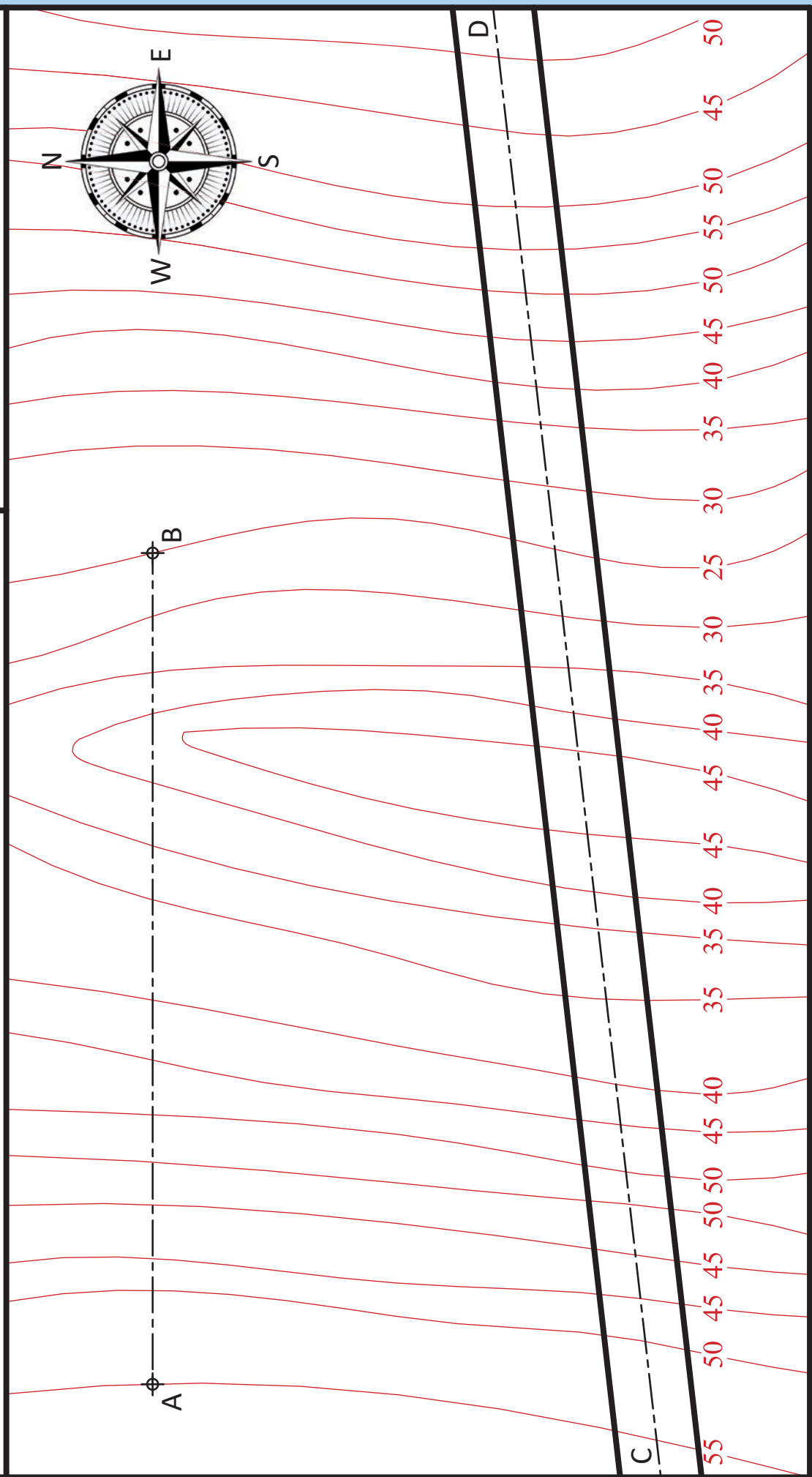


This Contour Map is part of Section C and should only be used for the answering of the Geologic Geometry Option (Question C-1).  
(Scale 1:1000)



## Pre-Leaving Certificate Examination, 2024

# Design & Communication Graphics Ordinary Level Section A (60 marks)

Duration: 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 <b>any three</b> questions on the A3 sheet overleaf. |
|           | • All questions in Section A carry <b>20 marks</b> each.      |

- |           |  |
|-----------|--|
| SECTION B | • Three questions are presented.                         |
|           | • Answer <b>any two</b> on drawing paper.                |
|           | • All questions in Section B carry <b>60 marks</b> each. |

- |           |   |
|-----------|---|
| SECTION C | • Five questions are presented.   |
|           | • Answer <b>any one</b> (i.e. the options you have studied) on drawing paper. |
|           | • All questions in Section C carry <b>60 marks</b> each.                      |

