Image of a point in a plane.

Let P and Q be two points and let π be a plane such that

(i) Line PQ is perpendicular to the planeπ, and

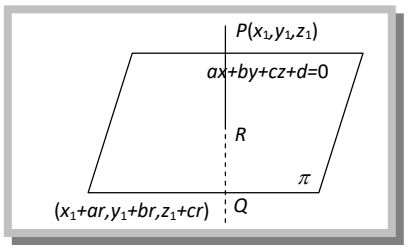
(ii) Mid-point of PQ lies on the planeπ.

Then either of the point is the image of the other in the plane π.

To find the image of a point in a given plane, we proceed as follows

(i) Write the equations of the line passing through P and normal to the given plane as

$$\frac{x-x_1}{a}=\frac{y-y_1}{b}=\frac{z-z_1}{c}.$$



(ii) Write the co-ordinates of image Q as $(x_1+ar, y_1, +br, z_1+cr)$.

(iii) Find the co-ordinates of the mid-point R of PQ.

(iv) Obtain the value of r by putting the co-ordinates of R in the equation of the plane.

(v) Put the value of r in the co-ordinates of Q.