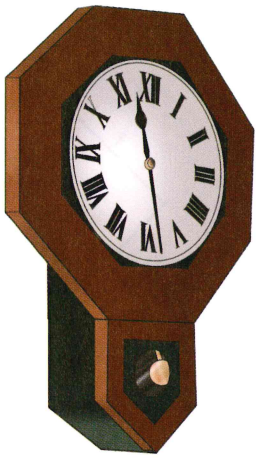
5. The incomplete isometric projection of a **Grandfather clock** using the axonometric axes method is shown over. The elevation and plan are also shown in their required positions.

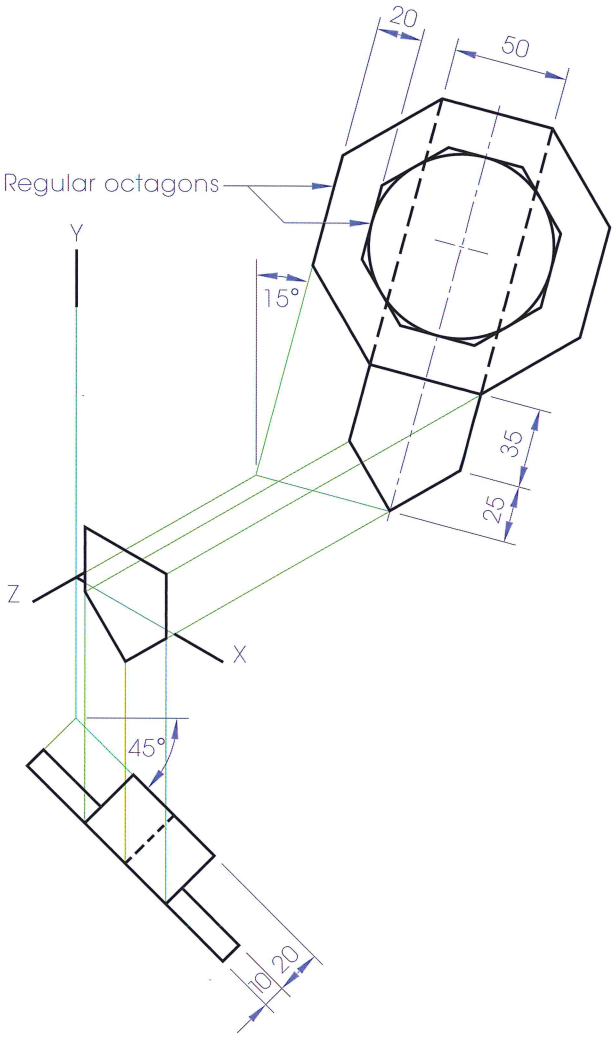
(i) Draw the axonometric axes X, Y and Z.

(ii) Draw the plan orientated at 45° as shown.

(iii) Draw the elevation orientated at 15° as shown.

(iv) Draw the completed axonometric projection.





Spheres in Isometric Projection

A sphere appears as a circle in isometric projection.

This is because the circle that forms the outline of a sphere relative to the relevant viewing direction is parallel to the plane of projection. As a result this circle appears in true shape.

