The Sphere

A sphere appears as a circle in all orthographic views.

Imagine a person moving on the sphere, over along the circle highlighted.

The **elevation** of a person’s path is represented by the outline of the sphere in elevation, shown far right.

The **plan** of a person’s path is represented by the diameter parallel to the XY line.

Points on the outline of a sphere in elevation are represented by the diameter parallel to the XY line in plan.

By considering the illustration of the ball shown over, it can be appreciated that:

- If a point moves horizontally on the surface of a sphere:
  - It moves horizontally in elevation.
  - It travels in a circular path in plan.

**Example**

The elevation and plan of a **sphere** are shown across.

The **elevation** of a point P and the **plan** of a point Q on the upper surface of the sphere are also shown.

(a) Locate point P in the plan.
(b) Locate point Q in the elevation.

1. Point P is on the outline of the sphere in elevation. As a result it will be located on the diameter parallel to the XY line in plan.
2. It can be projected to the plan as shown over.
3. In plan point Q can be rotated about C until it lies on the diameter parallel to the XY. This rotated position of point Q will lie on the outline of the sphere in elevation as shown.
4. This establishes the height of point Q as it will have moved horizontally in elevation. As a result the original position of point Q in elevation can be located as shown across.
Exercises

The elevation and plan of two spheres are shown over. The plan of a point P on the upper surface and the elevation of a point Q on the lower surface of each sphere are also shown. In each case:
(a) Locate point P in the elevation.
(b) Locate point Q in the plan.

The Cylinder

Example

The elevation and plan of a cylinder are shown over. The location of a point P on the front part of the curved surface of the cylinder is also shown.
(a) Draw the given views and locate point P in elevation and plan.
(b) Draw an end elevation of the cylinder showing the location of point P.

1. The given views are drawn as shown and point P is located in elevation.
2. Point P can be projected to lie on the circumference of the circle in plan as the circumference represents the curved surface of the cylinder in this view.
3. The end elevation of the cylinder is drawn in the normal manner, as shown below, right.
4. Point P can be located in this view as its location has already been established in two orthographic views.