



J.60/61



Pre-Junior Certificate Examination, 2015

Technical Graphics

Marking Scheme

Ordinary	Section A	Pg. 3
	Section B	Pg. 6
Higher	Section A	Pg. 12
	Section B	Pg. 15

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Pre-Junior Certificate Examination, 2015

Technical Graphics
Ordinary Level
Section A
(120 marks)

Time : 2½ Hours

Instructions

- (a) Answer **any ten** questions in the spaces provided. All questions carry equal marks.
- (b) Construction lines must be clearly shown.
- (c) All measurements are in millimetres.
- (d) This booklet must be handed up at the end of the examination.
- (e) Write your name, school's name and teacher's name in the boxes provided below and on all other pages used.

Name:

School:

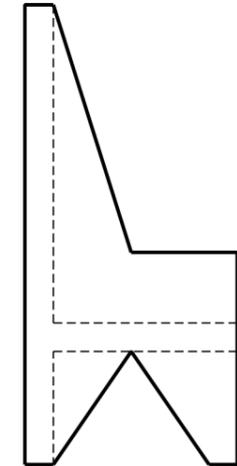
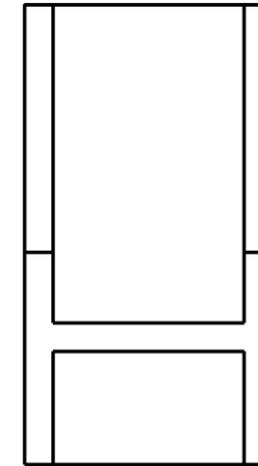
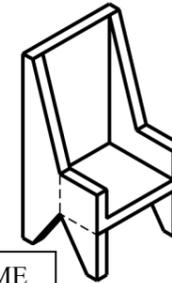
Teacher:

School Stamp

Question	Mark
Section A	
1	
2	
3	
4	
5	
6	
TOTAL	
GRADE	

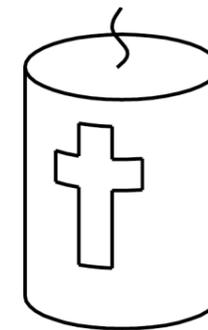
SECTION A. Answer **any ten** questions. All questions carry equal marks.

1. Shown is the **incomplete** elevation and **incomplete** end view of a concrete garden seat. Also shown is a 3D graphic of the seat. **Insert** the missing lines in both the elevation and the end view.



MARKING SCHEME
 - elevation (6m)
 - end view (6m)

2. In the space provided, make a **freehand pictorial sketch** of the candle shown. Colour **or** shade the completed sketch.



MARKING SCHEME
 - sketch (8m)
 - shade / colour (4m)



3. List **one** advantage and **one** disadvantage of a tablet device, as shown.

- Advantage:**
 portable //
 interactive //
 good graphics // etc.
- Disadvantage:**
 fragile //
 often no USB port //
 limited uses // etc.

MARKING SCHEME
 - Advantage (6m)
 - Disadvantage (6m)



4. Fig. 1 shows the design for a bell inscribed in a square ABCD.

Draw the enlarged design of the bell in the given square ABCD in Fig. 2.

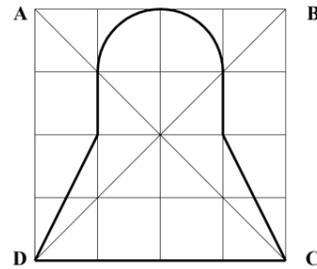


Fig. 1

MARKING SCHEME
 - set up (4m)
 - completion (8m)

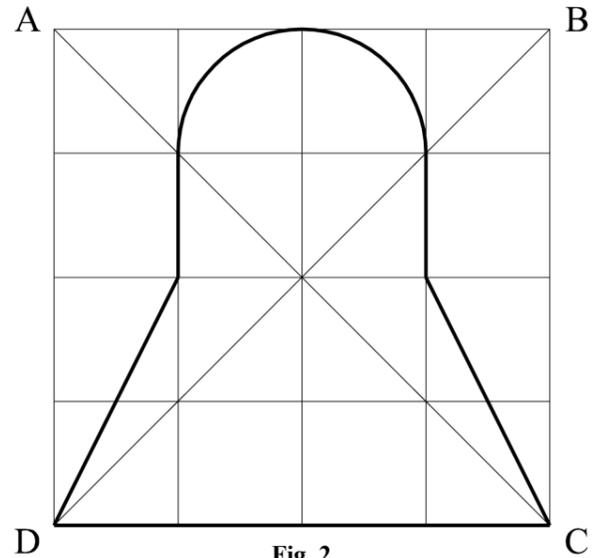


Fig. 2

5. Fig. 1 shows the design for a mirror which is based on an ellipse. The line AB is a tangent to the ellipse at A. Locate the focal points of the ellipse in Fig. 2 and complete the sign by drawing the tangents AB and BC.

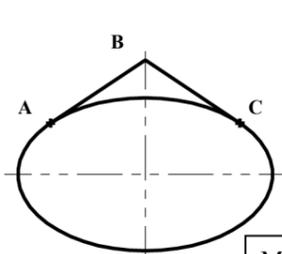


Fig. 1

MARKING SCHEME
 - focal points (4m)
 - construction (4m)
 - completion (4m)

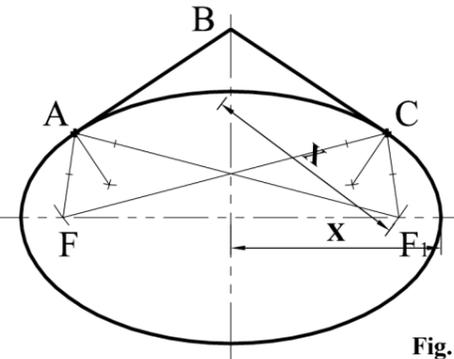
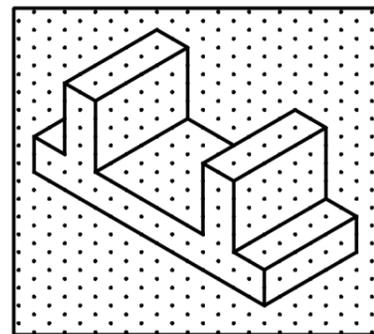
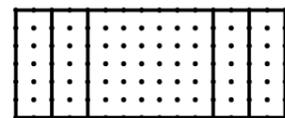
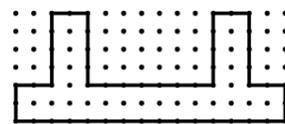


Fig. 2

6. The elevation and plan of a bookstand for holding children's books are shown.

Make a well proportioned freehand sketch of the bookstand in the space provided.

Colour or shade the completed sketch.



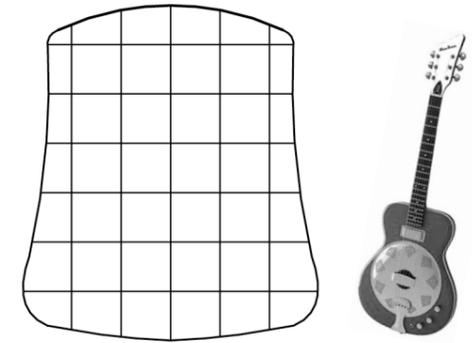
MARKING SCHEME
 - front face (4m)
 - depth (4m)
 - shade / colour (4m)

7. The outline of a portion of an electric guitar is shown.

Also shown is a 3D graphic of a similar guitar.

Write down the area of the front surface of the guitar in square units.

1 square = 1 square unit.



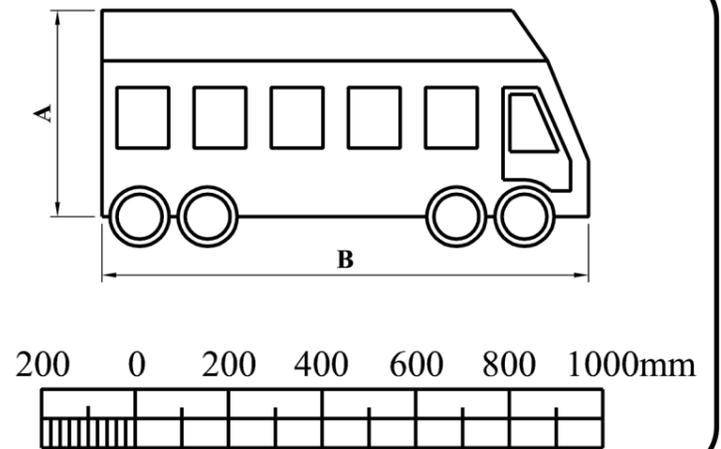
Area of guitar outline: 34 square units.

MARKING SCHEME
 - 33 to 35 square units (12m)
 ** Award 6 marks for 32 or 36.

8. Using the scale provided, measure and write down the dimensions A and B of the toy bus shown.

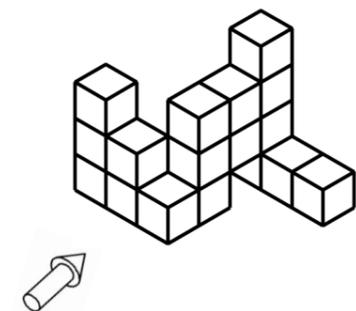
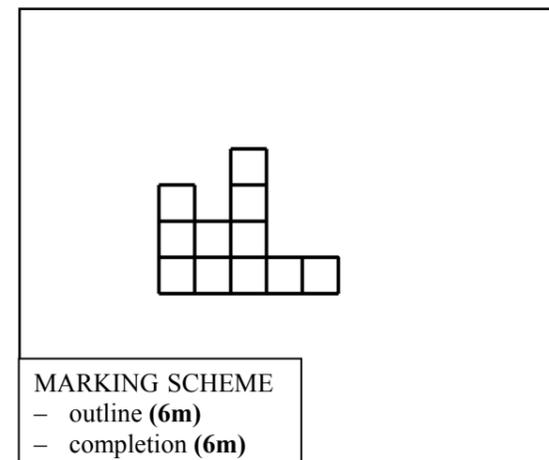
A: 440 mm

B: 1040 mm



MARKING SCHEME
 A - 440 mm (6m)
 B - 1040 mm (6m)

9. The figure shows a set of blocks. Draw, in the space provided, the elevation of the blocks in the direction of the arrow.

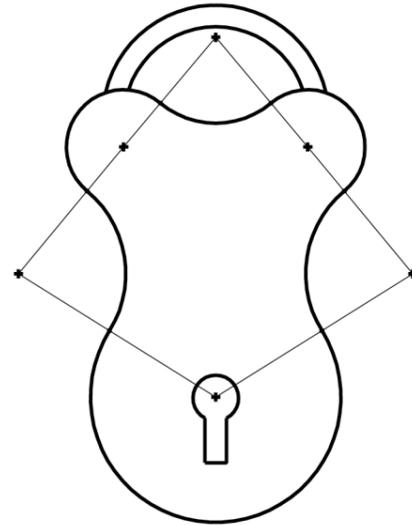


MARKING SCHEME
 - outline (6m)
 - completion (6m)

10. The figure shows the outline of a padlock.

The centres of the arcs are shown.

