

## 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.

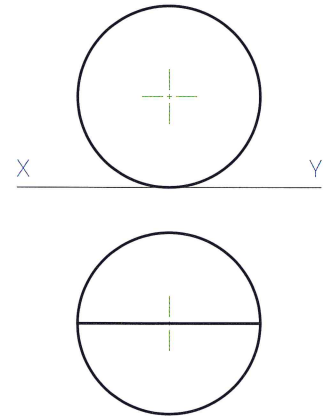
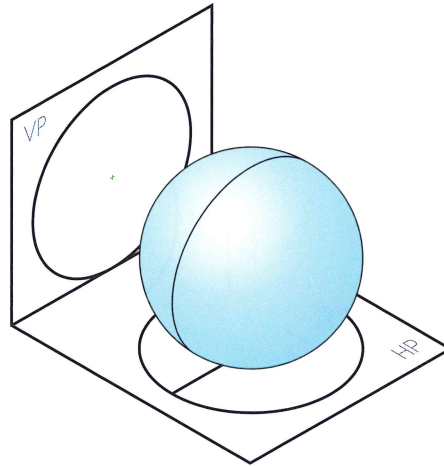
Points on the outline of a sphere in elevation are represented by the diameter parallel to the XY line in plan.

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.



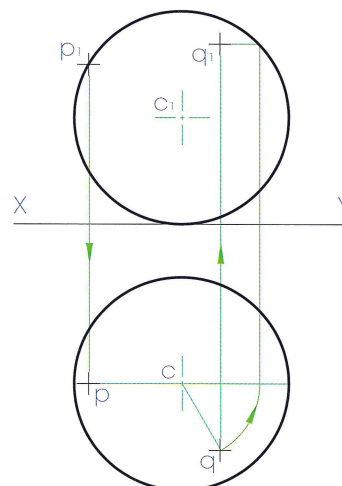
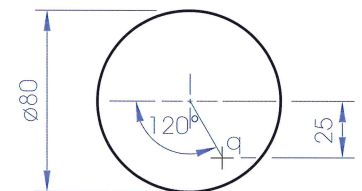
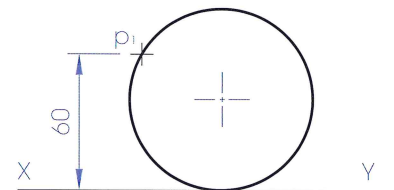
### Example

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.

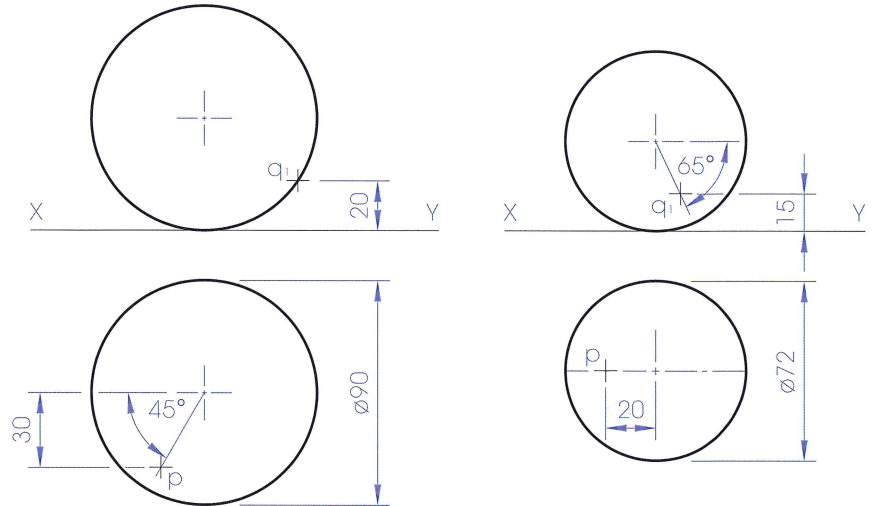


### Exercises

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:

- Locate point **P** in the **elevation**.
- Locate point **Q** in the **plan**.

Answer Worksheets 27A and 27B

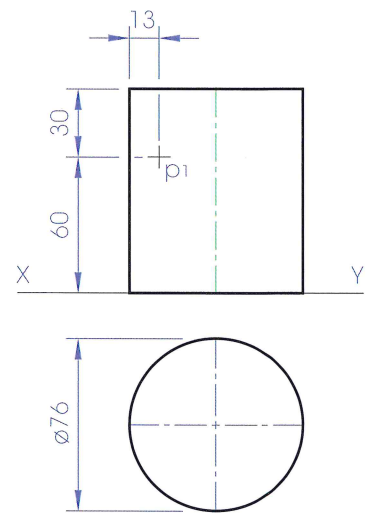


### The Cylinder

#### 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.

- Draw the given views and locate point **P** in elevation and plan.
- Draw an end elevation of the cylinder showing the location of point **P**.



- The given views are drawn as shown and point **P** is located in elevation.
- 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.
- The end elevation of the cylinder is drawn in the normal manner, as shown below, right.
- Point **P** can be located in this view as its location has already been established in two orthographic views.

