1. Scalars and Vectors

Scalars – **have magnitude only**
Vectors – **have both magnitude (size) & direction**

Scalars	Vectors
distance	displacement
speed	velocity
-	acceleration
time	-
-	force
mass	weight
energy	-

2. Distance and Displacement

Distance is a scalar quantity, which is the total length of the path travelled in a journey.

$$speed = \frac{distance}{time}$$

$$v = \frac{d}{t}$$

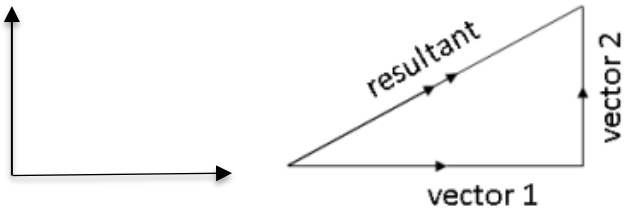
Displacement is a vector quantity which gives the separation between the start and finish points of the journey.

$$velocity = \frac{displacement}{time}$$

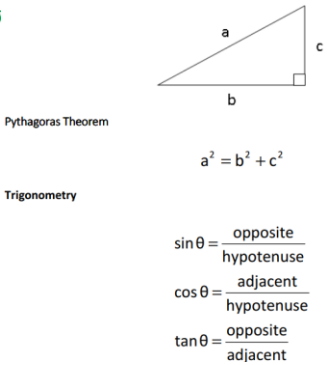
$$v = \frac{s}{t}$$

3. Vector Addition

Vectors should be added "nose to tail" when calculating resultant.
You can use **scale diagram** **or** **Pythagoras with trigonometry**



Helpful triangle rules

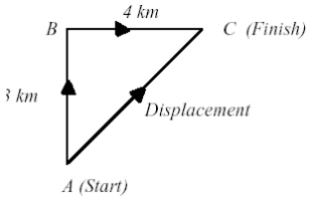


1. VECTORS & SCALARS

N5 Past Papers HW
2014 MC Q14,15
2015 Section 2 Q7a(i)(ii)
2016 Section 2 Q9

3. Example

A woman walks 3km due North, and then 4km due East. This takes her 2hours. Find her:
a) distance travelled.
b) displacement from her starting point.
c) average speed.
d) average velocity.



a) Distance travelled = (3 + 4) km = 7km
b) Displacement could be found by using a scale diagram or Pythagoras to get the magnitude and SOHCAHTOA to get the bearing. $a^2 = b^2 + c^2$ $a^2 = (3)^2 + (4)^2$ $a^2 = (9)+(16)$ $a^2 = 25$ $a = 5$km tan x = opp/adj tan x = 4/3 tan x = 1.33 $x = 53^0$
Displacement = 5km on a bearing of 053.
c) average speed = distance/time average speed = 7/2 average speed = 3.5kmh^{-1}
d) average velocity = displacement/time average velocity = 5/2 average velocity = 2.5kmh^{-1} on a bearing of 053