

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
General Certificate of Education Ordinary Level

**GEOMETRICAL AND MECHANICAL DRAWING**

**7040/01**

Paper 1

October/November 2005

**2 hours 40 minutes**

Additional Materials: A2 Drawing Paper (1 sheet)  
Standard Drawing Equipment

**READ THESE INSTRUCTIONS FIRST**

Print your Centre number, candidate number and name at the bottom right-hand corner of your Drawing Paper.

Use both sides of the paper for your answers.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **five** questions.

Answer not more than **three** questions from any one section.

Unless otherwise stated, strictly geometrical methods must be used, solutions are to be drawn full size and no dimensions are required. All construction lines must be shown clearly, but lines which are parallel to, perpendicular to or inclined at angles of  $30^\circ$ ,  $45^\circ$  or  $60^\circ$  to other lines may be drawn without showing construction lines.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.

All dimensions are in millimetres unless otherwise stated.

This document consists of **9** printed pages and **3** blank pages.



### Section 1 Plane Geometry

Answer not more than **three** questions from this section.

- 1 Fig. 1 shows the design logo for a new company.

Draw full size the design logo, showing clearly the method of construction used.

[20]

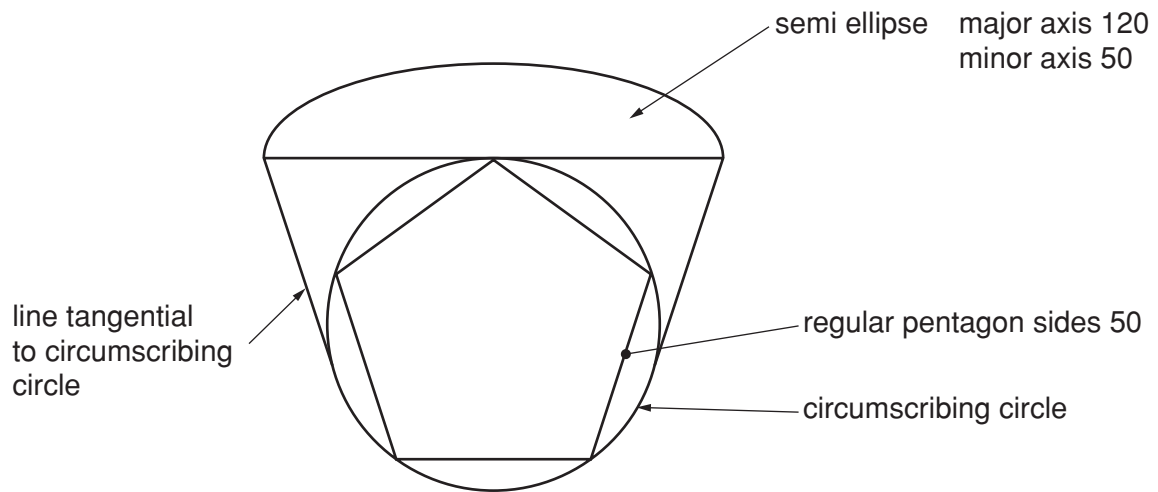


Fig. 1

2 Fig. 2 shows the design of a proposed garden layout.

(a) Draw to a scale of 1 : 100 the proposed garden design. [4]

(b) It is necessary to reduce the area of the garden in the ratio 3 : 5.

Construct geometrically the revised design. [16]