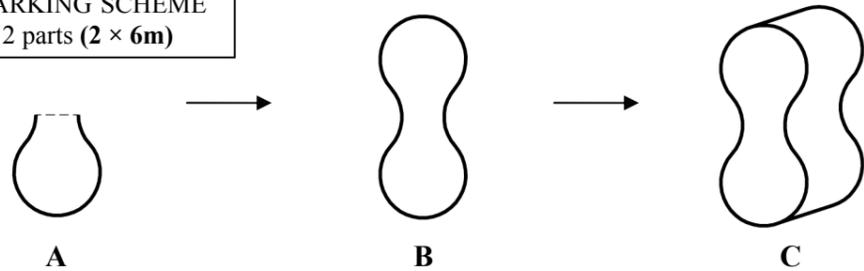
Show clearly all points of contact between the arcs.



MARKING SCHEME
 - construction (6m)
 - points (6m)

11. List the CAD commands used to produce the figures A to B and B to C.

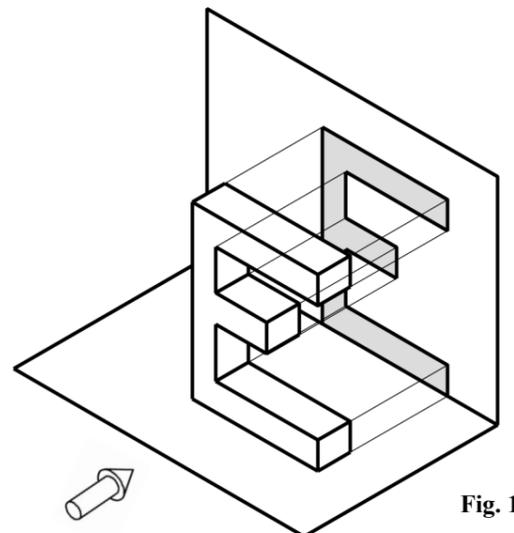
MARKING SCHEME
 - 2 parts (2 × 6m)



Commands: A → B MIRROR B → C EXTRUDE BOSS/BASS

12. The graphic shows the letter E.

Draw the **shadow** cast by the letter E shown in Fig. 1 when the light source is parallel to the direction of the arrow.

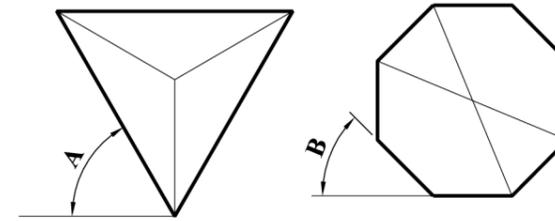


MARKING SCHEME
 - projection (6m)
 - solution (6m)

Fig. 1

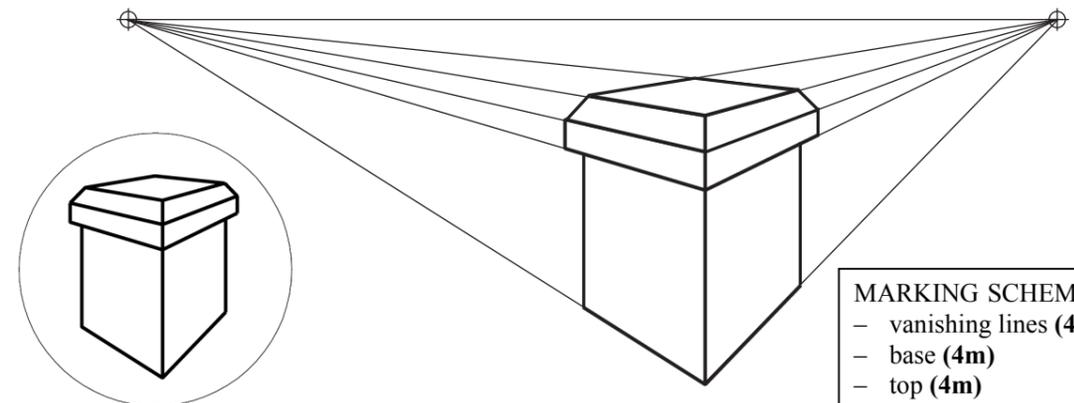
13. The outlines of two road-signs are shown. Write down the value of the angles A and B.

MARKING SCHEME
 - correct angle (2 × 6m)



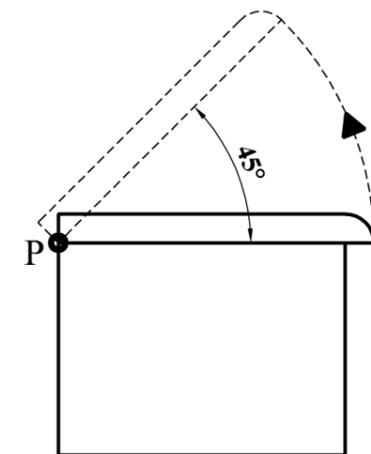
A = 60° B = 45°

14. The figure shows an **incomplete** two point perspective drawing of a pier for a set of gates. A small 3D graphic of the pier is also shown. Complete the perspective drawing of the pier.

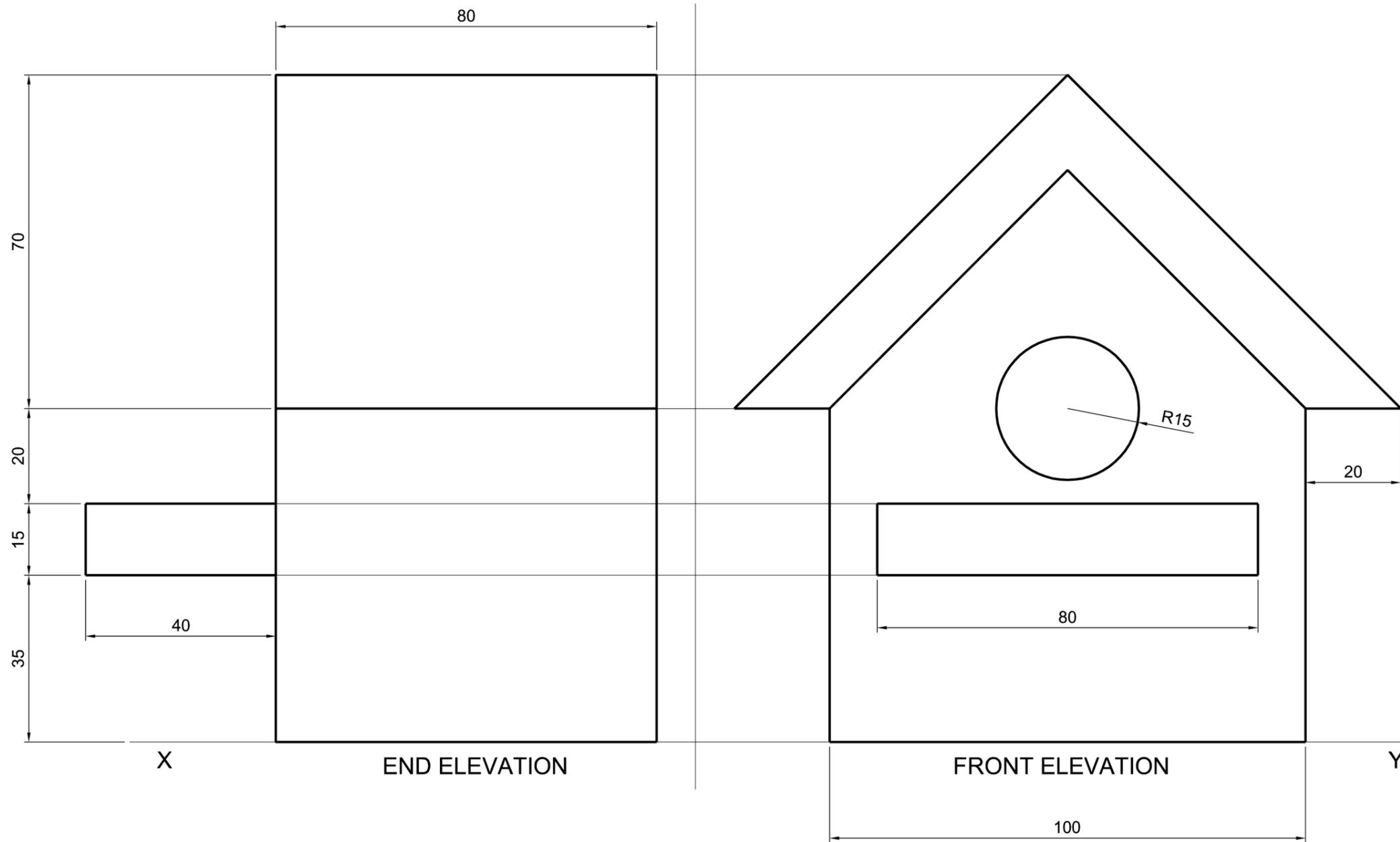


MARKING SCHEME
 - vanishing lines (4m)
 - base (4m)
 - top (4m)

15. The diagram shows the end elevation of a storage container with a rotating lid. Rotate the lid in the direction of the arrow through 45° about the point P and complete the drawing of the lid in the rotated position.



