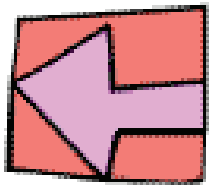
4. Travel Graphs and Story Graphs



Interpreting Travel Graphs and Story Graphs

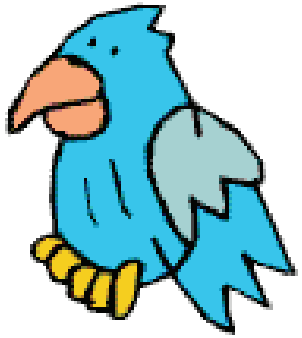
Often you will be presented with a "real life" graph and asked a few question based upon it.

Now, the temptation is to rush in and write down the first thing that you see...

But don't!

Just take a few moments, and ask yourself these questions before your pen touches the paper!

1. Look carefully at both **axis** to see what the variables are



2. Look at the **scale** carefully so you can accurately read the graph

3. Look at the **gradient** of the graph:
   - What does a horizontal line mean?
   - What does a positive/negative slope mean?

4. Always **read** the question extremely careful and **check** your answer!

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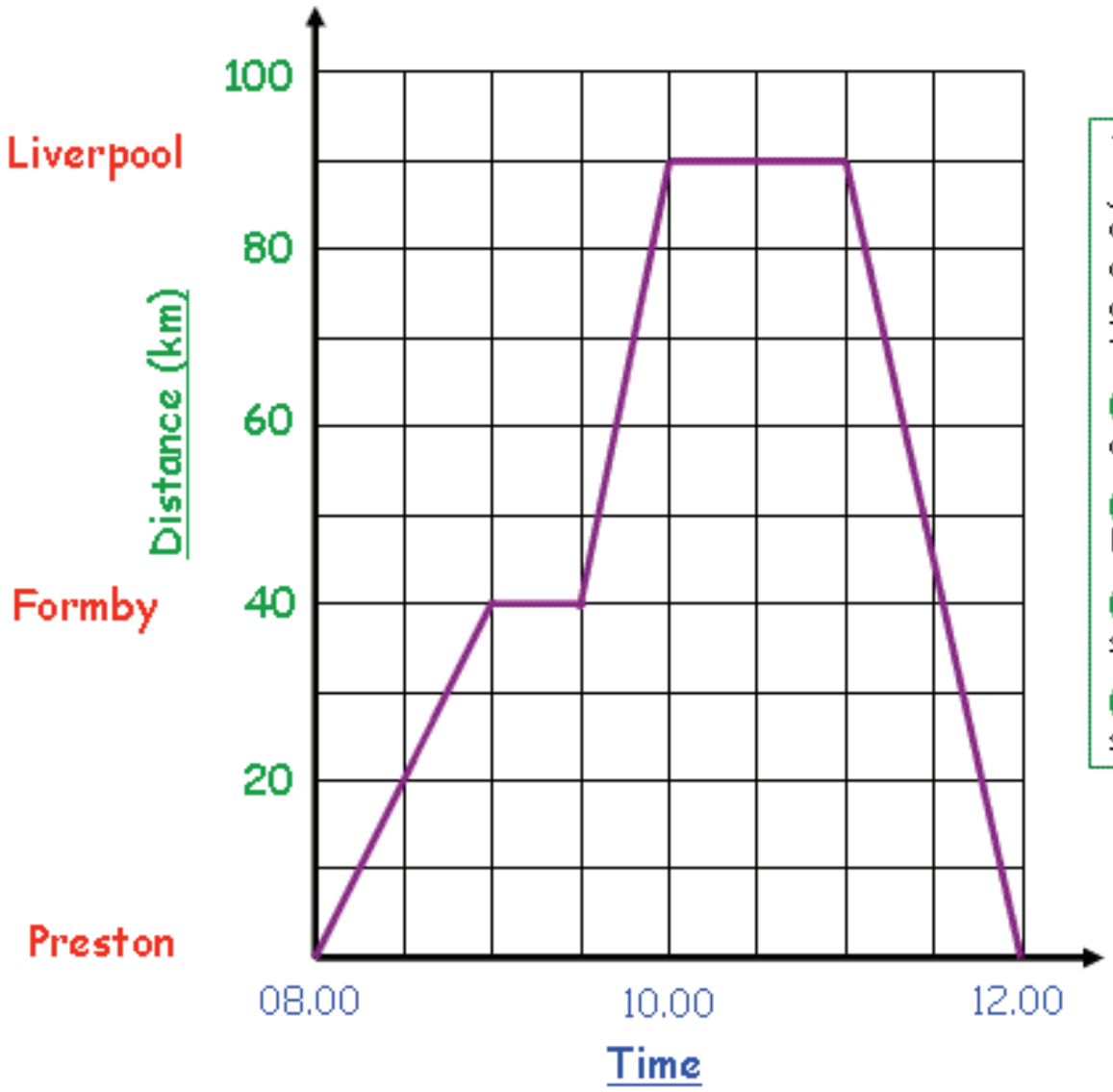
Example 1 – Travel Graph



The graph on the left shows a journey made by a family in a car between Preston, Formby and Liverpool. Look at the graph and then answer the following questions:

(a) What time did the family arrive in Liverpool?

