

Annual Examinations for Secondary Schools 2021

YEAR 11 GRAPHICAL COMMUNICATION TIME: 2 hours

Instructions

- Write your name and class on all sheets.
- Attempt ALL questions.
- All answers are to be drawn accurately with instruments, unless otherwise stated.
- All construction lines MUST be left on each solution to show the method employed.
- Drawing aids may be used.

Information

- All dimensions are in millimetres.
- Estimate any missing dimensions.
- Marks will be awarded for accuracy, clarity and appropriateness of construction.

This section is for teachers' use only.

Question	1	2	3	4	5	6	7	Total
Marks allotted	10	14	18	14	18	10	16	100
Marks awarded								

Question 1: Freehand pictorial drawing.

A front elevation and a plan in first angle projection are shown in Fig. 1. Draw a well-proportioned freehand isometric projection of the block. Estimate any dimensions.

(10 marks)

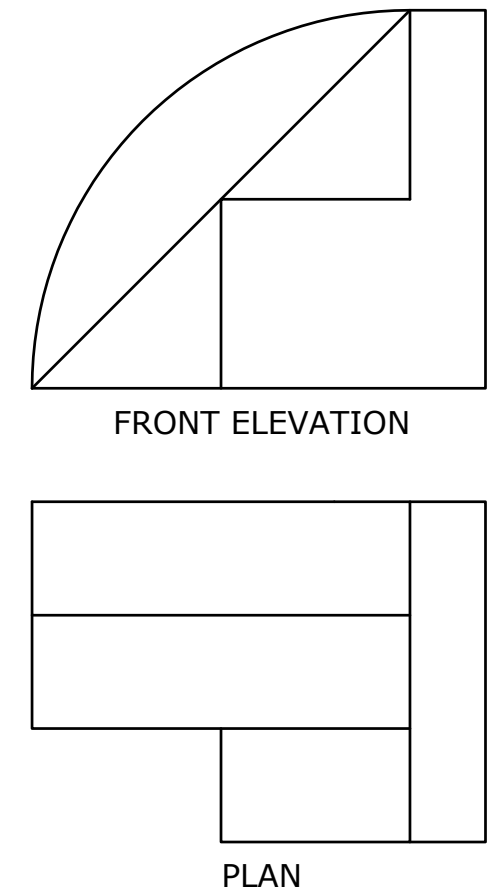
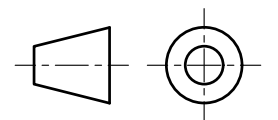


Fig. 1



Question 2: Involute of a circle.

A wooden model for a doll's house arch, based on $\frac{3}{4}$ of an involute of a circle, is shown in Fig. 2. Construct this part involute to complete the arch and the radials. Finish off the design and add some rendering to the model; material: wood.

Note: Do **not** draw the balustrades.

(14 marks)

