Velocity Vectors

original position $+T(v)$ = new position

If velocity is given and we need to find the speed, then we will apply pythagoras' theorum to calculate the speed. If speed is given and we need to find velocity, then the question will also be give the direction either in the form of bearings or through any other way. This is bc velocity is a vector quantity for which both magnitude and direction are needed.

In other words we will find the magnitude of the velocity vector.

If the initial position of the particle is given, its velocity & time is also given and we need to find the new position of the particle, then we apply the formula.

old position + vt = new position
old position = new position - vxt

V vector (magnitude of t) $=$ new position $-$ old position

→ new position $-$ old position $=$ distance travelled by the particle in vector form.

$$time = \frac{new\ position\ -\ old\ position}{V}$$

4) If two particle collides their position vectors at the time of collision is the same.

5) In order to find the time of collision or the point point of collision, we will equate i component with i component and j component w/ j component of both particle.