



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Junior Certificate Examination, 2016

Technical Graphics
Higher Level
Section A
(120 marks)

Monday, 20 June
Morning, 9:30 - 12:30

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 examination number in the box provided below and on all other pages used.

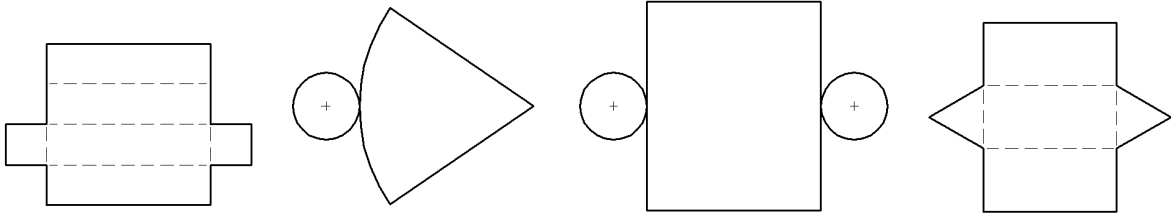
Examination Number:

Centre Number

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

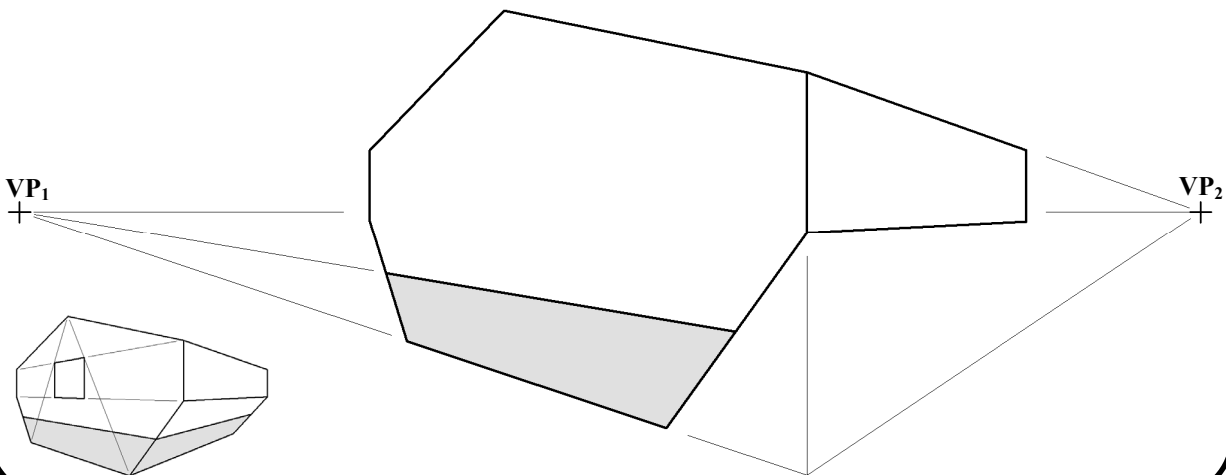
SECTION A. Answer **any ten** questions. All questions carry equal marks.

- 1.** Fill in the label for **each** developed solid by selecting from the list on the right.
- Cone
 - Cylinder
 - Triangular prism
 - Square-based prism



1. _____ 2. _____ 3. _____ 4. _____

- 2.** The figure shows the incomplete perspective drawing of a bird cage. A 3D graphic is also shown. Complete the perspective drawing.



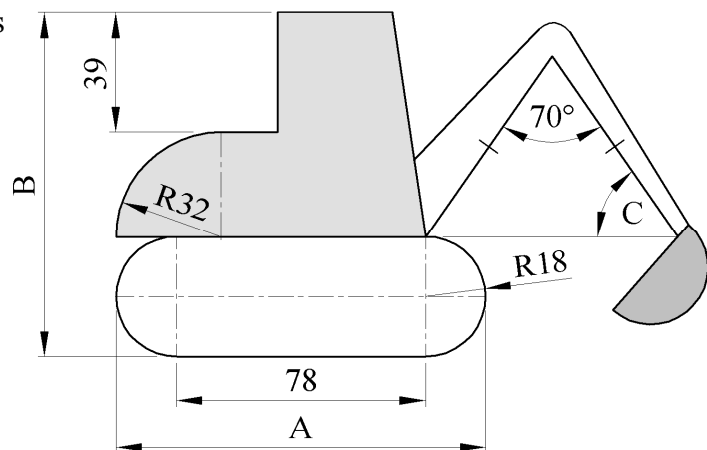
- 3.** The figure shows the outline of a mini-digger.

Write down the measurements of **A**, **B** and **C**.