MARKING SCHEME
 - rotation (4m)
 - angle (4m)
 - completion (4m)



MARKING SCHEME

Total (70)

- (a) Front Elevation
 - outline (12m)
 - inner detail (8m)
 - completion (4m)
- (b) End Elevation
 - outline (12m)
 - inner detail (8m)
 - shelf (4m)
 - completion (4m)
- (c) Dimensions (8m)

Accuracy / draughtsmanship (10m)



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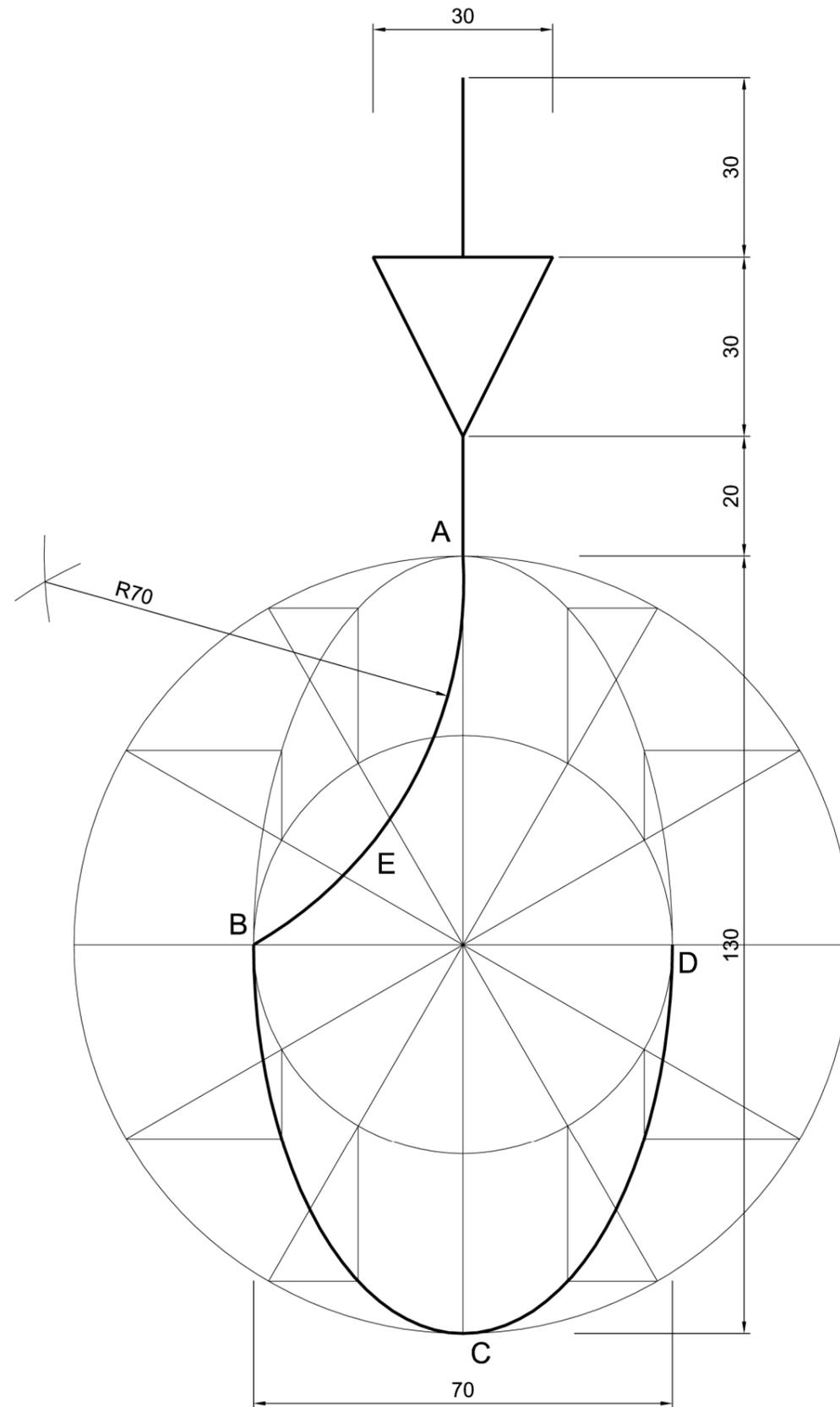
Pre-Junior Certificate Examination, 2015

Ordinary Level – Section B

J.60

Scale 1:1

Question 1



MARKING SCHEME

Total (70)

- setup (12m)
- elliptical constructions (14m)
- curve (12m)
- construction of arc (8m)
- arc (6m)
- completion (8m)

Accuracy / draughtsmanship (10m)



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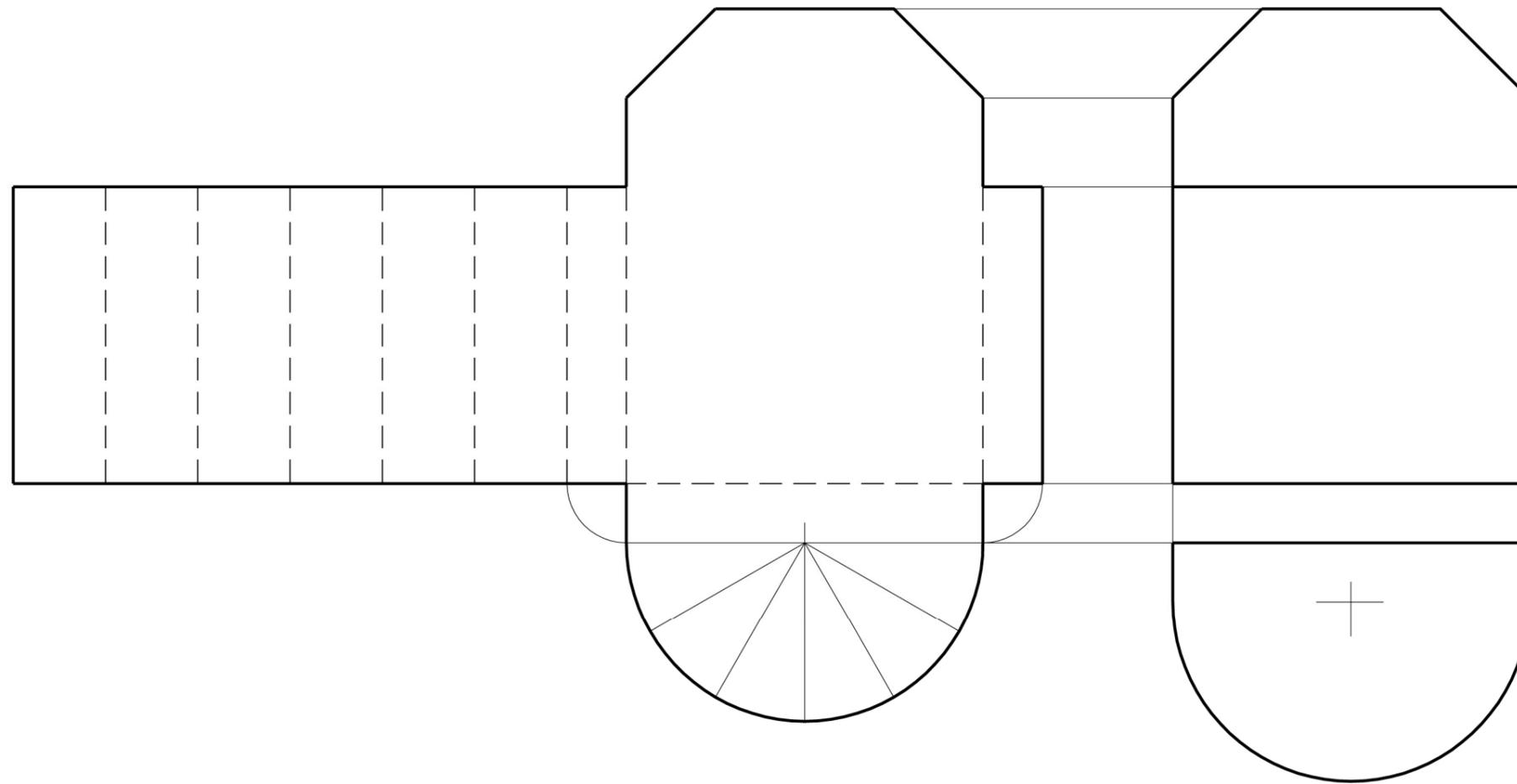
Pre-Junior Certificate Examination, 2015

Ordinary Level – Section B

J.60

Scale 1:1

Question 2



MARKING SCHEME

Total (70)

- (a) Elevation – outline (5m)
– completion (5m)
- (b) End elevation – outline (5m)
– completion (5m)
- (c) Development – 4 surfaces (4 × 10m)

Accuracy / draughtsmanship (10m)



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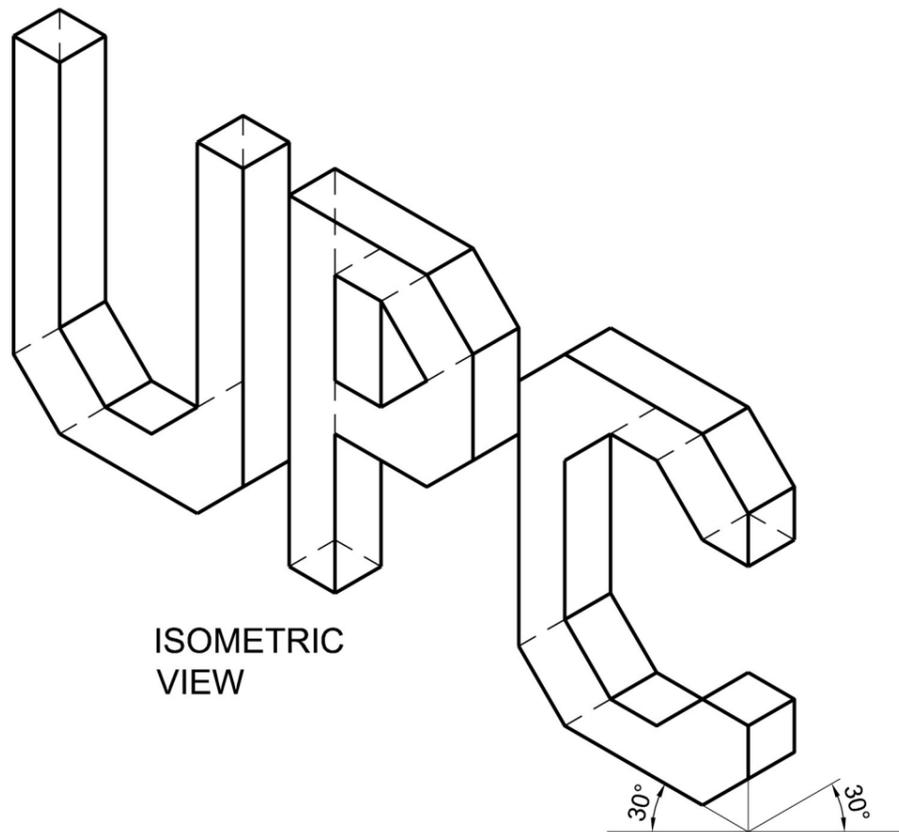
Pre-Junior Certificate Examination, 2015

Ordinary Level – Section B

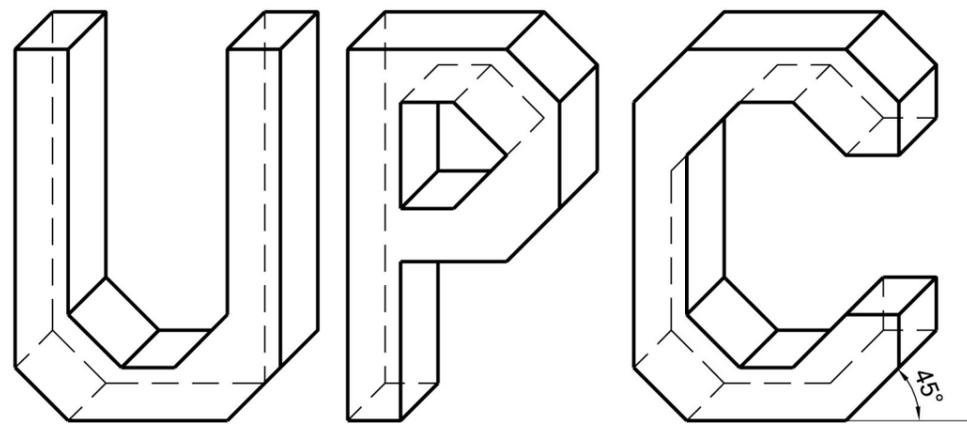
J.60

Scale 1:1

Question 3



ISOMETRIC
VIEW



OBLIQUE VIEW

MARKING SCHEME

Total (70)