### General Instructions:

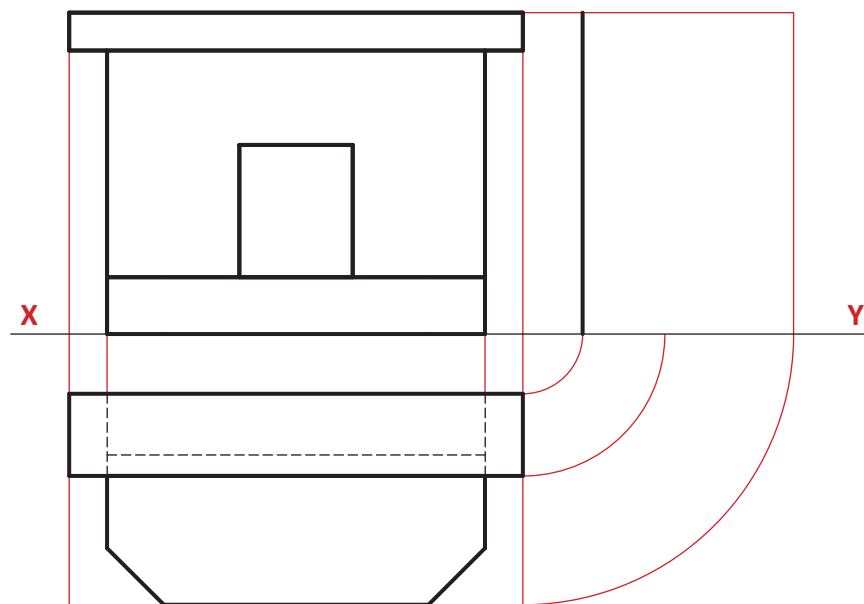
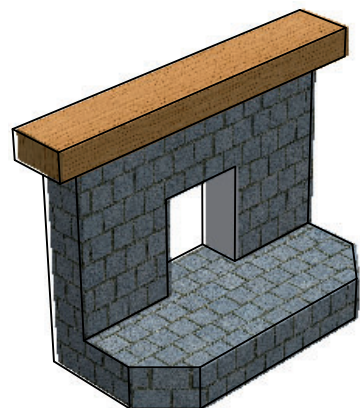
- Construction lines must be shown on all solutions.
- Write the question number distinctly on the answer paper in Sections B and C.
- Work on one side of the drawing paper only.
- All dimensions are given in metres or millimetres.
- Write your details in the box below and on all other sheets used.

Name:
School:
Address:
Class:
Teacher:

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

**A-1.** The image below shows a fireplace with an opening for a stove.  
The partial elevation, plan and end view are also given.

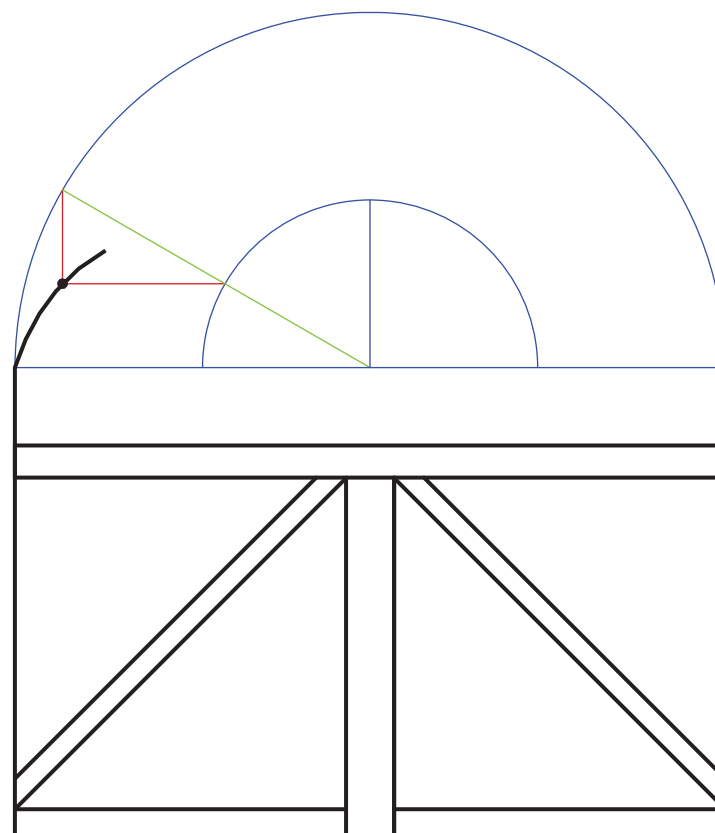
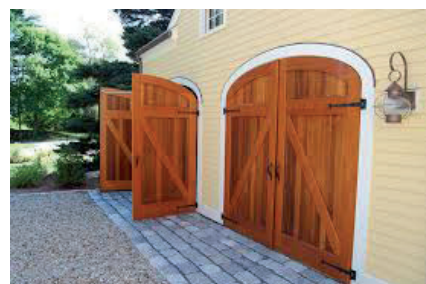
- (a) Complete the elevation.
- (b) Complete the plan.
- (c) Complete the end view.



**A-2.** The image below shows a set of wooden doors.  
The top of the door is in the shape of a semi-ellipse.

In the drawing of the door on the right, the major and minor axis are given and a point found on the curve.

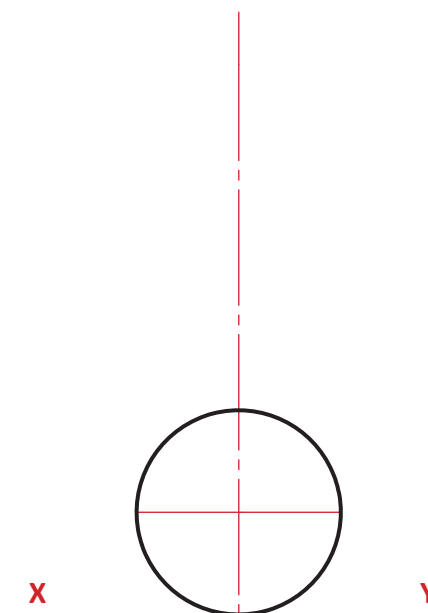
- (a) Complete the remainder of the semi-ellipse.
- (b) Find the focal points.



**A-3.** The image below shows three tennis balls in a plastic container. The tennis balls are in mutual contact with one another and rest on the horizontal plane.

The incomplete elevation is shown over.