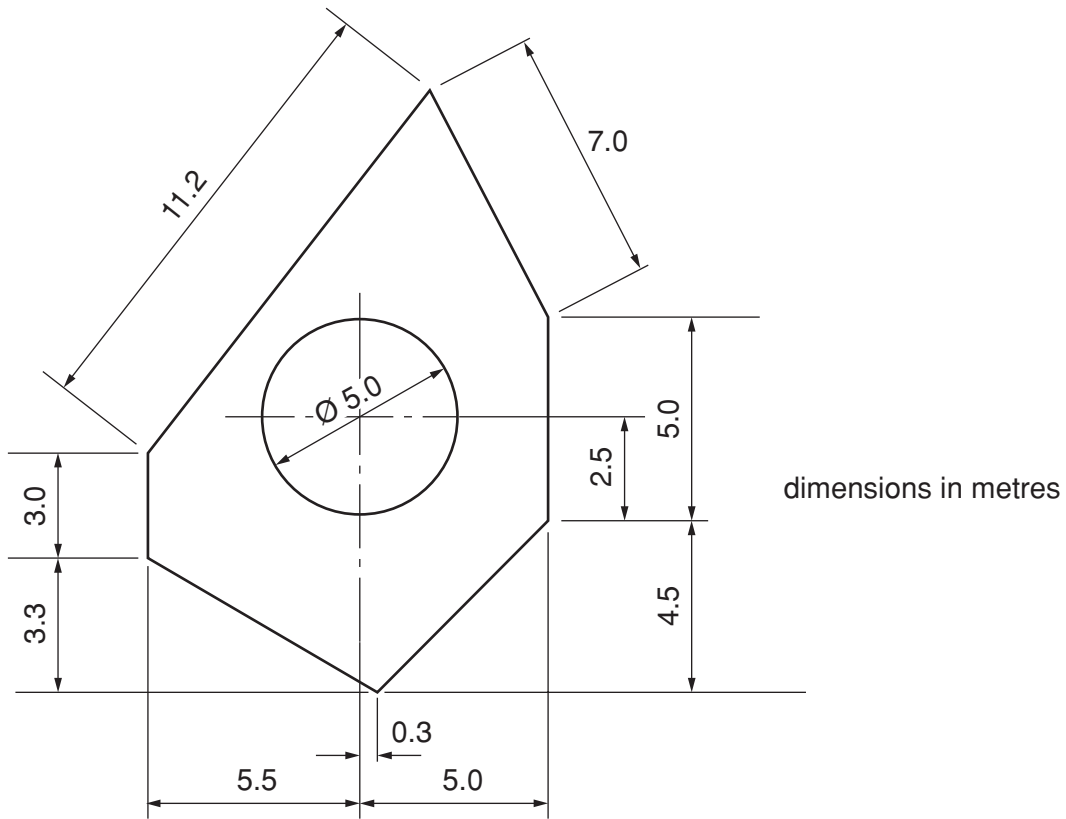


Fig. 2

- 3 Fig. 3 shows the outline of a mechanism, in which a circular disc rolls without slipping along a horizontal plane **HP**. The link **OA** is rigidly attached to the circular face of the disc. **A** is pin jointed to the link **AB**, which is constrained at **B** to slide along **OX** which is parallel to the horizontal plane.

Draw the locus of point **R** as the disc rolls clockwise from the position shown to the point where **OA** has turned through  $210^\circ$ . [20]

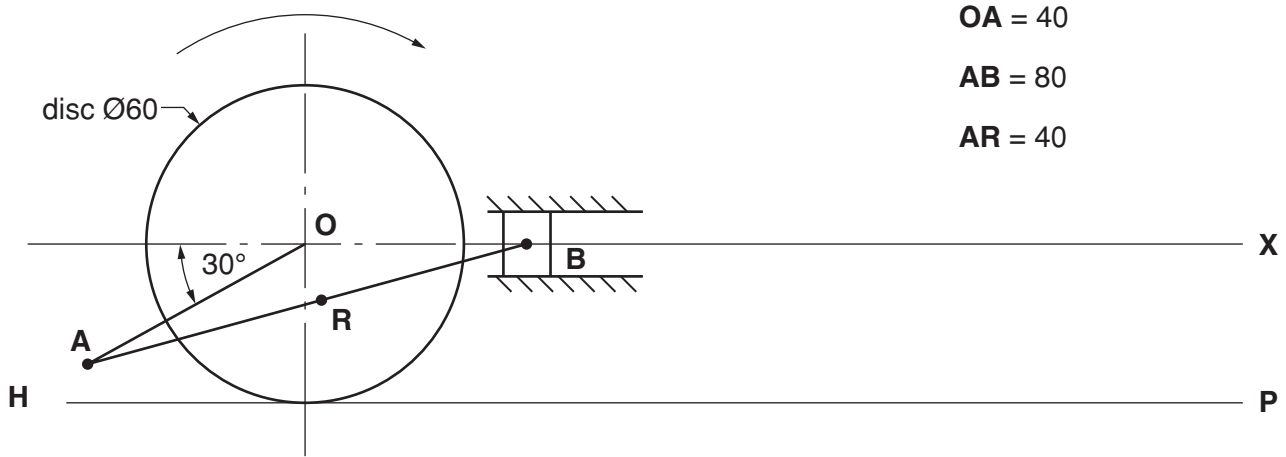


Fig. 3

## Section 2 Solid Geometry

Answer not more than **three** questions from this section.

