

Year 8 – Maths – Mastery Unit 7 – Real Life Graphs and Rates of Change

Price-wise Graphs

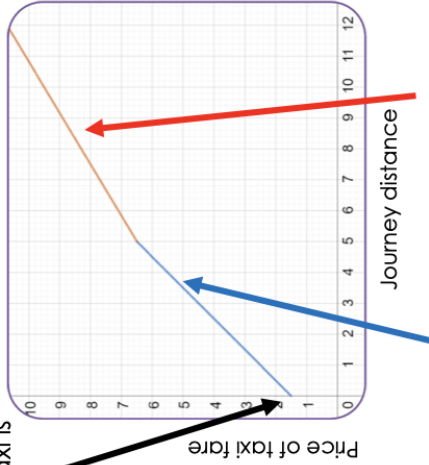
The graph below displays Tariq's Taxi's deal

Tariq's Taxi

New Deal

- £1.50 call out fee
- £1 per km for the first 5 km
- Only 80 pence for every km after that!

£1.50 call out fee means the minimum cost of the taxi is £1.50

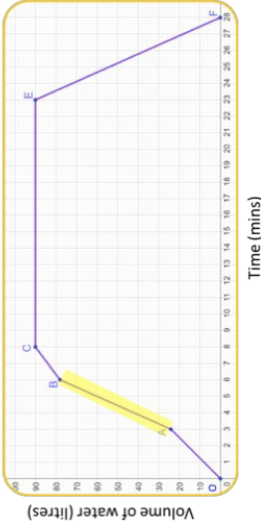


£1 per km for the first 5 km is shown in blue

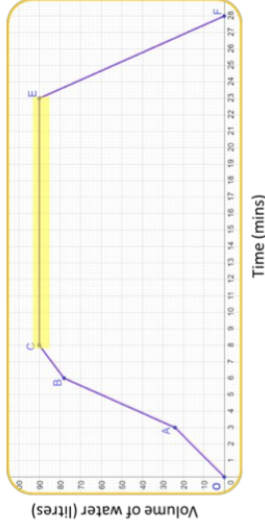
80p for every km after that means a flatter slope

Understanding graphs

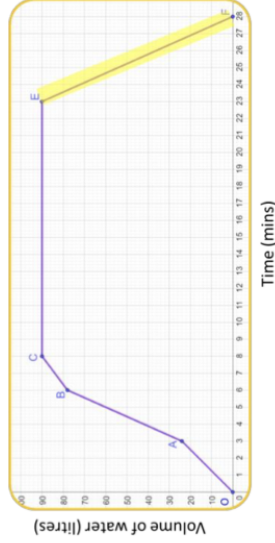
The graph shows how much water was in a bath over a period of time.



1) Highlighted section shows when the bath is being **filled the fastest**



2) Highlighted section shows the period of time when the bath is **not being filled or emptied**



3) Highlighted section shows the period of time when the bath is **being emptied**

Keyword/Skill	Definition/Tips
Linear	Relating to a line; in a straight direction.
Graph	A drawing or a diagram to record information.
Distance	The length between two points or objects.
Time	Continuum of past to present to future. Measured in seconds, minutes, hours etc.
Coordinate	Shown as pairs of letters and/or numbers to show position on graph (x, y).
Gradient	How steep a line is.
Speed	Is how fast something moves

Other Topics/Units this could appear in:

- Drawing and interpreting tables/charts
- Straight line graphs
- Graphs of trig functions
- Gradient & Area under graphs
- Mechanics

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Speed

Speed is a compound measurement combining **distance** and **time**

Example

A car travels **120 miles** in **2 hours and 30 minutes**. Calculate the average **speed** of the car in **mph**.

The units of **speed** are **miles per hour** so the **distance** must be in **miles** and the **time** must be in **hours**.

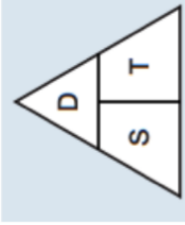
Distance = 120 miles
Time = 2.5 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed} = \frac{120}{2.5}$$

$$\text{Speed} = 48\text{mph}$$

The formula triangles can be used to help rearrange this equation to calculate distance or time.

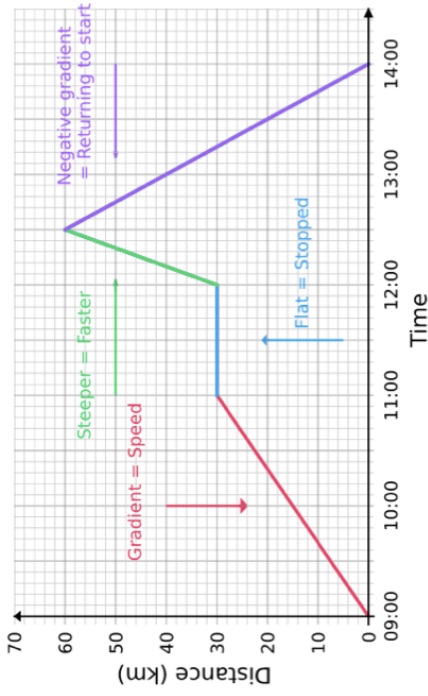


Speed

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

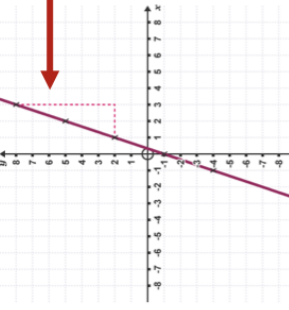
Distance – Time Graphs

A speed-time graph shows the speed and direction an object travels over a specific period of time.



Gradient of a straight line

The gradient of a straight line describes the slope or steepness of the line.



$$\text{Gradient} = \frac{6}{2} = 3$$

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