Vectors and Scalars...Quick Review

Vectors are described by a magnitude(number), unit and direction.

Vectors always have an arrow over the symbol.

Examples...

Scalars have a magnitude and unit, but no direction.

Scalars have no arrow over the symbol.

Examples...

Drawing Vectors

Directions for vectors are always given in square brackets.
Example : 10.0 m [E45°N]

Distance/Displacement

define as per p. 7

Vector addition: Vectors are added "tip-to-tail" and the net or resultant vector is drawn from the sta point to the tip of the last arrow drawn.

Example 1: North for 5.0 m and then south for 2.0 m.

Example 2: North for 5.0 m and then east for 2.0 m.

**Reiterate that all vectors must have magnitude unit and direction, how do we define direction here? Refresh pythagoras and trig.*

Speed/Velocity

define as per p. 7

For the examples in above, find the velocity and speed if it took 3.0 s.

Note that the direction of a velocity vector is always the same as the displacement vector that you used to obtain it.

Distance/Displacement

Distance, d - measure of total travel. scalar (m)

Displacement, $\vec{d}$ - measure of net travel from start to finish. vector (m)

Vectors are added "tip-to-tail" and the net or resultant vector is drawn from the start point to the tip of the last arrow drawn.

ex: You drive north for 50.0 km and then South for 30.0 km

a) What is your total distance, d

b) What is your total displacement, $\vec{d}$

Vectors are added "tip-to-tail" and the net or resultant vector is drawn from the start point to the tip of the last arrow drawn.

ex: You drive north for 50.0 km and then East for 30.0 km

a) What is your total distance, d

b) What is your total displacement, $\vec{d}$

Speed/Velocity

define as per p. 7

Speed, v: Distance divided by time. (m/s) May be average (total distance) or instantaneous (speed at a particular time)

Scalar

Velocity, $\vec{v}$: Displacement divided by time. (m/s) May be average (total displacement) or instantaneous (velocity at a particular time)

Vector

(Note that the direction of a velocity vector is always the same as the displacement vector that you used to obtain it.)

A car drives 120km in 1.5h the turns and drives another 150km in 2.0h.

Calculate:

a) distance

b) displacement

c) speed

d) velocity

Unit analysis

m/s into km/hr

years into seconds