



Junior Cycle Final Examination 2022

## Graphics

Common Level

Monday 20 June

Morning 9:30 - 11:30

280 marks

Examination Number

<input type="text"/>				
----------------------	----------------------	----------------------	----------------------	----------------------

Day and Month of Birth

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
----------------------	----------------------	----------------------	----------------------

For example, 3rd February  
is entered as 0302

Centre Stamp

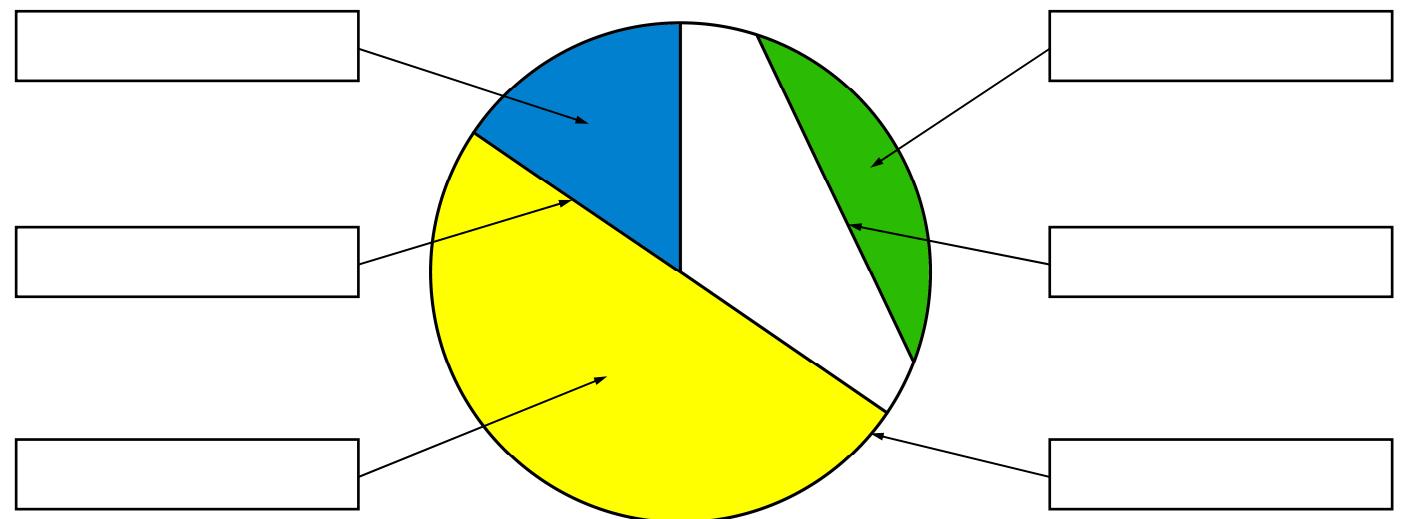
Centre Stamp	
Question	Mark
1	
2	
3	
4	
5	
6	
Paper Total	
Student Project	
Grand Total	
Grade	

**General Instructions:**

- Answer all questions
- All constructions must be clearly shown
- All measurements are in millimetres
- The graphics presented are not necessarily drawn to scale
- Complete your answers in the spaces provided in this booklet
- When using a T-square, you may mount the back cover of this booklet to your drawing board or desk, using tape
- There is space for extra work at the end of the booklet  
Label any such extra work clearly with the question number and part
- This booklet must be handed up at the end of the examination.

- 1.** (a) Fill in the label for **each** part of the circle shown below by selecting from the given list.

- Semicircle
- Diameter
- Chord
- Segment
- Sector
- Circumference



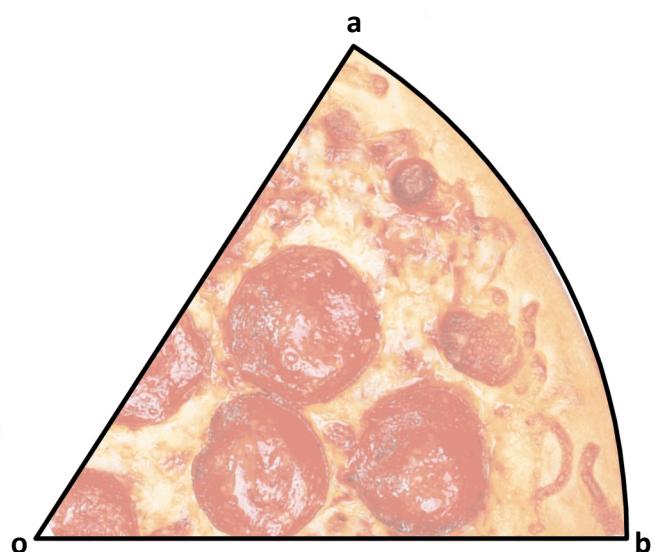
- (b) Shown on the right below is a portion of a pizza **aob**. The portion **aob** is to be divided into two equal slices.

- (i) On the image below, draw a line from point **o** that will divide the portion **aob** into two equal slices.

Show all construction clearly.

- (ii) If the measure of angle **aob** is  $60^\circ$ , how many of these portions would form a full circular pizza?

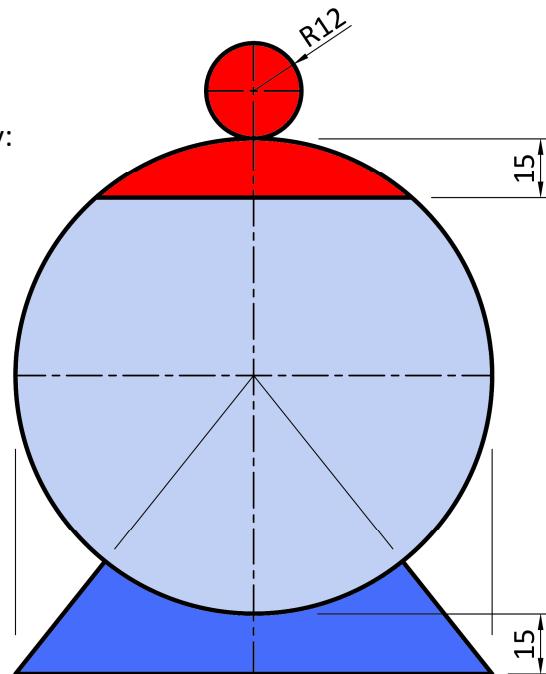
Number of portions: \_\_\_\_\_



- (c) The image on the right shows a design for a sweet jar. Complete the drawing of the sweet jar design below by:

- (i) Locating the centre of the large circle.
- (ii) Completing the drawing as shown in the image on the right.

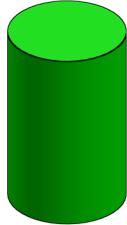
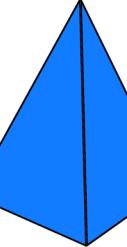
Show all constructions clearly.



2.

- (a) The table below shows a number of solids.

- (i) Using a ✓ indicate the correct name for **each** solid.

