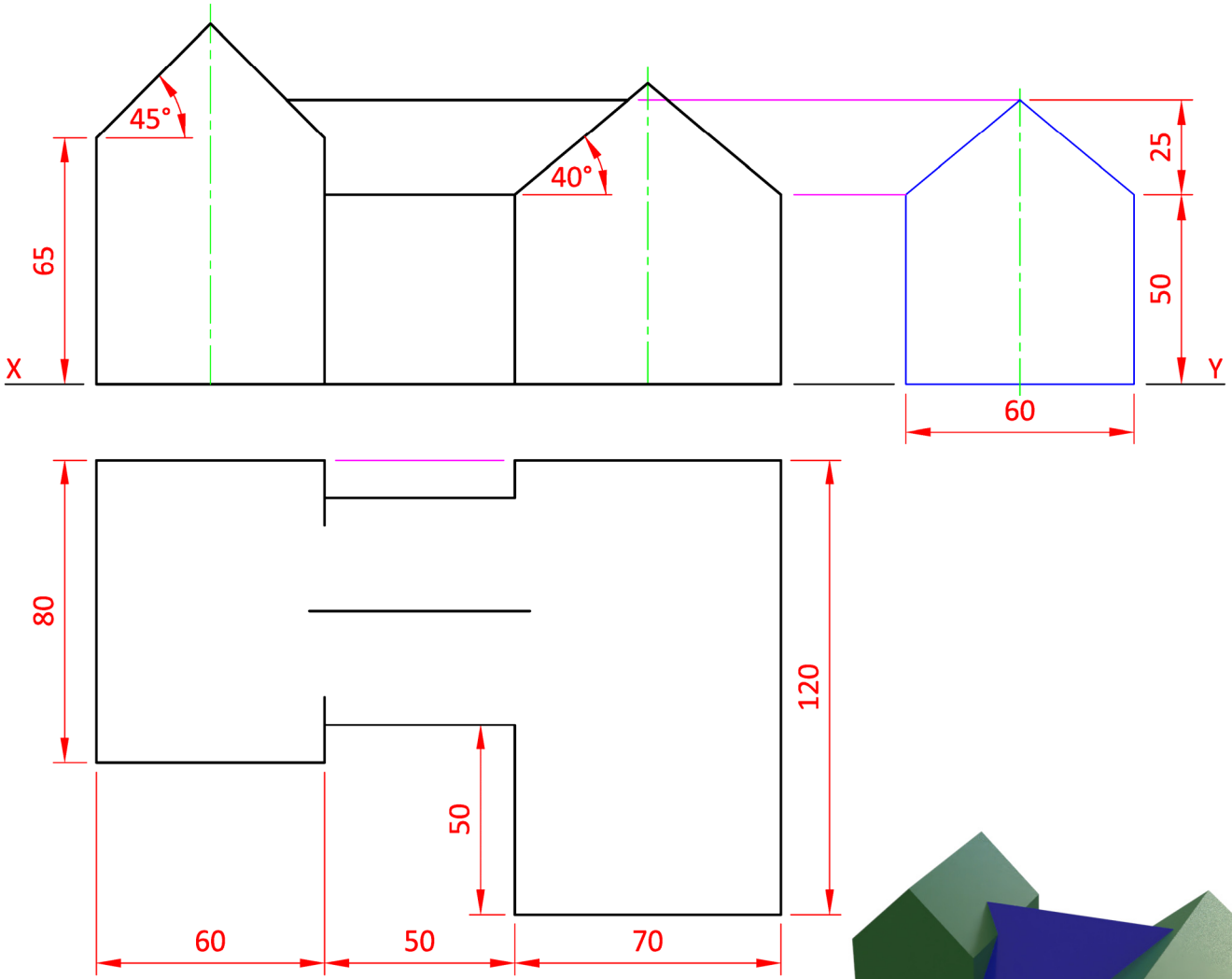
Fig. B-1 below shows the elevation and incomplete plan of a similar house. The outline profile of the central structure is shown on the right below. A 3D graphic is also given.

(a) Draw the given elevation and incomplete plan of the house.

(b) Complete the plan, showing all lines of interpenetration.

(c) Draw an end view of the house.

