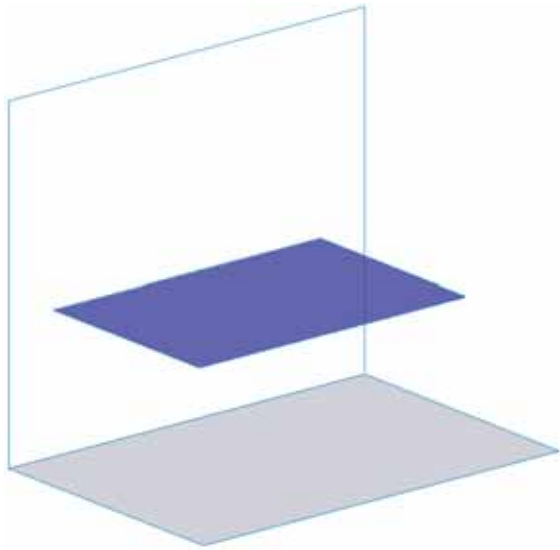
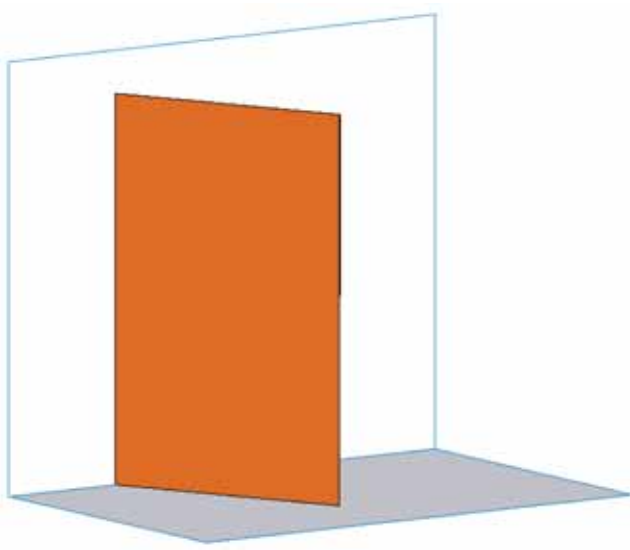


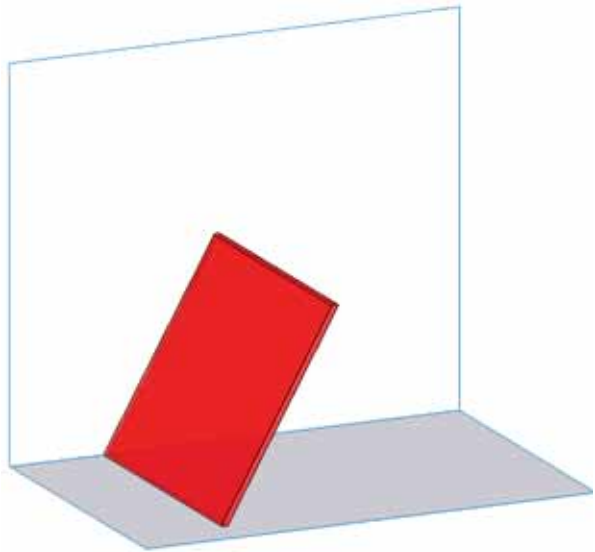
Pictorial views of three planes are shown. In the spaces provided below draw the line of intersection of these planes with the planes of reference (traces of the planes).



V.P.
H.P.



V.P.
H.P.

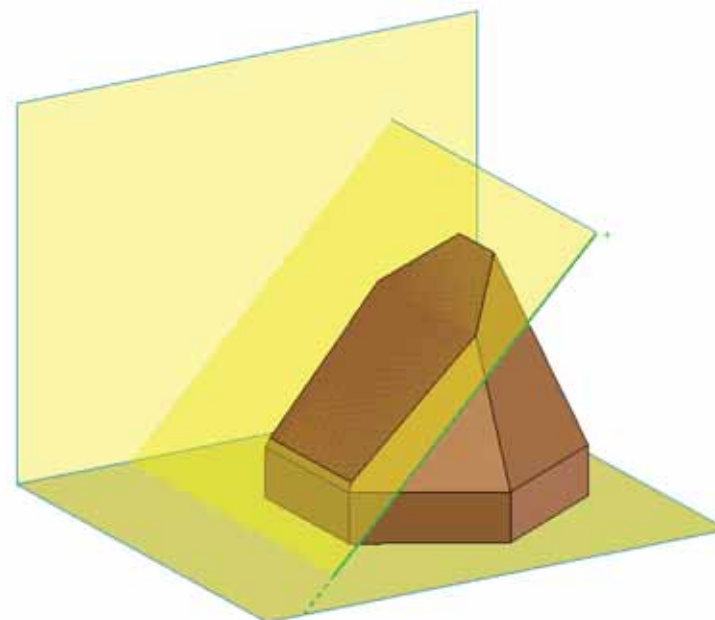
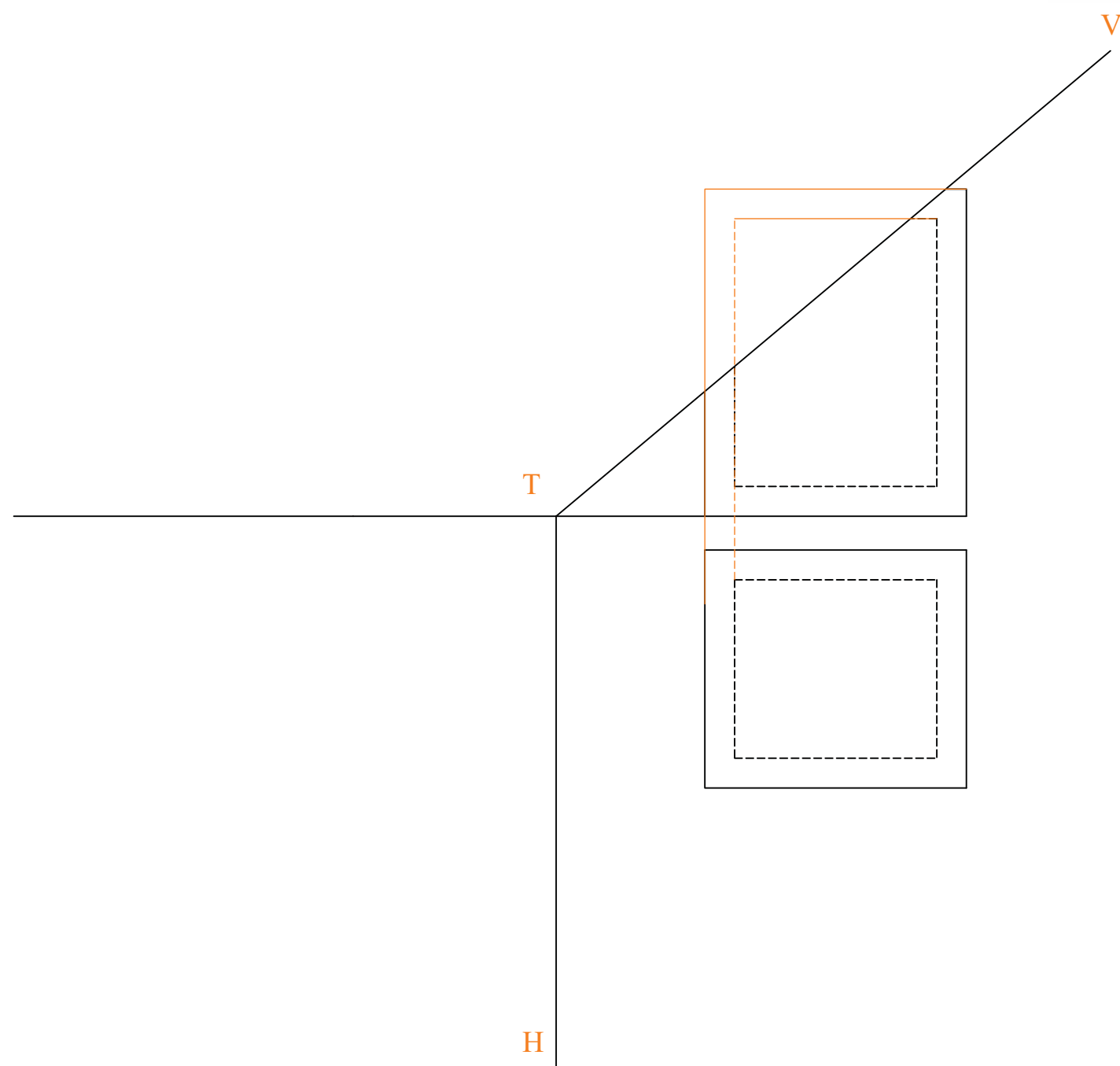


V.P.
H.P.