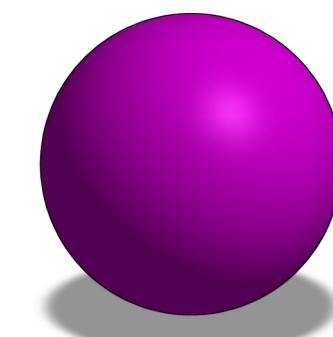
	Name:	
	Cylinder	<input type="checkbox"/>
	Cube	<input type="checkbox"/>
	Name:	
	Cone	<input type="checkbox"/>
	Cuboid	<input type="checkbox"/>
	Name:	
	Triangle	<input type="checkbox"/>
	Pyramid	<input type="checkbox"/>
	Name:	
	Sphere	<input type="checkbox"/>
	Hemisphere	<input type="checkbox"/>

- (b) Shown on the right is a sphere.

Using a ✓ indicate whether each of these statements is **true or false**.

True      False

- (i) In elevation, a sphere appears as a circle.



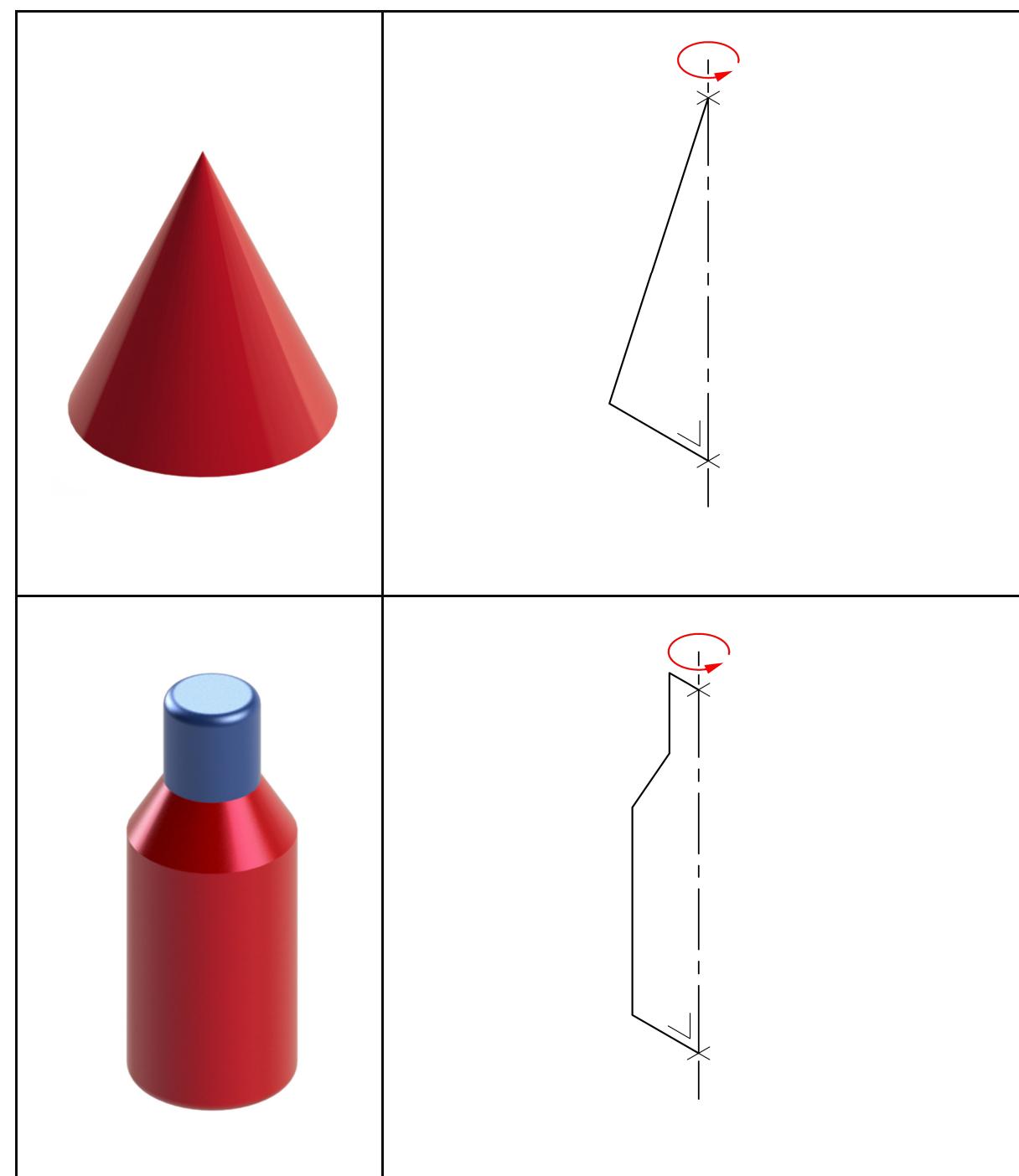
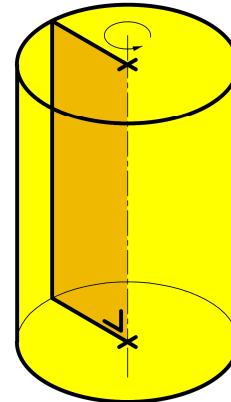
- (ii) In plan, a sphere appears as a circle.

- (iii) In an isometric view, a sphere appears as an ellipse.

- (c) Shown on the right is a cylinder which has been created by revolving a rectangle about an axis.

- (i) Complete a freehand sketch of a 3-dimensional solid created when each shape below is revolved about its given axis.

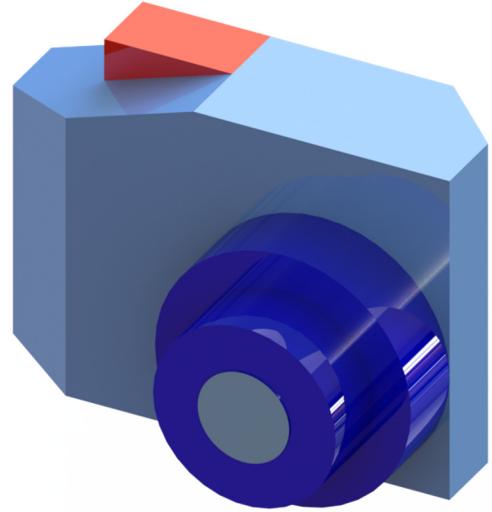
- (ii) Apply appropriate shading **or** rendering to each sketch to achieve a 3D effect.



3.

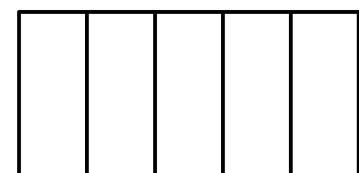
Shown below is a 3D model of an action camera.

Also shown is a drawing of the LCD panel on the back surface of the camera which displays the power level, Bluetooth, and WiFi connection.



(a) The outline of the power display is shown below.

Shade the display to show the power level at **80%**.

