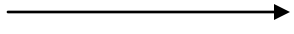
Vectors

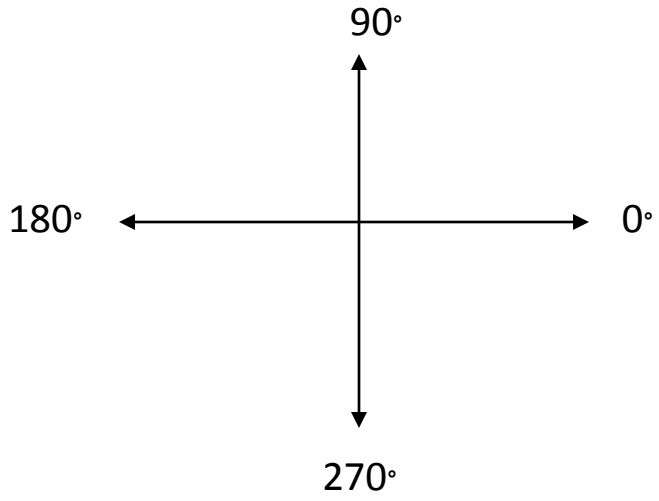
I. Vector addition (Two dimensions)

Scale: 1cm=1km

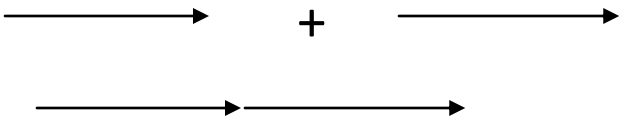
Vector 

Displacement, velocity, force

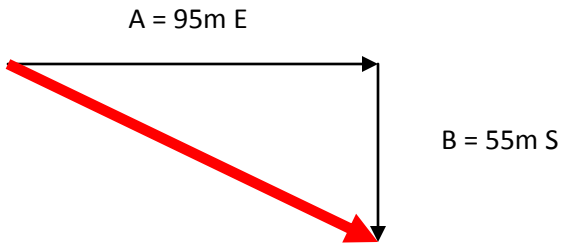
- length of arrow is magnitude.
- Direction of arrow is direction.



- The sum of any two vectors can be found graphically.
- Vectors are added by placing the tail of one vector at the head of the other vector.



- Neither the direction nor the length of either vector is changed.
- The resultant vector (R) is drawn by connection the tail of the first vector with the head of the second vector.
- Magnitude is found by measuring (R) its length.
- Direction is expressed as an angle measured clockwise from North (0°).



II. Independence of Vector Quantities.

- Vectors act independently!
- Motorboat heads due east at 8.0 m/s across a river that flows due South at 5.0 m/s. The boat will travel 8.0 m East in 1 second AND 5.0 m South in the same second.
- NEITHER VECTOR CHANGES THE OTHER!
- Each velocity is independent of the other and acts as if it were the only velocity.
- All vector quantities behave in this manner.

III. Vector Addition on Forces

- Force vectors are added the same way as velocity vectors.
- Forces that act on the same point at the same time are **concurrent** forces.