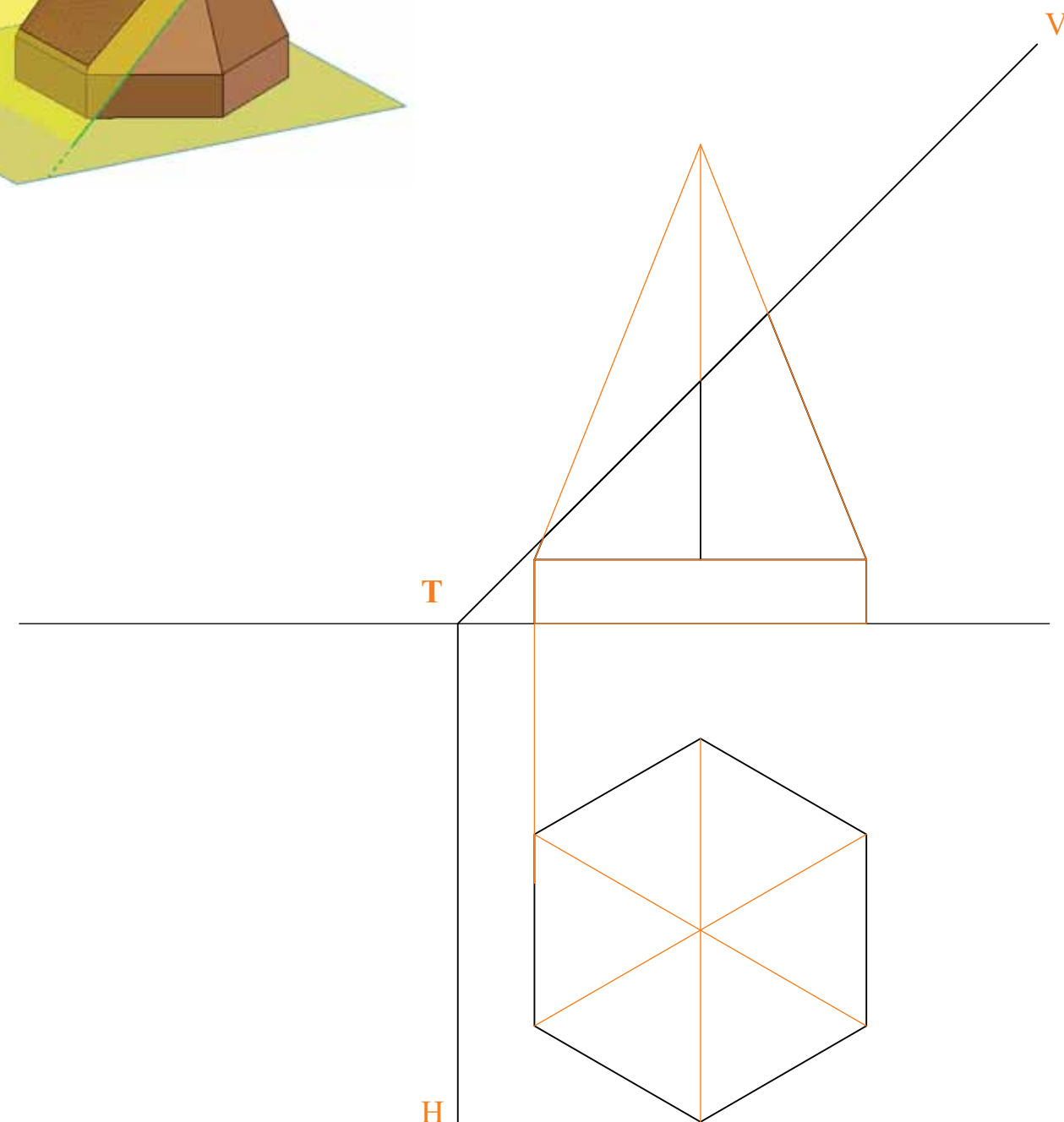
A box cut by a simply inclined plane is shown.

- (a) Complete the plan of the box.
- (b) Determine the true shape of the opening.



A hexagonal based pyramid is cut by a simply inclined plane as shown.

- (a) Complete the plan of the cut surface.
- (b) Determine the true shape of the cut surface.



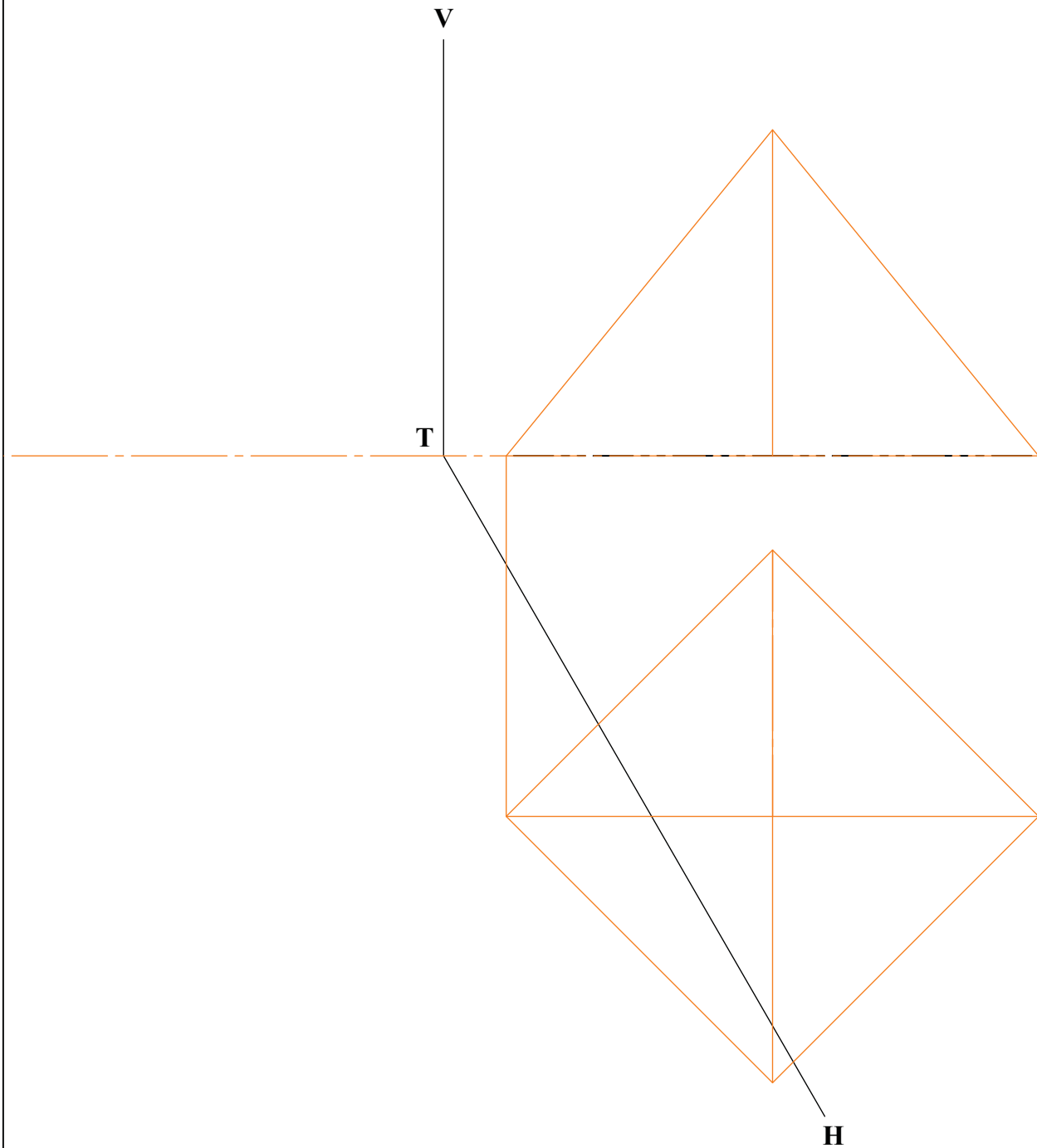
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SUBJECTS
SUPPORT
SERVICE