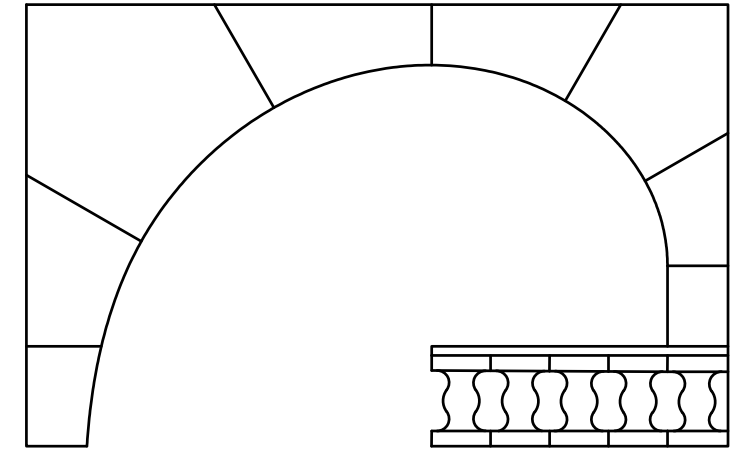
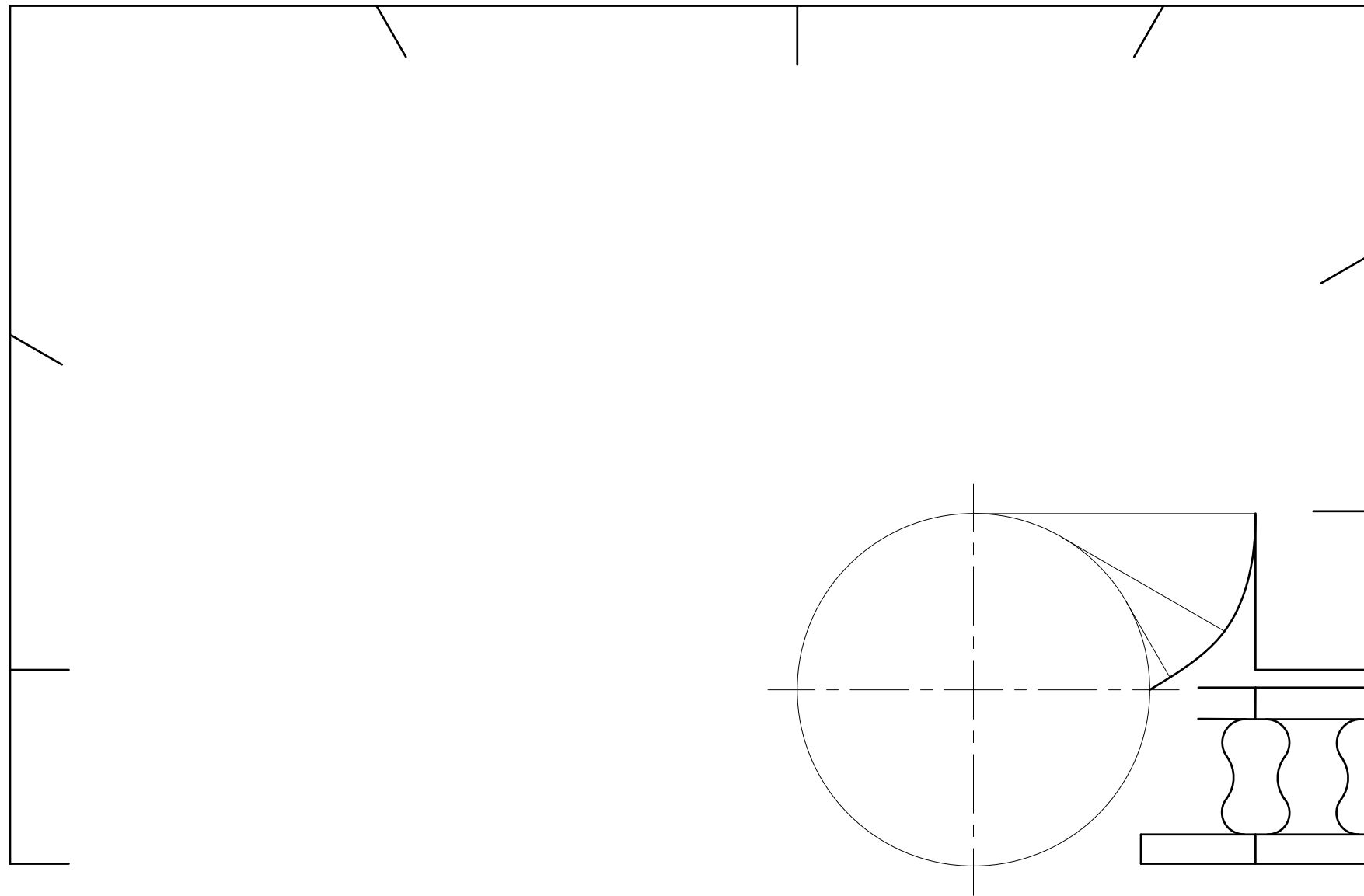


Fig. 2



Question 3: Circles in contact.