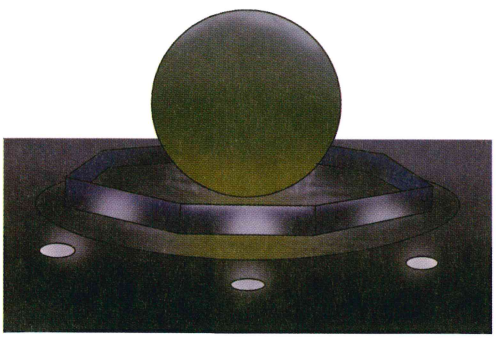
Example 1

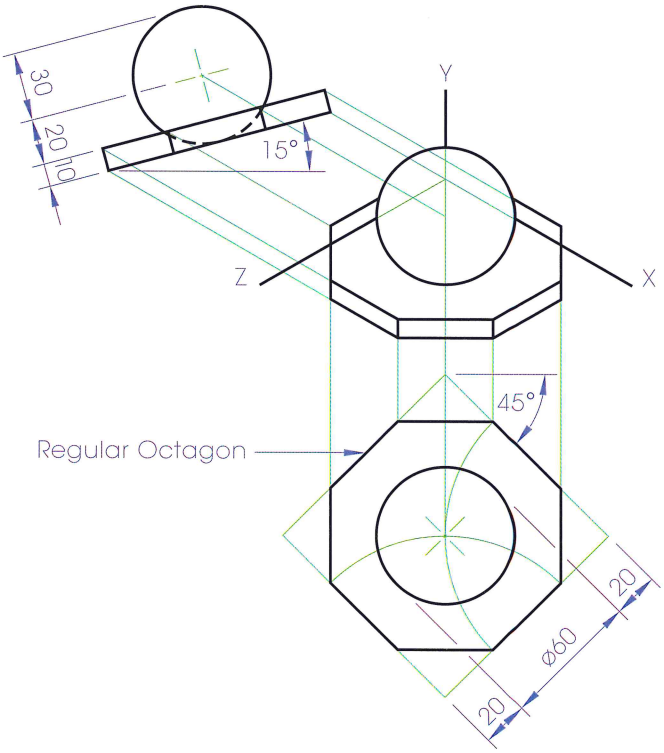
The isometric projection of a **fountain** using the axonometric axes method is shown over.

The sphere is determined in the axonometric projection by:

(i) locating the centre of the sphere.

(ii) using this as centre to draw a circle of radius 30 mm.





Example 2

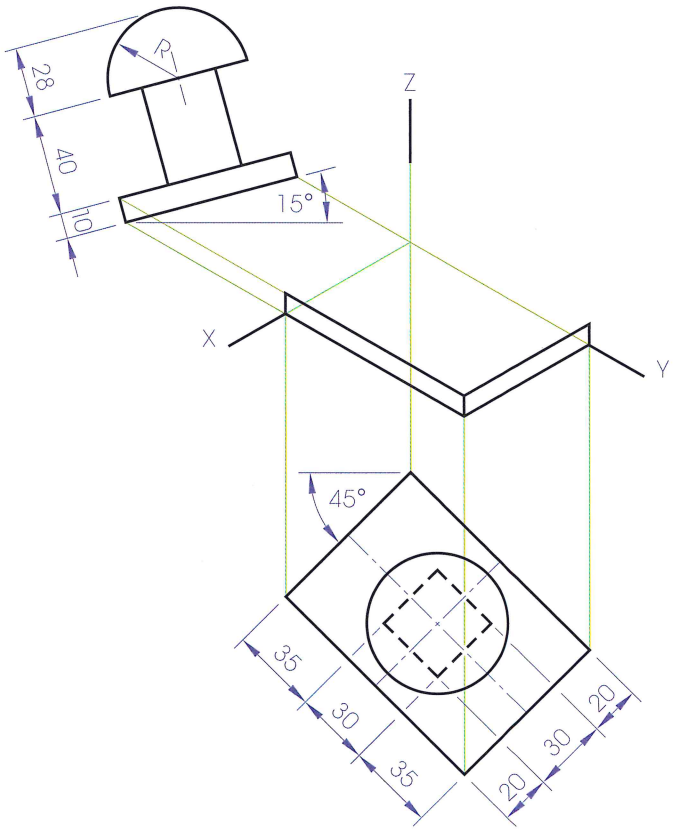
The incomplete isometric projection of a **stamp** using the axonometric axes method is shown over. The end elevation and plan are also shown in their required positions.

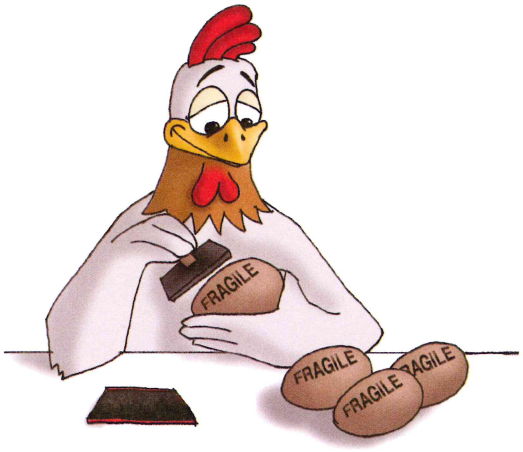
(i) Draw the axonometric axes X, Y and Z.

(ii) Draw the plan orientated at 45° as shown.

