Question 1. A SAFE CONDITION sign is given below. This sign indicates a safety action to be taken to prevent or limit the damage caused by accidents at an industrial place of work.

a. Colour the sign in accordance with approved recognised standards.
b. Enlarge the push button given below by using the polar enlargement method.

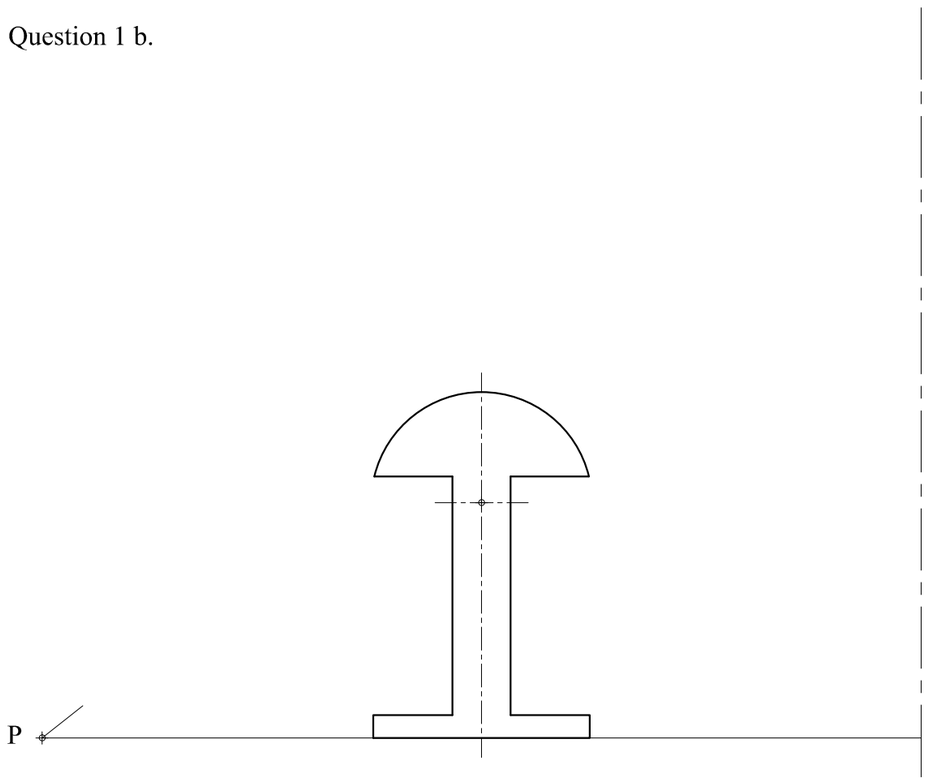
Notes:

- *P is the pole.*
- *The centerline of the enlarged push button is given.*

(10 marks)

Question 1 a.

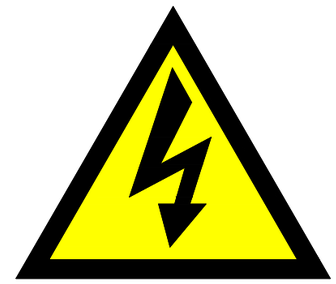
Question 1 b.



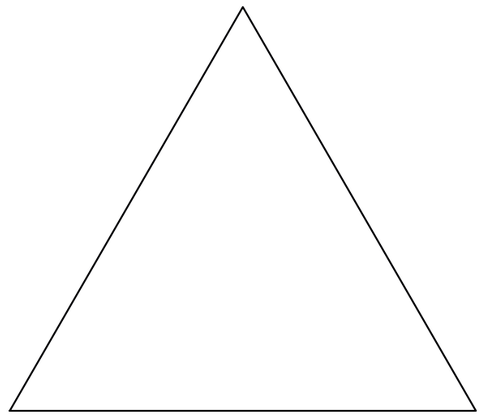
Question 2. An Elecrtical Hazard sign, to be placed at a building site, is given on the right. The sign is made by screen printing the triangular hardboard given below.

a. Convert geometrically the area of the triangular hardboard into a square of equal area.
b. Measure and state the side of the square.
c. Determine graphically the area printed with yellow paint (shown shaded).

(14 marks)

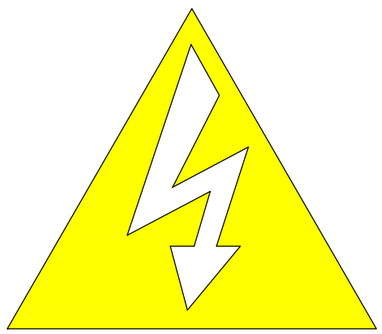


Question 2 a. & 2 b.