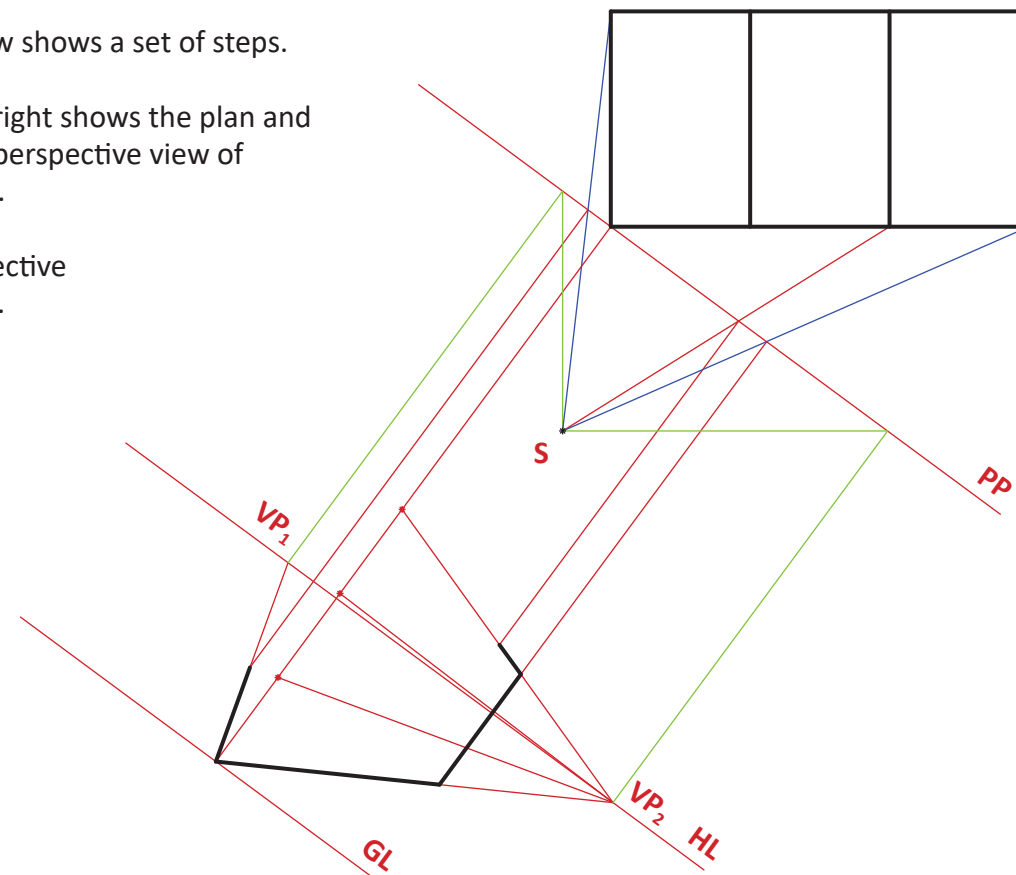
- (a) Complete the elevation of the tennis balls and container showing all points of contact.
- (b) Project a plan view of the container.



**A-4.** The 3D graphic below shows a set of steps.

The drawing on the right shows the plan and partially completed perspective view of a similar set of steps.

Complete the perspective drawing of the steps.





## Pre-Leaving Certificate Examination, 2024

# *Design & Communication Graphics*

## *Ordinary Level*

### *Sections B and C (180 marks)*

**Duration: 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 **60 marks** each.

**SECTION C**

- Five questions are presented.
- Answer **any one** (i.e. the options 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 details 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 image on the right shows an outdoor garden seat in the shape of a house.

Fig. B-1 belows shows an isometric view of the seat.

- (a) Draw an elevation of the seat looking in the direction of the arrow **A**.
- (b) Project a plan from the elevation.
- (c) Draw an auxiliary elevation of the seat projected from the plan, which will include the true shape of surface **S**.