OBLIQUE PLANES 2

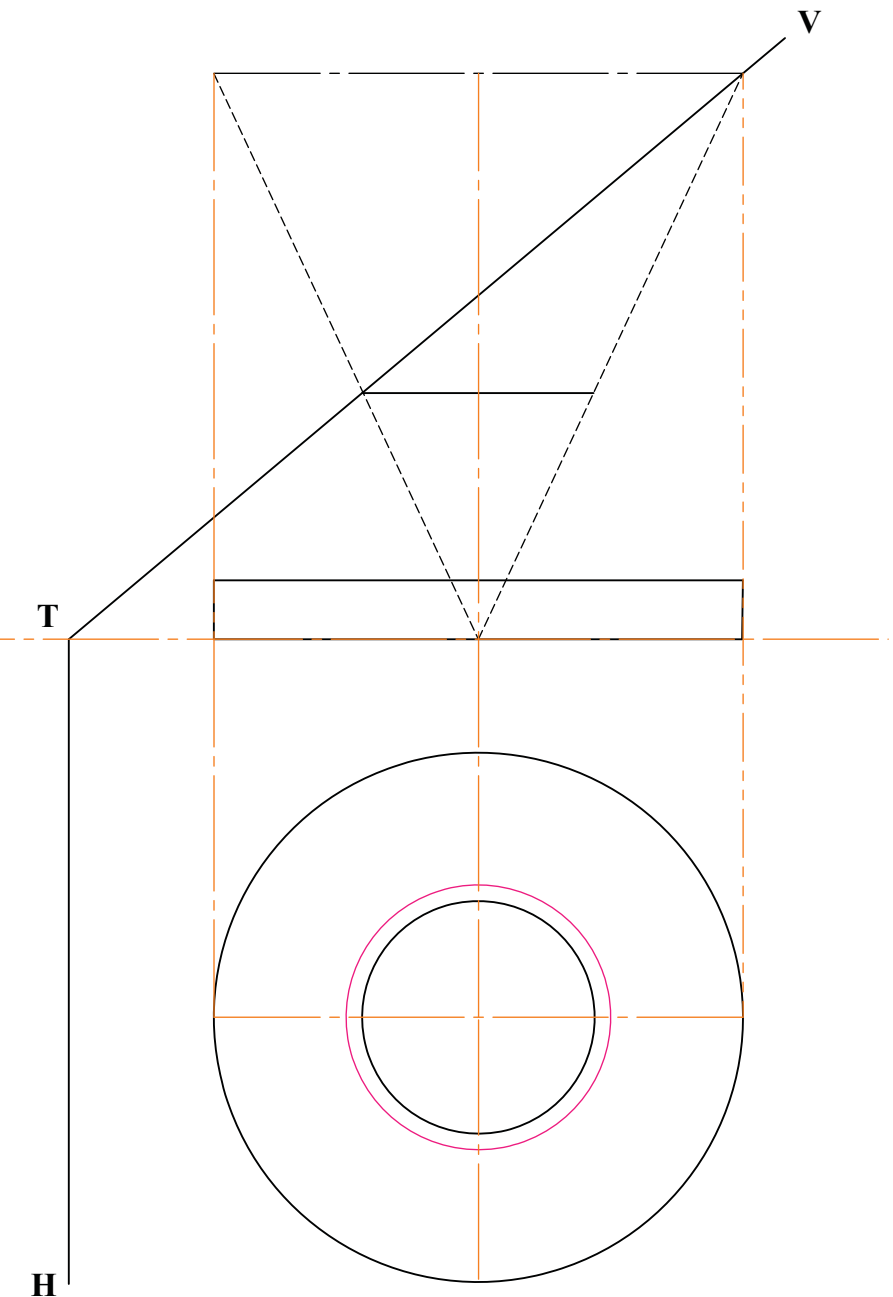
NAME: _____ DATE: _____



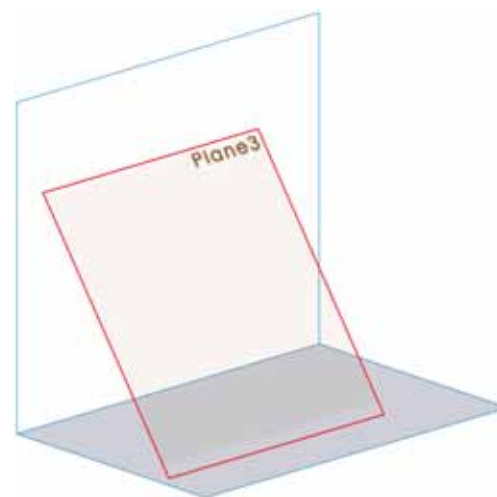
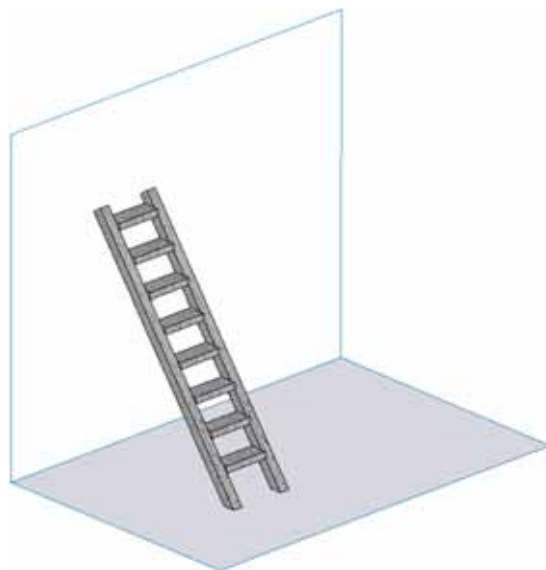
A pyramid is cut by a simply inclined plane as shown.
Complete the elevation and show the true shape of the cut section.



A cone cut by a simply inclined plane is used to design the seat shown.
Complete the plan and show the true shape of the cut section.

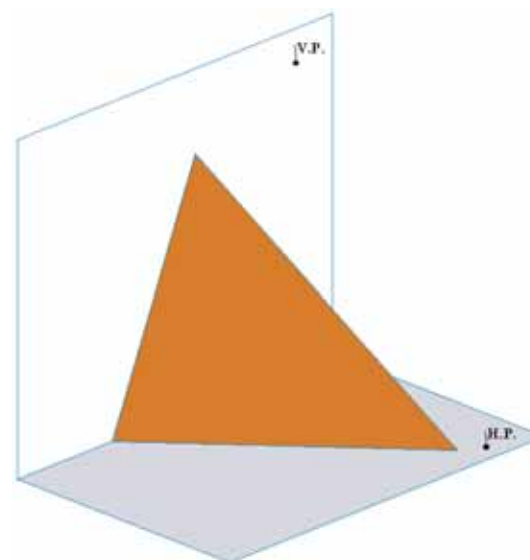


1



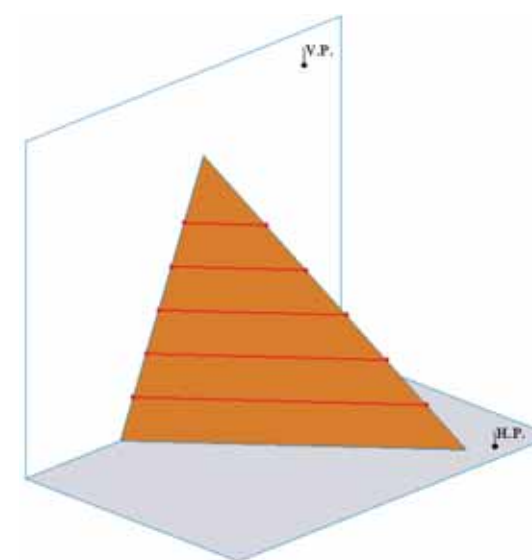
V.P.
H.P.

2

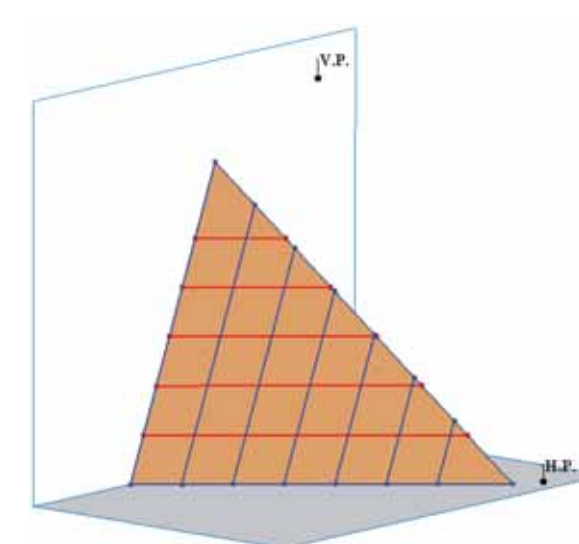


V.P.
H.P.

3



4



In parts 1- 4, draw the horizontal and vertical traces of the planes shown in the space provided.

In part 3, show the projections of the lines on the plane that are parallel to the H.P. in your orthographic views.

In part 4, show the projections of the lines on the plane that are parallel to the V.P. in your orthographic views.