(b) What is the distance from Formby to Liverpool?

(c) How long did the family spend not moving?

(d) What was the average speed on the journey home?

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Before we begin...

Okay, let's get to the bottom of what this graph is showing us by asking ourselves those key questions:

1. Look carefully at both **axis** to see what the variables are

Okay, so we have distance in kilometres going up the y axis, and time in hours going along the x axis

2. Look at the **scale** carefully so you can accurately read the graph

On the y axis every square represents 10km, and on the x axis every square is 30 minutes (quarter of an hour)

3. Look at the **gradient** of the graph:

- What does a horizontal line mean?

A horizontal line means that time is still passing, but the distance travelled isn't changing... so the family must have stopped moving!

- What does a positive/negative slope mean?

Positive slopes mean the family is travelling from Preston towards Liverpool, and a negative slope means they are on their way back home!

Note: If you wanted to be really clever (and why not!) you could say that the family are travelling faster between Formby and Liverpool than between Preston and Formby.
Why?... well, notice how the line is steeper, meaning they are travelling more distance in less time, so they must be going quicker!

4. Okay, now we have a really good understanding of the graph, so we can answer all the questions... and hopefully it will be dead easy!

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Answering the Questions:

(a) What time did the family arrive in Liverpool?

The line first hits Liverpool at 10.00

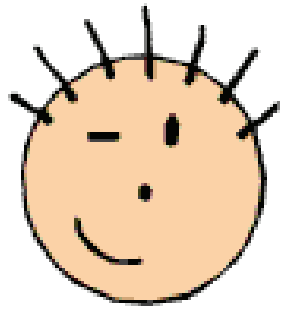
(b) What is the distance from Formby to Liverpool?

Formby is 40km from Preston, Liverpool is 90km from Preston, so the distance from Formby to Liverpool must be 50km!

(c) How long did the family spend not moving?

As we discussed, when the family is not moving we see a horizontal line. Well, that happens twice, firstly at Formby for 30 minutes, and then at Liverpool for 60 minutes, giving us a grand total of 90 minutes... or one and a half hours!

(d) What was the average speed on the journey home?



Okay, this is the tricky one. To answer it you need to know that:

Average Speed = Distance Travelled ÷ Time Taken

Which means on the journey home we have:

Average Speed = 90 km ÷ 1 hour

= 90 km/hr

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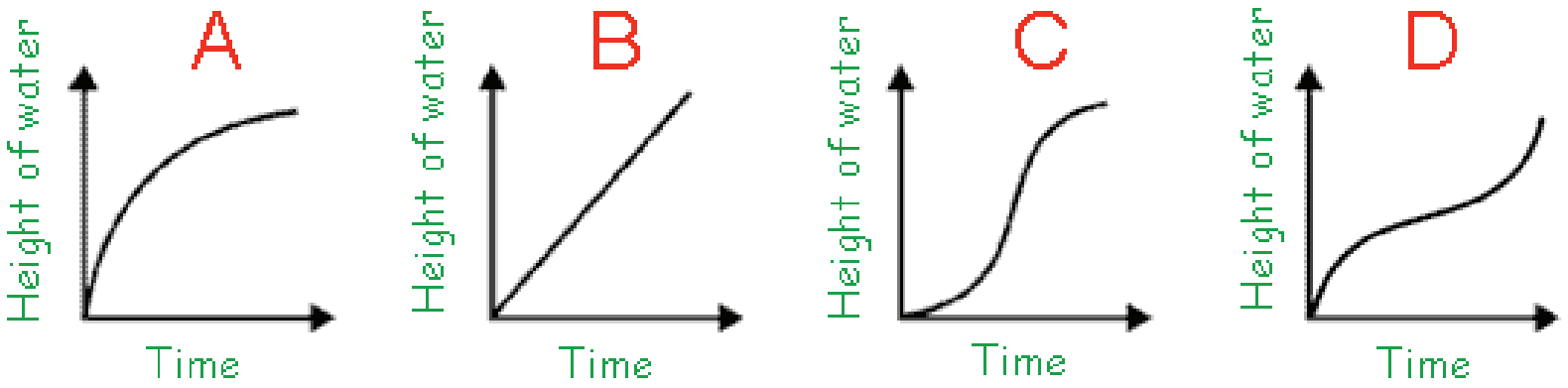
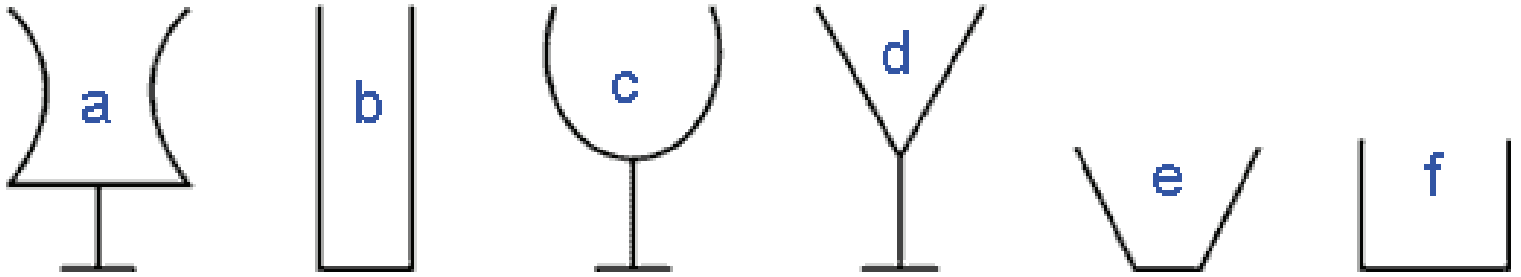
Example 2 – Story Graph