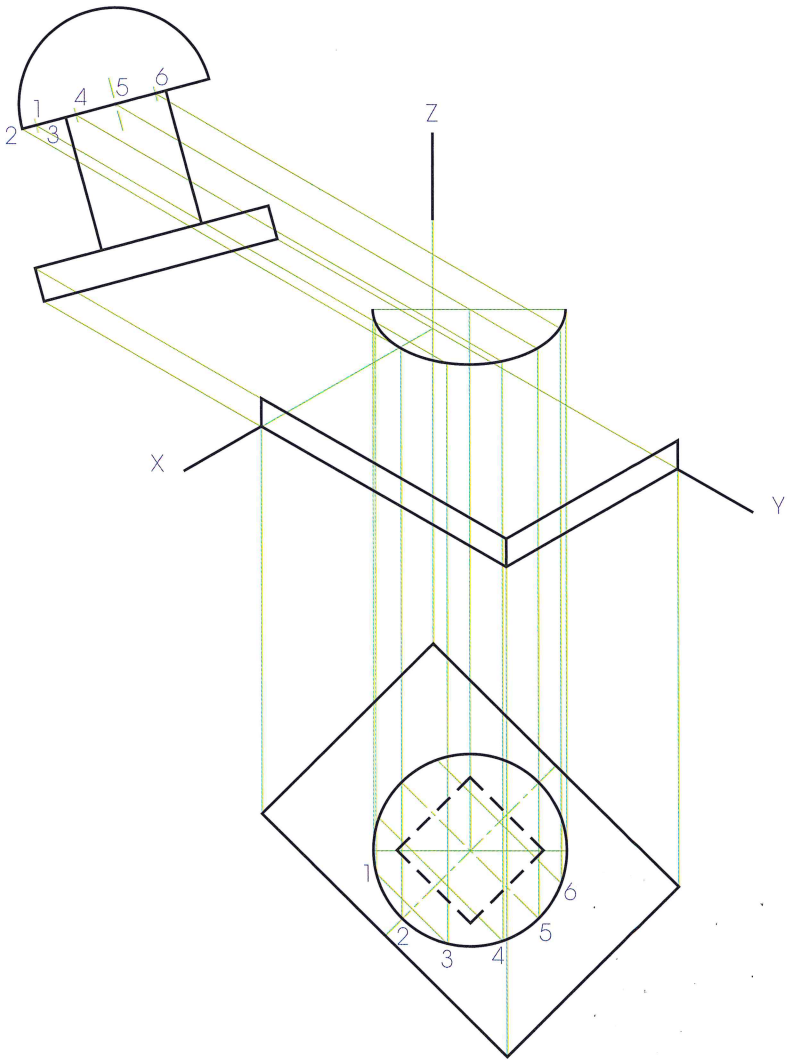
(iii) Draw the end elevation orientated at 15° as shown.

(iv) Draw the completed axonometric projection of the stamp.