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SUBJECTS
SUPPORT
SERVICE

OBLIQUE PLANES 4

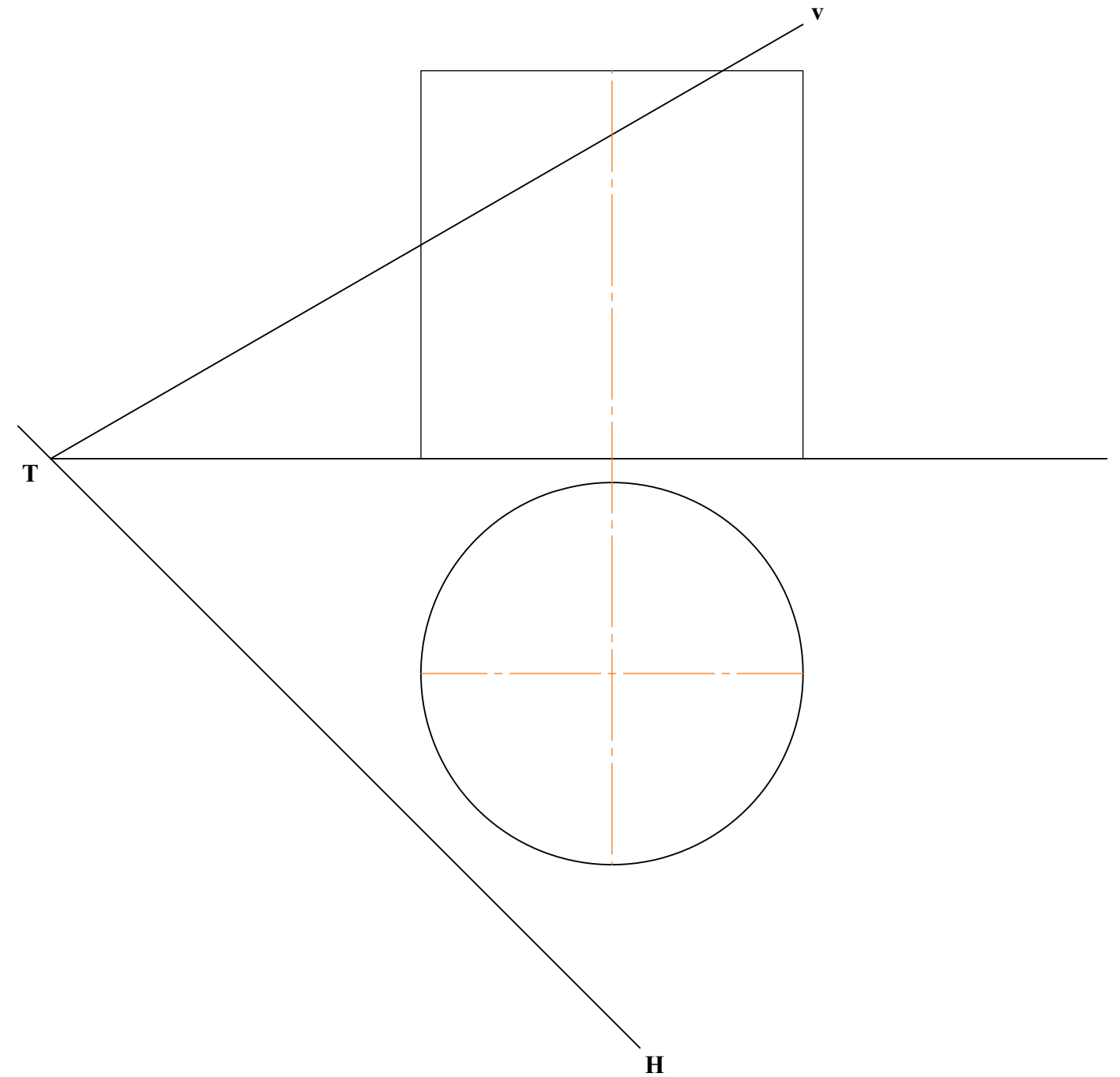
NAME: _____ DATE: _____



Copenhagen Planetarium

The building shown consists of a cylinder cut by an oblique plane. The incomplete elevation and plan of the cylinder and the traces of an oblique plane are shown below.

- (a) Complete the elevation and determine the true shape of the cut surface.
- (b) Identify the major and minor axes in the true shape of the cut surface.



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SUBJECTS
SUPPORT
SERVICE

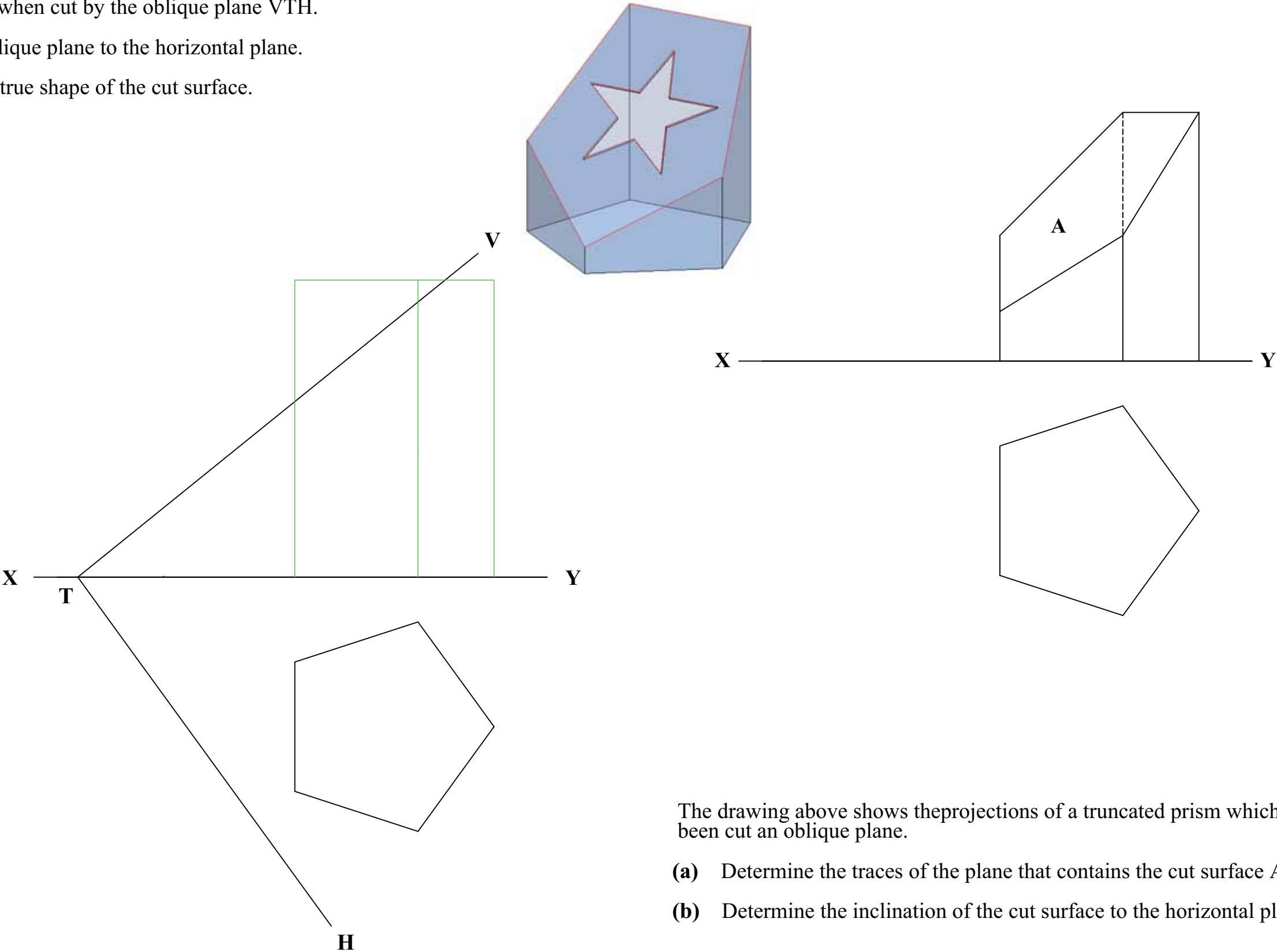
OBLIQUE PLANES 5

NAME: _____ DATE: _____

The 3D graphic on the right shows a glass trophy which has been engraved as shown. The trophy is based on a truncated pentagonal prism.

The drawing below shows the projections of the prism and the traces of the oblique plane VTH. trophy is cut to form the sloping face.

- (a) Draw the projections of the trophy when cut by the oblique plane VTH.
- (b) Determine the inclination of the oblique plane to the horizontal plane.
- (c) Hence, or otherwise, determine the true shape of the cut surface.



The drawing above shows the projections of a truncated prism which has been cut an oblique plane.