Scale 1:1

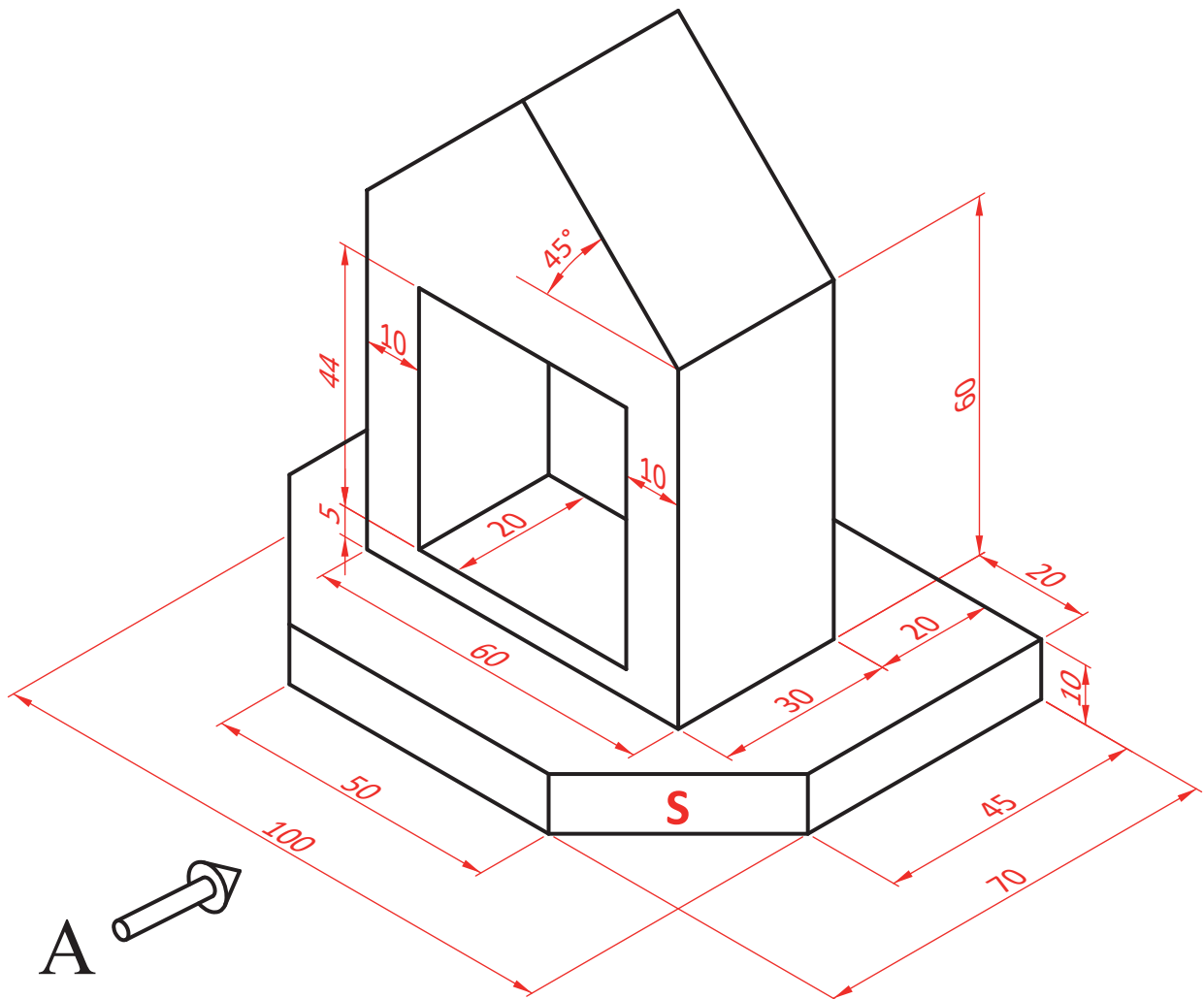
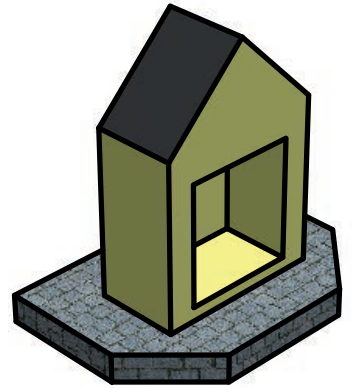


Fig. B-1

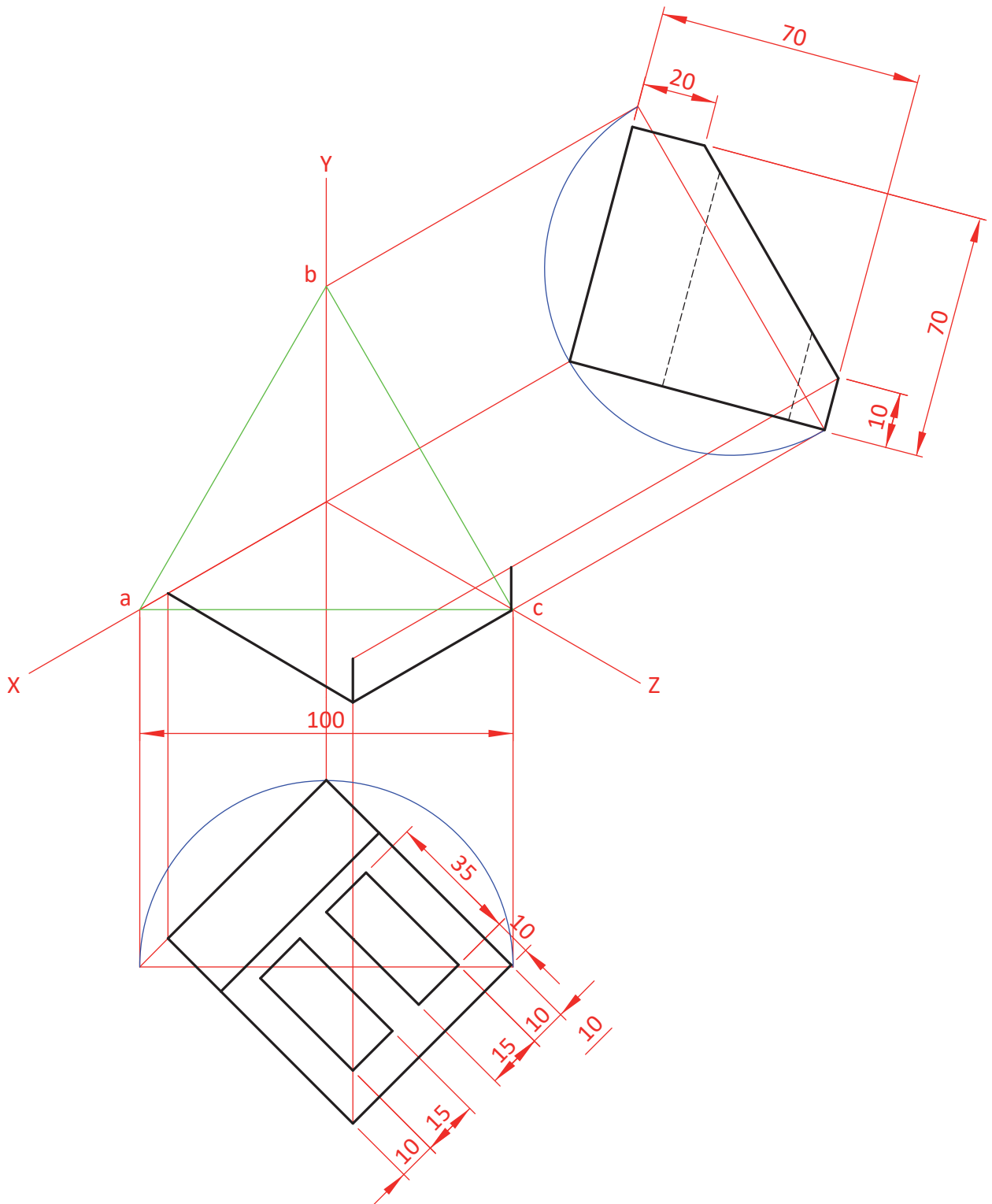
**B-2.** The graphic on the right shows a toaster. Below shows an incomplete isometric projection of a similar toaster.