Scale 1:1



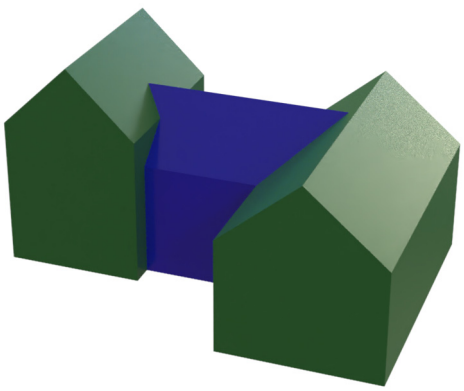


Fig. B-1

B-2. The image on the right shows a sports dugout.

Fig. B-2 below shows an incomplete isometric projection of a similar dugout. A 3D graphic is also given.

The elevation and plan of the dugout are shown in their required positions.

(a) Draw the given equilateral triangle **abc** and the axonometric axes **X**, **Y**, and **Z**.

(b) Draw the elevation and plan positioned as shown.

(c) Draw the axonometric projection of the base of the dugout.

(d) Complete the axonometric projection of the dugout top shelter and seat.

Scale 1:1

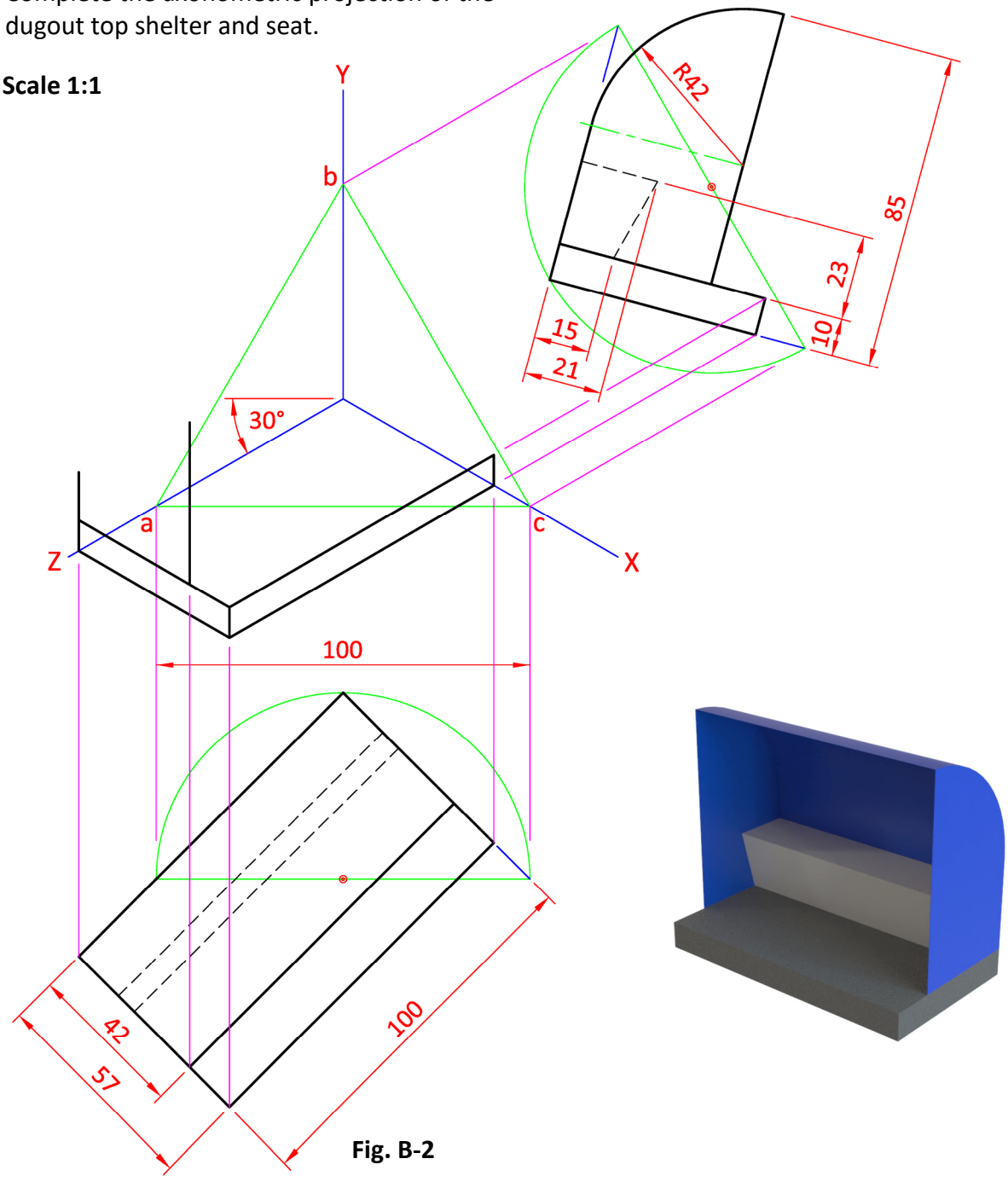


Fig. B-2

B-3. The image on the right shows a popular arcade game.

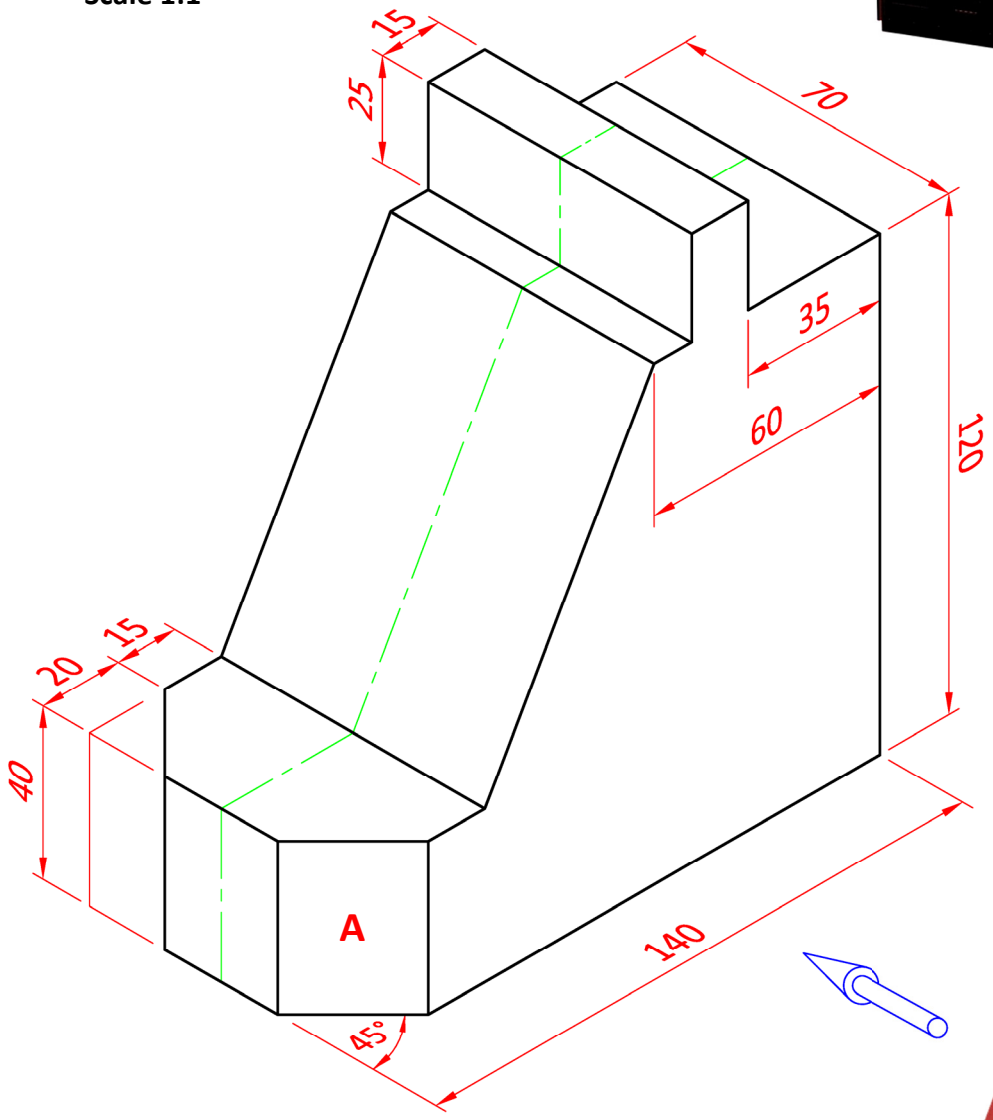
Fig. B-3 below shows an isometric view of a similar arcade game. A 3D graphic is also given.