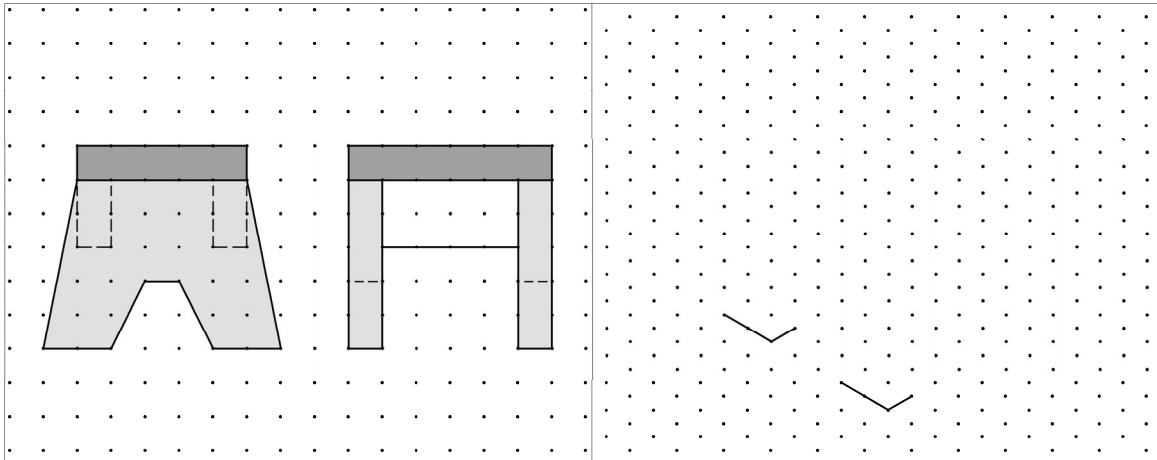
A = _____

B = _____

C = _____

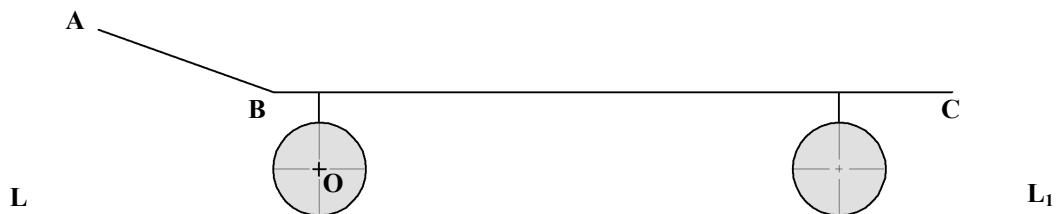


4. The elevation and end view of a stool are shown on the square grid. Make a **freehand pictorial sketch** of the stool. Colour **or** shade the sketch.



5. The figure below shows the elevation of a skateboard. A graphic of a skateboard is also shown.

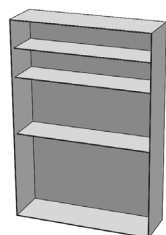
Rotate the skateboard about point **O** until point **A** reaches the line **LL₁**.



6. The incomplete elevation of a bookcase is shown. Also shown is a 3D graphic of the complete bookcase.

Complete the elevation by:

- dividing the height of the bookcase in the ratio of **3:2:1:1** to find the locations of the shelves
- drawing the shelves in these locations.



7. **Fig. 1** shows a cylinder which has been created by revolving a rectangle about an axis. Complete a freehand sketch of the 3-dimensional solid created when the right-angled triangle in **Fig. 2** and the semi-circle in **Fig. 3** are revolved about their given axis. Name each solid.