SIDE OF SQUARE.....mm

Question 2 c.



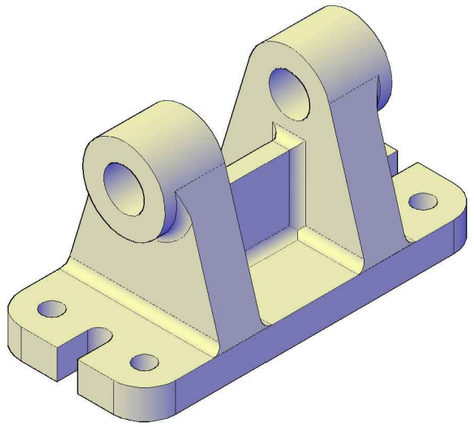
TOTAL SHADED AREA IS:.....cm^2

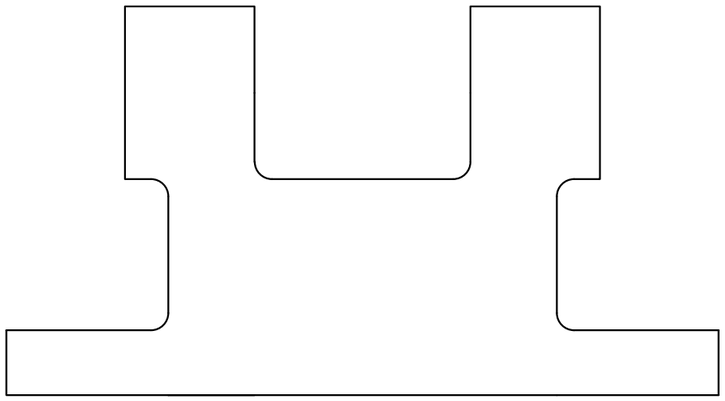
Question 3. A pictorial view, an end view, a plan view and an incomplete front view of a **cast iron bracket** are given. In the space provided:

a. Complete the sectional front A-A.

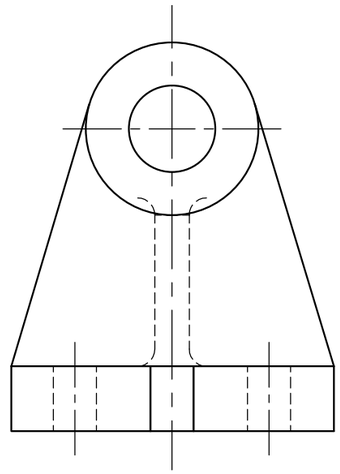
b. Draw the symbol of the projection used.

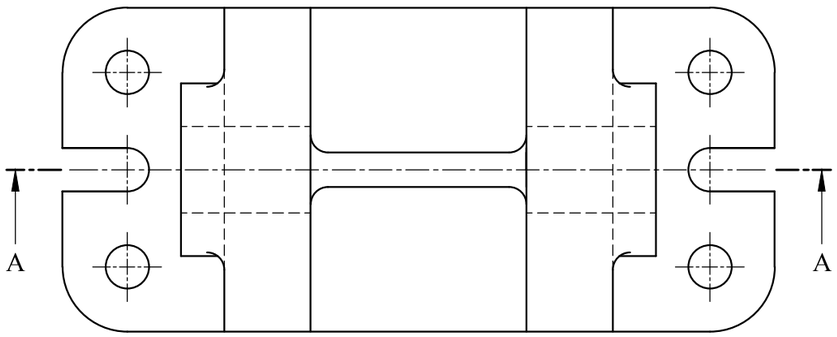
(15 marks)





A-A





Projection Symbol

Question 4. The illustration shows the logo of a restaurant which has its structure based on the shape of a conic section.

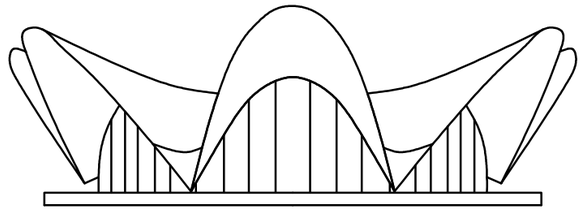
This particular conic section is the curve that results when a cone is cut parallel to its axis.