The elevation and plan of the toaster are also 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 main body of the toaster.

**Scale 1:1**



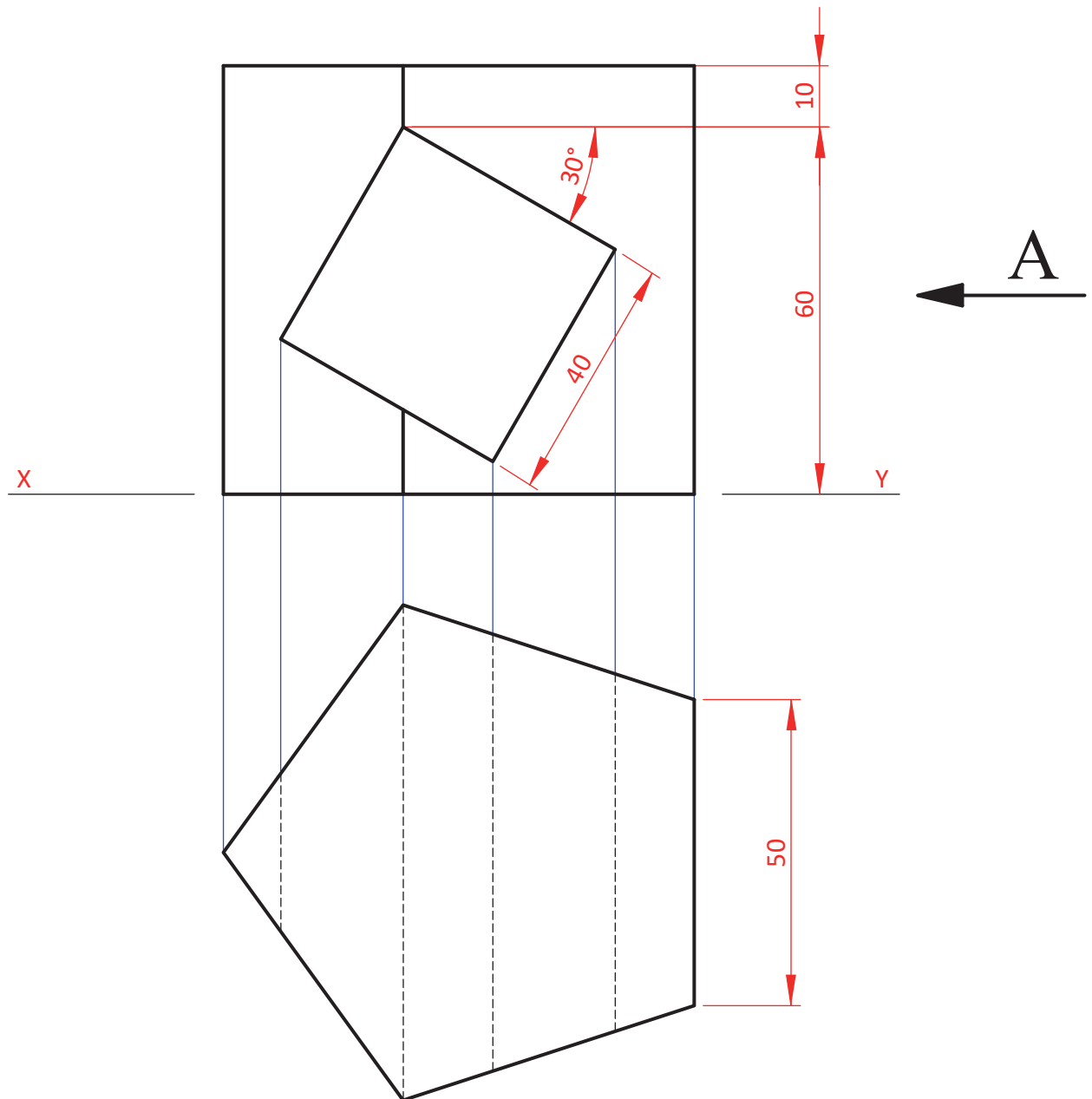
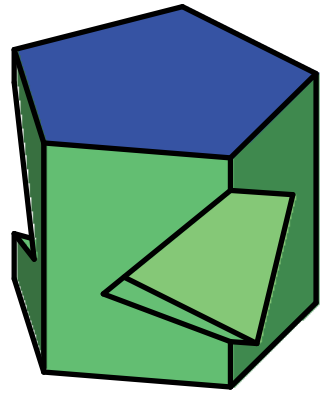
**Fig. B-2**

**B-3.** Fig B-3 below shows the elevation and plan of a regular pentagonal prism which has a square hole cut through it as shown.

A 3D graphic is also given.

- (a) Draw the given plan of the regular pentagon.
- (b) Project an elevation.
- (c) Complete the end view looking in the direction of arrow **A** showing all lines of interpenetration.