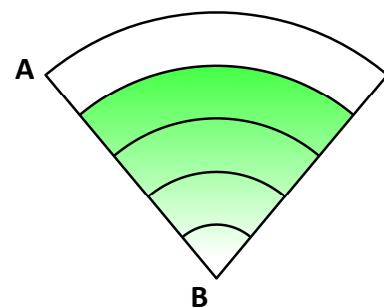
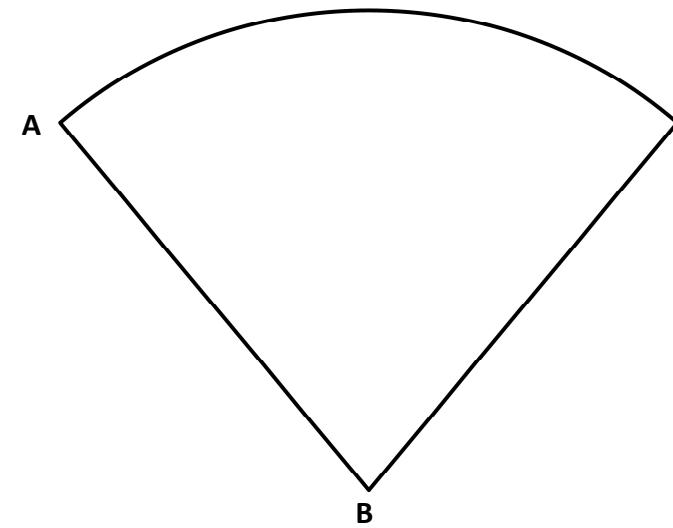


(b) The camera has WiFi connectivity for uploading videos.

The drawing across shows a logo for a wireless connection.

Divide the line **AB** into **5** equal parts and complete the drawing of the wireless logo below.

Show all constructions clearly.

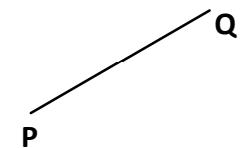
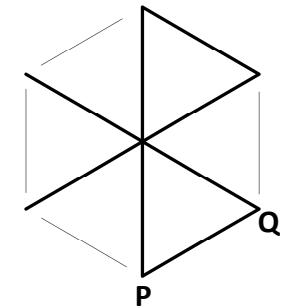


(c) The camera has Bluetooth connectivity to enable it to connect to other devices.

Shown on the right is the outline drawing of the Bluetooth symbol, based on a regular hexagon.



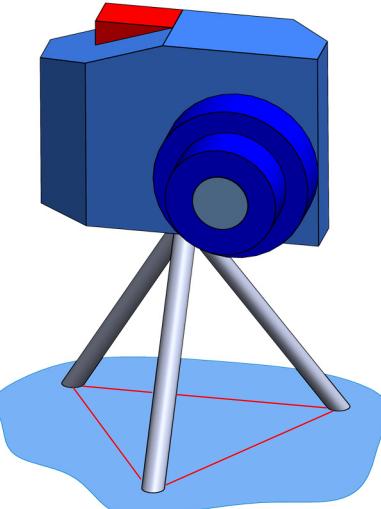
Complete the drawing of the Bluetooth symbol below.



(d) Shown on the right is the action camera mounted on a tripod.

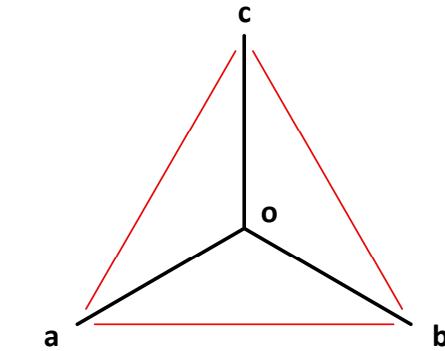
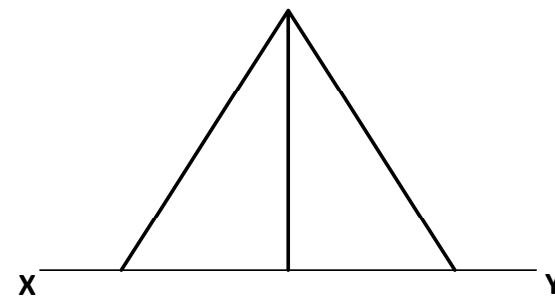
The tripod is based on a triangular-based pyramid.

Shown below is the outline elevation and plan of a similar tripod.



(i) Complete the indexing of the elevation from the plan.

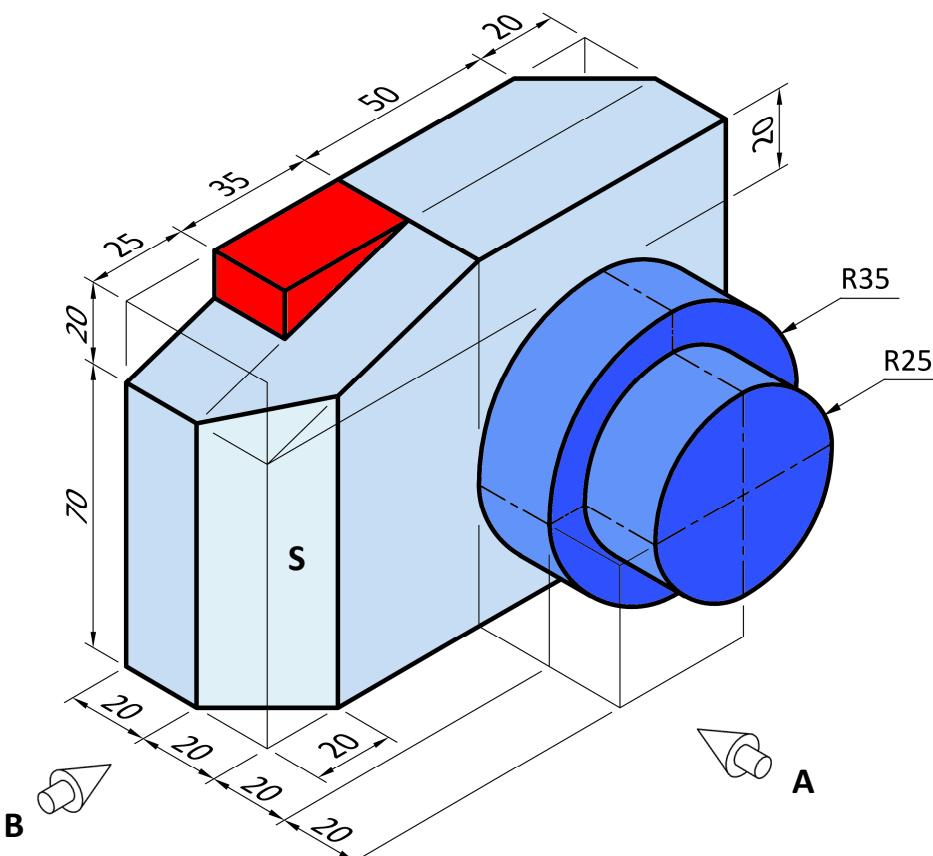
(ii) Find the true length of the leg **oa**.



- (e) The image below shows the design of a similar action camera.