The profile of a typical fuel pump gun is shown in Fig. 3. Using the given centre lines and dimensions, construct the profile of the pump gun.

Note: Show clearly how the centres, tangents and points of tangencies were derived.

(18 marks)

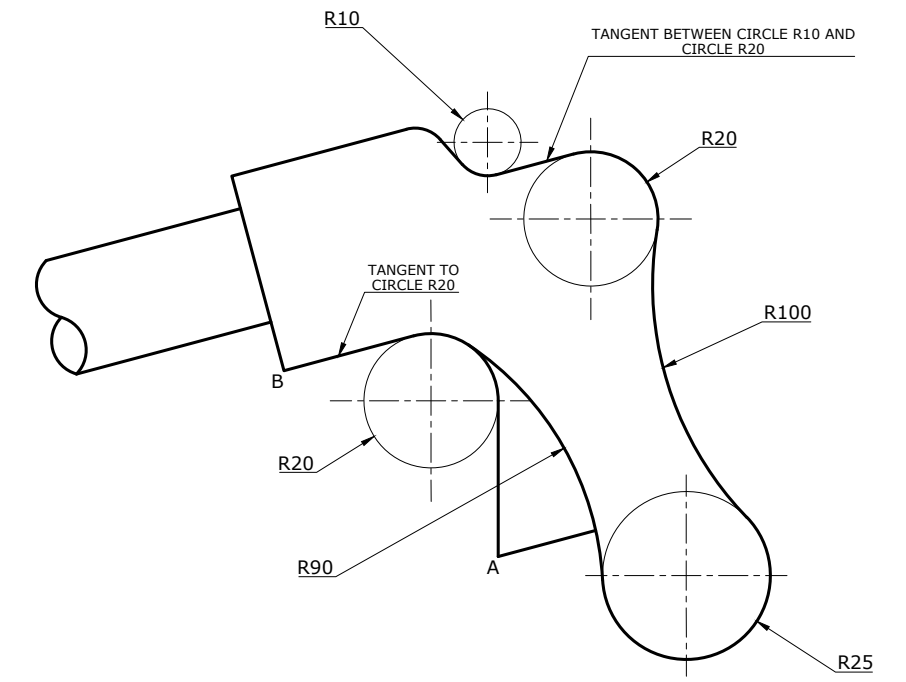
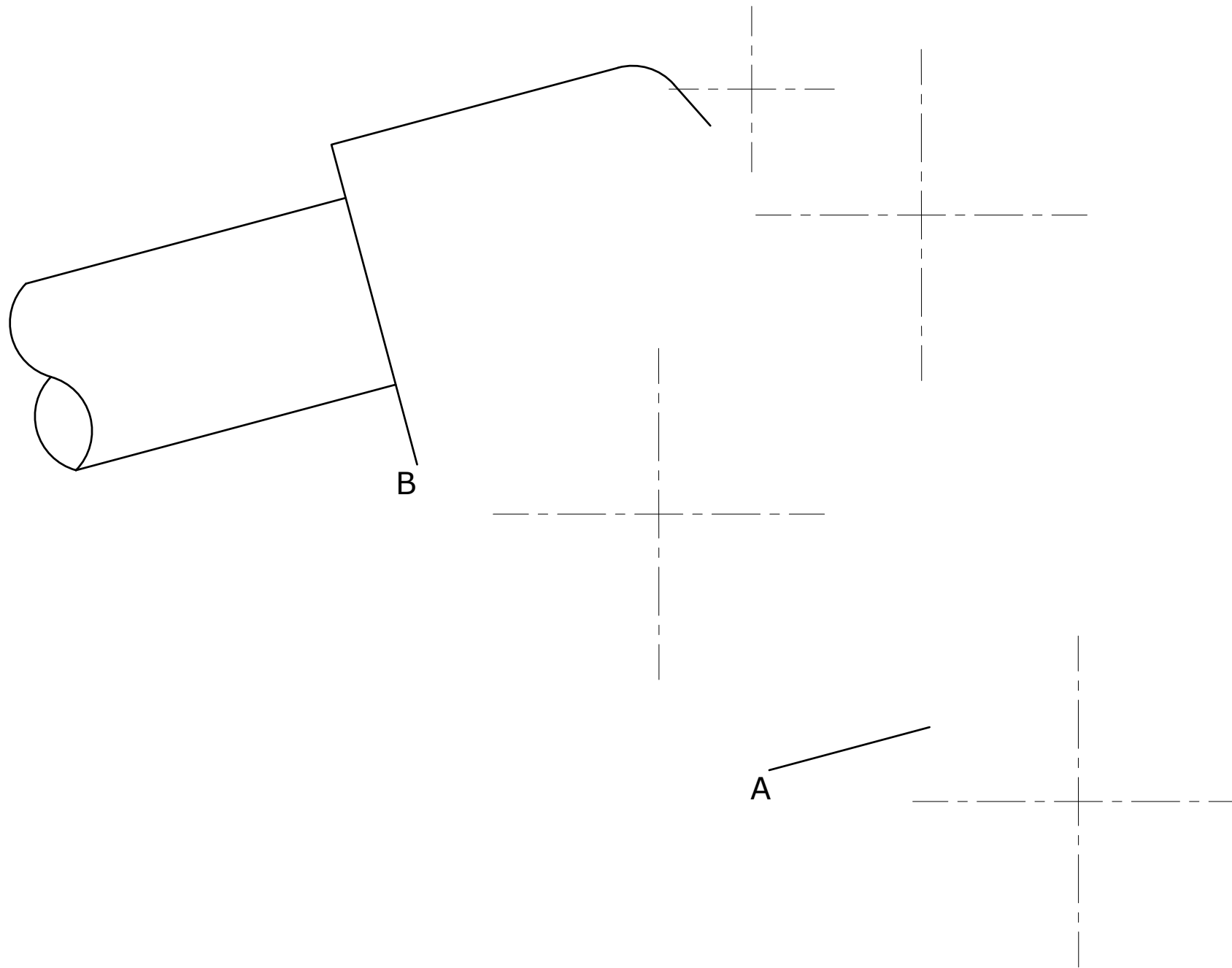