(a) Draw an elevation of the arcade game looking in the direction of the arrow.

(b) Project a plan from the elevation.

(c) Draw the auxiliary elevation of the **arcade game**, projected from the plan, which will include the true shape of surface **A**.

Scale 1:1



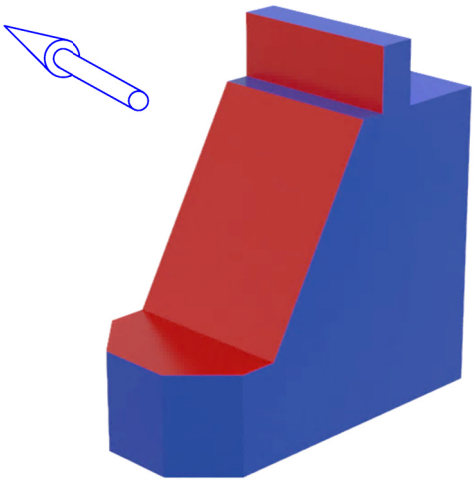


Fig. B-3

Section C - Applied Graphics

Answer **one** question (i.e. the option you have studied) from this section on drawing paper.

Geologic Geometry

C-1. The image on the right shows a country road which required cuttings to accommodate it.

The accompanying map, located on the back page of Section A, shows ground contours at five metre vertical intervals.

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

(b) **CD** is the centreline of a proposed roadway which is level at an altitude of 30 m.

Using side slopes of 1 in 1 for the cuttings, complete the earthworks necessary to accommodate the roadway.

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

Scale 1:1000

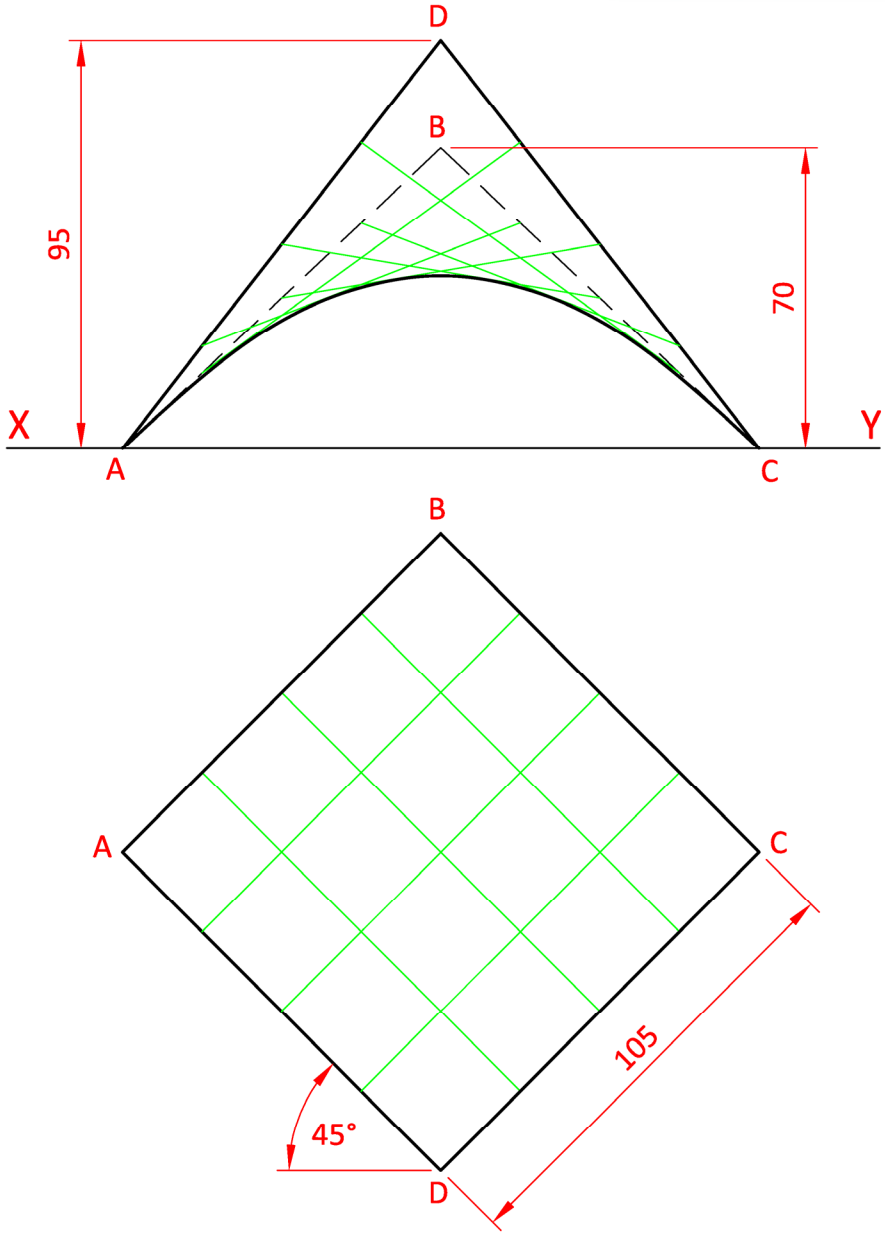
C-2. The image on the right shows pieces from the HyperTiles game. The game is made up of various forms of hyperbolic paraboloid pieces.