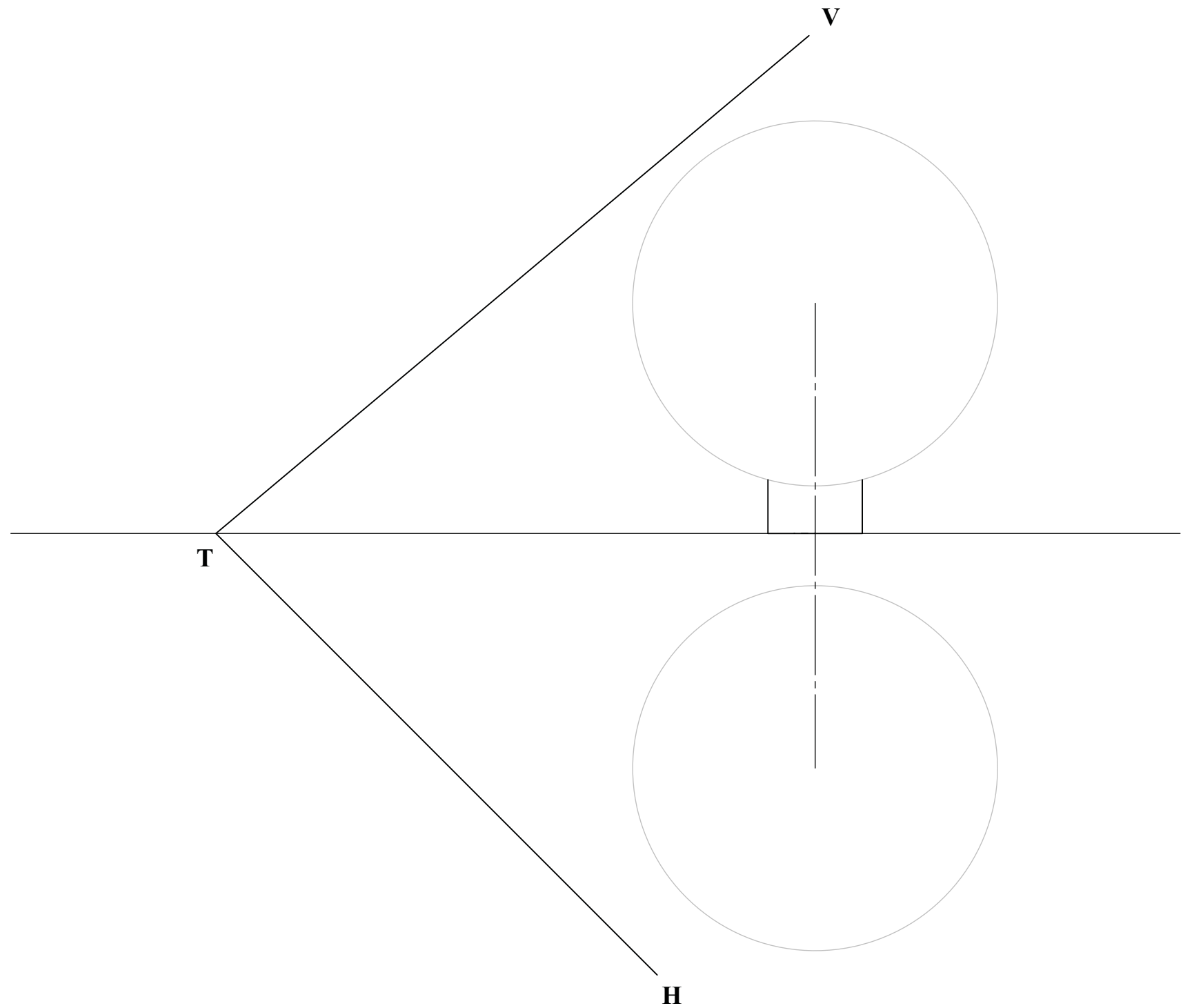
- (a) Determine the traces of the plane that contains the cut surface A.
- (b) Determine the inclination of the cut surface to the horizontal plane.





The elevation and plan of a sphere that is to be cut by the oblique plane VTH is given.

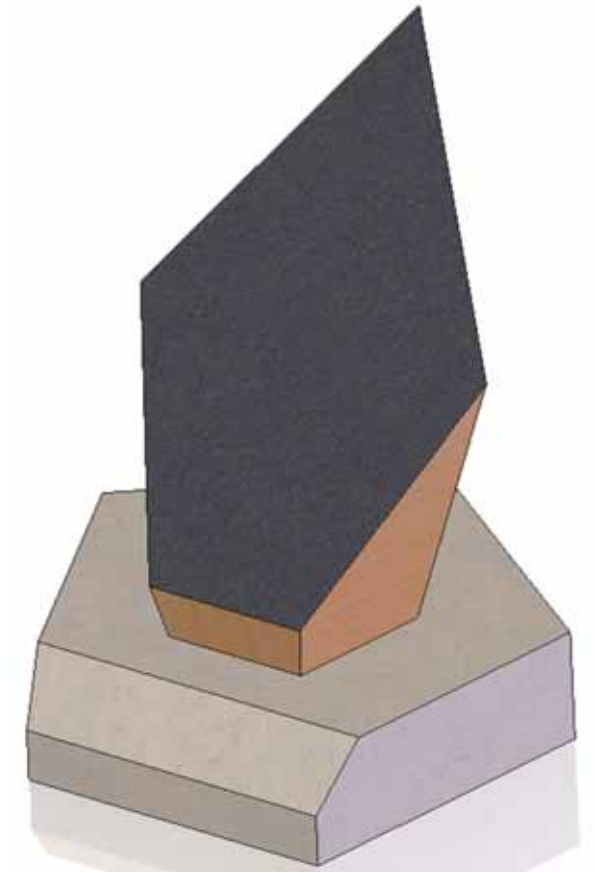
Complete the plan and elevation of the sphere showing the cut section.



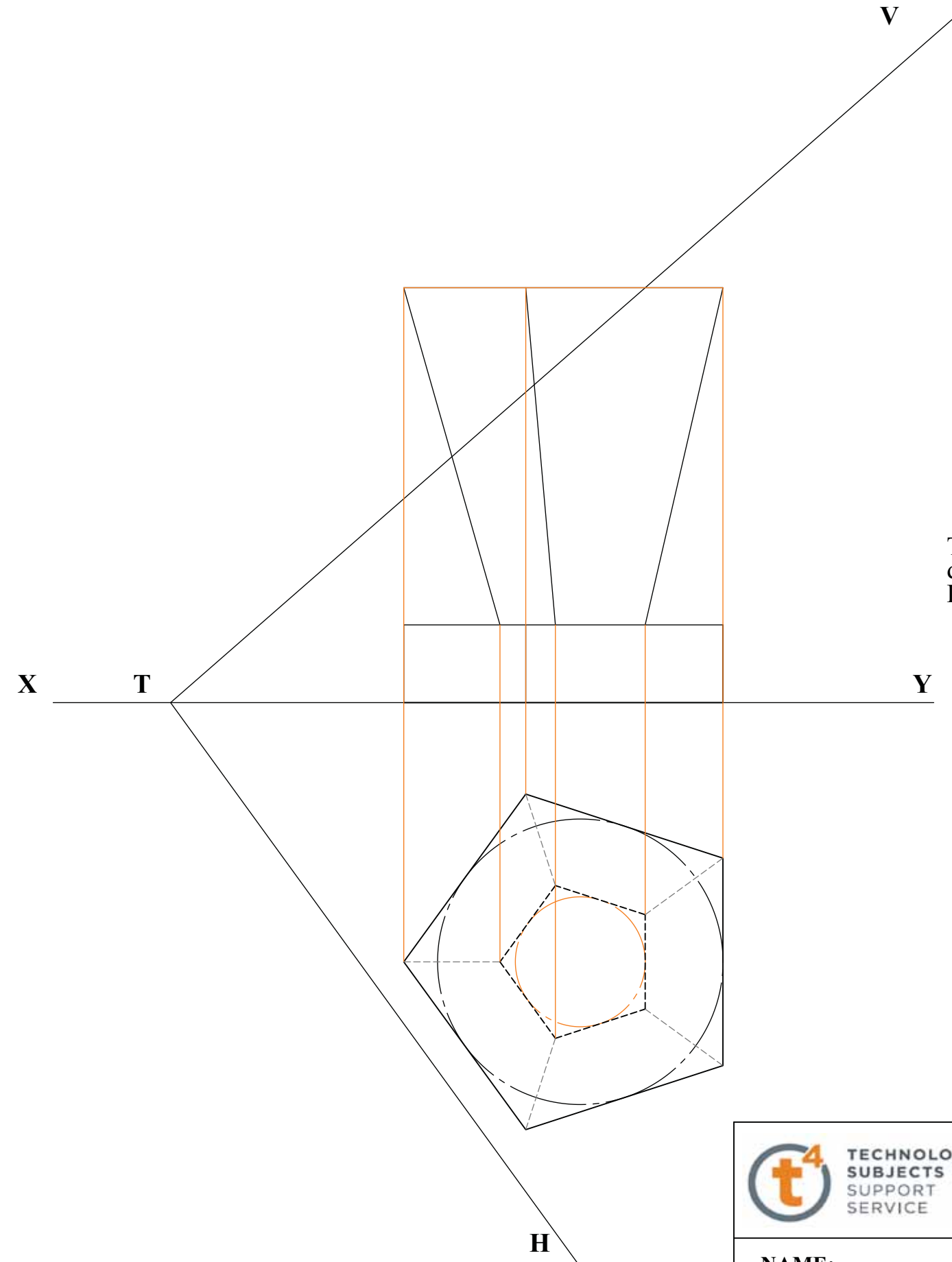
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SUBJECTS
SUPPORT
SERVICE

OBLIQUE PLANES 7

NAME: _____ DATE: _____



The partial elevation and plan of a jewellery display stand is shown.
Draw the projections of the jewellery stand when cut by the oblique plane VTH.



