

Scalars and Vectors

Instructions: A **vector** needs a size *and* a direction. Use a ruler for the map, and give every answer a **unit**.

Scalar Quantities

DEFINITION

USE THESE WORDS **magnitude (size)** **only** **no direction**

LIST SIX EXAMPLES

Vector Quantities

DEFINITION

USE THESE WORDS **magnitude (size)** **and** **a direction**

LIST SIX EXAMPLES

Distance and Displacement

scale: 1 cm = 2 km

A walker follows the dashed route from **A** to **B**. Draw a straight line from A to B to show the **displacement**, then measure it with a ruler.

Displacement = _____

Direction = _____

DISTANCE ☐ scalar ☐ vector

DISPLACEMENT ☐ scalar ☐ vector

Speed and Velocity

geostationary orbit

A satellite goes round the Earth in a circle at a steady **3.1 km/s**. The gold arrows show its velocity at two points in the orbit.

one complete orbit every 24 hours
orbit radius = 42 000 km from the centre of the Earth

Velocity = _____

SPEED ☐ constant ☐ changing

VELOCITY ☐ constant ☐ changing

Why?

Results — Finish the Unit, Then Decide

if it can change direction, it is a vector

Result — write the unit	Can it change direction?	Is it a vector?
Force = 20 _____	☐ Y ☐ N	☐ Y ☐ N
Mass = 4.5 _____	☐ Y ☐ N	☐ Y ☐ N
Velocity = 12 _____	☐ Y ☐ N	☐ Y ☐ N
Distance = 250 _____	☐ Y ☐ N	☐ Y ☐ N
Acceleration = 3.2 _____	☐ Y ☐ N	☐ Y ☐ N

Result — write the unit	Can it change direction?	Is it a vector?
Momentum* = 36 _____	☐ Y ☐ N	☐ Y ☐ N
Time = 8.0 _____	☐ Y ☐ N	☐ Y ☐ N
Displacement = 15 _____	☐ Y ☐ N	☐ Y ☐ N
Energy = 500 _____	☐ Y ☐ N	☐ Y ☐ N
Moment* = 24 _____	☐ Y ☐ N	☐ Y ☐ N

* Physics only — not needed for Combined Science.