Scale 1:1



**Fig. B-3**

## SECTION C – Applied Graphics

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

### Geologic Geometry

- C-1.** The accompanying map located on the back of Section A shows ground levels at five metre vertical intervals.
- (a) In the space provided, draw a vertical section (profile) on the line **AB**.
- (b) On the drawing supplied, **CD** is the centre line of a proposed roadway which is level at an altitude of 55m. Using side slopes of 1 in 1 for the embankments, complete the earthworks necessary to accommodate the roadway.

**Scale 1:1000**

## Structural Forms

**C-2.** The outline plan and elevation of a hyperbolic paraboloid roof surface is shown in Fig. C-2b.

A 3D graphic is also shown.

- (a) Draw the given plan.
- (b) Draw the given elevation.
- (c) Project an end view of the surface.

Scale 1:1

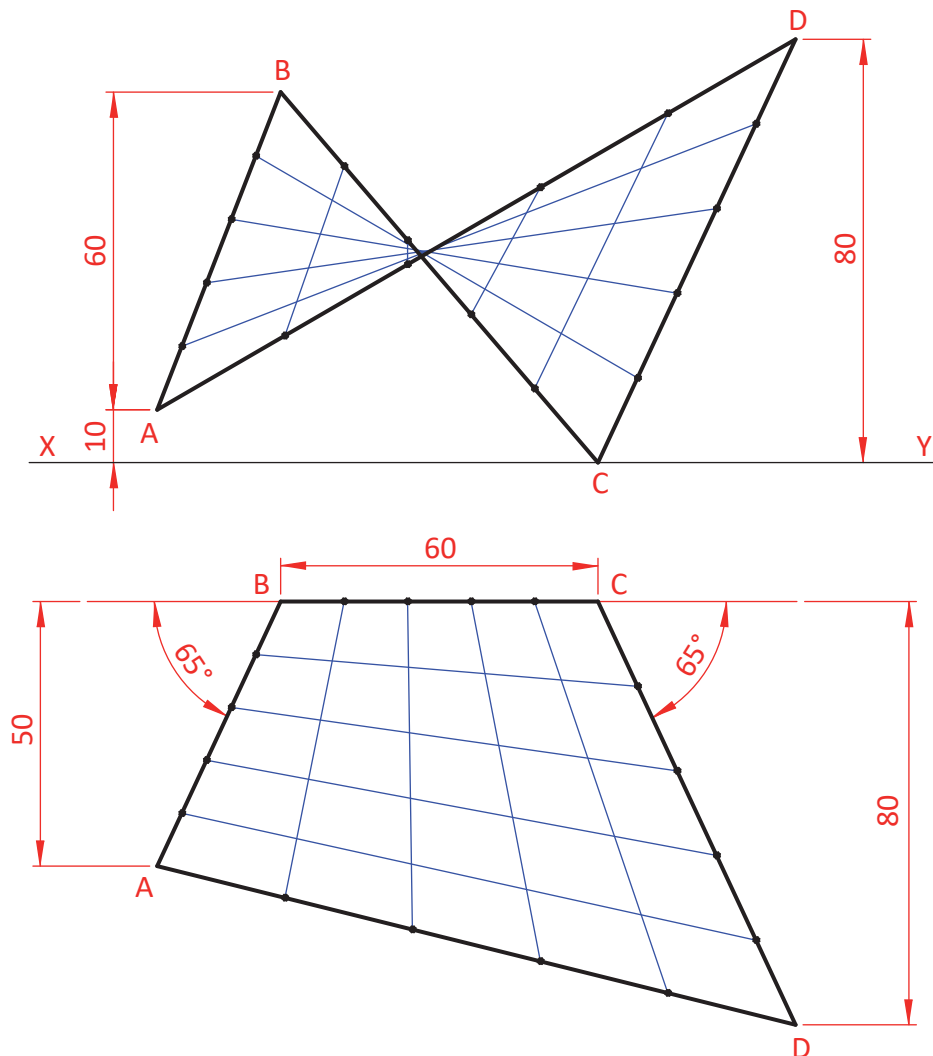
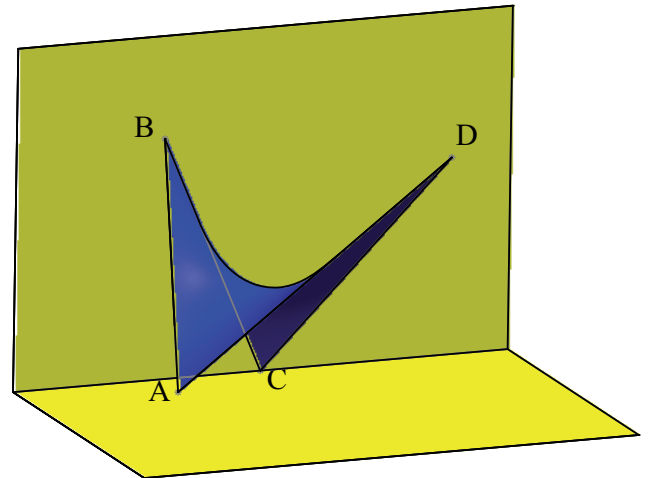