TECHNOLOGY
SUBJECTS
SUPPORT
SERVICE

DESIGN & COMMUNICATION GRAPHICS

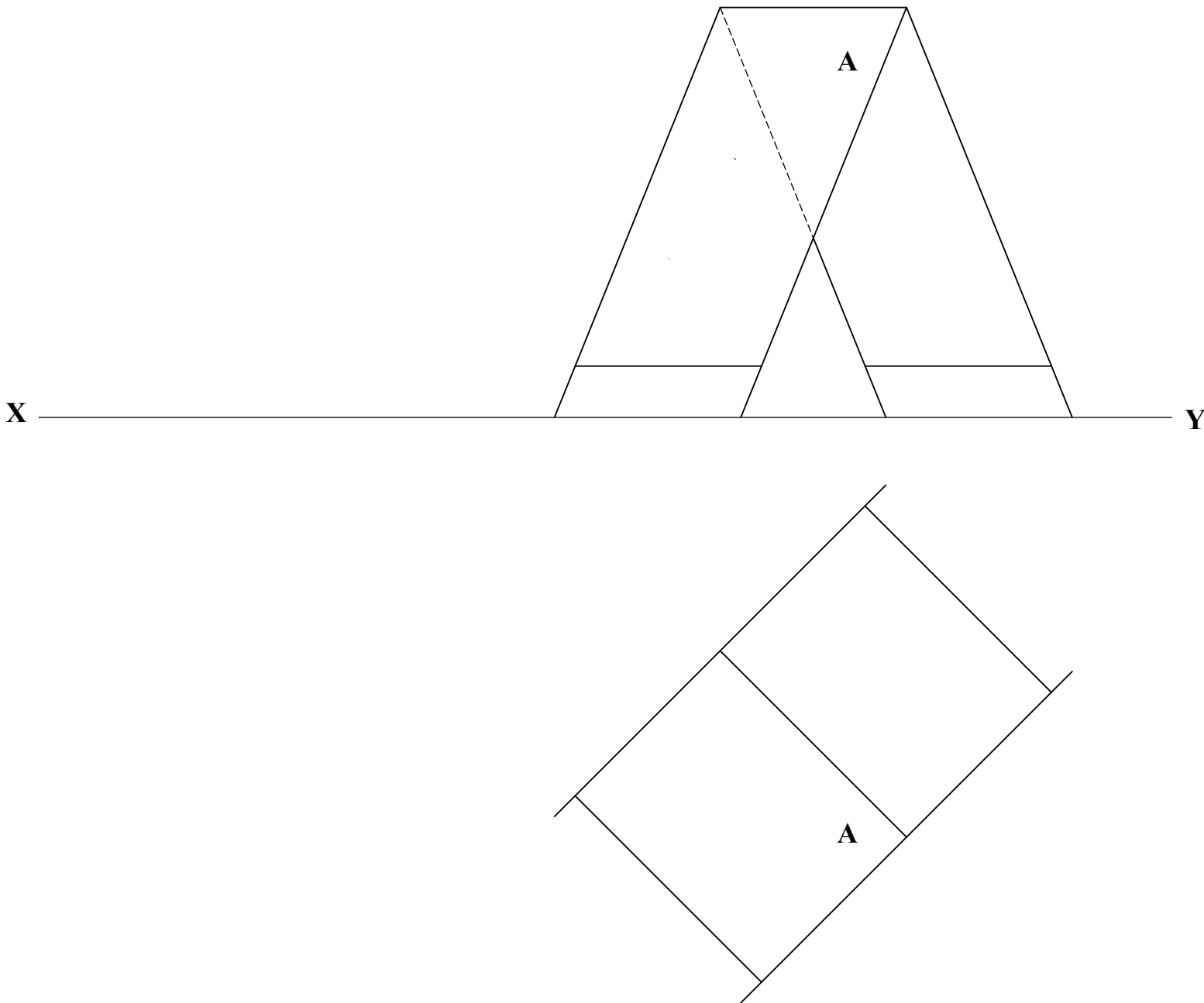
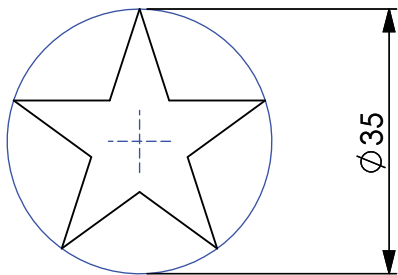
OBLIQUE PLANES 8

NAME: _____ DATE: _____

The 3D graphic below shows a sandwich board. The projections of the board are also shown.

- (a) Determine the traces of the oblique plane that contains the surface A.
- (b) Determine the true shape of board A.
- (c) A design based on a star (shown below) must be placed at the centre of the sloping surface of the board marked A.

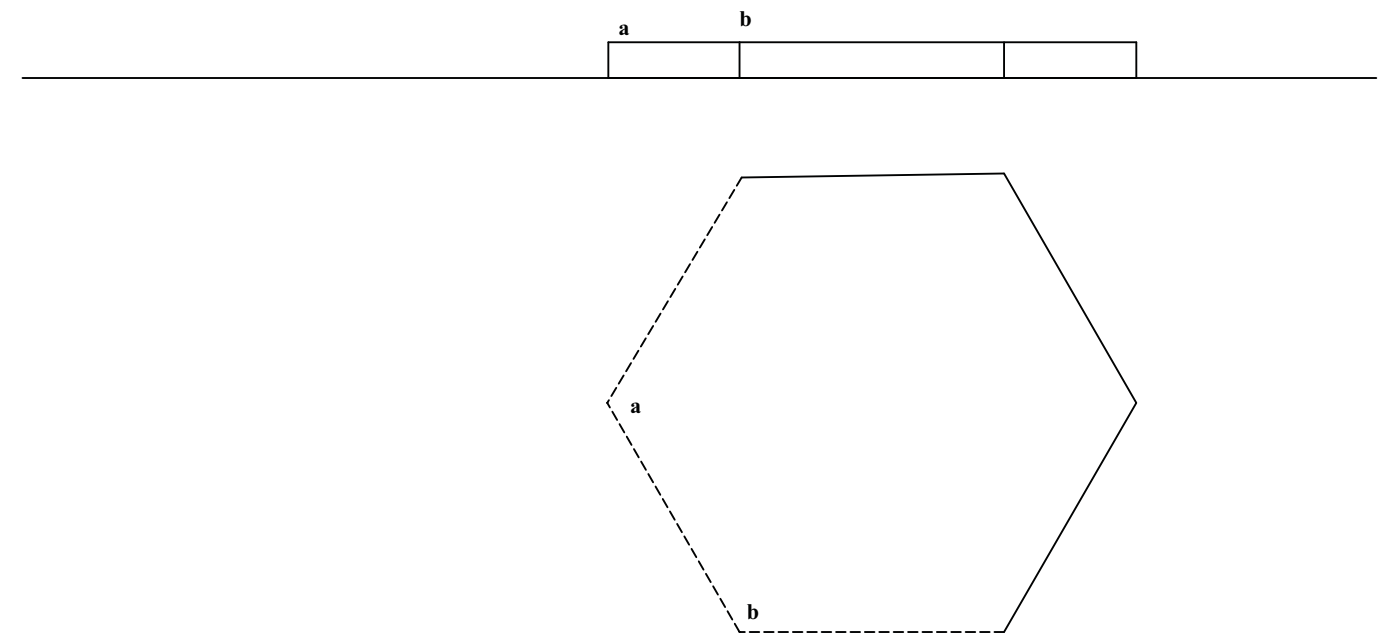
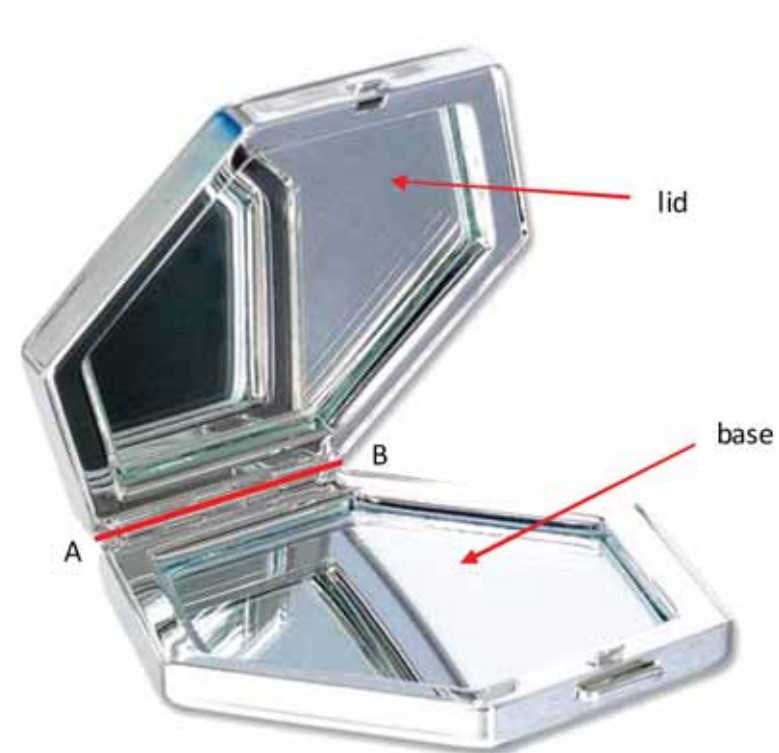
Draw the projections of the star.

