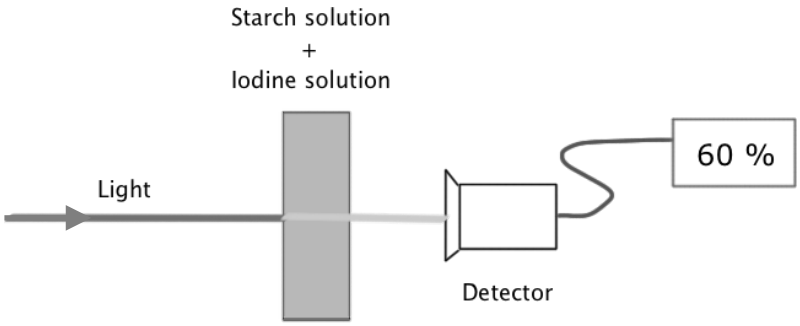
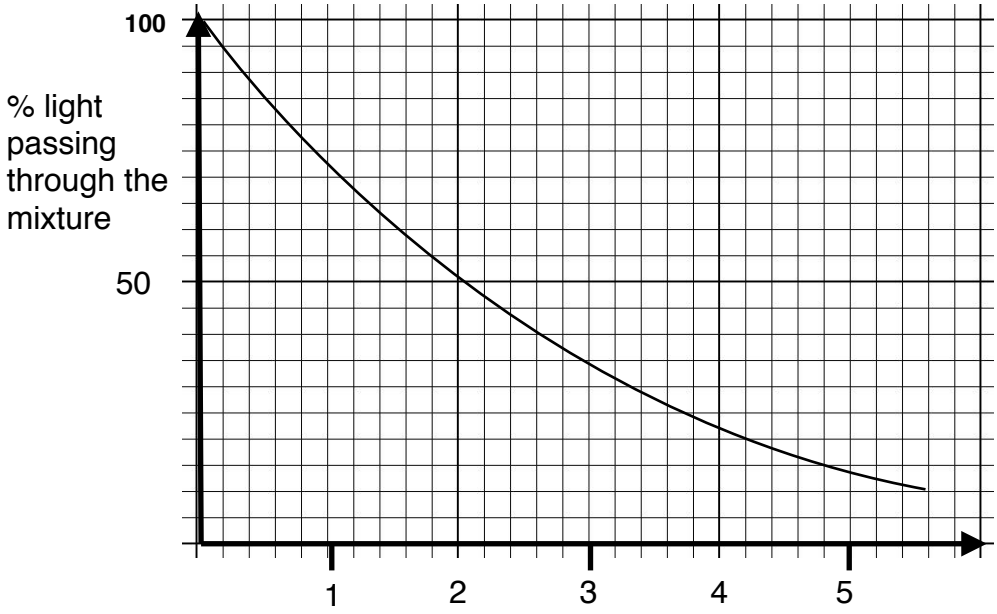
1 A company that makes slimming foods is experimenting with carbohydrase enzymes made by different microbes.

They use iodine solution which is pale brown. When iodine reacts with starch, it produces a dark blue mixture.

Known concentrations of starch solution and iodine solution are placed into a colorimeter which measures the percentage of light passing through the mixture, as shown in the diagram below.





(a) Explain why more light passes through when the starch solution is dilute.

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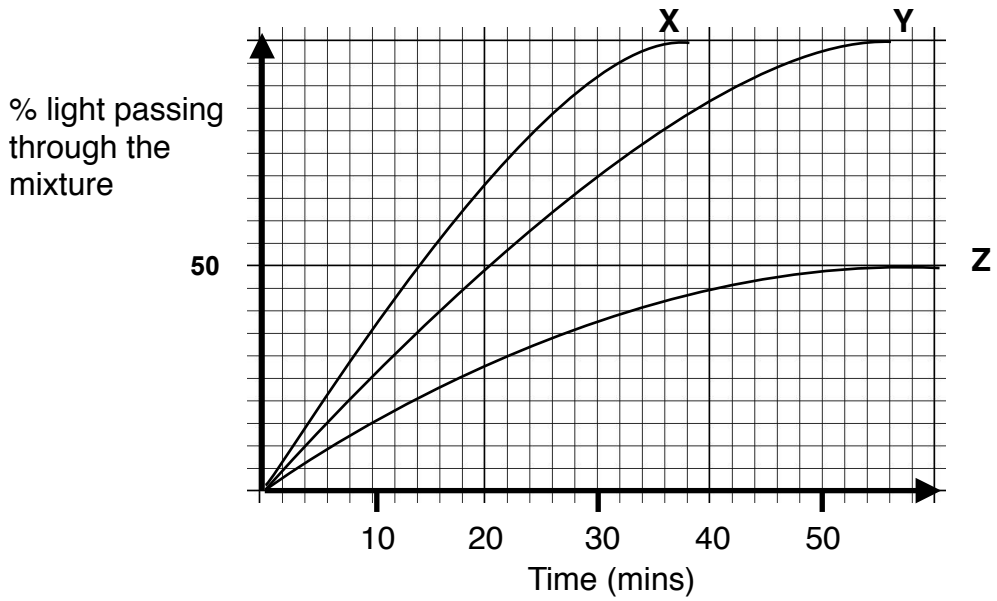
(1 mark)

The investigators from the company add carbohydrase from each of three different microbes, **X**, **Y** and **Z**, to starch in flasks at 35 °C.

Every 2 minutes some of the mixture is added to iodine solution and placed in the colorimeter.

The graph below shows the results.



1 (b) Use **both** graphs to answer the following question.

How long does it take for the most effective carbohydrase enzyme to reach a 2% concentration of starch.

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(2 marks)

1 (c) Carbohydrase enzymes break down starch to glucose. Glucose can be converted to fructose in the final stages of making slimming foods.
Why is it better to use fructose rather than glucose in slimming foods?

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(2 marks)