

SUBJECT: DISTANCE – TIME GRAPHS

KEY-WORDS: Graphs, axis, units

LINK-WORDS: time, speed = distance ÷ time

NOTES

These are a graphical representation (“picture-type” graph) of a journey. Time is always shown on the horizontal (bottom) axis, and distance travelled is always on the vertical (going up) axis. To plot the graph, you will need a journey broken down into different sections, giving the distance for each section and the times of departure and arrival.

Once drawn, the graph can be used to calculate speed, distance and / or time. From a VISUAL point of view, the graph can be used to COMPARE different sections.

The steeper the line, the faster the travel. A horizontal line indicates that the traveller has stopped (as time is passing, but no extra distance is covered).

A vertical (straight up) line within the graph is impossible – as distances would be travelled in no time at all (only Dr Who can do that)!

The Distance covered is given by y-axis, remembering to add the upwards and downward distances.

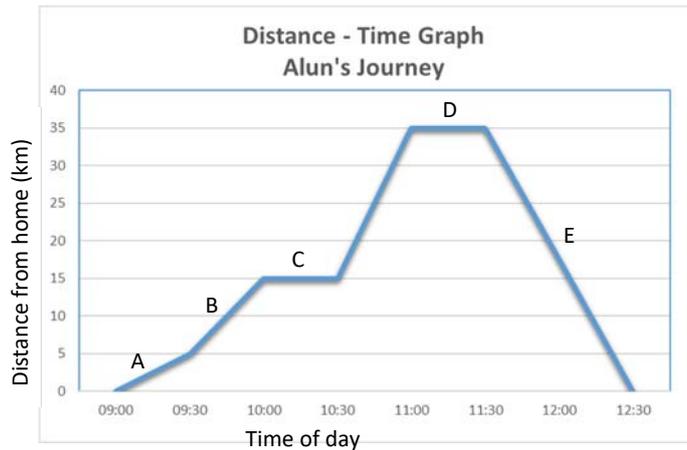
DOs

Make sure that your time axis has a constant gap for each unit of time.

Draw the connecting lines straight (each section is only an “average” – there could be variation in actual speed within a section.

Do remember that these are a simplified picture of a journey. They do not give directions travelled – this would be VELOCITY (speed in a given direction).

EXAMPLE



- A – Alun leaves home at 9AM and travels 5km in ½ an hour.
- B – He then picks up speed (steeper graph) and travels 10km by 10AM
- C – Alun stops for a break before travelling again – 20km in ½ an hour
- D – He has another break
- E – He travels home non-stop, 35km in one hour.

Total distance travelled is 70km.
 AVERAGE speed for whole distance is = distance / time
 = 70 / 3
 = 23.3km/hr (to 1dp)

DON'Ts

Don't confuse the time scale with a decimal scale – 09:00 to 09:15 is ¼ of an hour, whereas 0.25 is a decimal ¼.

RELEVANT SUBJECTS

PHYSICS, MECHANICS
 Comparing journeys

EXAMPLES and LINKS

http://www.bbc.co.uk/schools/gcsebitesize/science/add_aqa/forces/forcesmotionrev1.shtml