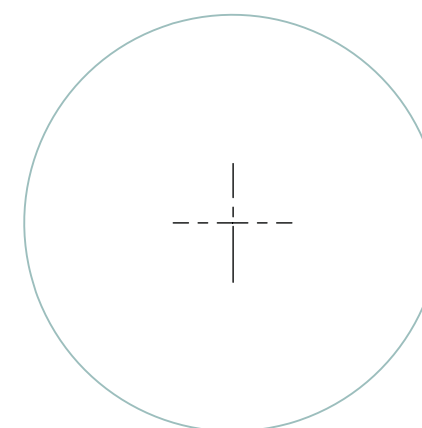


A 3D graphic of a pocket mirror is shown below. It consists of two hexagonal prisms which are equal in height and hinged about edge AB of the hexagon as shown.

The plan and elevation of the base are given across. The lid is inclined at 50° to the base and is hinged about line ab.

Draw the plan and elevation of the lid in its inclined position.





A 3D graphic of a knife block is shown above. The block is based on an oblique cylinder which is cut as shown.

The incomplete plan of an oblique cylinder is given along with the traces of an oblique plane which cuts it. The axis of the cylinder is perpendicular to the oblique plane.

- (a) Complete the plan and draw the elevation of the cut cylinder.
- (b) Find the true shape of the cut surface.
- (c) A knife is inserted into the block in the centre of the cut surface and at right angles to it. The length of the handle left protruding is 50mm.

Using a line to represent the handle, draw the handle in position in plan and elevation.



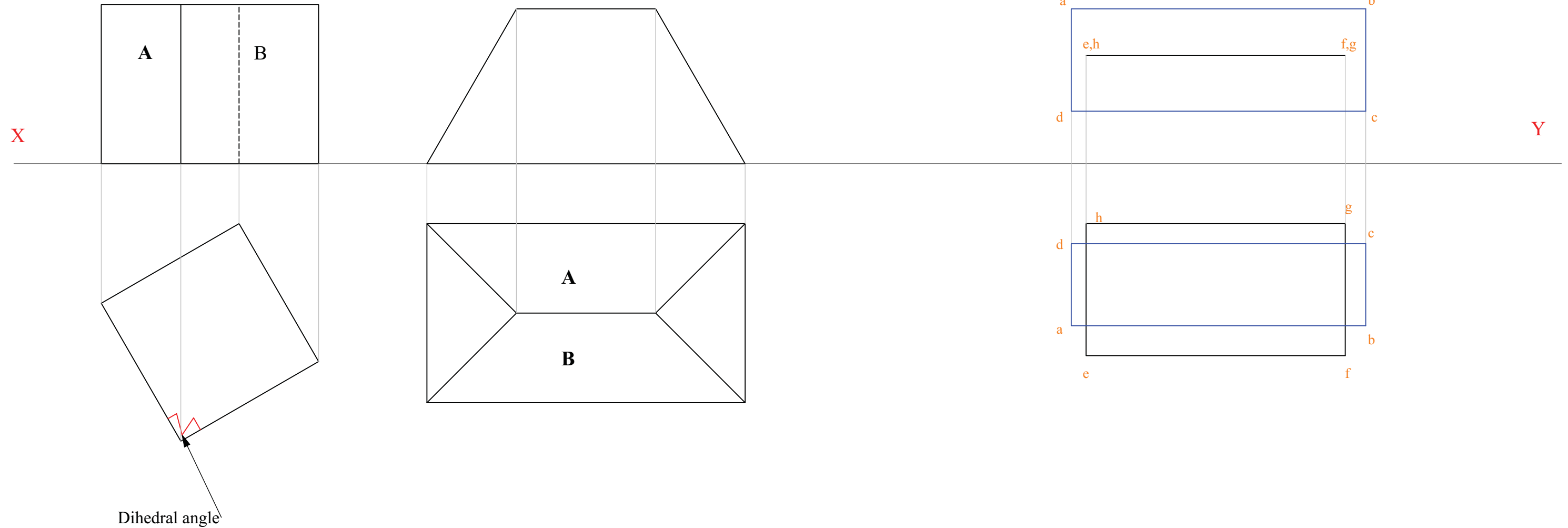
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SUBJECTS
SUPPORT
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OBLIQUE PLANES 11

NAME: _____ DATE: _____

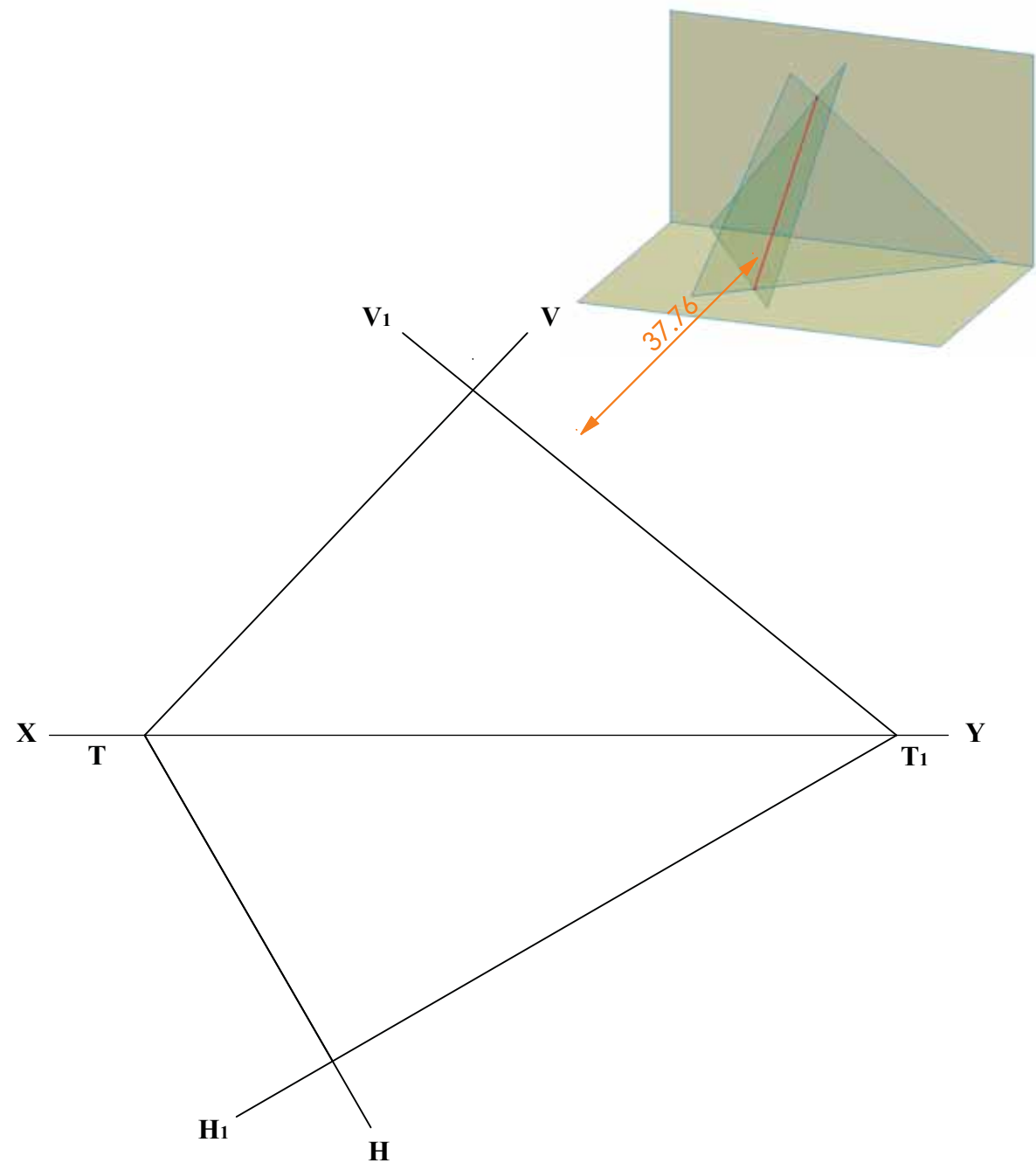
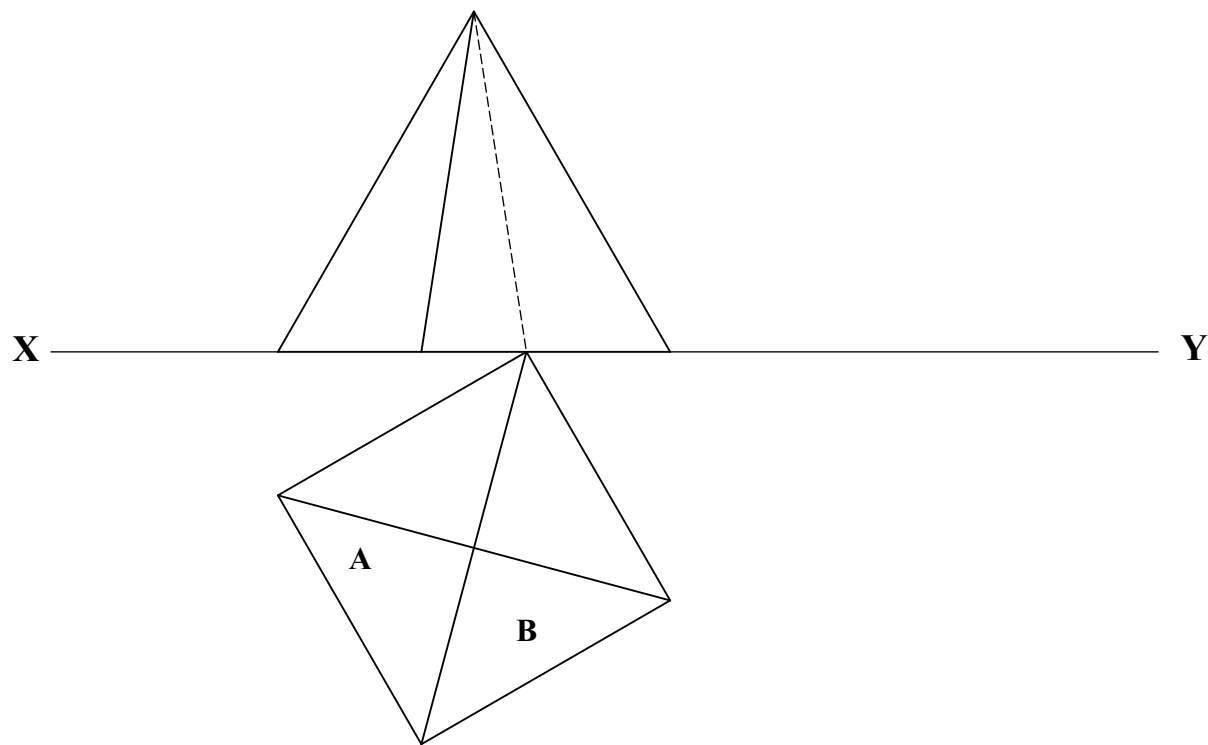