4 Fig. 4 shows details of a fume extractor hood drawn to scale.

The hood is open at the top and bottom.

(a) Ignoring the thickness of the material, draw:

- (i) the two given views; [3]  
 (ii) an end elevation. [2]

(b) Determine the shape for the development of the fume extractor hood, and indicate on the development the bend lines required for its construction. [15]

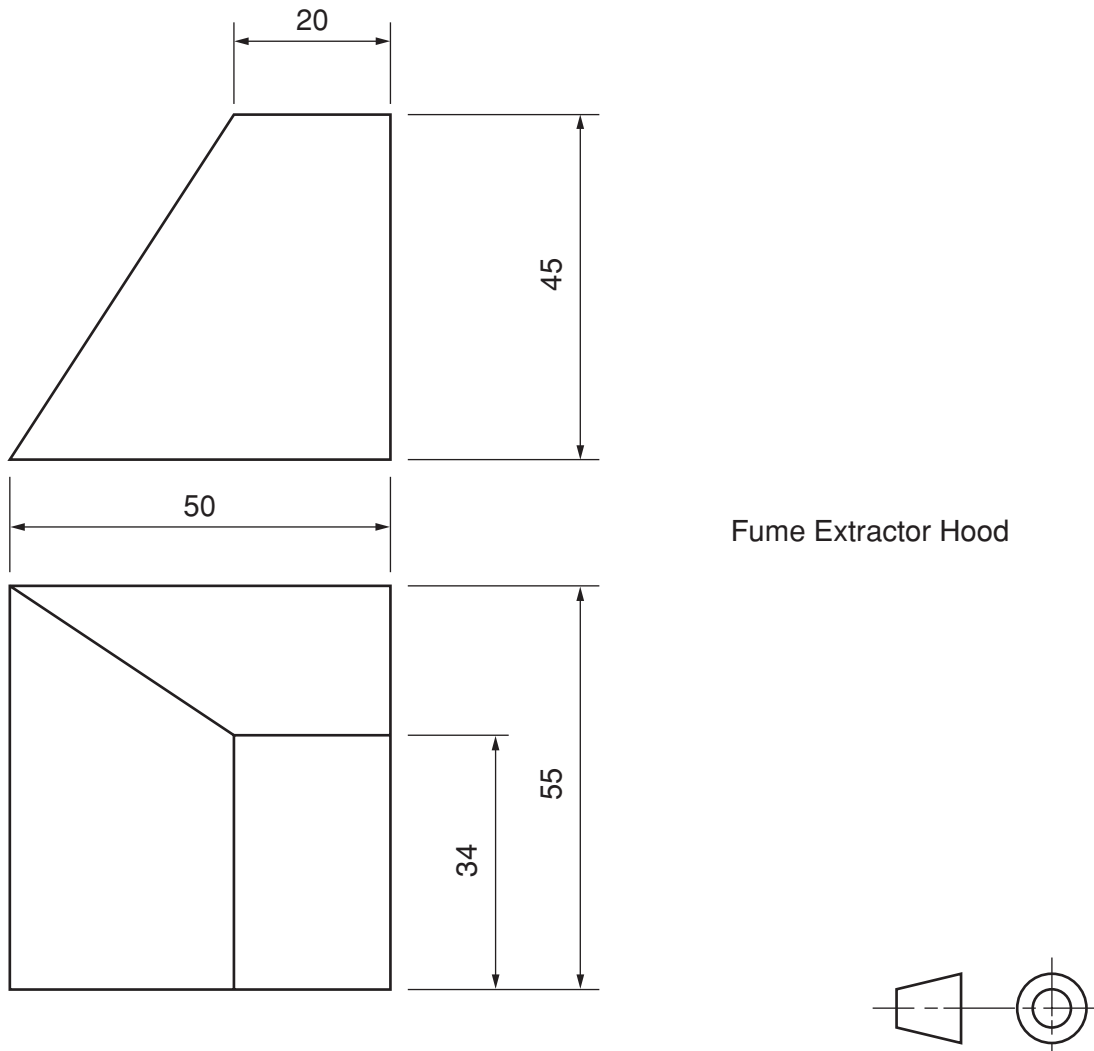


Fig. 4

5 Fig. 5 shows the elevation of part of a right circular cone. The cone lies with a generator on the H.P. and parallel to the V.P.