Fig. C-2b



## Surface Geometry

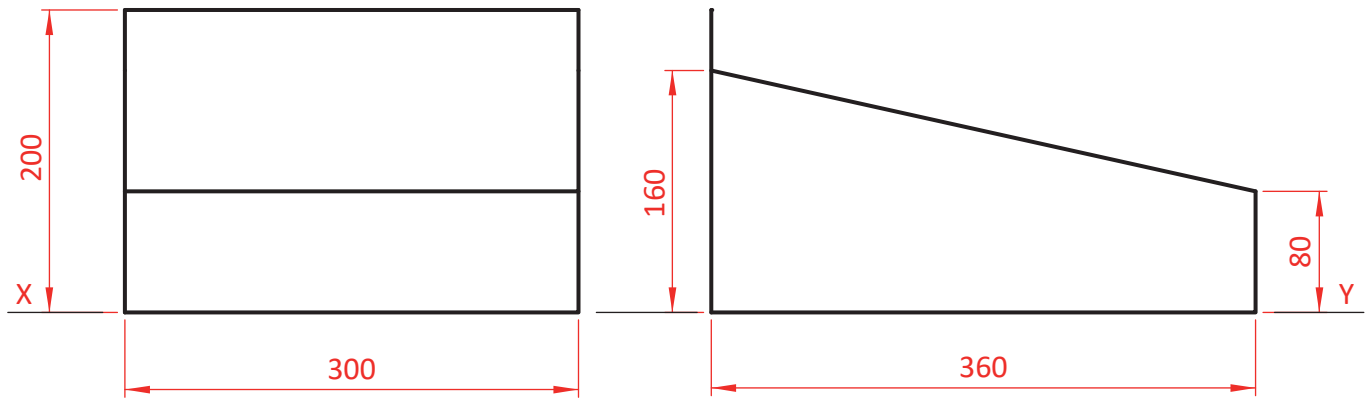
**C-3.** The image on the right shows a storage container for M&M toys.

The projections of a similar storage box are shown below.

- (a) Draw the given elevation and end view.
- (b) Project a plan.
- (c) Draw a one-piece surface development of the storage box.



Scale 1:4



**Fig. C-3**

# Dynamic Mechanisms

**C-4.** The picture on the right shows a yo-yo and string. Fig. C-4a below shows a representation of the same yo-yo, with point **P** as the string's starting point.



- (a) Show the path of the string as it unravels from point **P** in a clockwise direction as shown for one full revolution.

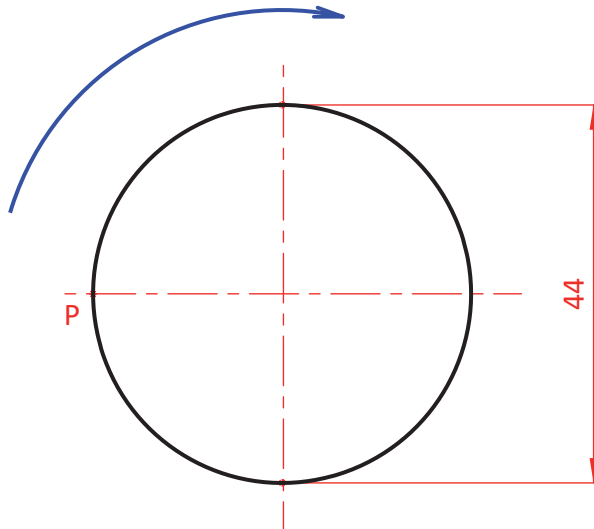
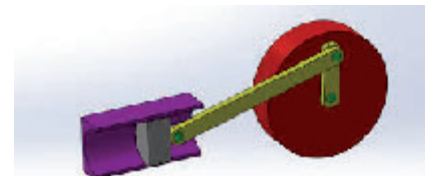


Fig. C-4a

- (b) The picture to the right shows a crank and slider mechanism. Below shows a representation of a similar crank and slider.



Plot the locus of the midpoint **P** for half a revolution  $180^\circ$  clockwise of the crank **AB**.