1. The plan and elevation of a dice is shown.
 (a) Indicate surfaces A and B in plan.
 (b) Show the dihedral angle between the two surfaces.
2. The plan and elevation of a hip roof is shown.
 Find the dihedral angle between surfaces A and B.
3. The plan and elevation of two glass panels of an extractor fan are shown.
 • Find the dihedral angle between the panels.
 • Find the line of intersection between the panels.



The 3D graphic below shows a package for Ferrero Rocher chocolates which is based on a square based right pyramid. The projections of the pyramid are shown below.

- (a) Determine the traces of the oblique plane that contains:
 - (i) the surface A
 - (ii) the surface B
- (b) Determine the line of intersection between the planes.
- (c) Determine the inclination of surface A to the horizontal plane.
- (d) Determine the true shape of surface A.

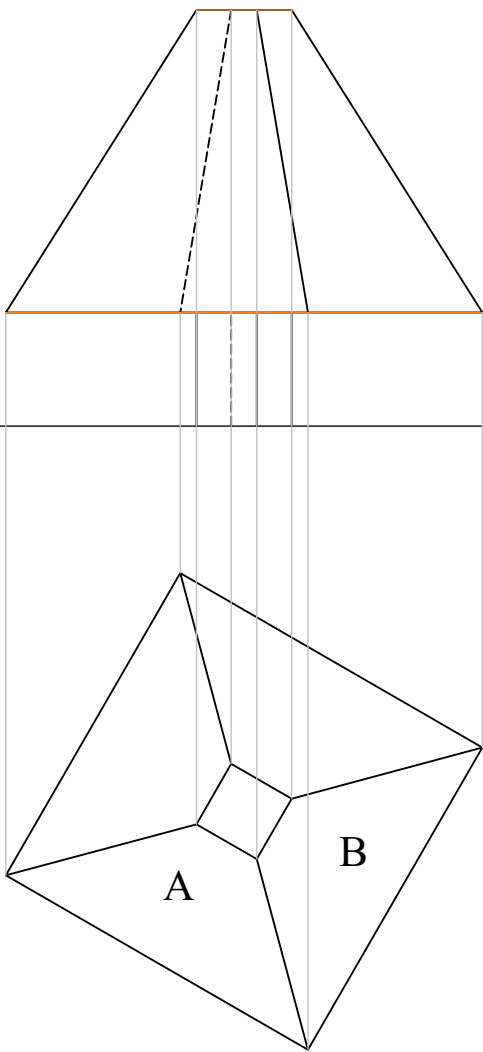


The traces of two oblique planes VTH and V₁T₁H₁ are shown above.

- (a) Determine the line of intersection between the planes.
- (b) Determine the inclination of the plane VTH to the horizontal plane.
- (c) Determine the true shape of the oblique plane VTH.

A 3D graphic of a lamp is shown across. The elevation and plan of the lamp shade are shown below.

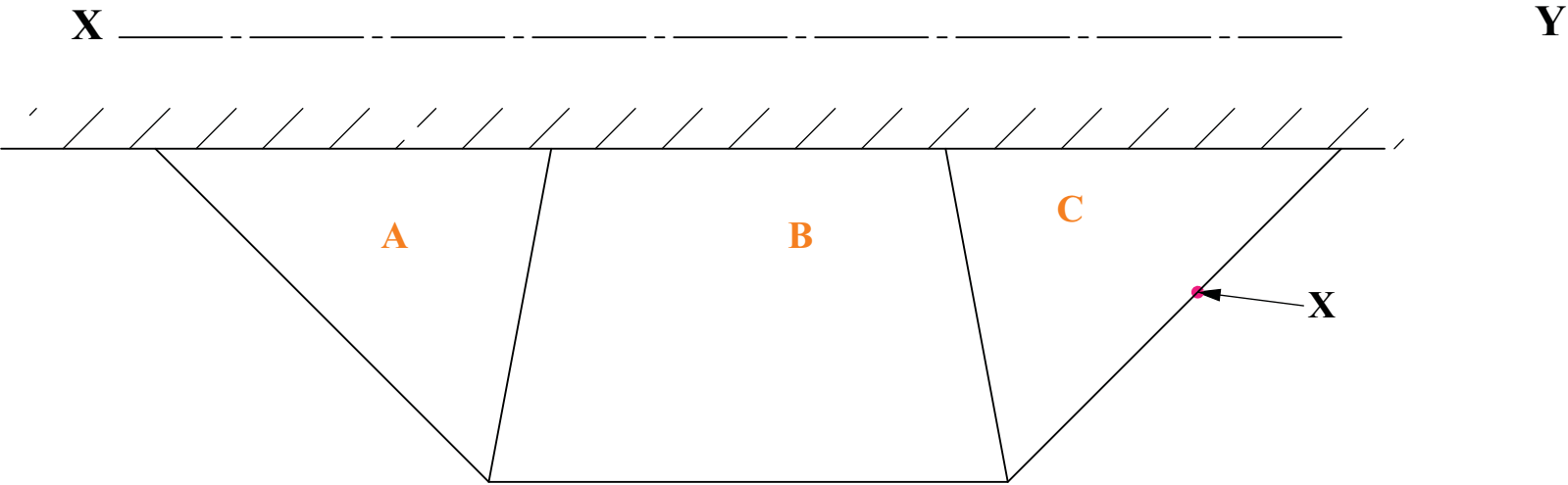
- (a) Determine the traces of the planes which rest on the surfaces A and B.
- (b) Complete the line of intersection between the oblique planes.
- (c) Determine the dihedral angle between the planes.
- (d) Find the true inclination of the oblique plane that contains the surface A to the planes of reference.



The 3D graphic on top shows a bay window. The outline for a roof over the bay window is shown in the drawing above. The roof surface B has an inclination of 40° to the horizontal plane.

- (a) Draw the elevation of the roof showing the lines of intersection between the surfaces A, B and C.
- (b) Find the true length of the hip rafter between A and B.
- (c) Determine the dihedral angle between surfaces A and B.
- (d) A 450mm cable from point X rests on surface C and touches the hip rafter between surfaces B and C. Show this cable in plan and elevation and determine the true inclination of the cable to the H.P.

Scale: 1:10



A 3D graphic of the front of an aircraft is shown. The elevation and incomplete plan is given below.

- (a) Determine the dihedral angles between A and B.
- (b) Determine the true shape of surface A
- (c) On windshield A a wiper blade rests at 45° to the edge ab. The blade pivots about the midpoint of ab. Draw the wiper blade in this position in elevation and plan.
- (d) The dihedral angle between B and C is 145° . Complete the plan.