Fig. C-2 below shows the plan and elevation of a similar hyperbolic paraboloid piece which is square in plan.

(a) Draw the given plan of the hyperbolic paraboloid piece.

(b) Project an elevation from the plan.

(c) Project an end view.



Scale 1:1

Fig. C-2

C-3. The image on the right shows an electric car charging station. A 3D graphic of a similar charging station is also shown.

The projections of a similar charging station are shown in Fig. C-3 below.

(a) Draw the given elevation and plan of the charging station.

(b) Project an end view.

(c) Draw a one-piece surface development of the charging station.

Scale 1:1

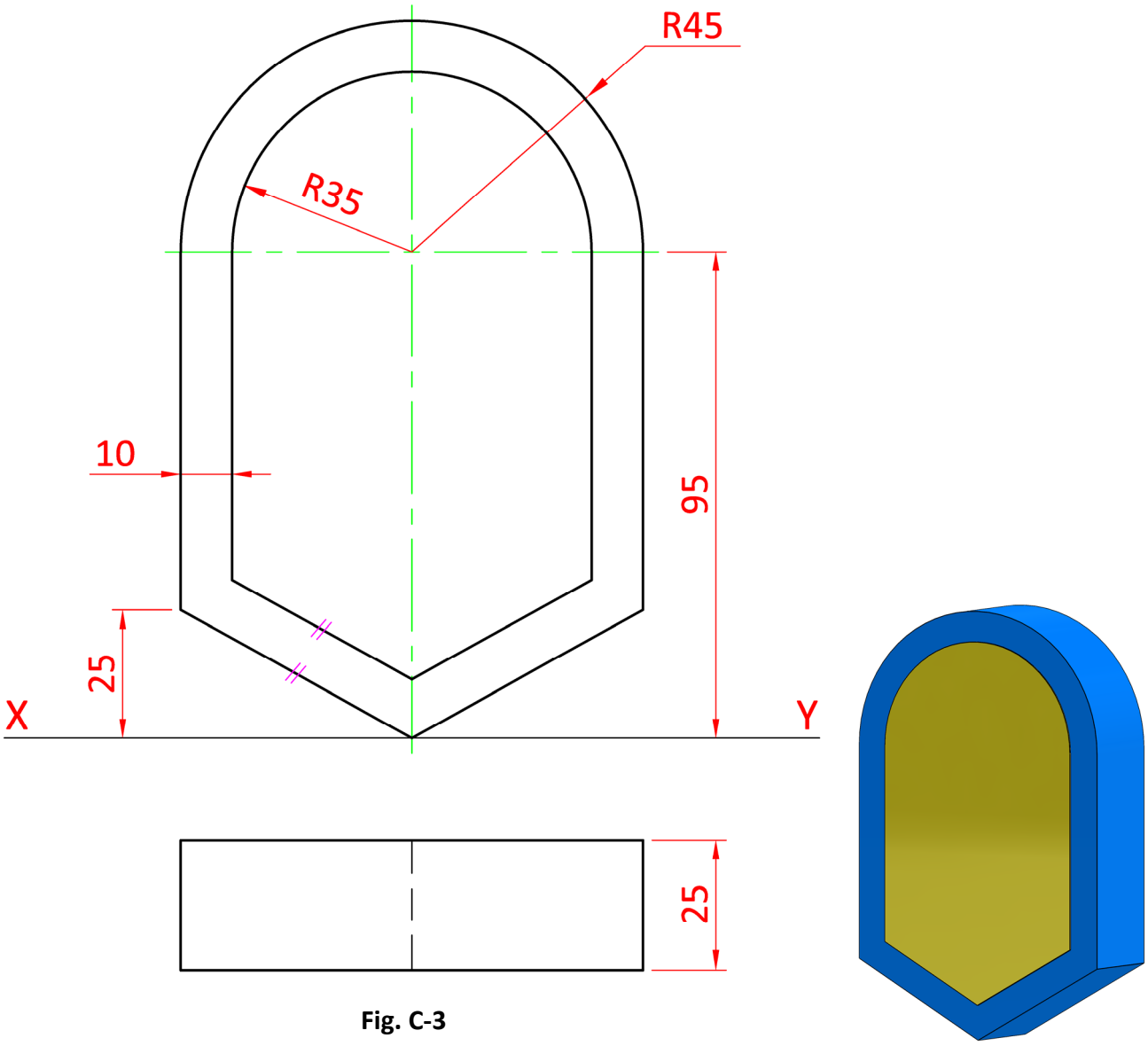


Fig. C-3

C-4. **(a)** The image below shows an excavator boring a hole. The auger of the excavator is based on a helix.

Fig. C-4 opposite shows the projections of portion of a similar partially completed helix.