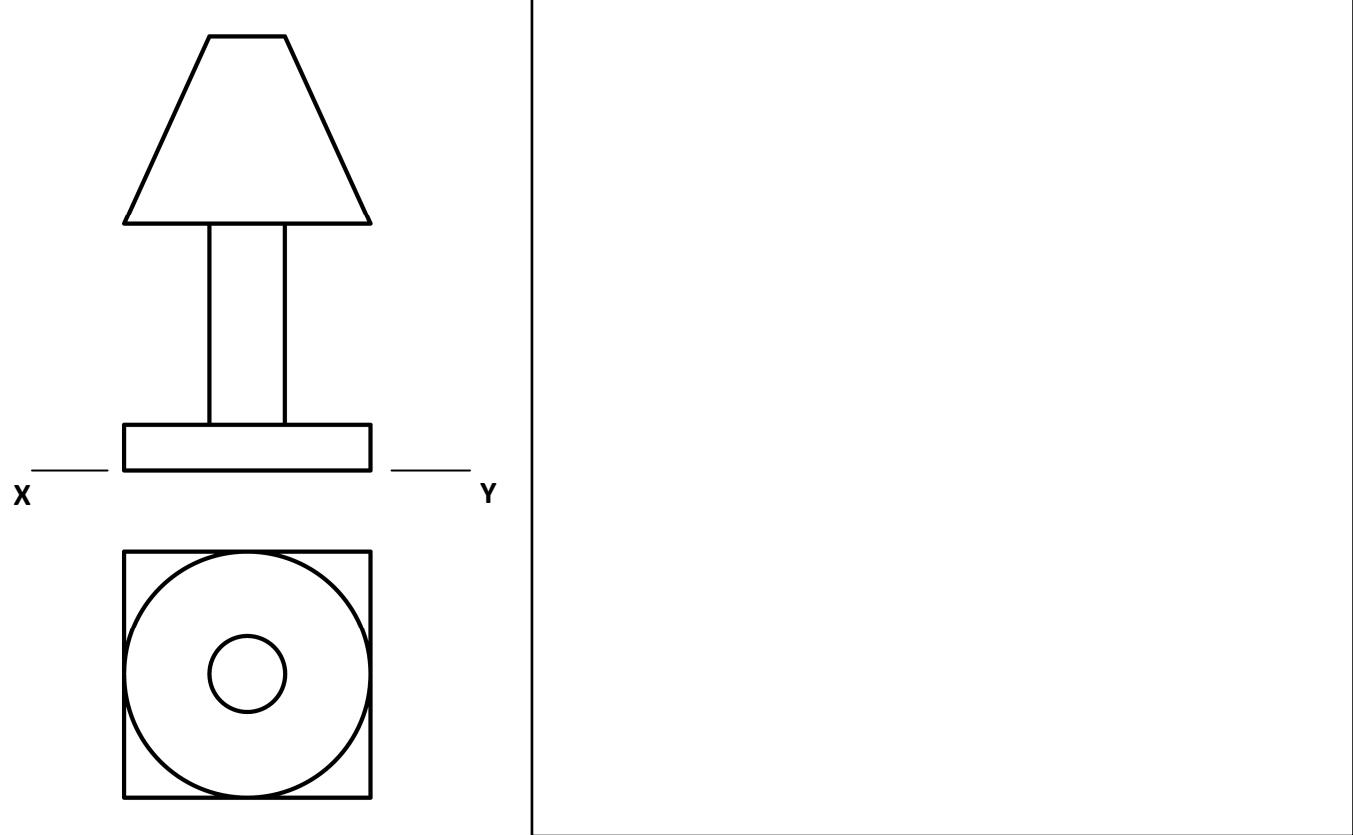
Draw:

- (i) An elevation in the direction of arrow A.
- (ii) A plan projected from the elevation.
- (iii) An end view in the direction of arrow B.
- (iv) Determine the true shape of surface S.

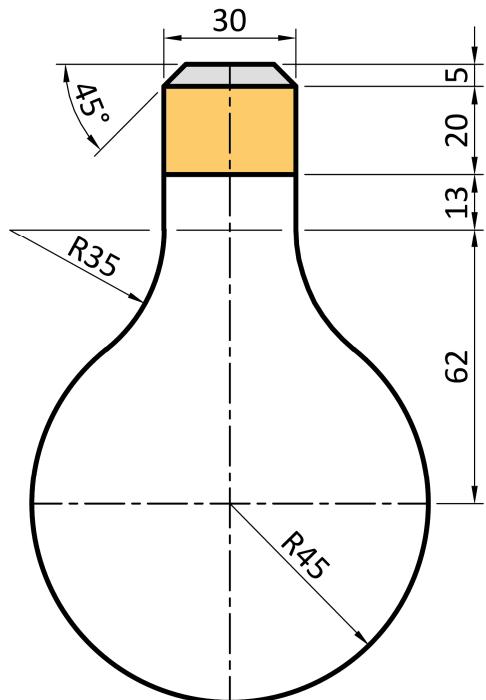


4.

- (a) The elevation and plan of a table lamp are shown below. The design of the lamp includes a truncated cone. In the space provided, draw a **freehand pictorial sketch** of the lamp. Colour **or** shade the sketch.

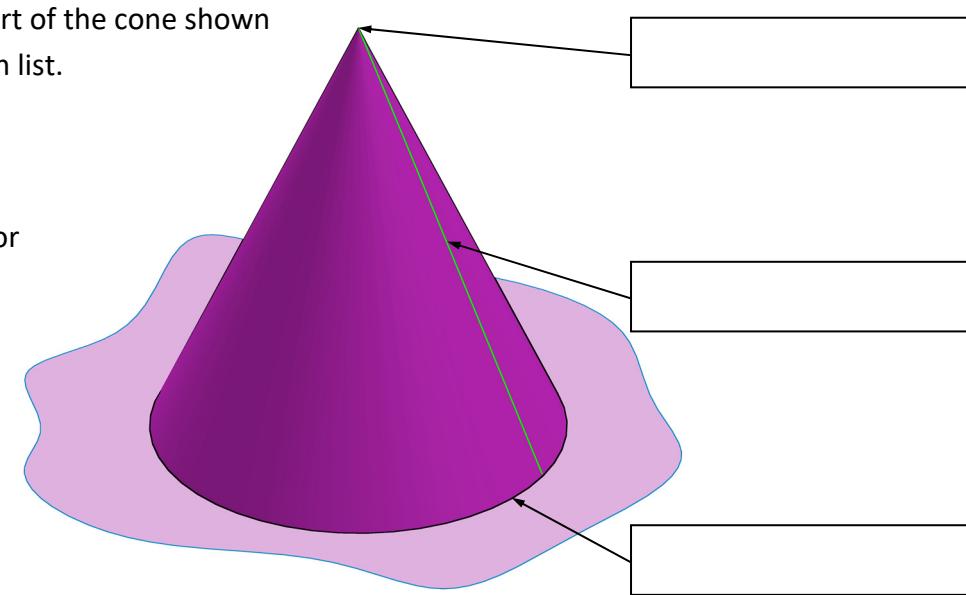


- (c) Shown across is an outline drawing of a bulb to be used in the lamp. Using the dimensions given, redraw the bulb on the given centreline. Show all construction lines, tangents and points of contact.



- (b) Fill in the label for each part of the cone shown by selecting from the given list.

