

AQA – Kinetics – AS Chemistry P2

1. No.6

0 6

A student investigates the effect of changing the temperature on the rate of hydrolysis of 1-iodobutane.

The student follows this method:

- Add 5 cm³ of ethanol and 4 drops of 1-iodobutane to a test tube.
- Mark this test tube with a cross (below the level of the liquid).
- Add 5 cm³ of 0.05 mol dm⁻³ silver nitrate solution to a separate test tube.
- Place a stopper in both test tubes.
- Place both test tubes in a beaker of water at a known temperature (between 5 and 60 °C).
- After 5 minutes, pour the silver nitrate solution into the test tube containing 1-iodobutane and start a timer.
- Look through the transparent reaction mixture in the test tube towards the cross.
- Stop the timer when the cross is no longer visible due to the yellow precipitate formed.

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. 1

Identify the yellow precipitate formed in the reaction.

[1 mark]

The student repeats the experiment at different temperatures.

Table 2 shows the student's results.

Table 2

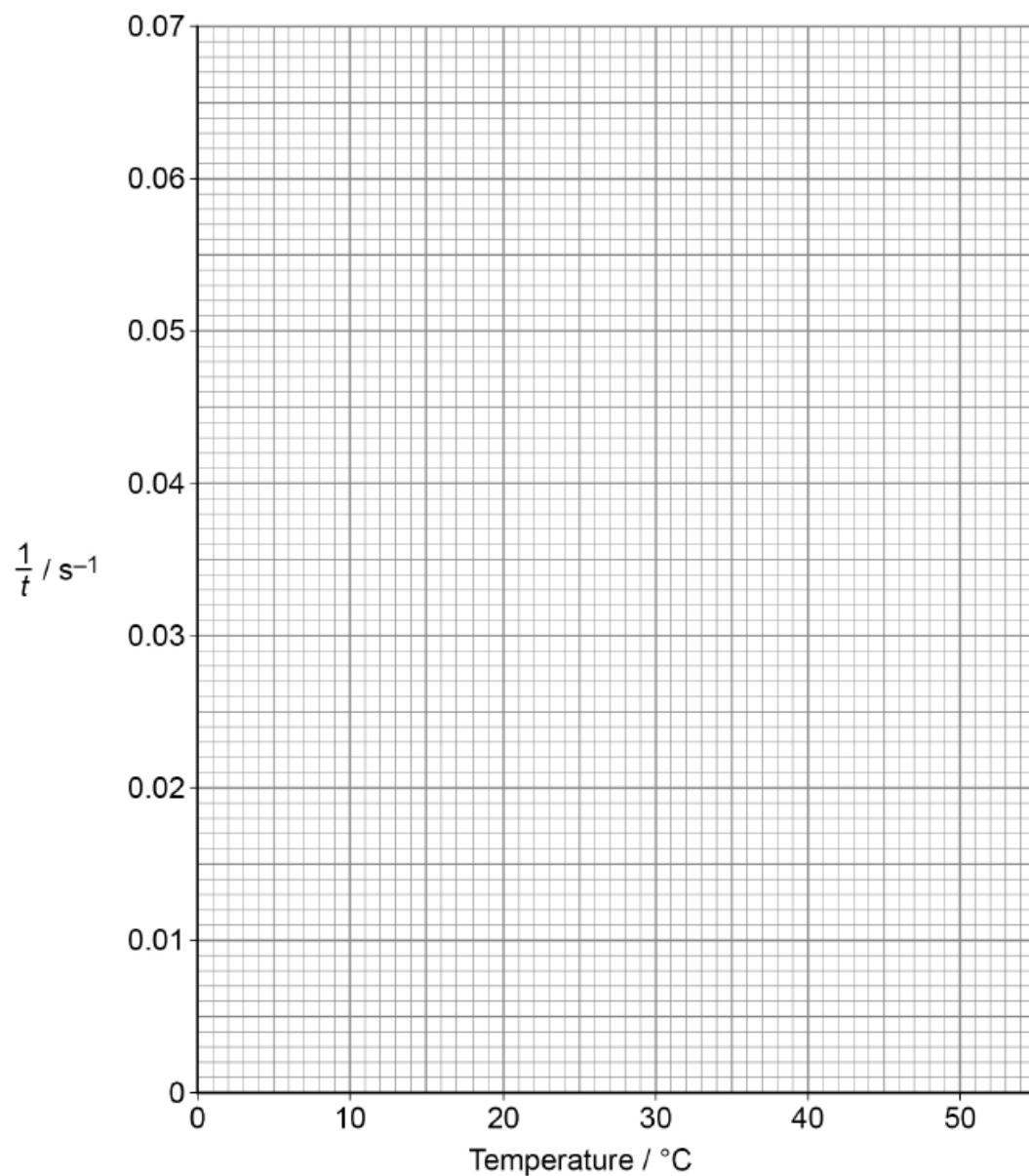
Temperature / °C	Time t / s	$\frac{1}{t}$ / s ⁻¹
6	125	0.0080
15	83	0.0120
28	50	0.0200
34	38	0.0263
42	26	0.0385

06.2

Plot the values of $\frac{1}{t}$ against temperature on the grid.