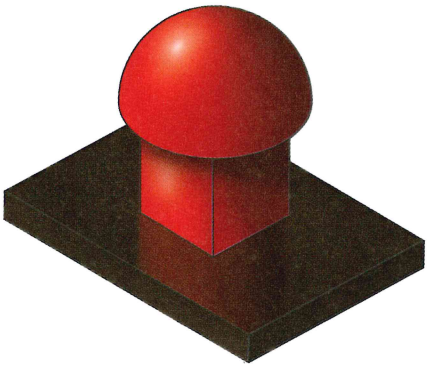


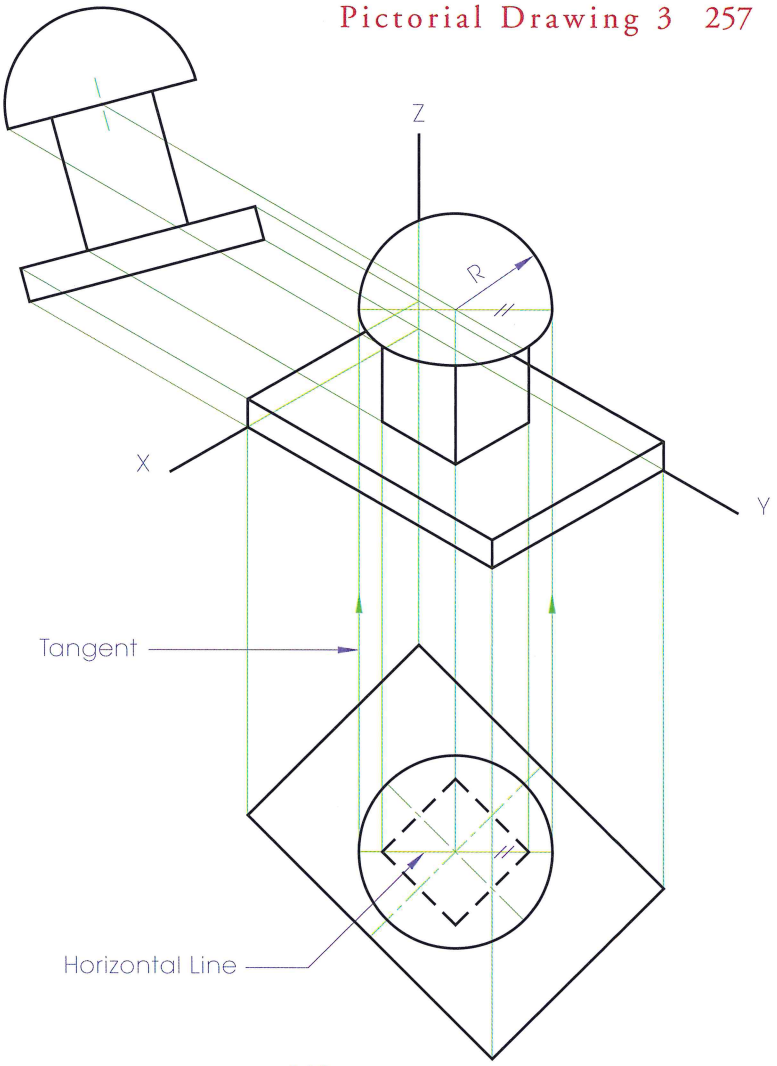


1. Draw the axonometric axes, plan and end elevation in the normal manner.
2. Draw the axonometric projection of the base of the stamp as shown over.
3. Locate points on the base of the hemisphere in plan and end elevation (say 12 mm offset) as shown over.
4. Locate points 1 to 6 in the axonometric view.
5. Locate the centre of the hemisphere and the major axis of the semi-ellipse (construction highlighted overleaf).
6. Draw the semi-ellipse.



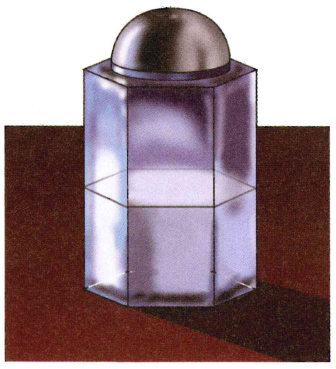
7. Draw the semicircle of radius 28 mm to complete the hemisphere.
8. Complete the axonometric projection as shown over. Note that some construction lines have been omitted for the purposes of clarity.

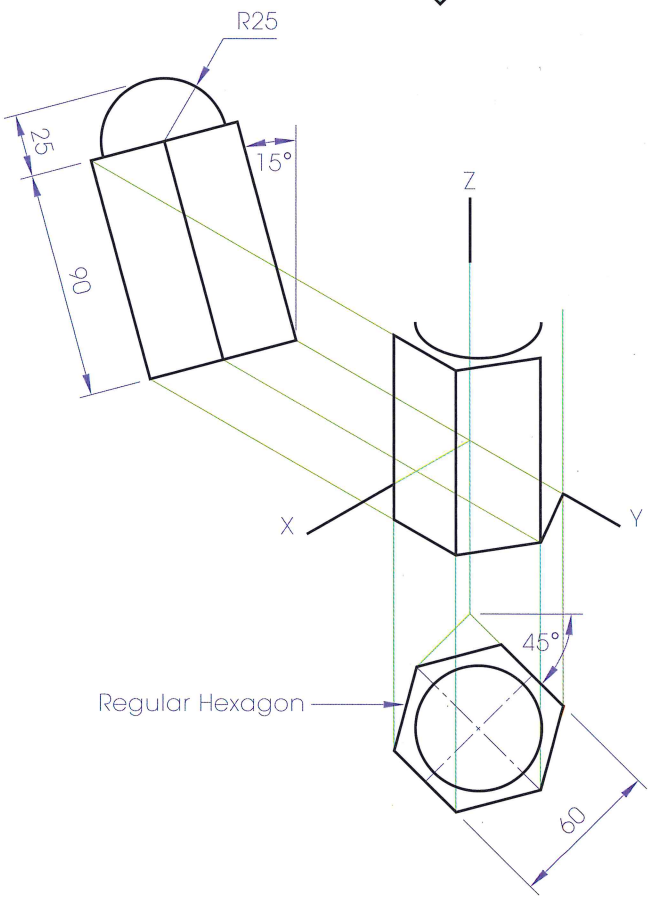




Exercises

1. The figure over shows the incomplete isometric projection of a **salt container** using the axonometric axes method. The side elevation and plan are also shown in their required positions.
   (i) Draw the axonometric axes X, Y and Z.
   (ii) Draw the plan orientated at 45° as shown.
   (iii) Draw the side elevation orientated at 15° as shown.
   (iv) Draw the completed axonometric projection.





