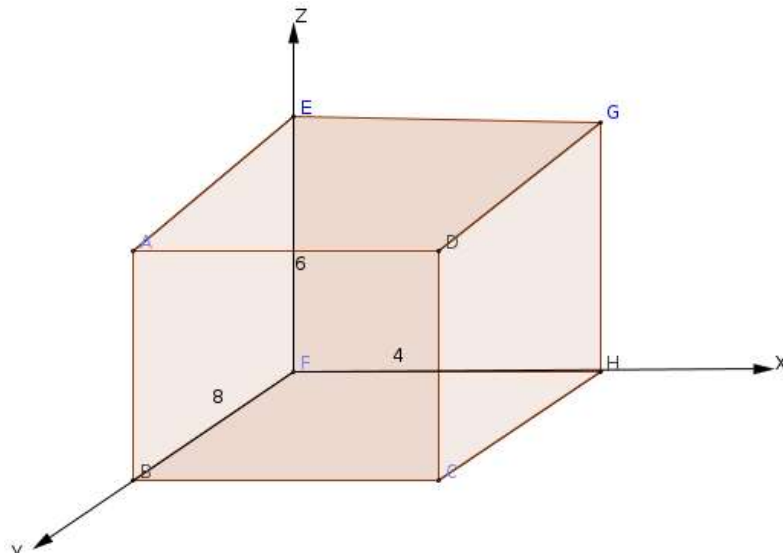


# Three Dimensional Geometry

Que 1:



Consider a box of edges 4, 6, 8 placed in the first octant as shown in the figure.

1. Find the coordinates of D
2. Find the equations of the side BC and diagonal FD
3. Find the shortest distance between the above two lines. **Marks :(6)**

Ans:

1.  $D=(4,6,8)$

2. Equation of line through F and D

$F(0,0,0)$   $D(4,6,8)$

$$\vec{r} = 0i + 0j + 0k + \lambda(4i + 6j + 8k)$$

Equation of line through B(0,0,8) and C(4,0,8)

$$\vec{r} = 0i + 0j + 8k + \mu(4i + 0j + 0k)$$

3.  $\vec{a}_1 = 0i + 0j + 0k$ ,  $\vec{a}_2 = 0i + 0j + 8k$ ,  $\vec{b}_1 = 4i + 6j + 8k$ ,  $\vec{b}_2 = 4i + 0j + 0k$

$$S.D = \left| \frac{8k \cdot (32j - 24k)}{\sqrt{32^2 + (-24)^2}} \right| = \frac{24}{5}$$