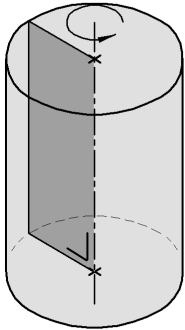


Fig. 1 Cylinder

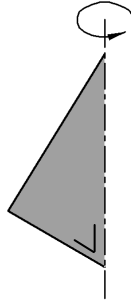


Fig. 2 _____

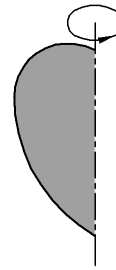
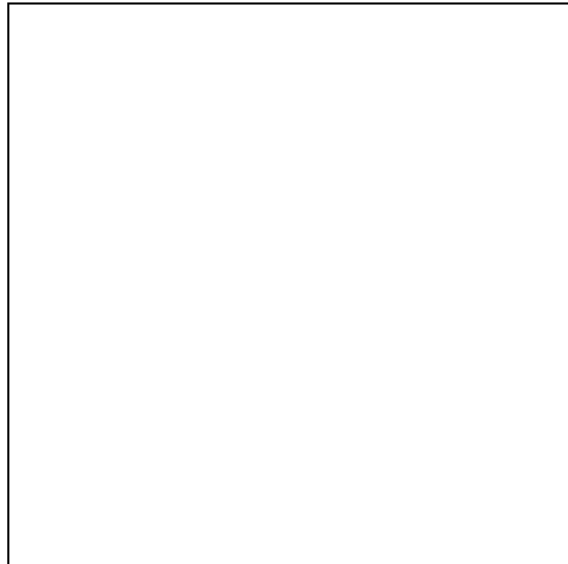
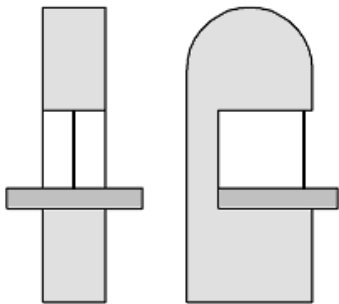


Fig. 3 _____

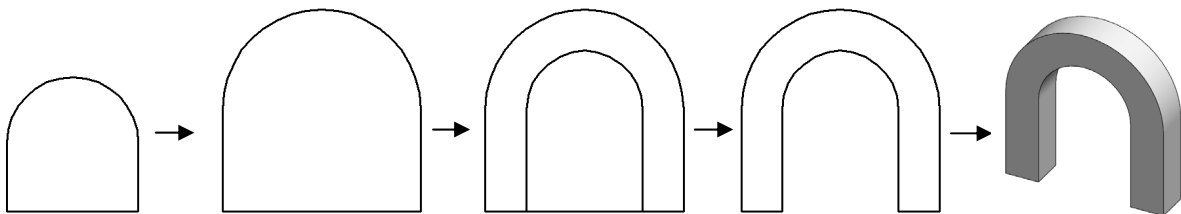
8. The elevation and end view of an electric bandsaw are shown.

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

Colour **or** shade the sketch.



9. Write down **any three** CAD commands used to edit the drawing of the finishing line arch for a triathlon as shown in the sequence below.

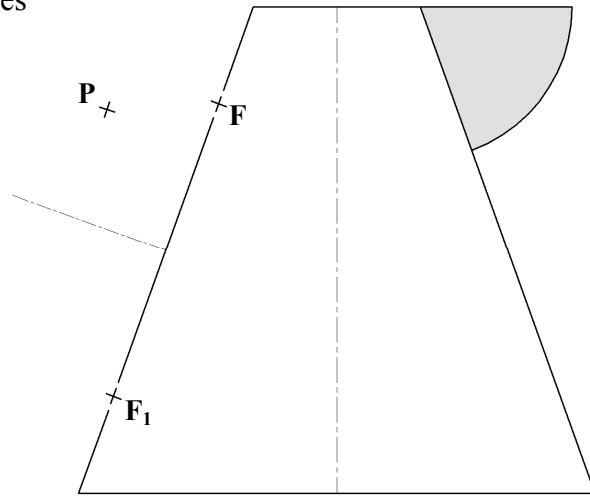


Any **three** CAD commands: _____

- 10.** The 3D graphic shows a water jug. The handle of the jug is a semi-ellipse. The figure shows the location of the axes and focal points of the semi-ellipse.

P is a point on the curve.

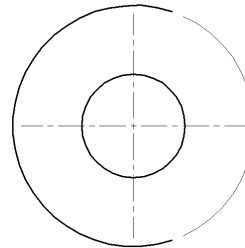
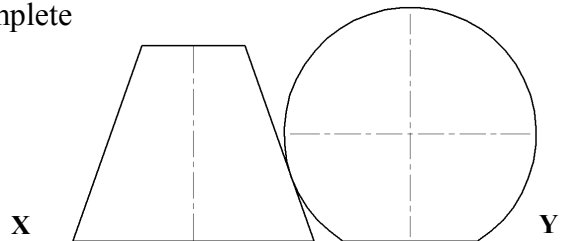
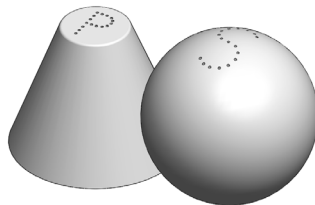
Determine the lengths of the major and the minor axes and draw the semi-ellipse.



- 11.** The figure shows the elevation and incomplete plan of a set of salt and pepper shakers.

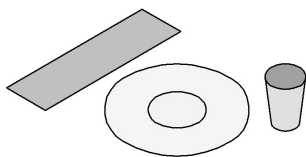
A 3D graphic is also shown.

Complete the given plan and locate the point of contact between the shakers.

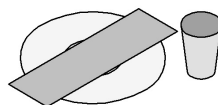


- 12.** The graphic below shows three place settings at a table. The plan of each place setting is shown on the right.