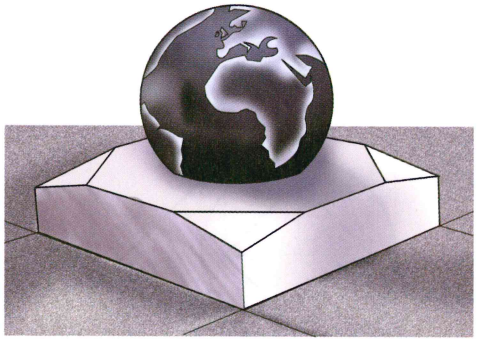
2. The axonometric axes required for the isometric projection of a **sculpture** are shown over. The elevation and plan are also shown in their required positions.

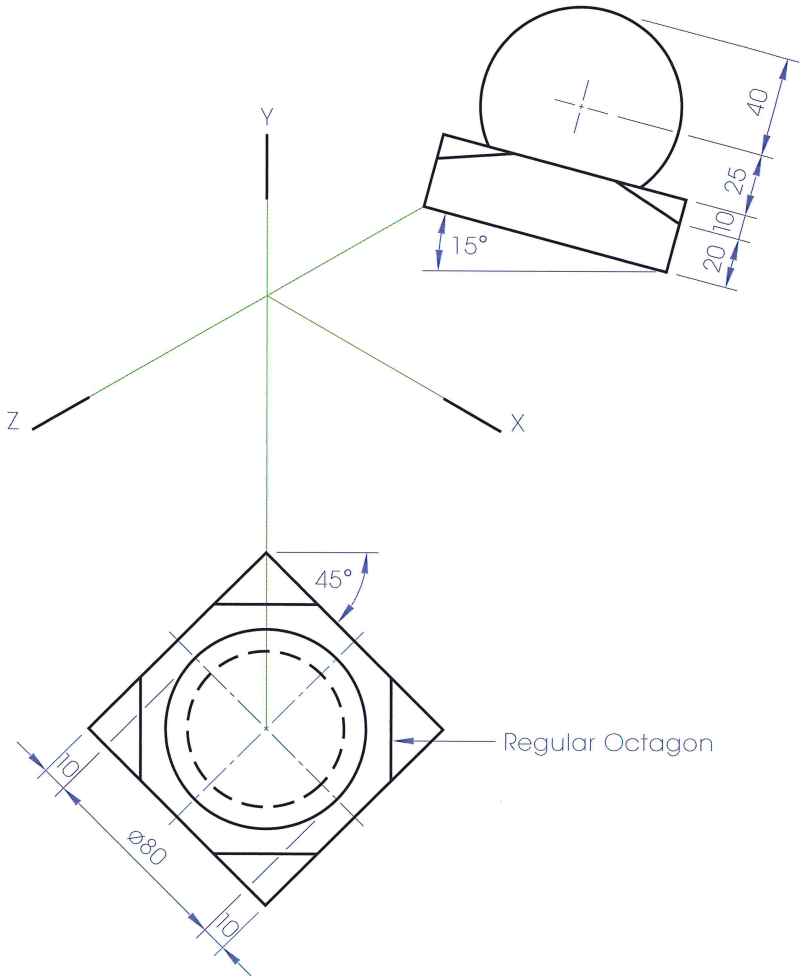
(i) Draw the axonometric axes X, Y and Z.

(ii) Draw the plan orientated at 45° as shown.

(iii) Draw the elevation orientated at 15° as shown.

(iv) Draw the axonometric projection of the sculpture.





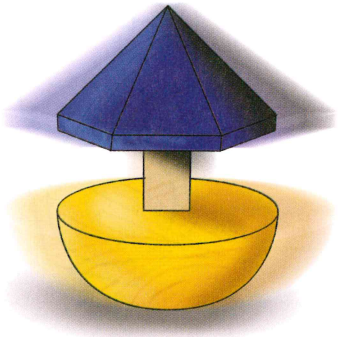
3. The figure over shows the axonometric axes required for the isometric projection of a **spinning top**. The elevation and plan are also shown in their required positions.