Fig. 3



Question 4: Sectioning.

A pictorial projection of a glass shelf bracket is shown in Fig 4. A front elevation and the profile of the end elevation are also given. In the space provided, complete a sectional end elevation on cutting plane X-X. All holes are cut through the material. Render the pictorial projection; material:metal.

Notes:

- Show all centre lines.

(14 marks)

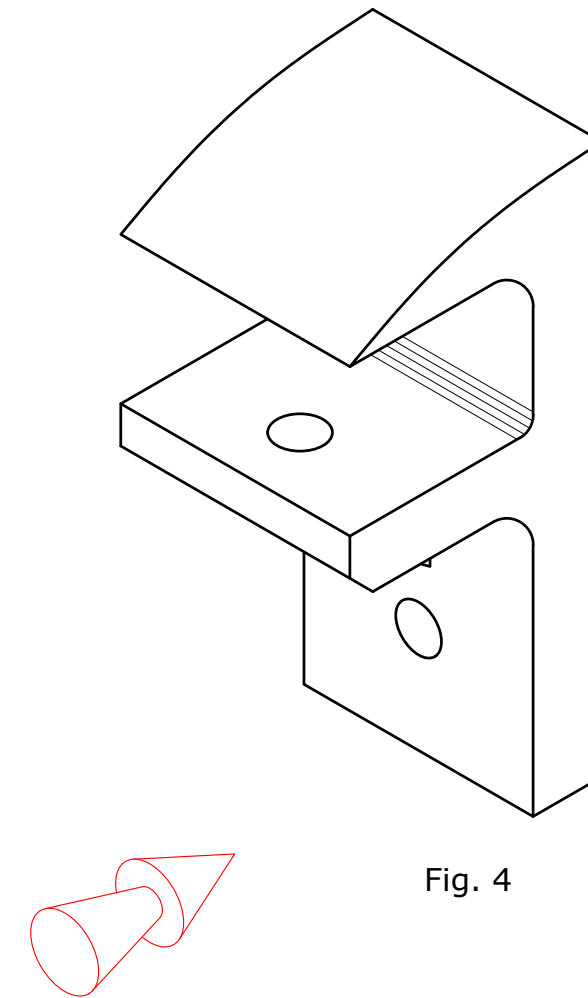
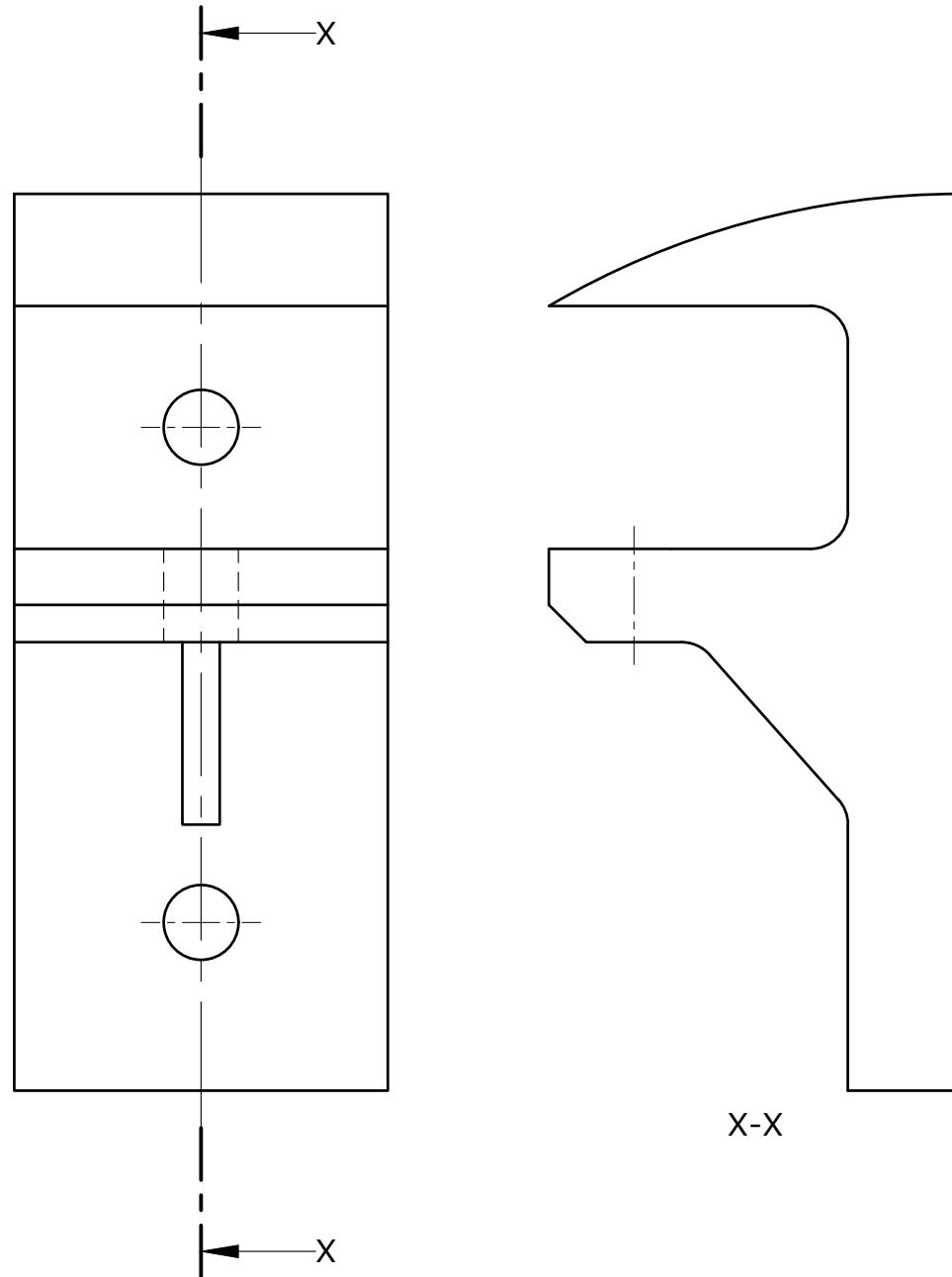
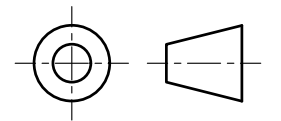