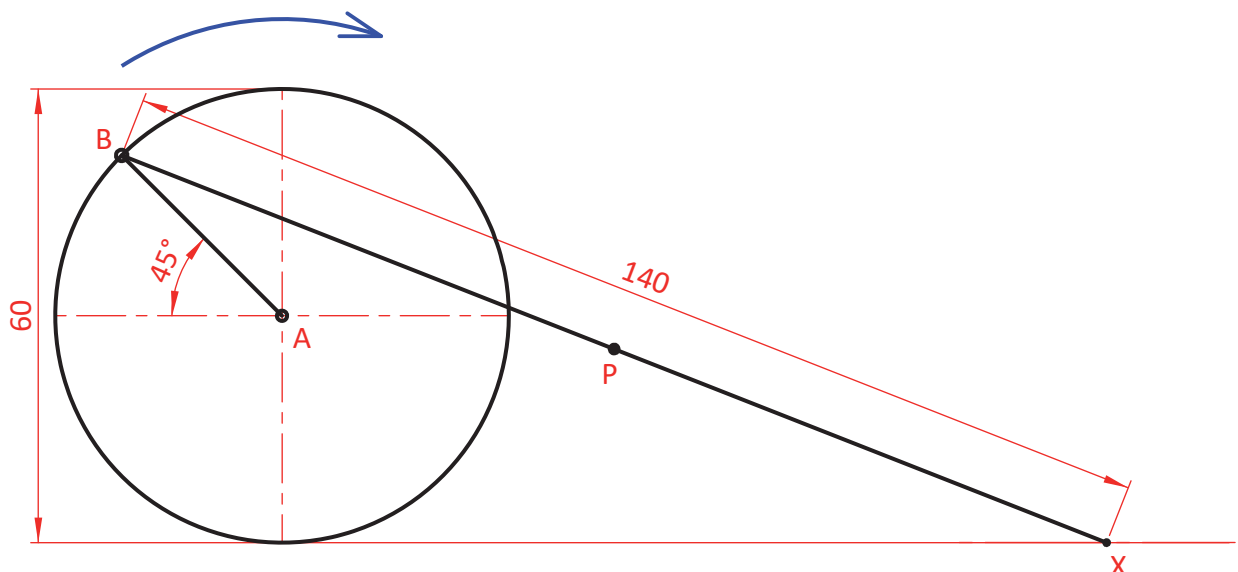


Fig. C-4b

# Assemblies

**C-5.** Details of a hitch for a toy tractor and trailer, similar to the image on the right, are given below.

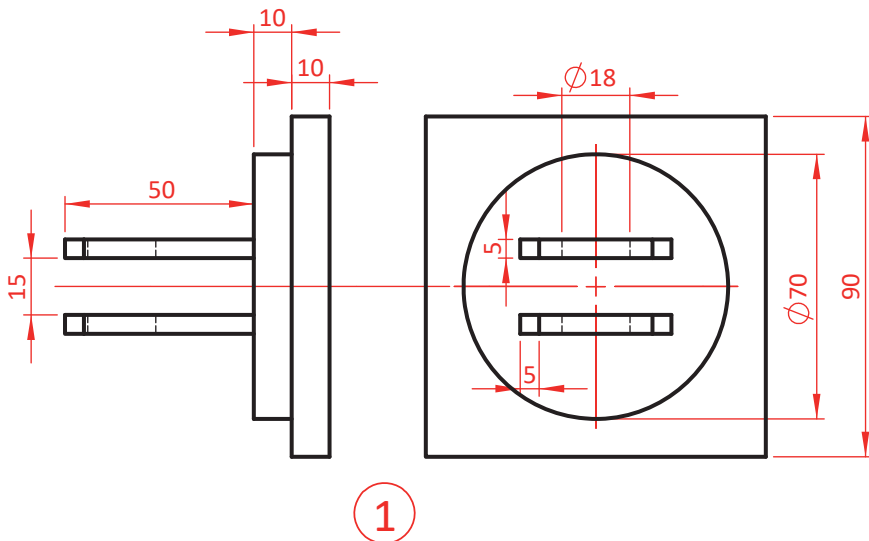
A parts list and a 3D graphic of the parts are also given.

Draw the elevation of the assembled hitch.

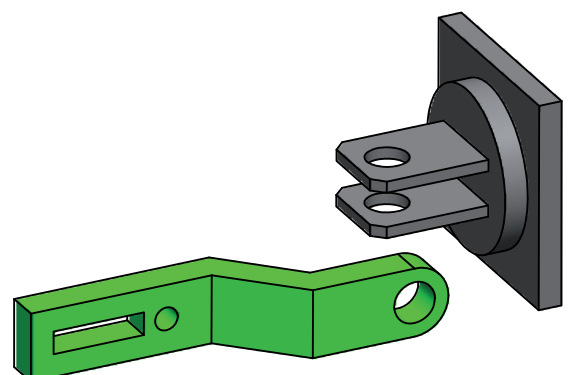
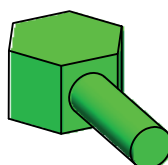
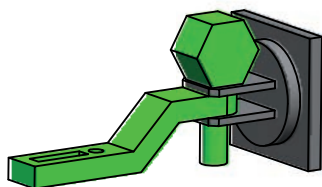
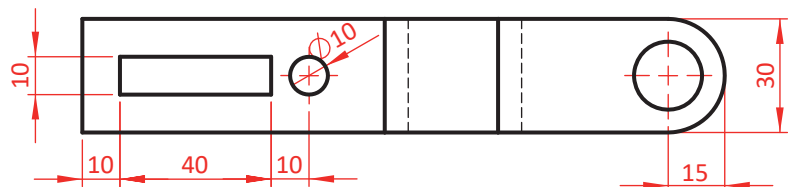
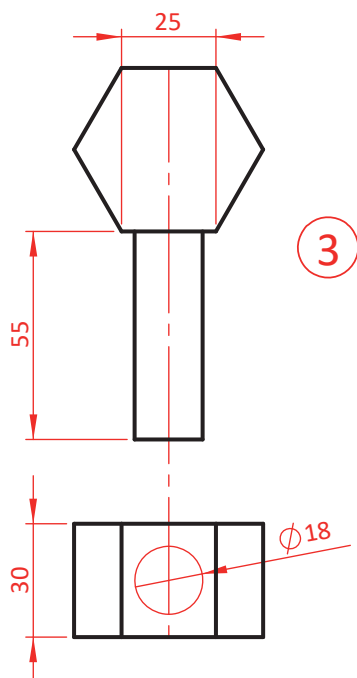
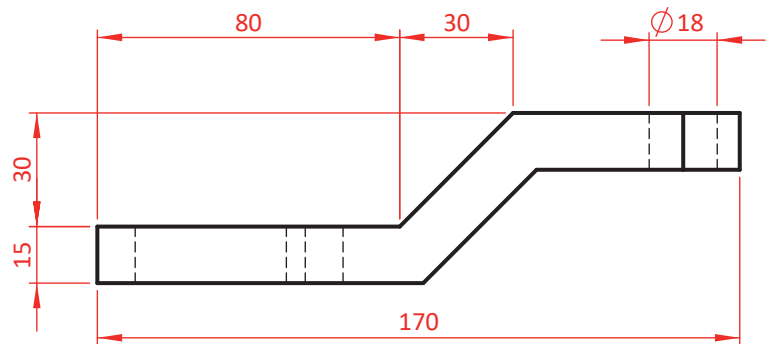
(Any omitted dimensions may be estimated.)



Scale 1:1



Part	Name	Qty.
1	BRACKET	1
2	HITCH	1
3	PIN	1



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