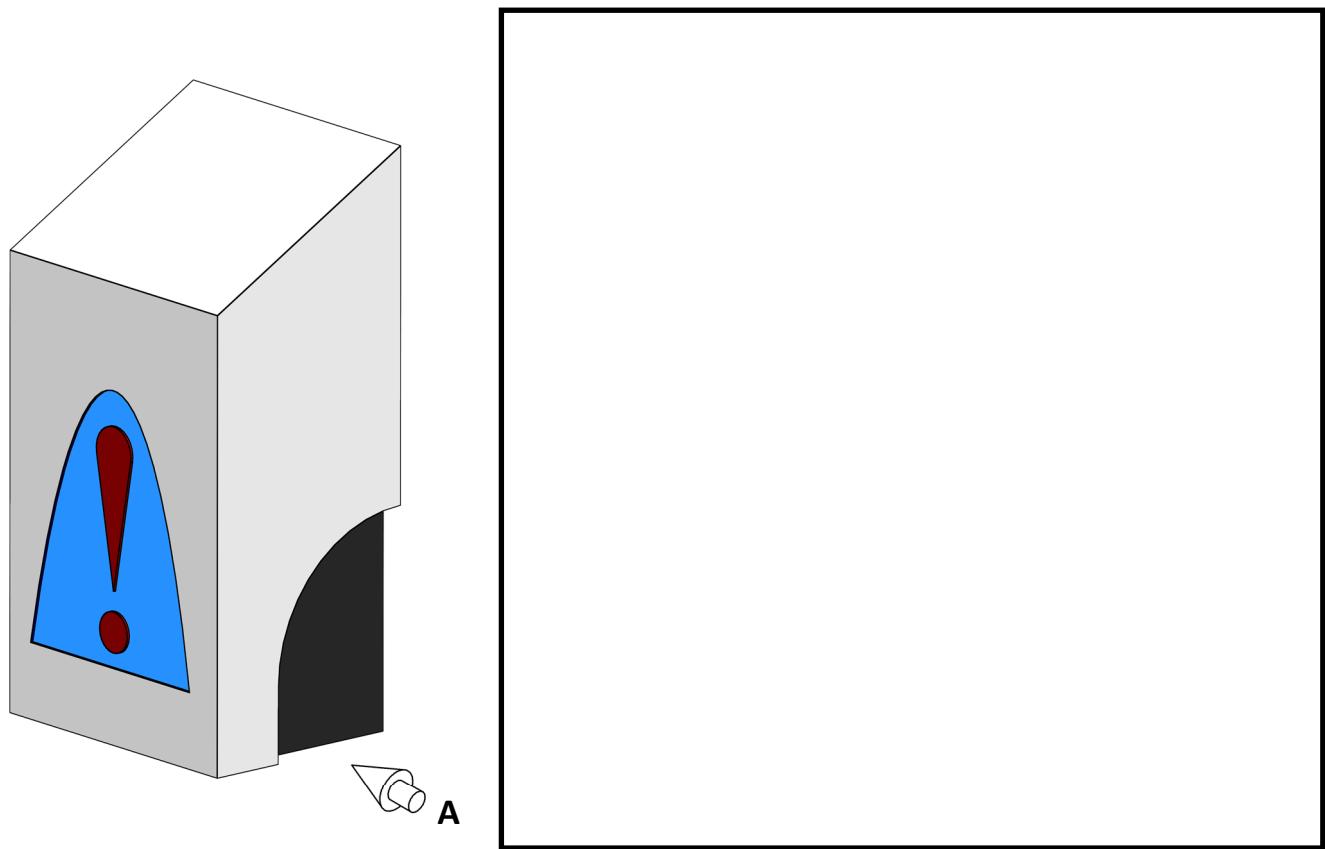
- Apex
- Generator
- Base



5.

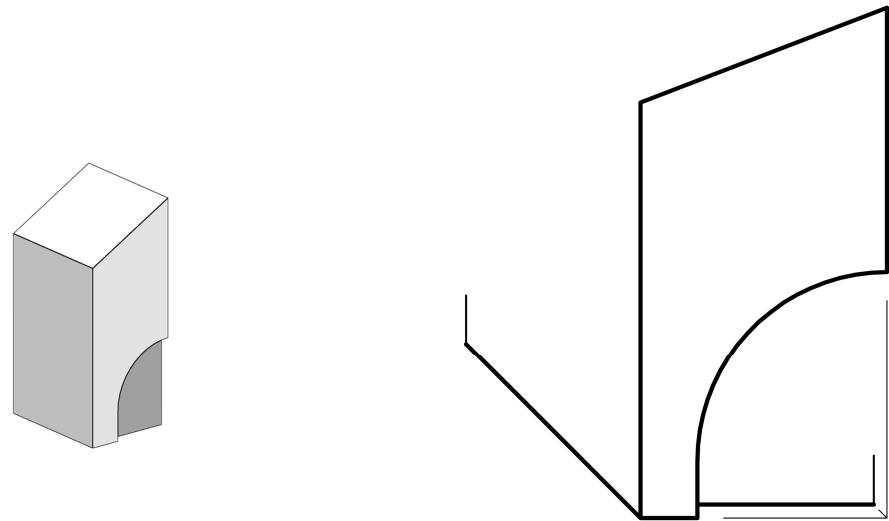
- (a) Shown below is a hand-sanitiser dispenser.

In the space provided, draw a well proportioned **freehand sketch** of the end view of the dispenser looking in the direction of arrow **A**.



- (b) Shown below is the incomplete oblique drawing of the dispenser body without the logo.

A 3D graphic is also shown. Complete the oblique drawing of the dispenser.