Fig. 4

FRONT ELEVATION



Question 5: Two-point perspective.

A front and end elevation of a bird observatory hut in a nature park are shown in Fig 5. Draw an estimated two-point perspective view of the hut, using the given VP1, VP2 and the starting point.

(18 marks)

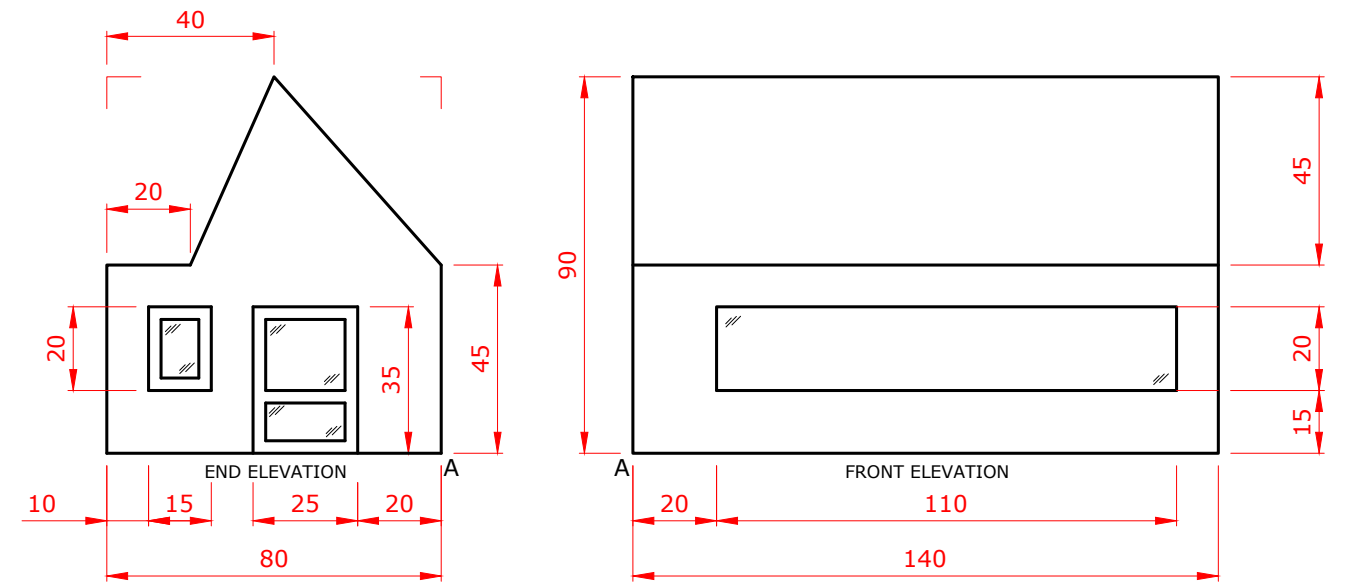
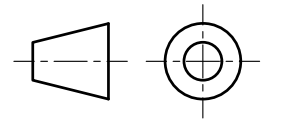


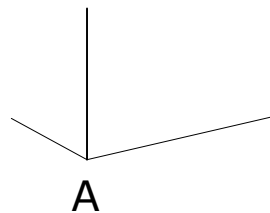
Fig. 5



VP 1



VP 2



Question 6: Vectors.