(a) isometric **or** (b) oblique

- axis (10m)
- front face outline (15m)
- depth (10m)
- detail (15m)
- completion (10m)

Accuracy / draughtsmanship (10m)

Note: Solution scale 1:2, Student scale 1:1



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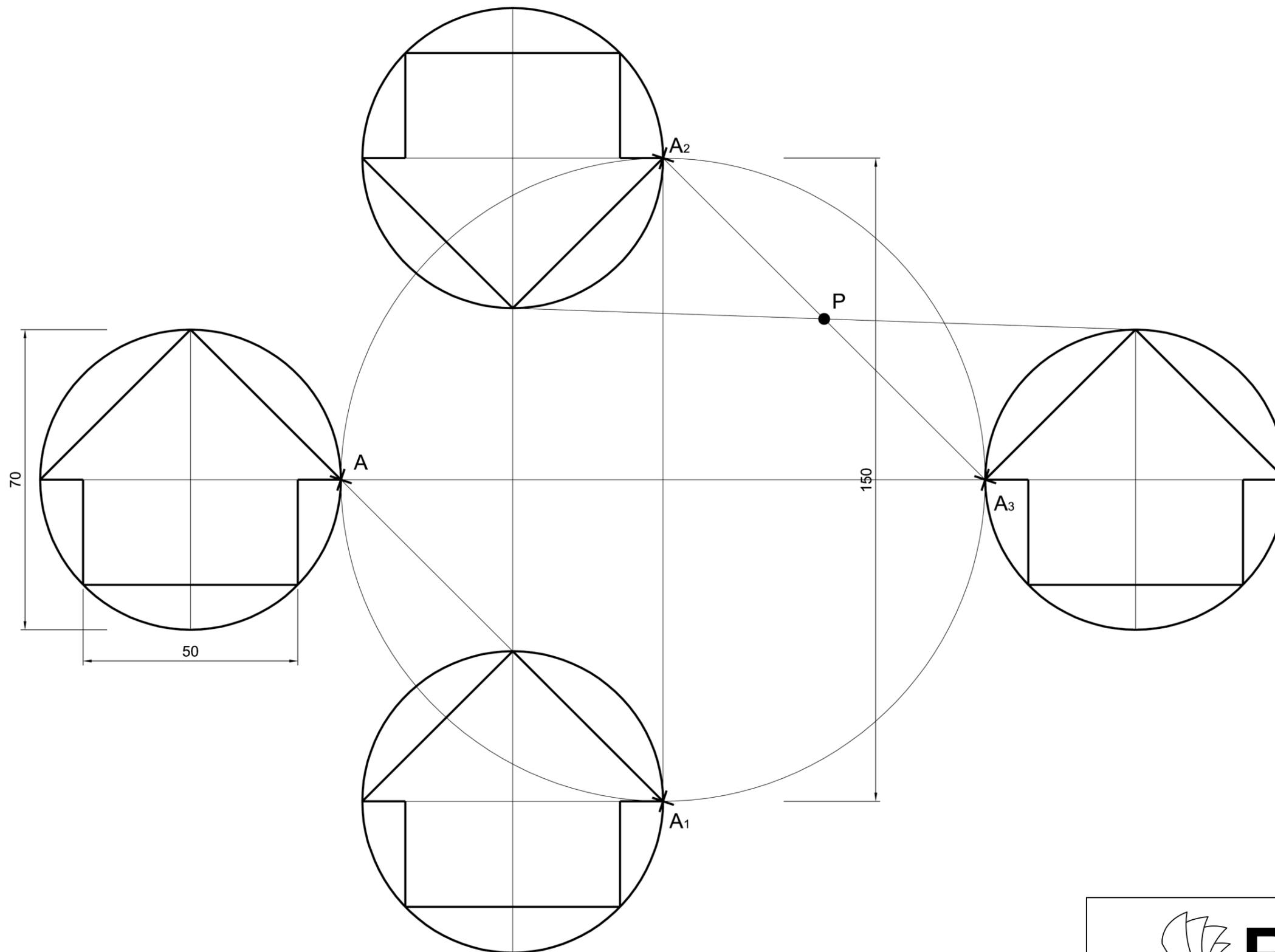
Pre-Junior Certificate Examination, 2015

Ordinary Level – Section B

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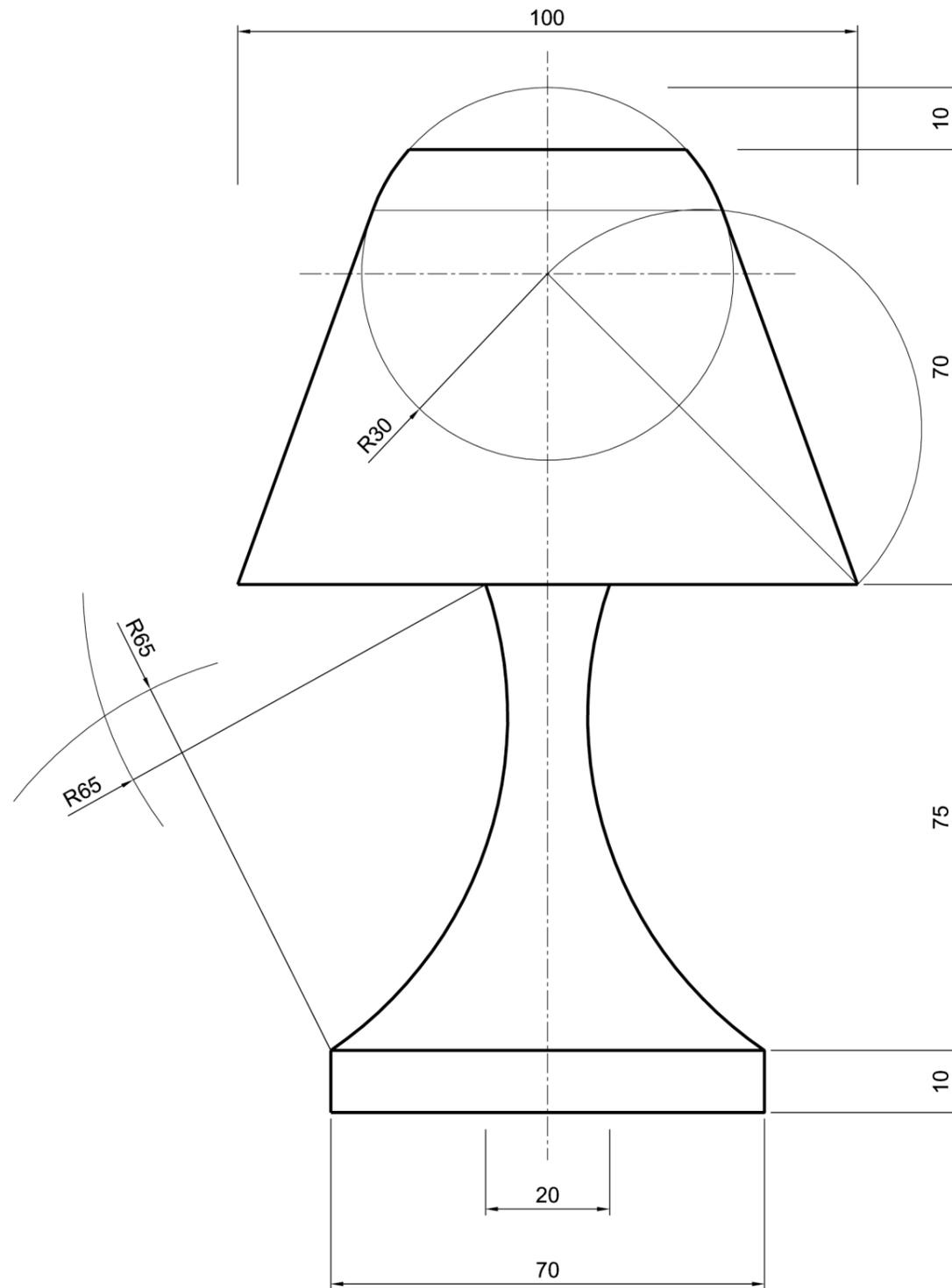
Scale: *see note*

Question 4



MARKING SCHEME	
Total (70)	
-	set up (10m)
-	translation (15m)
-	axial symmetry (20m)
-	central symmetry (15m)
Accuracy / draughtsmanship (10m)	

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Pre-Junior Certificate Examination, 2015		
Ordinary Level – Section B		
J.60	Scale 1:1	Question 5



MARKING SCHEME

Total (70)

- set up (10m)
- R65 arcs construction (10m)
- R65 arcs (10m)
- tangent construction (10m)
- tangents (10m)
- completion (10m)

Accuracy / draughtsmanship (10m)



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Pre-Junior Certificate Examination, 2015

Ordinary Level – Section B

J.60

Scale 1:1

Question 6



Pre-Junior Certificate Examination, 2015

Technical Graphics Higher Level

Section A (120 marks)

Time : 3 Hours

Instructions

- (a) Answer **any ten** questions in the spaces provided. All questions carry equal marks.
- (b) Construction lines must be clearly shown.
- (c) All measurements are in millimetres.
- (d) This booklet must be handed up at the end of the examination.
- (e) Write your name, school's name and teacher's name in the boxes provided below and on all other pages used.

Name:

School:

Teacher:

School Stamp

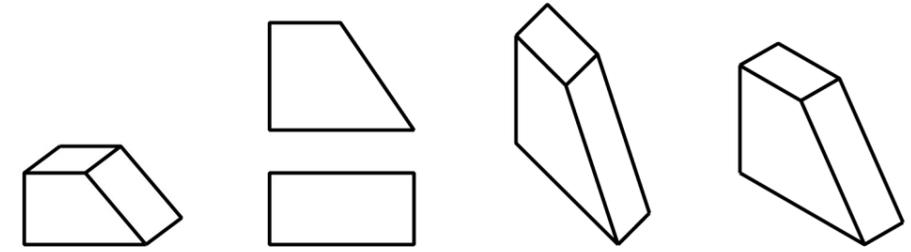
Question	Mark
Section A	
1	
2	
3	
4	
5	
6	
TOTAL	
GRADE	

SECTION A. Answer **any ten** questions. All questions carry equal marks.