An incomplete front elevation, an end elevation and a plan of a cut cone are given below.

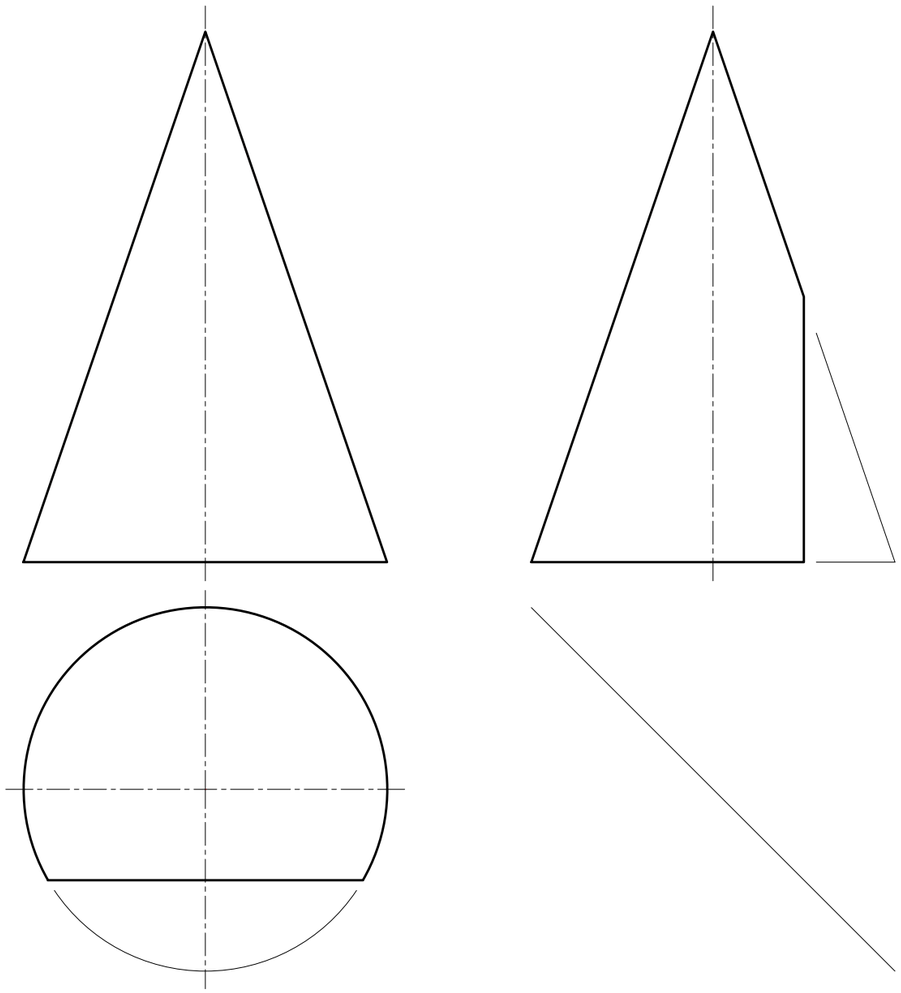
a. Complete the front elevation by plotting the curve of the conic section.

b. In the space provided, name the curve.

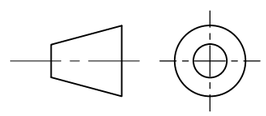
(15 marks)



SUBMARINE RESTAURANT
LOGO



NAME OF CURVE .....



Question 5. The diagram on the right shows a model of a proposed monument. The cardboard triangle PQR was bent around a cylinder having its circumference equal to side PQ. After bending, the cylinder was removed.

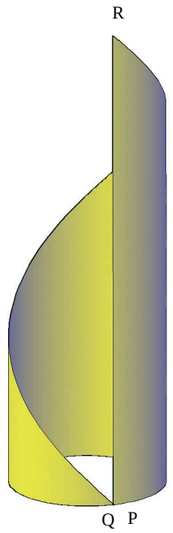
A front elevation and a plan of the cylinder, together with the triangle (before bending) are given below.