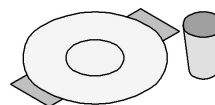
Match the correct letter with the appropriate graphic below.



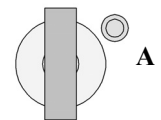
1. _____



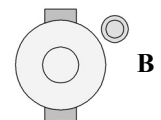
2. _____



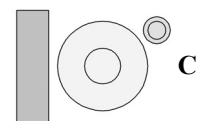
3. _____



A



B

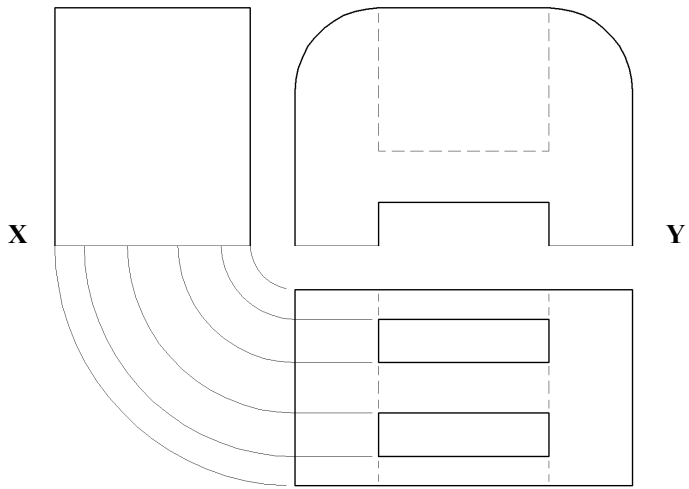
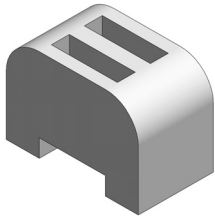


C

13. The figure shows the elevation, plan and incomplete end view of a toaster.

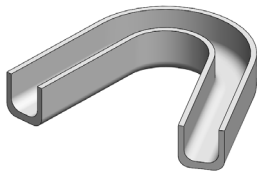
A 3D graphic of the toaster is also shown.

Complete the end view by constructing the hidden detail.

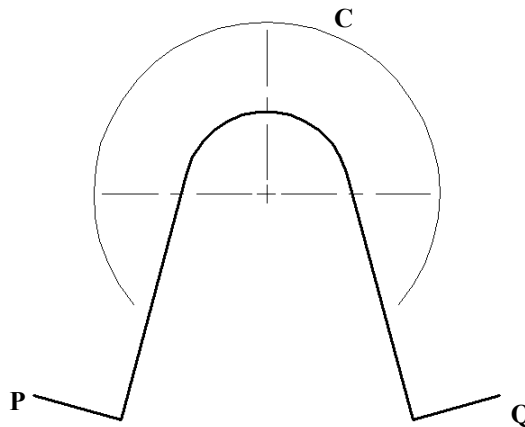


14. The incomplete outline of a sports mouthguard is shown. A 3D graphic of the mouthguard is also shown.

Complete the outline of the mouthguard by constructing tangents from points P and Q to the circle C.

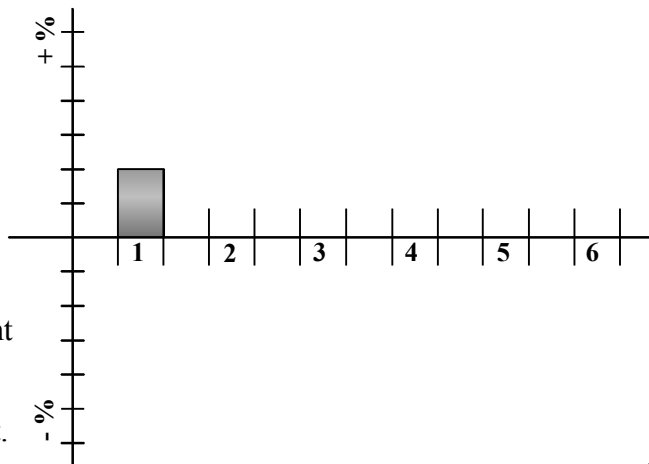


Note: All geometric constructions must be clearly shown.



15. The performance of a student in their Christmas examinations was compared to their performance in the summer examinations. The following changes were recorded:

- | | | | |
|----|-----------|---|-------|
| 1. | Maths | - | + 10% |
| 2. | English | - | - 5% |
| 3. | Irish | - | + 30% |
| 4. | Science | - | - 15% |
| 5. | History | - | + 20% |
| 6. | Geography | - | + 15% |



Complete the given chart to represent this information graphically.

Colour or shade the completed chart.

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