(a) Draw the given elevation. [3]

(b) Draw a plan view looking in the direction of arrow P. [14]

(c) Name and identify the two curves produced in (b). [3]

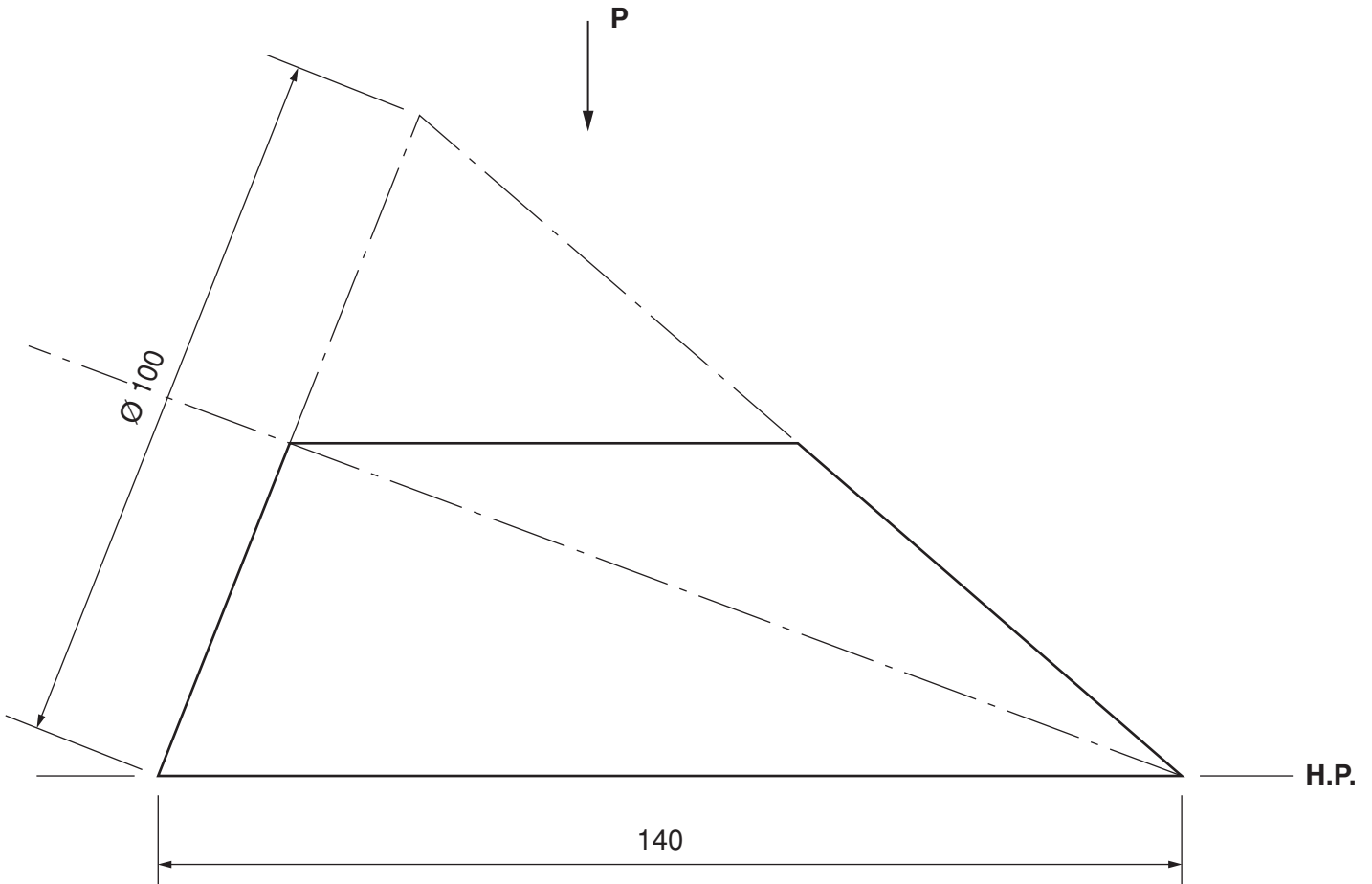


Fig. 5

6 Fig. 6 shows the two views of a casting drawn in third angle projection.

Draw an isometric view of the casting with **C** the lowest point in the view.