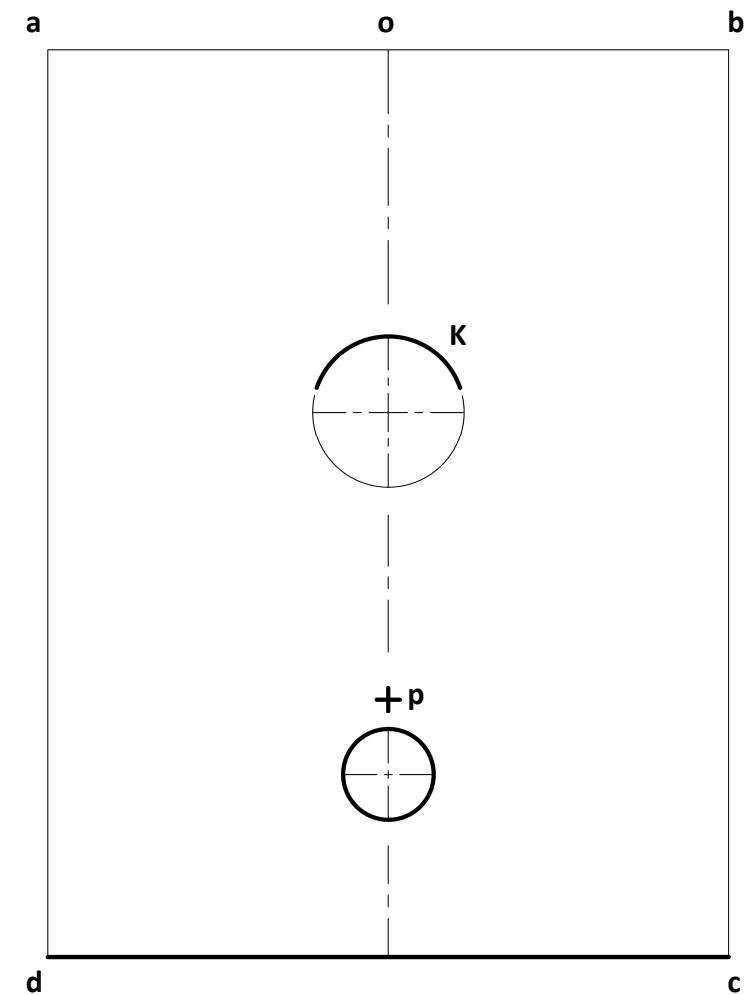
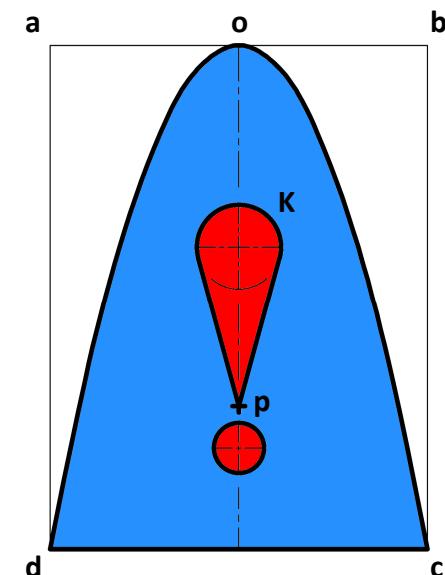


- (c) The logo for the hand sanitiser dispenser is shown across.

It is based on a parabola  $doc$  with vertex at **o**.

- (i) Redraw the parabola in the given rectangle **abcd**.

- (ii) Complete the logo by constructing tangents from point **P** to the circle **K**.

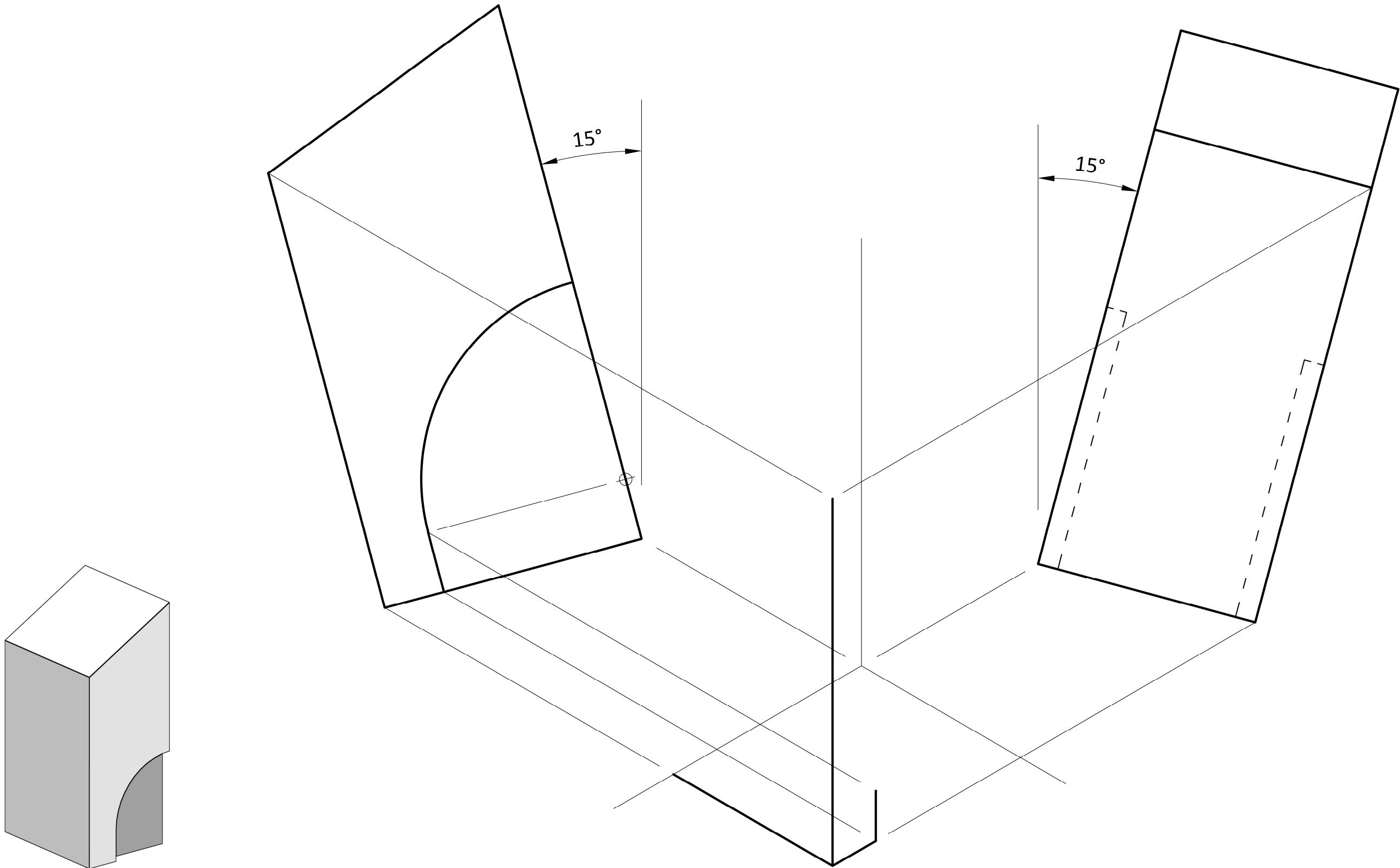


- (d) The axonometric axes required for the isometric projection of the hand sanitiser dispenser are shown.

The elevation, end view, and incomplete axonometric projection of the dispenser are given.

A 3D graphic of the dispenser is also shown.