1. Fill in the label for **each** diagram by selecting from the given list.

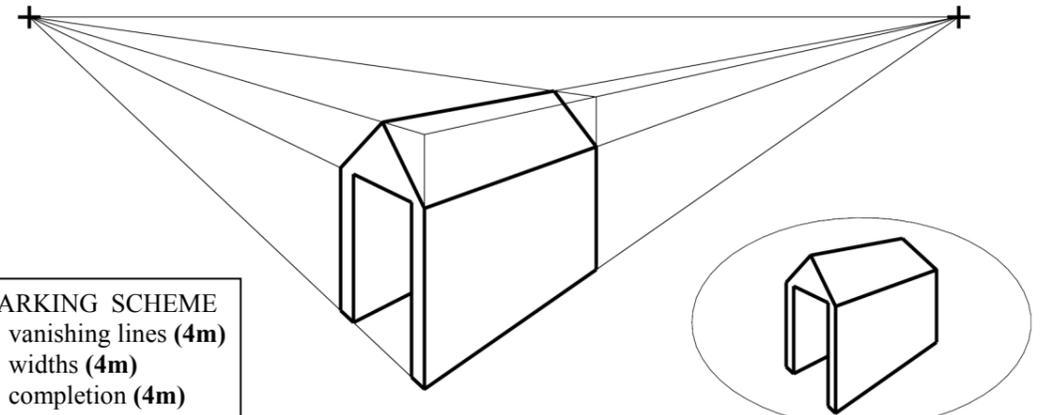
- Planometric
- Oblique
- Isometric
- Orthographic

MARKING SCHEME
- 4 parts (4 × 3m)



1. Oblique 2. Orthographic 3. Planometric 4. Isometric

2. The figure shows the incomplete perspective drawing of a toy tunnel. A 3D graphic is also shown. Complete the perspective drawing.

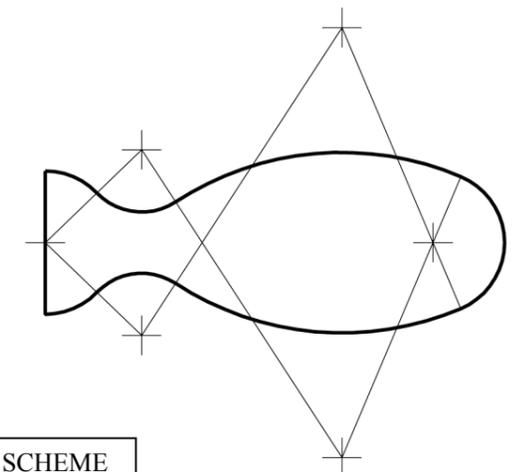


MARKING SCHEME
- vanishing lines (4m)
- widths (4m)
- completion (4m)

3. The figure shows the design for the handle of a screwdriver. The centres of the arcs are shown.

A 3D graphic is also shown.

Show clearly all points of contact.

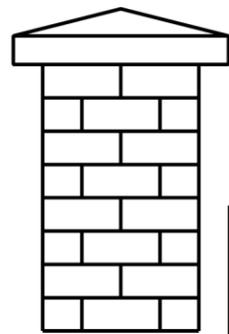


MARKING SCHEME
- 6 lines (6 × 2m)

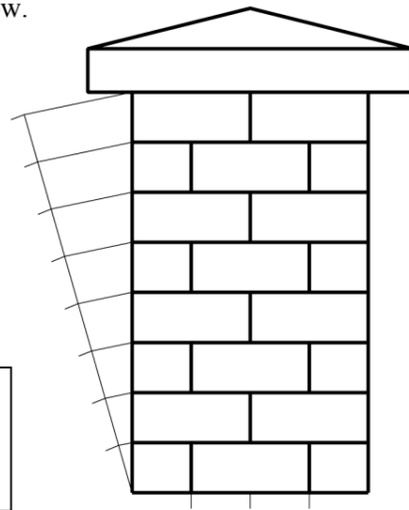
4. The figure shows the incomplete drawing of a gate pier.

A graphic of the completed pier is shown below.

Complete the drawing of the pier showing clearly how to determine the height of the bricks.



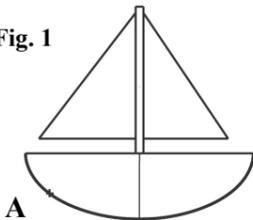
MARKING SCHEME
 - division (6m)
 - construction (3m)
 - completion (3m)



5. Fig. 1 shows the design of a sailboat. The base of the boat is a semi-ellipse as shown with point A on the curve. Fig. 2 shows the major axis of an ellipse and a point A on the curve.

Determine the length of the minor axis and find five points on the curve.

Fig. 1



MARKING SCHEME
 - construction (4m)
 - focal points (4m)
 - tangent (4m)

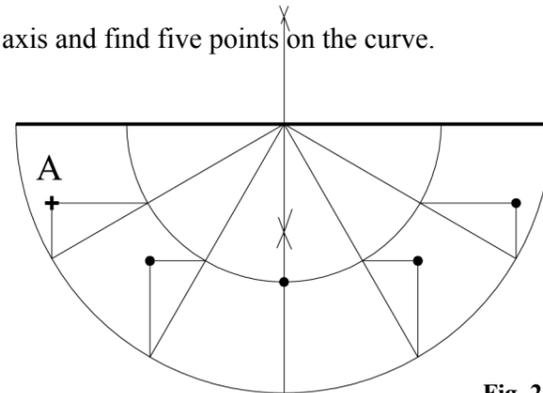
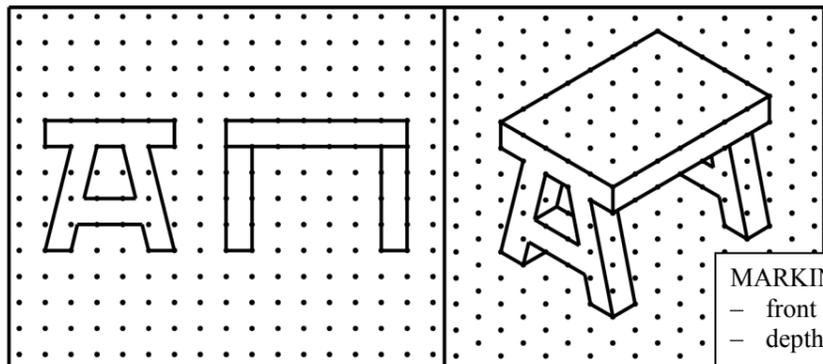


Fig. 2

6. The elevation and end elevation of a table are shown on the square grid.

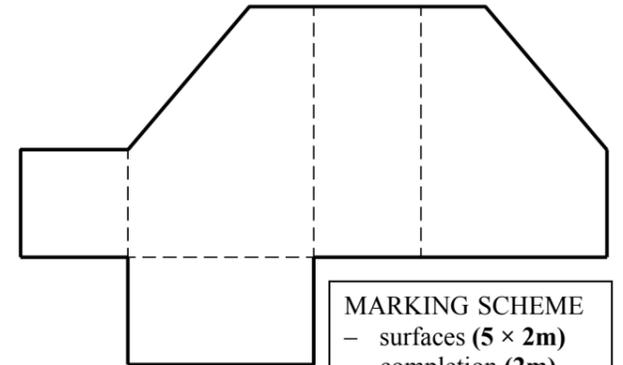
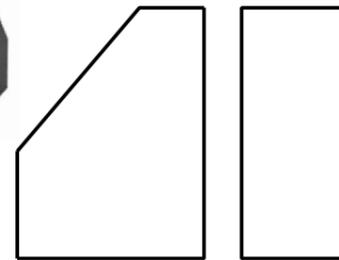
Make a **freehand pictorial sketch** of the table. Colour **or** shade the new sketch.



MARKING SCHEME
 - front (4m)
 - depth (4m)
 - completion (4m)

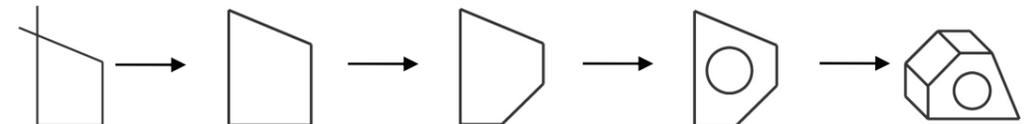
7. The figure shows the elevation and end elevation of an office storage box.

A 3D graphic is also shown. Draw a development of the box.



MARKING SCHEME
 - surfaces (5 × 2m)
 - completion (2m)

8. Write down **any three** CAD commands used to edit the figure as shown in the sequence below.



Any **three** CAD commands: TRIM

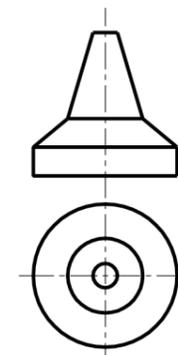
MARKING SCHEME
 - 3 parts (3 × 4m)

CHAMFER
CIRCLE
EXTRUDE BOSS/BASS

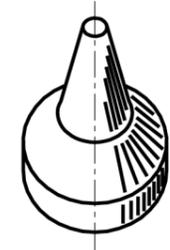
9. The elevation and plan of a traffic cone are shown.

In the space provided, draw a **freehand pictorial sketch** of the traffic cone.

Colour **or** shade the sketch.



MARKING SCHEME
 - sketch (8m)
 - shade / colour (4m)



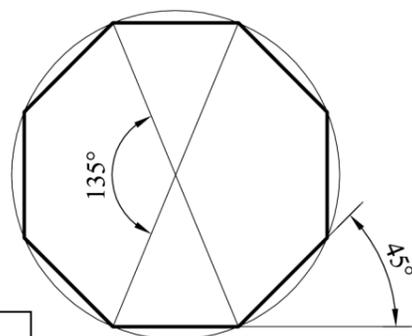
10. Write down the measures of the angles marked A and B.

A = 45°

B = 135°

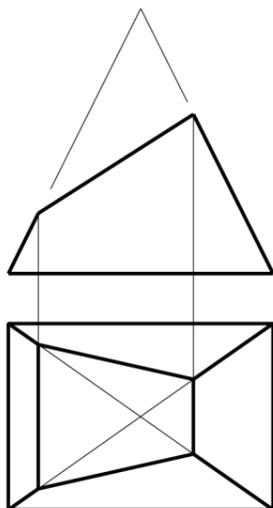


MARKING SCHEME
- correct angles (2 × 6m)



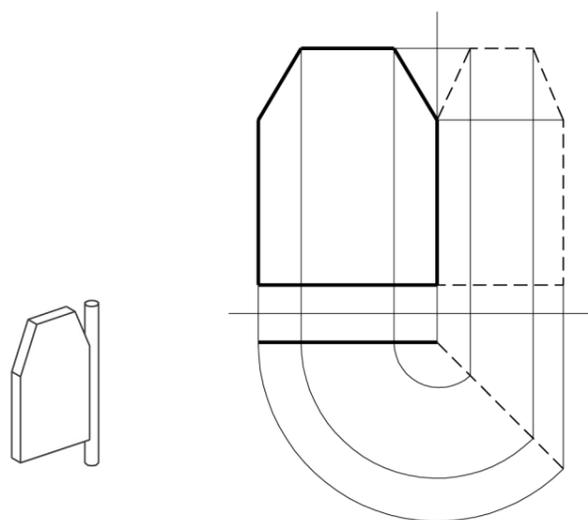
11. Complete the plan of the truncated pyramid shown.