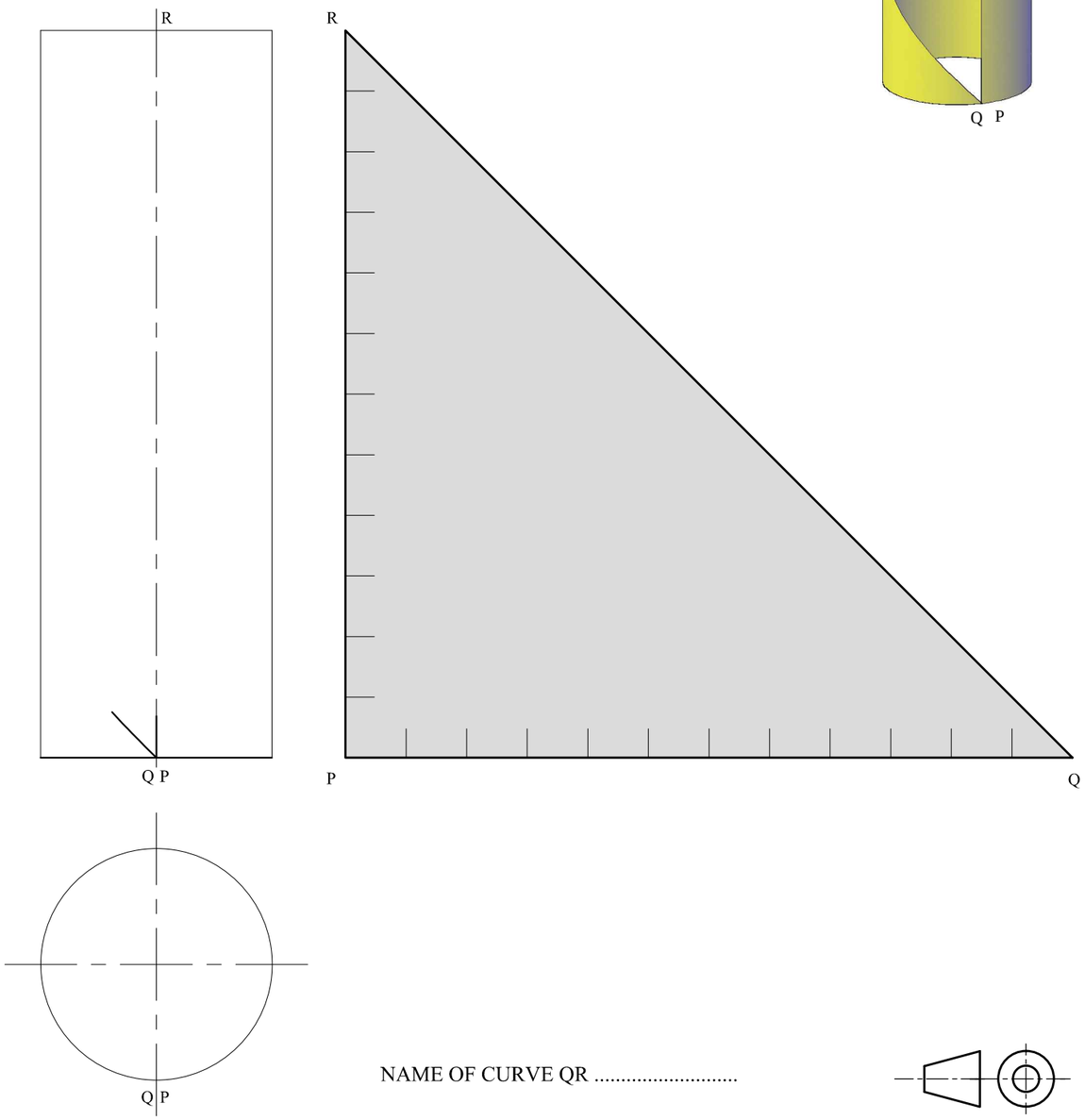
In the space provided and using the given start lines:

a. Project a front elevation of the bent triangle (with cylinder removed).
b. Lightly shade the bent triangle.
c. Give the technical name of the curve QR.

(12 marks)

Note: Show the hidden detail.





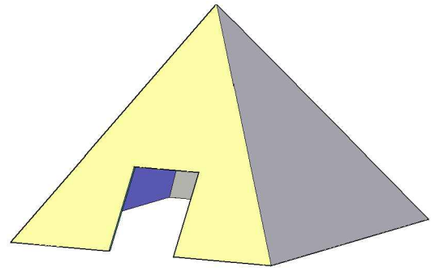
NAME OF CURVE QR .....