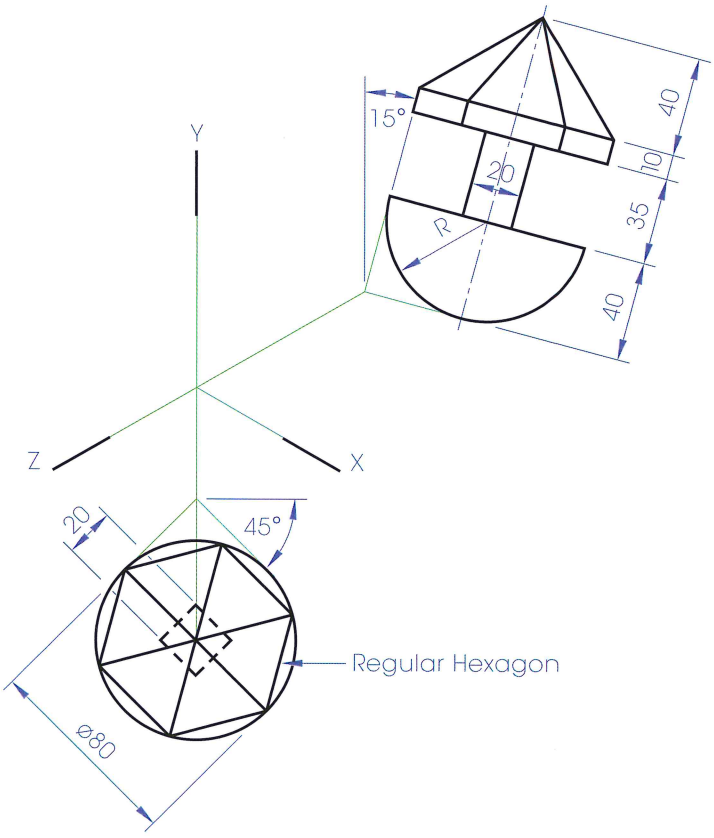
(i) Draw the axonometric axes X, Y and Z.

(ii) Draw the plan orientated at 45° as shown.

(iii) Draw the elevation orientated at 15° as shown.

(iv) Draw the axonometric projection of the spinning top.





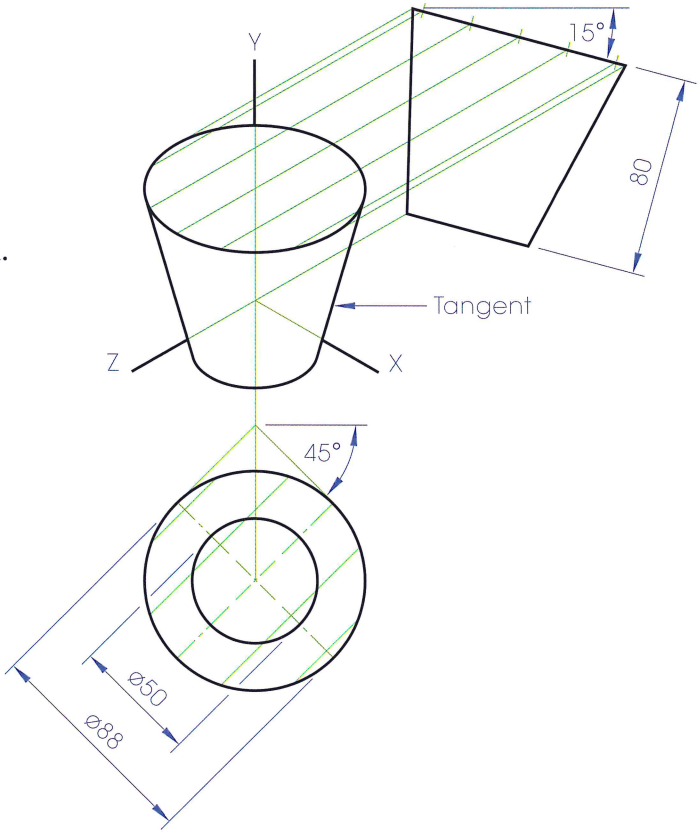
4. The figure over shows the isometric projection of a **waste basket** using the axonometric axes method. The elevation and plan are also shown in their required positions.

(i) Draw the axonometric axes X, Y and Z.

(ii) Draw the plan orientated at 45° as shown.

(iii) Draw the elevation orientated at 15° as shown.

(iv) Draw the completed axonometric projection.



5. The incomplete isometric projection of a **hand basin and mirror** using the axonometric axes method are shown over. The elevation and plan are also shown in their required positions.

(i) Draw the axonometric axes X, Y and Z.

(ii) Draw the plan orientated at 45° as shown.

(iii) Draw the elevation orientated at 15° as shown.

(iv) Draw the completed axonometric projection.