MARKING SCHEME
- projections (4m)
- intersections (4m)
- completion (4m)



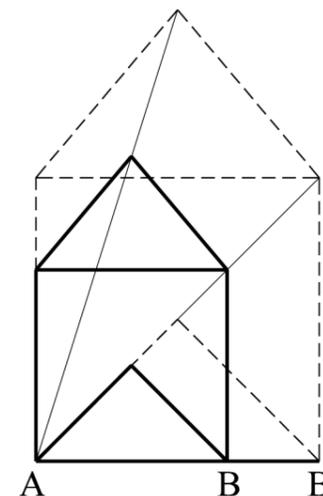
12. The figure shows the outline plan and elevation of a garden gate. A 3D graphic is also shown. Complete the elevation of the gate when it is rotated into the position as shown by the broken line in plan.

MARKING SCHEME
- rotation (4m)
- projections (4m)
- completion (4m)

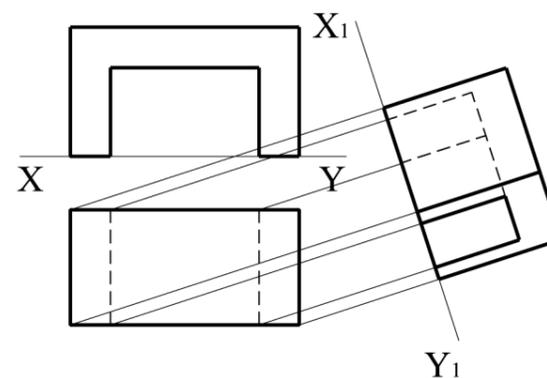


13. The figure shows the logo for a building company. Draw a new logo similar to the given logo, with the base AB increased to AB₁.

MARKING SCHEME
- rotation (4m)
- projections (4m)
- completion (4m)



14. The figure shows the elevation and plan of a garden seat. Project an auxiliary elevation of the bridge on the line X₁-Y₁ shown.



MARKING SCHEME
- projections (4m)
- altitudes (4m)
- completion (4m)

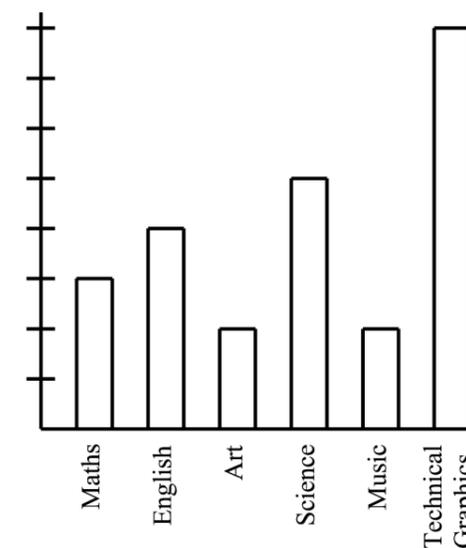
15. Twenty four students were surveyed about their favourite subject. The results were as follows:

- Maths - 3 students
- English - 4 students
- Art - 2 students
- Science - 5 students
- Music - 2 students
- Technical Graphics - 8 students

Complete the bar chart to represent this information graphically.

Colour or shade the completed chart.

MARKING SCHEME
- correct division (5 × 2m)
- completion (2m)



MARKING SCHEME

Total (70)

- (a) Front elevation
 - outline (8m)
 - completion (6m)
- (b) Plan
 - outline (8m)
 - completion (6m)
- (c) End elevation
 - outline (8m)
 - construction (6m)
 - completion (6m)
- (d) - method (8m)
 - solution (4m)

Accuracy / draughtsmanship (10m)



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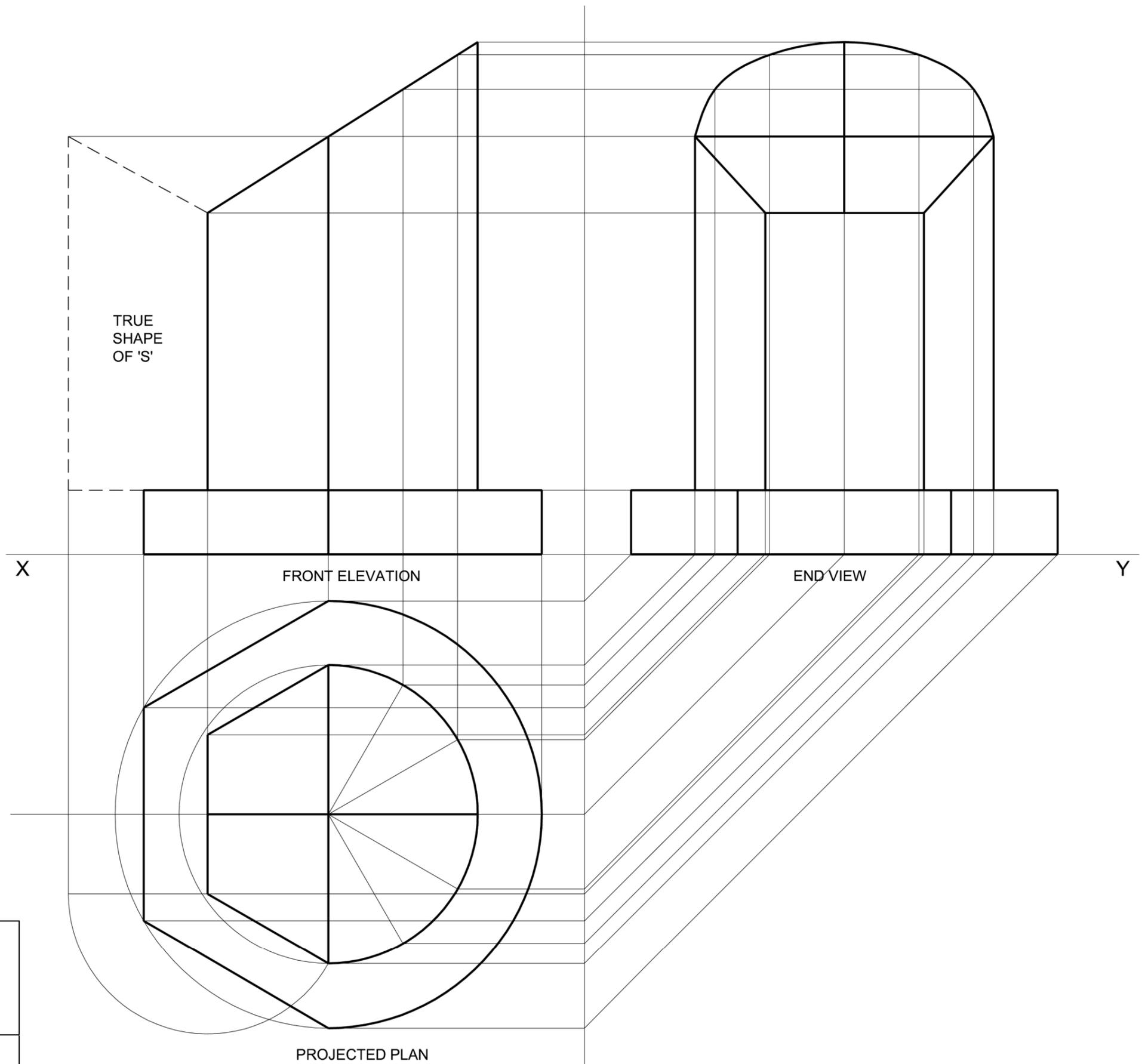
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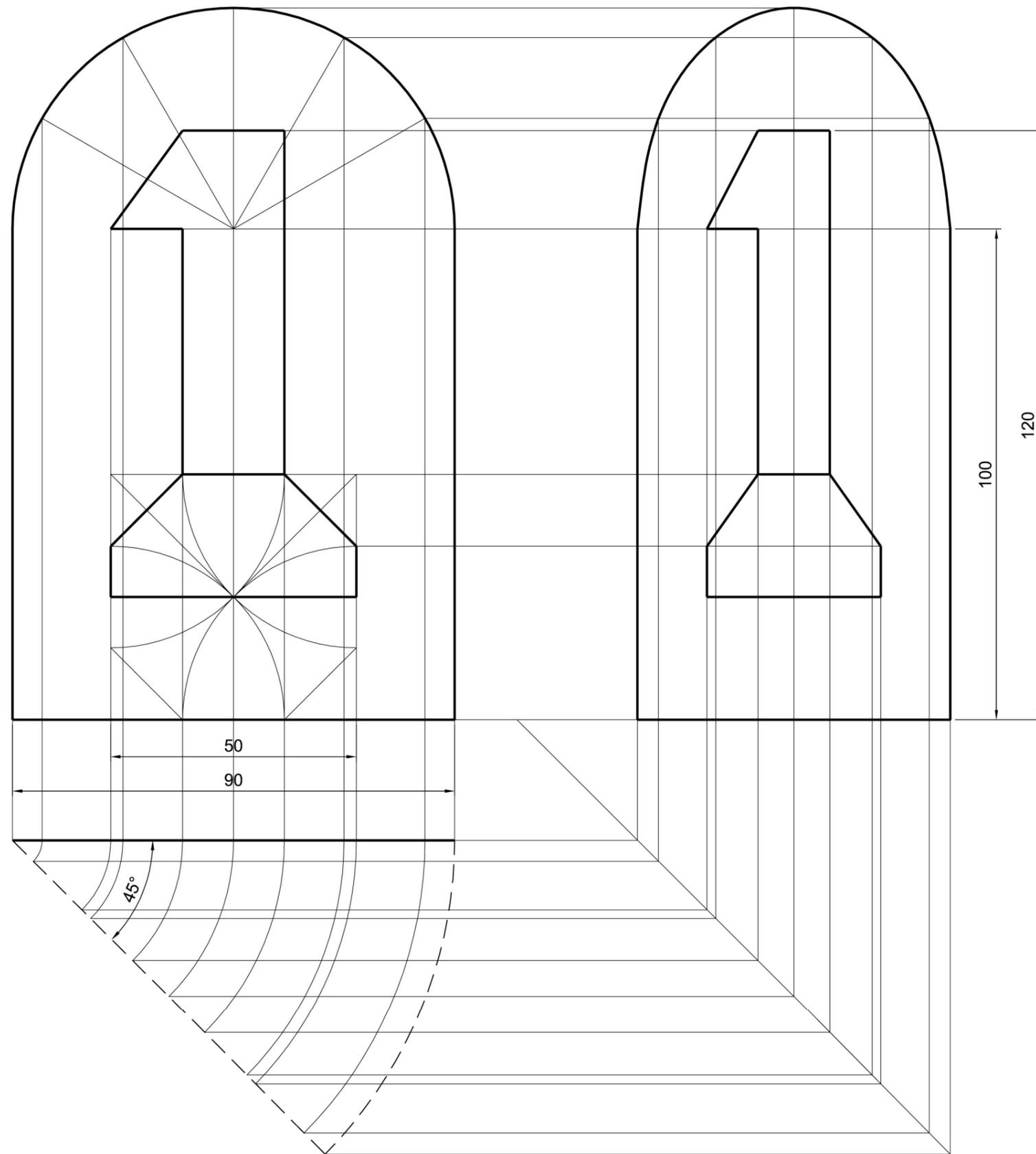
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Scale 1:1