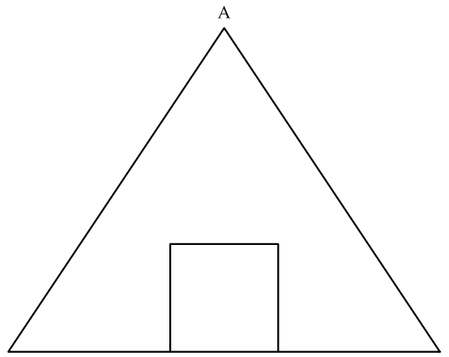
Question 6. A 3-D view of a cardboard square pyramid, with an opening cut on one of the facets, is shown on the right.

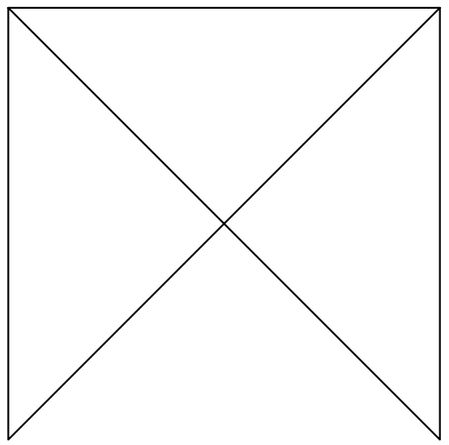
A front elevation and an incomplete plan are given below. In the space provided and using the given start lines:

a. Complete the plan.
b. Construct the surface development of the pyramid.

(16 marks)





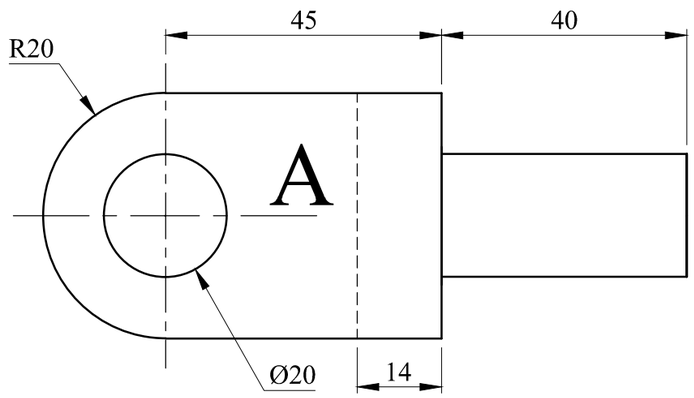


A

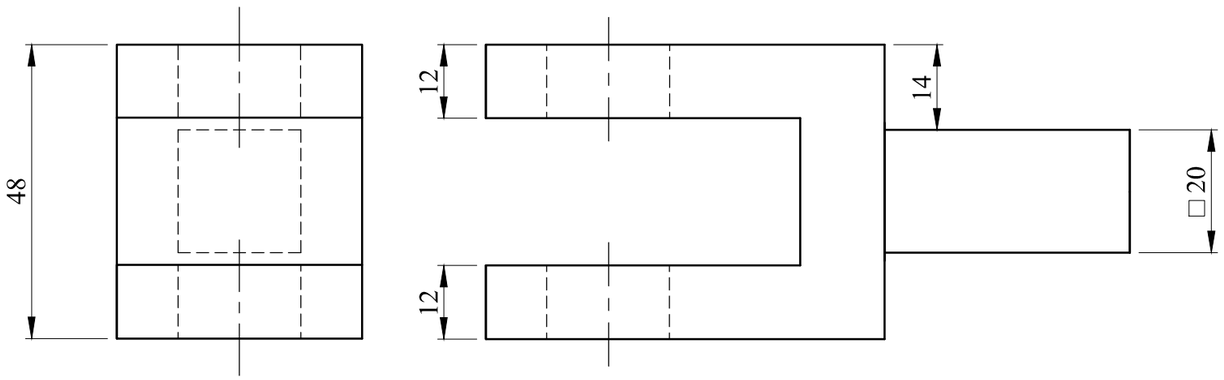
Question 7. Three orthographic views of a FORK END FITTING are given below.
In the space provided and on the given start lines:

a. Draw a well proportioned **freehand** pictorial drawing of the fitting.
b. Shade your drawing to give it a shiny metal finish.
c. Using set squares and compasses, draw a 60°/30° planometric drawing of the same fitting, placing face A in the uppermost position.

(18 marks)



FREEHAND DRAWING



SCALE 1 : 1

A

PLANOMETRIC DRAWING

Sheet 4 of 4