A tower crane with a load is shown in Fig. 6. A westerly wind is acting on the load from the left side. Using a scale of your choice, draw a force diagram to find the magnitude and direction of the load acting on the crane.

(10 marks)

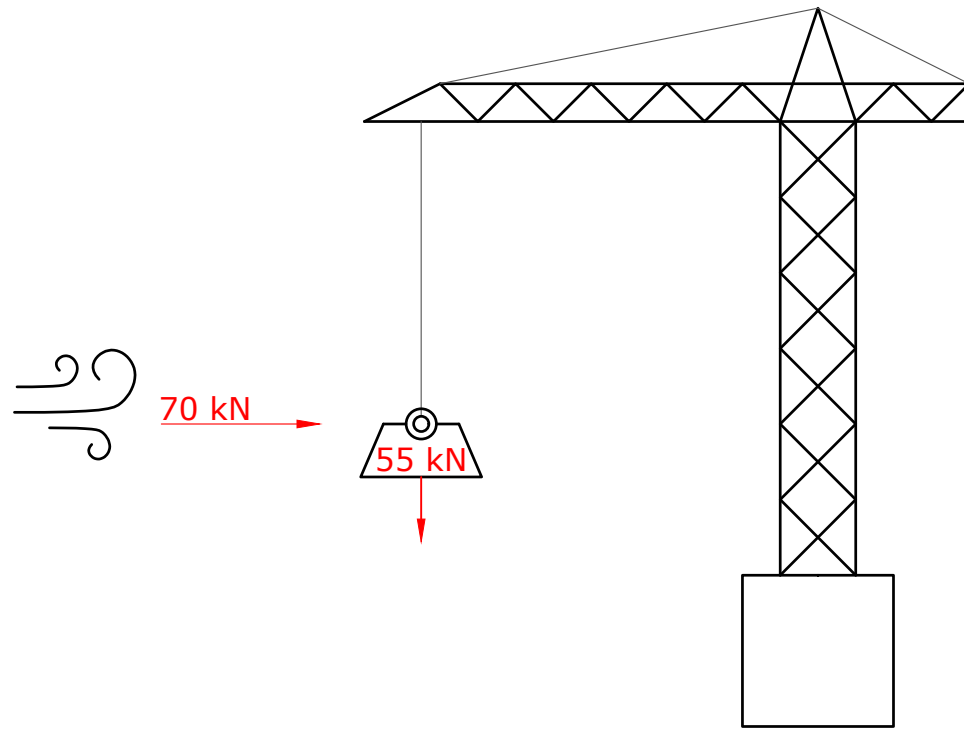


Fig. 6

Ans: magnitude: _____
 angle to horizontal plane _____°

Question 7: Intersection of Solids.

Fig. 7 shows a pictorial illustration of an electricity power plug. Complete the end elevation to show the curve of intersection produced between the triangular prism and the cylinder.

(16 marks)

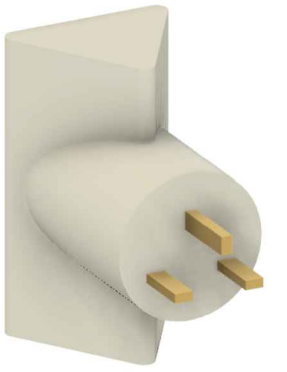


Fig. 7