Question 1





MARKING SCHEME

Total (70)

- (a) – plan (5m)
 – elevation (10m)

- (b) End view
 – outline (10m)
 – inner detail (10m)
 – curve (15m)
 – completion (10m)

Accuracy / draughtsmanship (10m)



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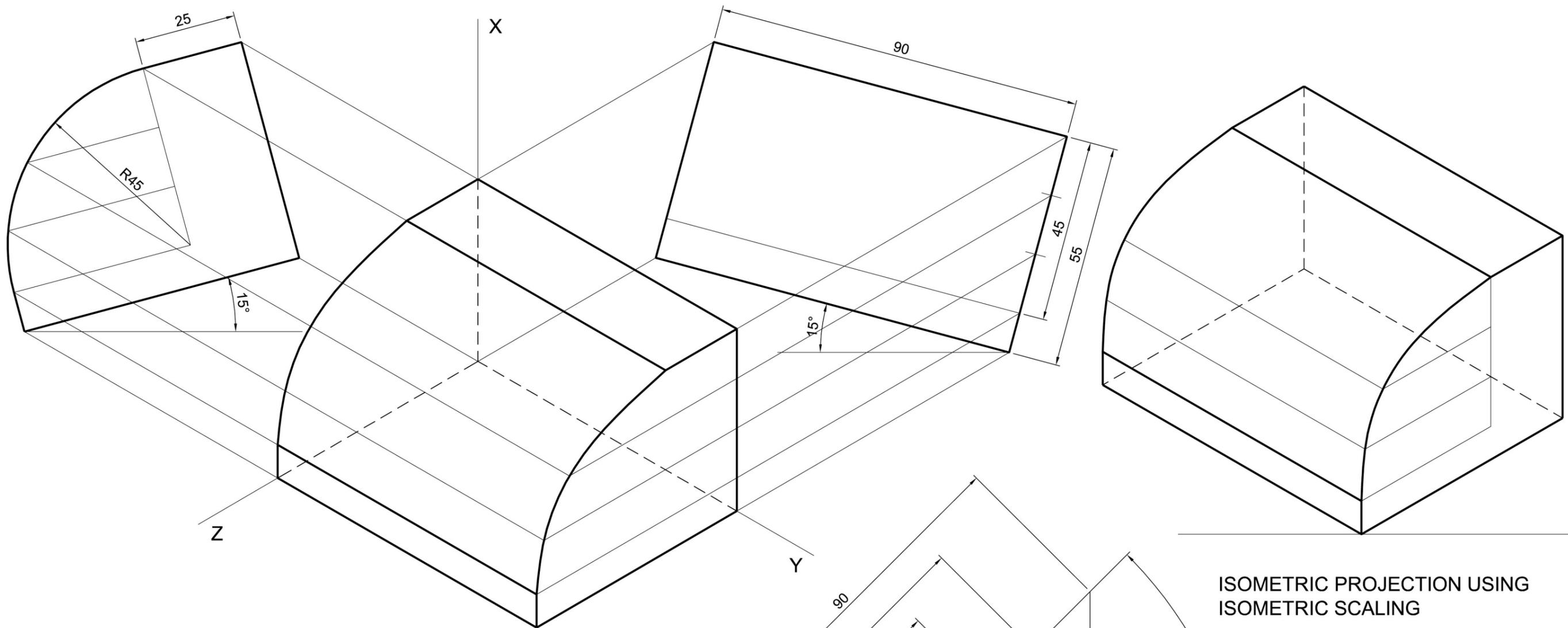
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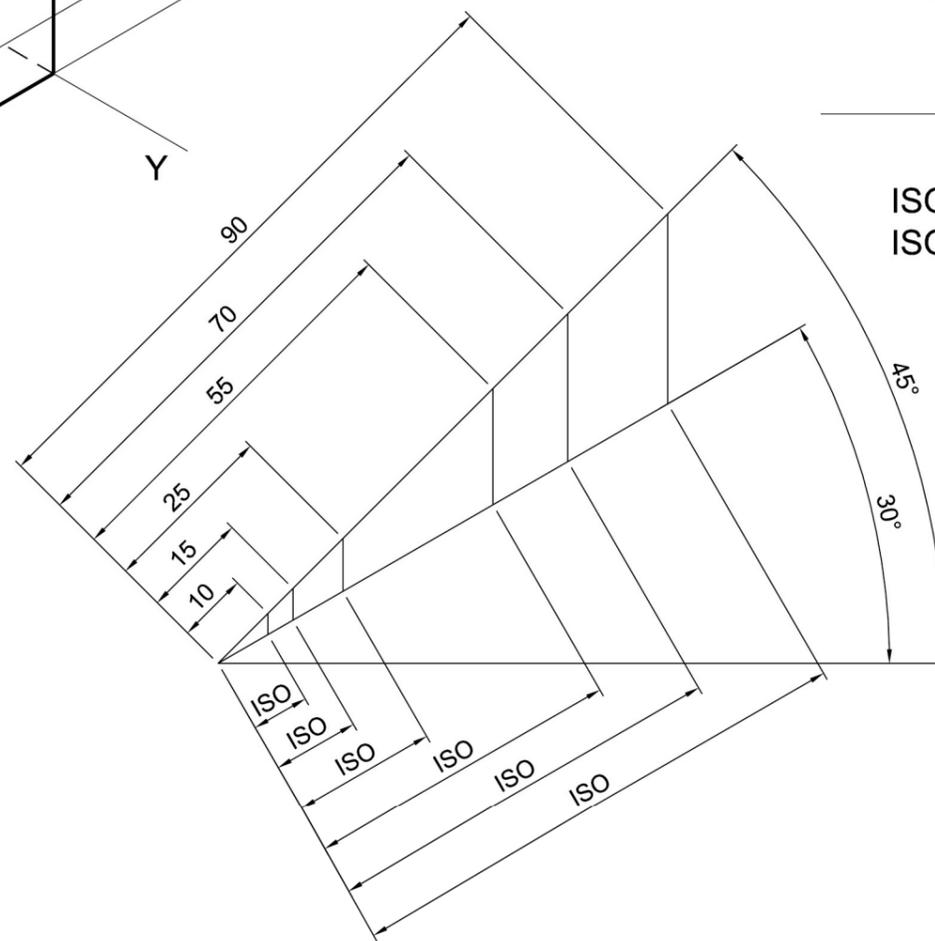
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Scale 1:1

Question 2



ISOMETRIC PROJECTION USING ISOMETRIC SCALING



MARKING SCHEME

Total (70)

- (a)
- (i) – axis (5m)
 - (ii) – elevation (5m)
 - (iii) – plan (5m)
 - (iv) – outline (15m)
 - curves (10m)
 - detail (10m)
 - completion (10m)

Accuracy / draughtsmanship (10m)

OR

- (b)
- scale (15m)
 - outline (10m)
 - curves (15m)
 - detail (10m)
 - completion (10m)

Accuracy / draughtsmanship (10m)



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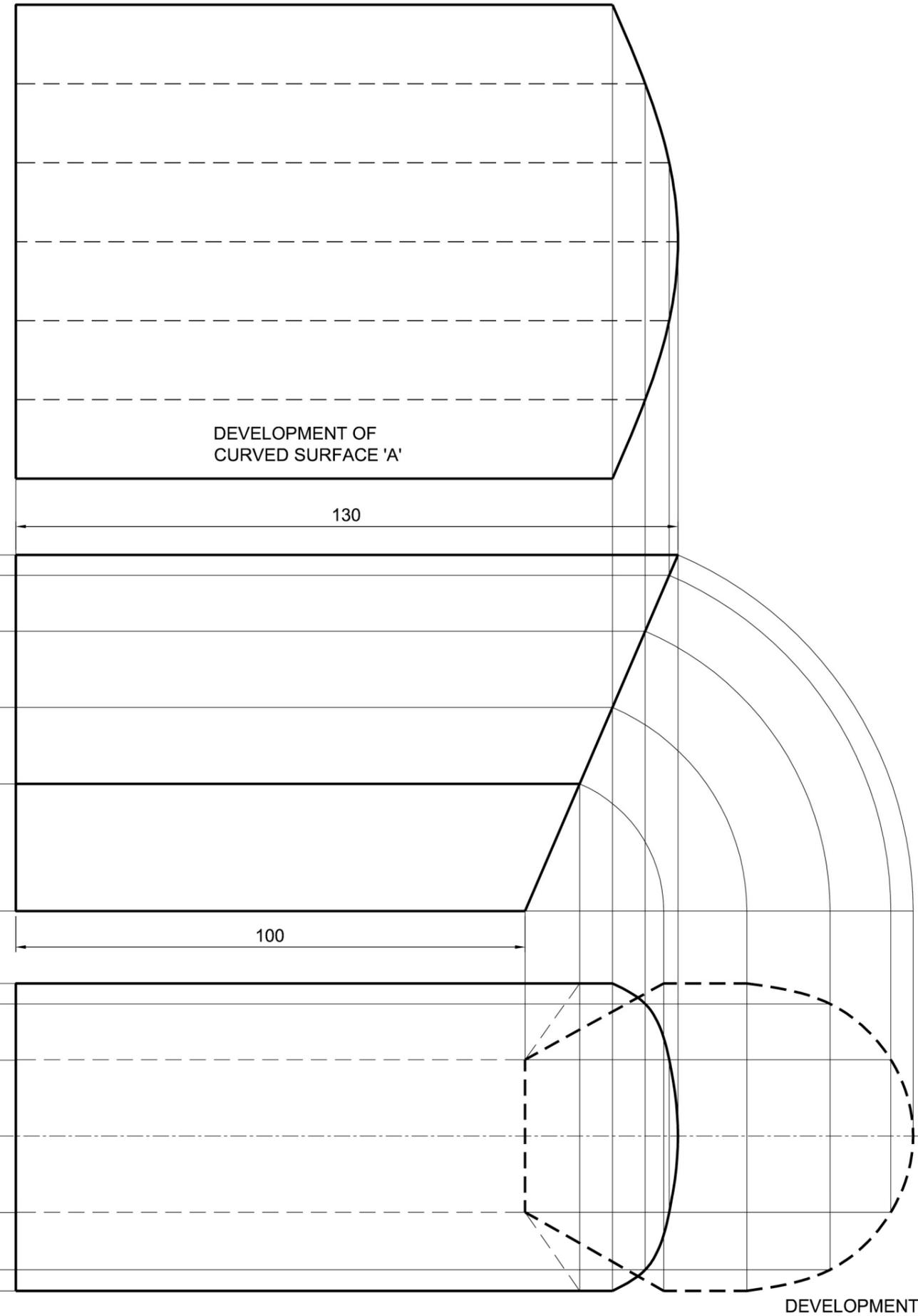
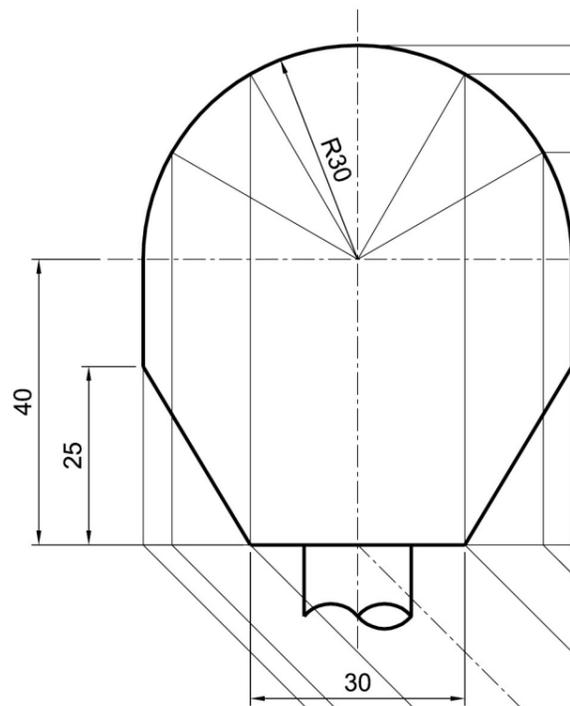
Question 3