Draw a line of best fit.

Use your graph to predict the time, in s, when the cross is no longer visible at 50 °C
[3 marks]

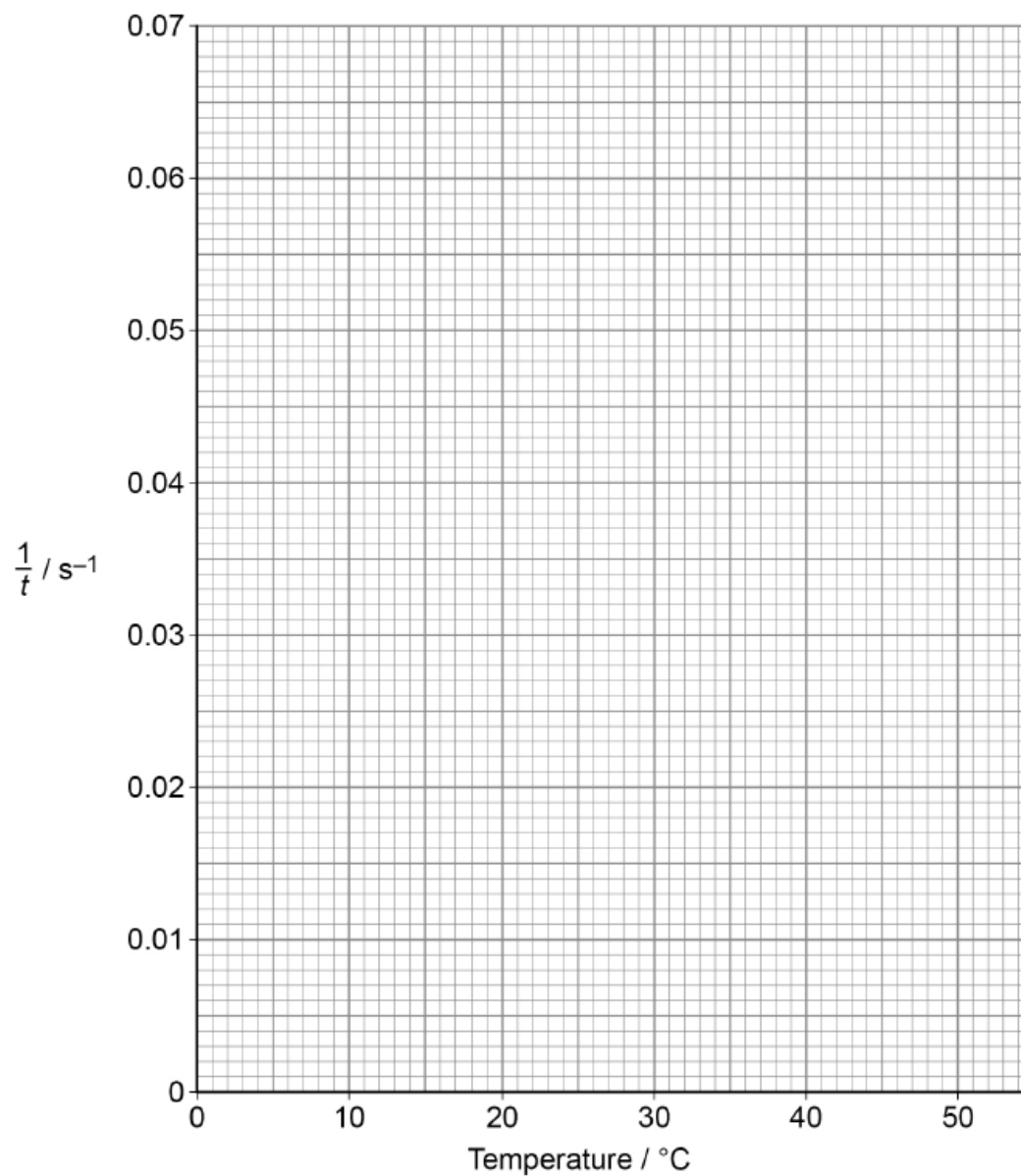


06.2

Plot the values of $\frac{1}{t}$ against temperature on the grid.

Draw a line of best fit.

Use your graph to predict the time, in s, when the cross is no longer visible at 50 °C
[3 marks]



Time _____ s

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The student repeats the investigation using 1-bromobutane instead of 1-iodobutane.

State and explain how the rate of reaction for 1-bromobutane compares with the rate for 1-iodobutane.

Predict how the graph will differ for 1-bromobutane compared to 1-iodobutane.

[3 marks]

How rate of reaction for 1-bromobutane will compare _____

Explanation _____

How graph for 1-bromobutane will differ _____