(i) Draw the given elevation and plan.

(ii) Complete the projections of the helix which moves in a clockwise direction from point **A** on the base to point **B** in one revolution.

Scale 1:1

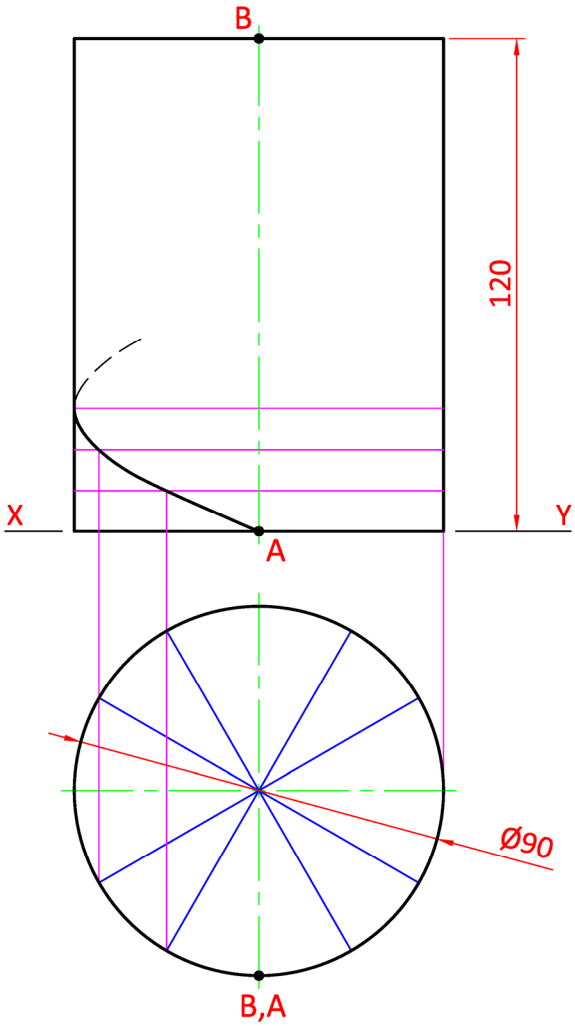


Fig. C-4

(b) The image on the right shows a camshaft from the fuel system of the excavator.

A cam imparts the following motion to the follower:

- 0° to 90° Rise 60 mm with uniform velocity
- 90° to 180° Dwell
- 180° to 360° Fall 60 mm with simple harmonic motion.

Draw the displacement diagram, using a distance of 15 mm to represent each 30° interval.

***Note**: It is not necessary to draw the cam profile.*

C-5. The image on the right shows a wireless camera.

Details of a similar wireless camera are shown in Fig. C-5 below. A parts list and a 3D graphic of the camera are also shown.

