Scalars and Vectors

Key words: vectors, scalars, distance, displacement, speed, velocity.

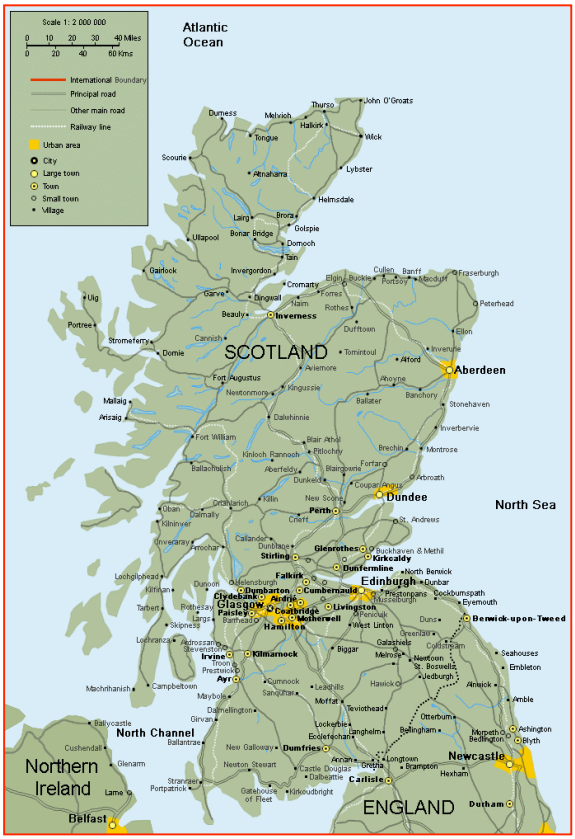
By the end of this lesson you will be able to:

- Describe what is meant by vector and scalar quantities
- State the difference between distance and displacement
- State the difference between speed and velocity
- State that force is a vector quantity
- Use a scale diagram to find the magnitude and direction of the resultant of two forces acting at right angles to each other.

Imagine a boat making a distress call to the coastguard.

The boat tells the coastguard he is
60 km from Aberdeen.

Is this enough information for the coastguard to find the boat?



The boat could be 60 km in any direction. To find the boat, the coastguard needs both _____and _____.

Scalar: a quantity which has only magnitude (size). It is defined by a number and a unit.

Vector: a quantity which has magnitude (size) and direction. It is defined by a number, unit and direction.

Scalar	Vector

Distance and Displacement

A pupil walks from her house to her school.

What distance has she walked? _____

50 m

Her brother walks from the house to school via a shop.

What distance has he walked? _____

50 m

30 m

40 m

How far from the original starting point is the girl? _____

How far from the original starting point is her brother? _____

Distance – how much ground an object has covered. Distance is a scalar quantity.

Displacement – how far out of place an object is compared with its starting point. Displacement is a vector quantity. This means we need both _____ and _____.