Water is poured into various glasses at a constant rate. The graphs below are sketches showing how the height of water in the glasses changes over time. Match up the shape of the glasses with their graphs

Note: Each graph can represent more than one glass.





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Before we begin...

Okay, this is a bit trickier, so once more let's get to the bottom of what these graphs are showing us by asking ourselves those key questions:

1. Look carefully at both **axis** to see what the variables are
Okay, so we have height of water going up the y axis, and time going along the x axis

2. Look at the **scale** carefully so you can accurately read the graph
There is no scale, so this doesn't matter
Note: This is also the reason why more than one glass can match to each graph!

3. Look at the **gradient** of the graph:
Okay, I am going to change the questions slightly here as this is the key to this problem:

What does a straight line mean?
The height of the water is changing by the same amount as time passes... so the sides of the glass must be straight!

What does a curved line mean?
Well, it depends on the shape of the curve, but generally a curved line means that the height of the water is not changing by the same amount, so the sides of the glass must also be curved

4. Okay, like I say, this question is a lot trickier than the first, so have a go at it and then have a look at my answers.

Try to picture that water dropping constantly into those glasses and what the height of the water will be doing!

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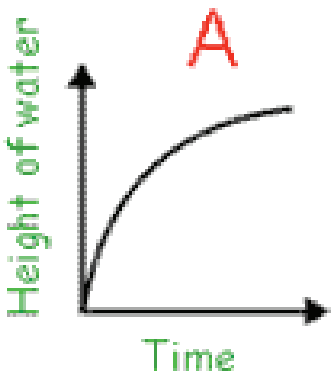
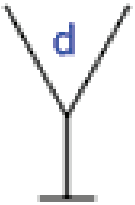
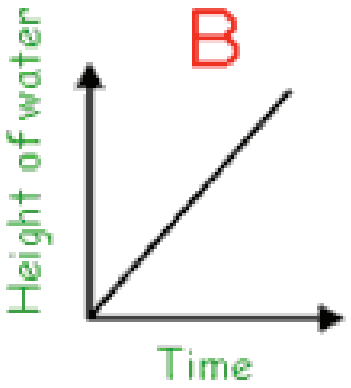
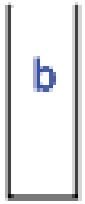
Answering the Question:









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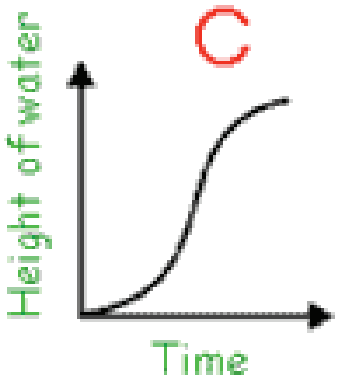

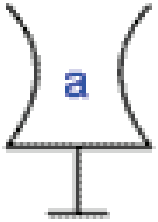

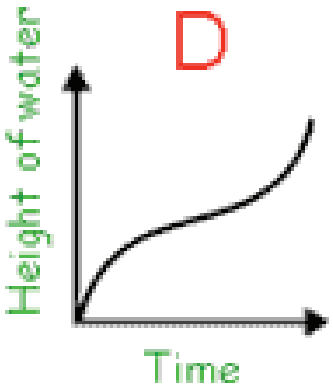

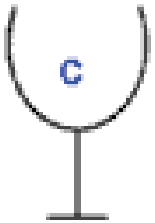

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