MARKING SCHEME

Total (70)

- (a) – elevation (10m)
- end view (10m)
- (b) – outline (5m)
- curve (10m)
- completion (5m)
- (c) – method (5m)
- completion (5m)
- (d) – method (5m)
- completion (5m)

Accuracy / draughtsmanship (10m)



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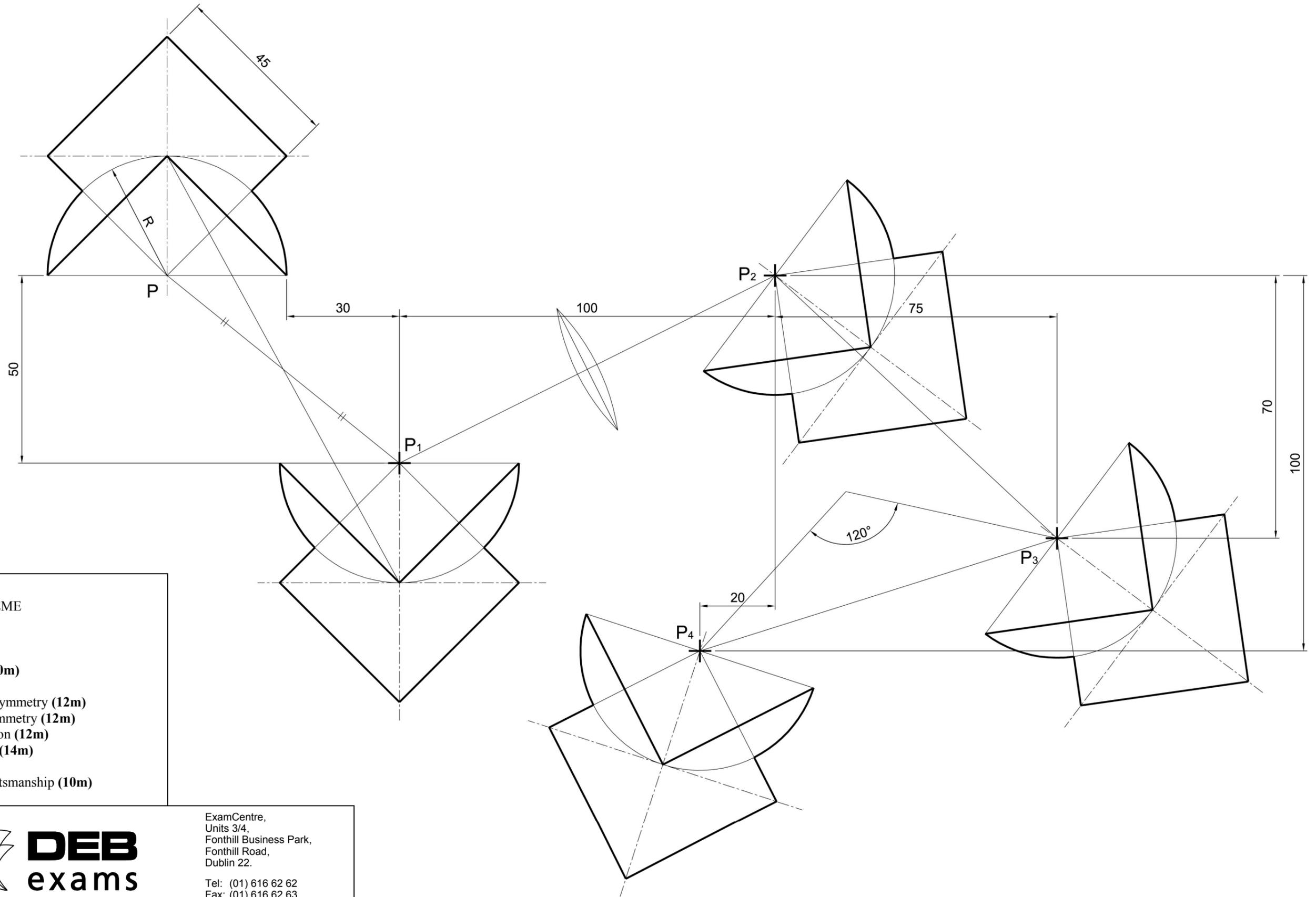
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Scale 1:1

Question 4



MARKING SCHEME

Total (70)

- (a) – setup (10m)
- (b) — central symmetry (12m)
- axial symmetry (12m)
- translation (12m)
- rotation (14m)

Accuracy / draughtsmanship (10m)



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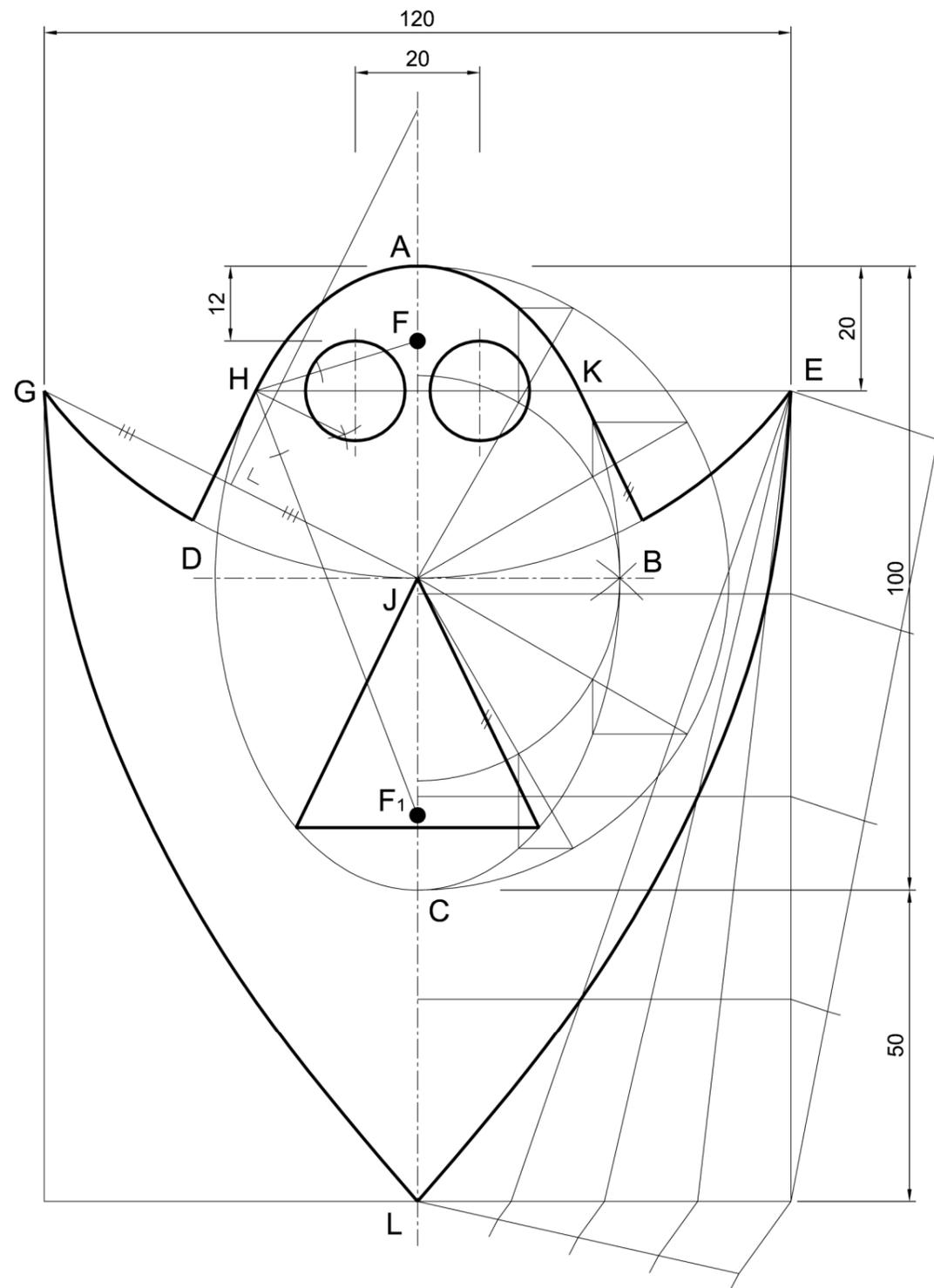
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Scale 1:1

Question 5



MARKING SCHEME	
Total (70)	
Set-up (5m)	
-	minor axis (9m)
-	elliptical constructions (9m)
-	ellipse (9m)
-	parabola constructions (9m)
-	parabola (9m)
-	tangents (5m)
Completion (5m)	
Accuracy / draughtsmanship (10m)	

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J.61	Scale 1:1	Question 6