Do not use an isometric scale and do not show any hidden details.

[20]

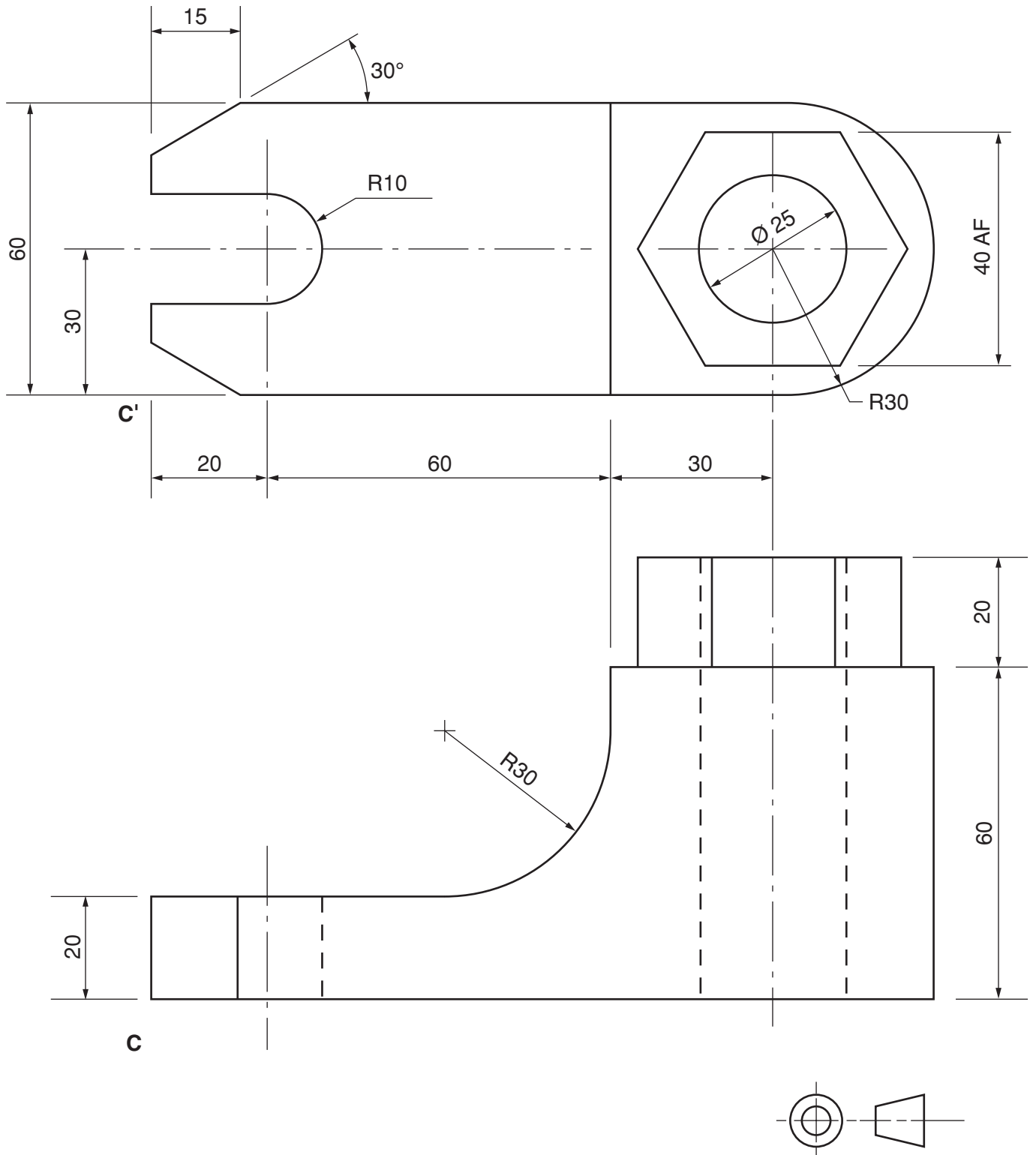


Fig. 6

7 Fig. 7 shows two incomplete views of the junction of two offset cylindrical pipes.

(a) Draw the given views. [3]

(b) Complete the front elevation, showing the curves of intersection.