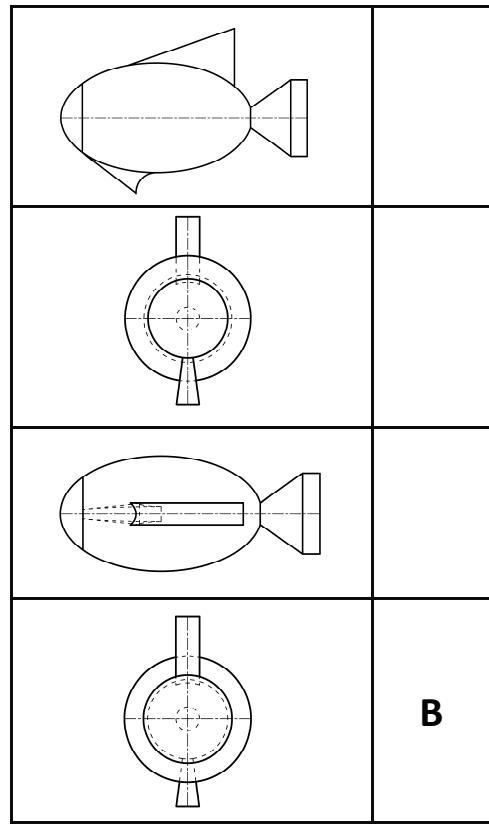
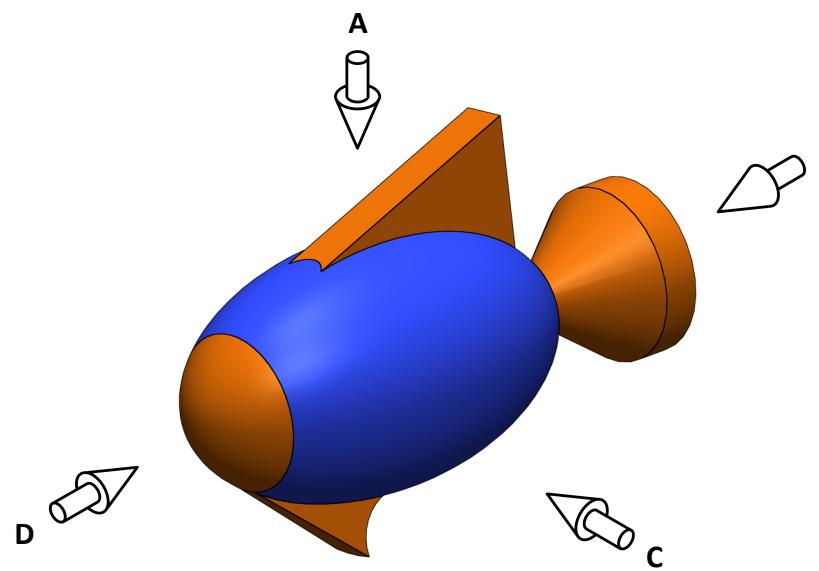
Complete the axonometric projection of the dispenser.



6.

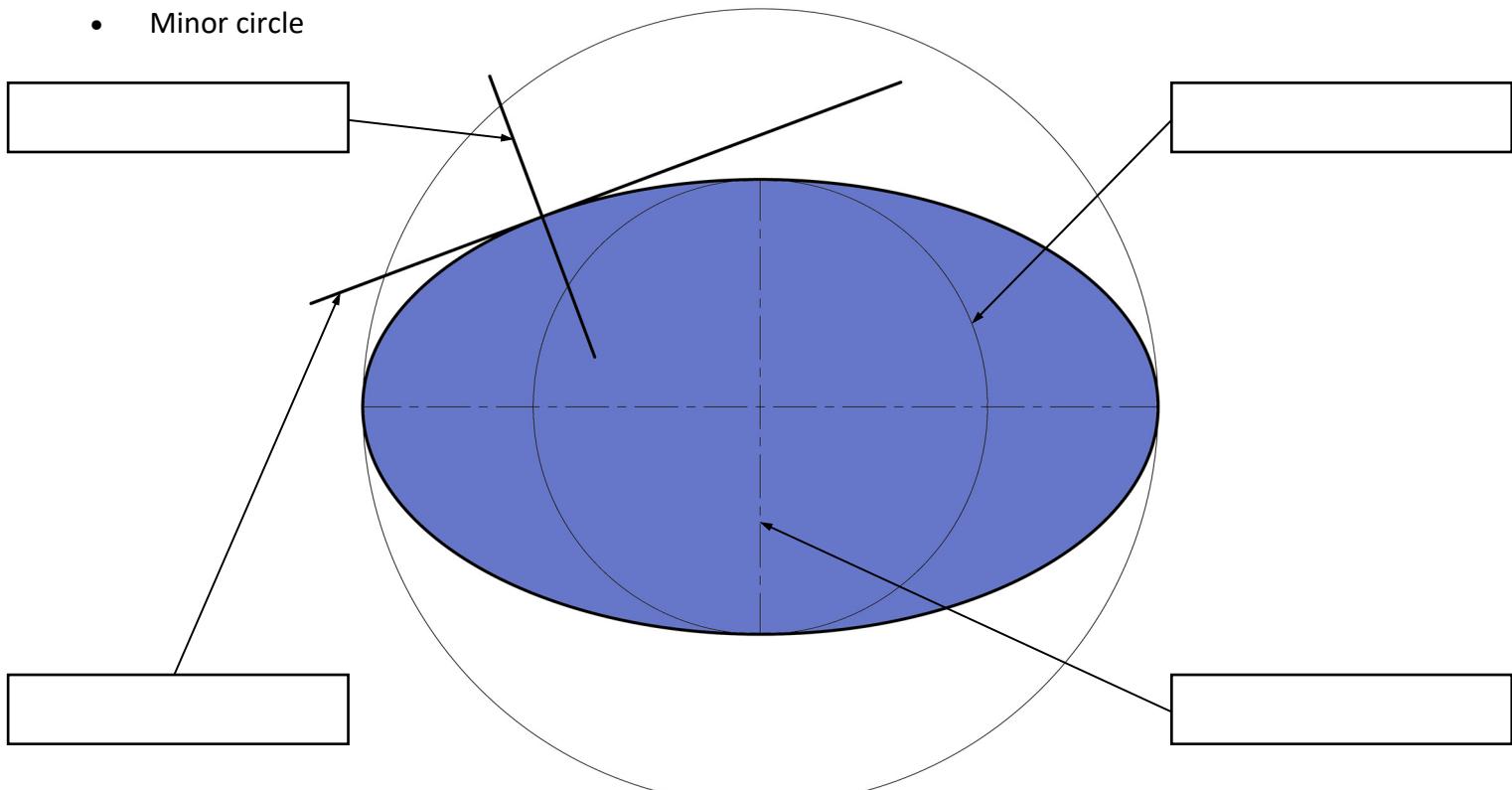
- (a) The image below shows the design of a toy rocket. The body of the rocket is based on an ellipse.

Match the correct letter with the appropriate orthographic view shown in the table.  
One view has been completed for you.



- (b) Label the parts of the drawing below by selecting from the given list.

- Normal
- Tangent
- Minor axis
- Minor circle

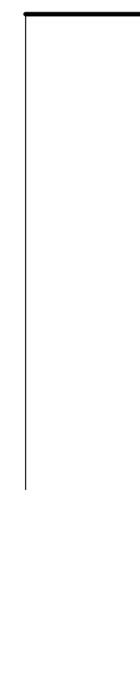
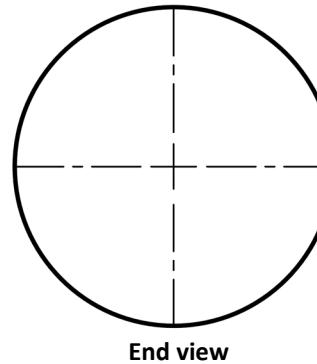
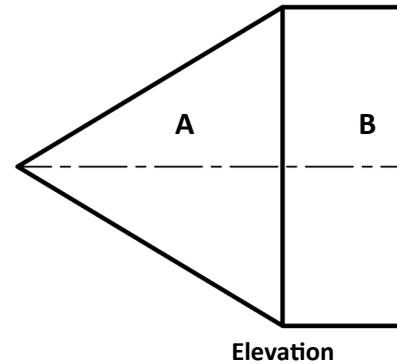
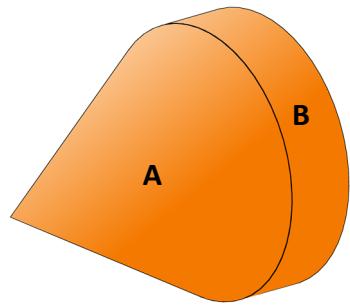


- (c) The image on the right shows the tail of the rocket.

