# Unit 2 – Vectors

A boat travels north for 1 km, turns and travels west for 1 km, and then heads south for 1 km.

What is the boat's distance traveled and displacement?

We have two types of quantities:

Scalar – a measurement that only has a magnitude and unit of measurement.

ex.

Vector – a measurement that has a magnitude, a DIRECTION, and a unit of measurement.

ex.

A vector can be shown with an arrow that indicates its direction and the length of the arrow indicates its relative magnitude.  (We may use a scale to indicate the actual value.)

When we add vectors we must account for the direction (unlike scalars).  To do this, we have methods of adding (or finding the resultant) of vectors:

1.  Graphically (using scale diagrams)

To find the resultant vector graphically, we place the vectors tip to tail and then the resultant is from the start of the first vector to the end of the last vector.

Solving Vectors Graphically in 2-D:

ex.
Find the displacement of an airplane that flies 5 km to the east and then 6 km to the north.

There are always two different ways to label the direction of a vector, both of which are correct.