Include all hidden detail. [11]

(c) Complete the end elevation. [6]

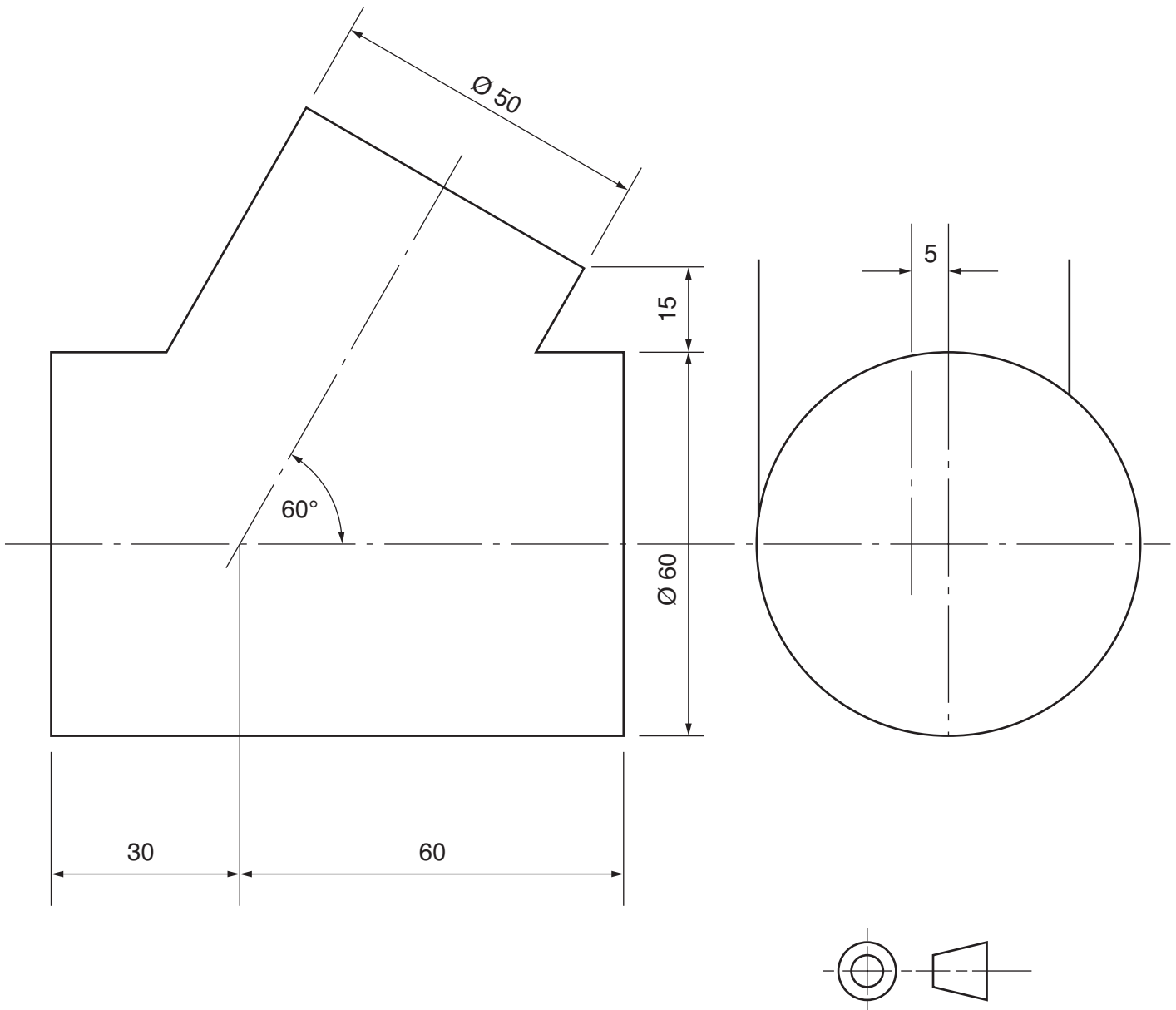


Fig. 7



- 8 Fig. 8 shows the elevation of a truncated regular octagonal prism with sides 40 mm long.