The design of the tail is based on a cone **A** and a cylinder **B**.

Shown below is the elevation, end view, and incomplete surface development of the tail of the rocket.

Complete the development of the cylindrical surface **B**.



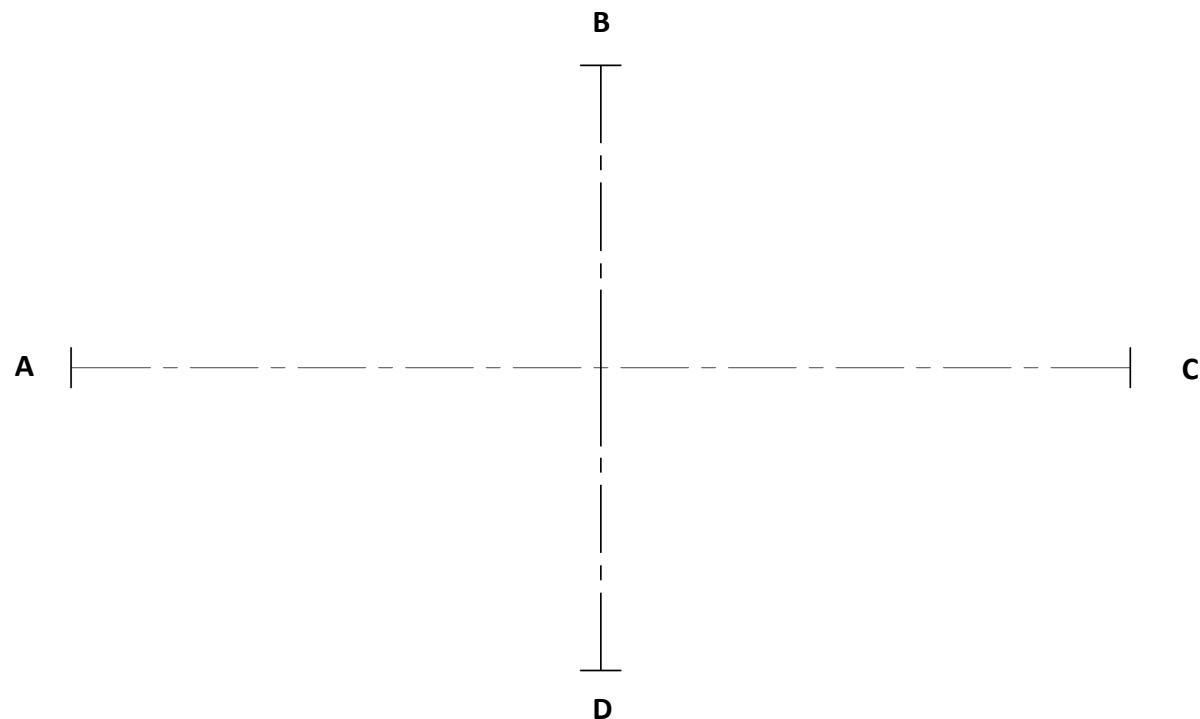
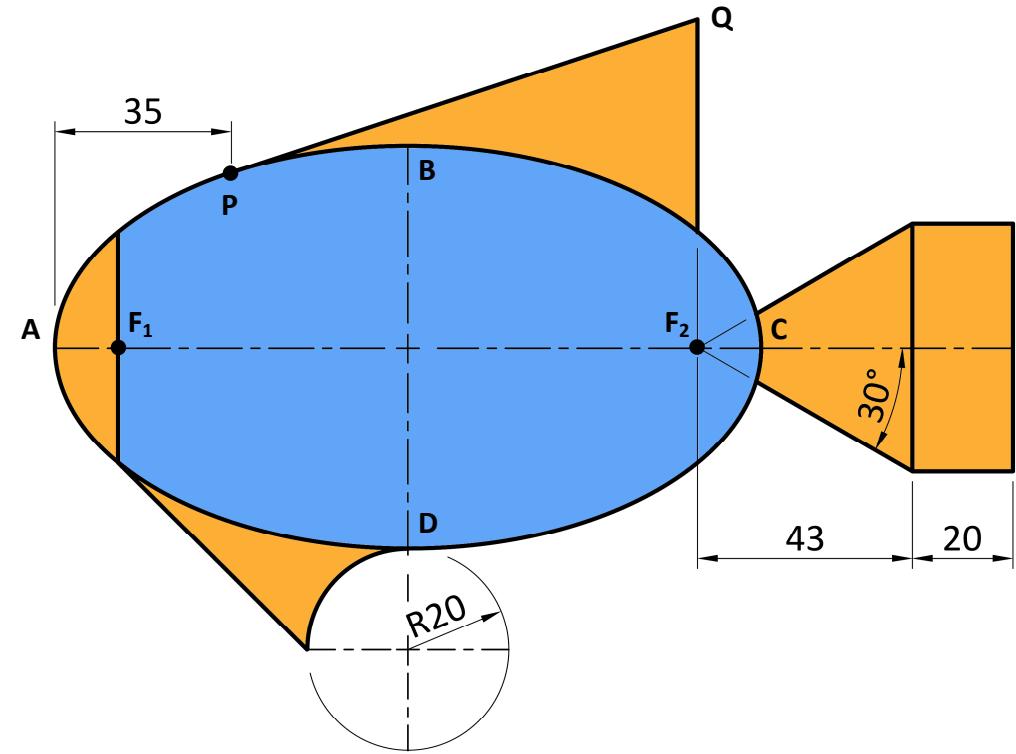
- (d) Shown on the right is a dimensioned drawing of the toy rocket.

The curve **ABCD** is an ellipse. **AC** is the major axis and **BD** is the minor axis of the ellipse.

The line **PQ** is tangent to the ellipse at point **P** on the curve.

(i) Given the lengths of the major axis **AC** and the minor axis **BD** below, draw the ellipse.

(ii) Using the dimensions given, complete the drawing of the toy rocket.











**Do not write on this page**

**Copyright notice**

This examination paper may contain text or images for which the State Examinations Commission is not the copyright owner, and which may have been adapted, for the purpose of assessment, without the authors' prior consent. This examination paper has been prepared in accordance with *Section 53(5) of the Copyright and Related Rights Act, 2000*. Any subsequent use for a purpose other than the intended purpose is not authorised. The Commission does not accept liability for any infringement of third-party rights arising from unauthorised distribution or use of this examination paper.

Junior Cycle Final Examination – Common Level

**Graphics**

Monday 20 June  
Morning 9:30 - 11:30