Draw the **sectional end view A-A** of the assembled camera.

Note: *Unless otherwise stated all fillets are radius 5 mm; any omitted dimensions may be estimated.*

Scale 1:1

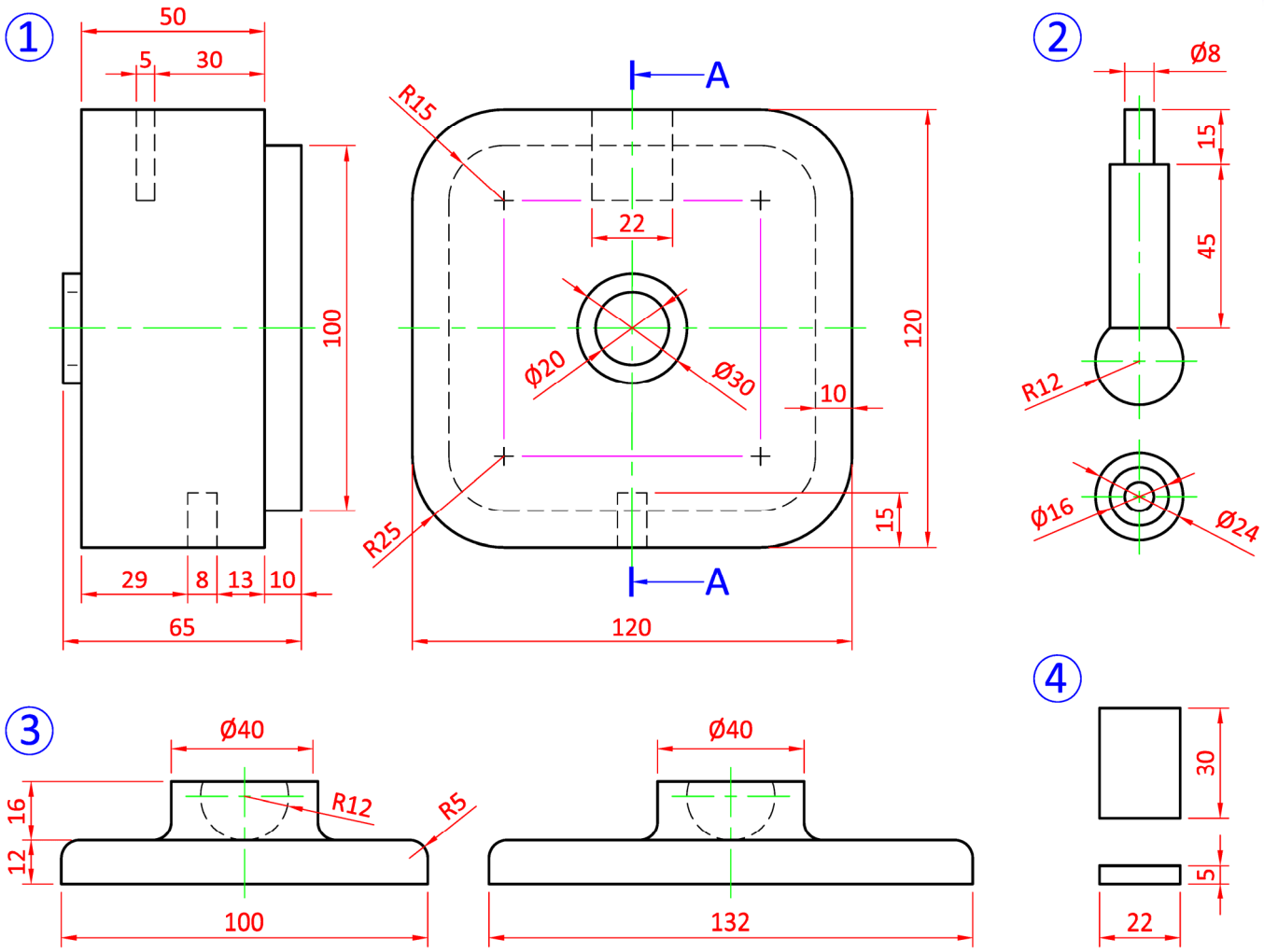


Fig. C-5

Part	Name	Qty.
1	Camera	1
2	Stem	1
3	Base	1
4	SD Card	1

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