The base of the prism is inclined at  $30^\circ$  to the horizontal plane and is at right angles to the vertical plane.

Draw full size:

- (a) the given view; [5]  
 (b) a plan view looking in the direction of arrow **P** (include all hidden detail); [9]  
 (c) the true shape of the cut face looking in the direction of arrow **T**. [6]

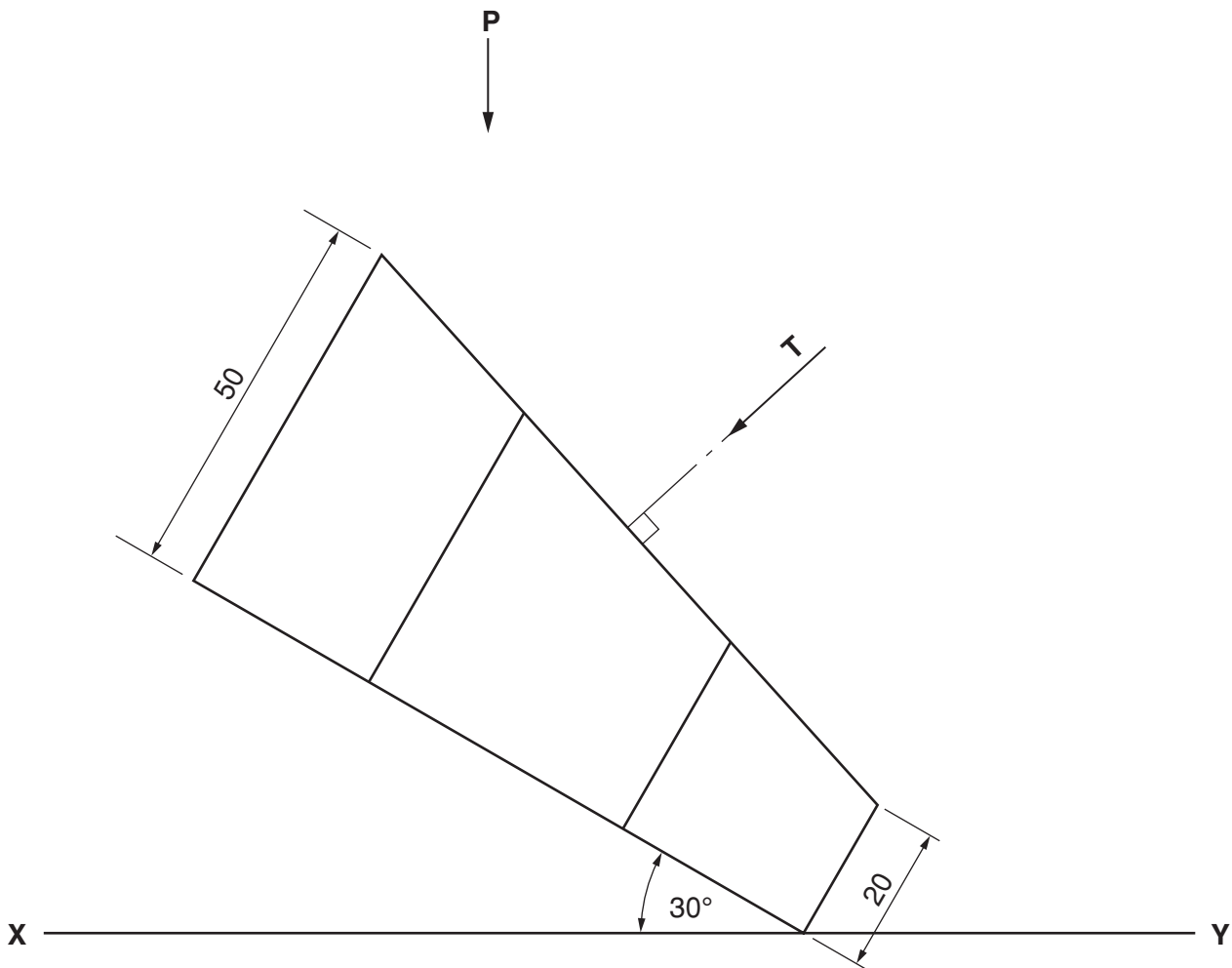


Fig. 8





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