

Position.

Any object is situated at point O and three observers from three different places are looking for same object, then all three observers will have different observations about the position of point O and no one will be wrong. Because they are observing the object from their different positions.

Observer 'A' says: Point O is 3 m away in west direction.

Observer 'B' says: Point O is 4 m away in south direction.

Observer 'C' says: Point O is 5 m away in east direction.

Therefore position of any point is completely expressed by two factors: Its distance from the observer and its direction with respect to observer.

That is why position is characterized by a vector known as position vector.

Let point P is in a xy plane and its coordinates are (x, y). Then position vector (\vec{r}) of point will be $x\hat{i} + y\hat{j}$ and if the point P is in a space and its coordinates are (x, y, z) then position vector can be expressed as $\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$.

