



Supervisor only	
Skill A/10	Skill B/15

C1b

**Internal Assessment Task:**  
GCSE Science  
GCSE Chemistry

**Task Code & Title:** How does the rate of reaction between sodium thiosulphate solution and hydrochloric acid depend on the concentration of the sodium thiosulphate solution?

**Candidate Name** .....

**Centre Name** ..... **Centre Number** .....

**Declaration by candidate**

The attached work is my own unaided work, with the exception of experimental work carried out as part of a group and any assistance given to me by the supervisor. I carried out all the work in class under the supervision of a teacher.

*Signature:* ..... *Date:* .....

**Declaration by teacher or lecturer**

I confirm that the candidate's work was conducted under the conditions laid out by the specification. I have authenticated the candidate's work and am satisfied that to the best of my knowledge the work produced is solely that of the candidate.

*Signature:* ..... *Date:* .....

**Notes for Supervisors:**

1. Internal Assessment Tasks for the GCSE sciences must be carried out entirely in the laboratory / classroom [or field, in the case of fieldwork]. It must not be taken away by the candidate. If it is carried out over two lessons, it must be collected at the end of the first lesson and kept under secure conditions until being given out in the second lesson. At the end of the task, it should be collected in for marking and stored under secure conditions. It must not be subject to subsequent amendment.
2. With the exception of the group aspect of the task, marks should only be awarded for work which is the candidate's own. Supervisors are free to give candidates assistance to enable them to make progress, but such assistance should not attract credit. The extent of any assistance should be clearly noted e.g. by annotation or by additional information attached to the worksheet.

Approved for 2007 – 2008

## Assessed Practical - How does the rate of reaction between sodium thiosulphate solution and hydrochloric acid depend on the concentration of the sodium thiosulphate solution?

### Information:

Sodium thiosulphate solution (thio) reacts with hydrochloric acid to form a precipitate of solid sulphur. This can be used to measure the rate of the reaction.

### Apparatus

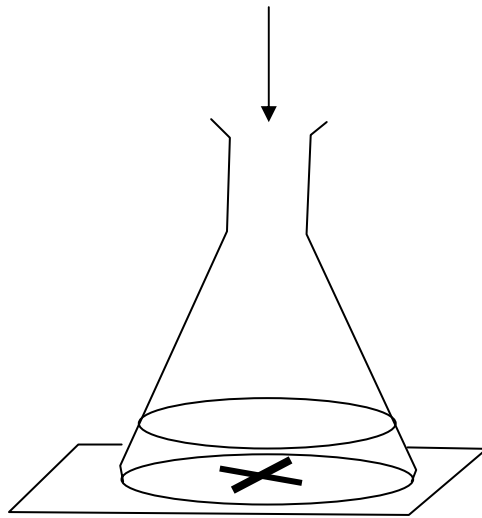
1. 10 cm<sup>3</sup> measuring cylinder  
50 or 100 cm<sup>3</sup> measuring cylinder  
250 cm<sup>3</sup> conical flask  
stopclock or stopwatch  
square of white paper

### Instructions

Read the instructions and carry out the risk assessment which follows before starting your practical work.

2. Carry out the experiment as follows:
  - (a) Collect the apparatus.
  - (b) Draw a cross on the square of white paper.
  - (c) Measure 50 cm<sup>3</sup> of the thio solution into the conical flask.
  - (d) Place 5 cm<sup>3</sup> of hydrochloric acid into the small measuring cylinder.
  - (e) Pour the acid into the conical flask and swirl the flask to thoroughly mix the reactants - at the **same time**, start the stopwatch and place the flask on the cross.

- (f) Look down at the cross from above (through the mixture).



- (g) Stop the stopwatch as soon as the cross disappears.
- (h) Record the time taken to the nearest second.
- (i) Repeat (a) - (h) with different concentrations of this made by diluting the original solution with water.

3. **Risk Assessment**

Write down one safety risk and what you could do to minimise it.

(i) Risk

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(ii) How the risk can be minimised

[2]

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4. **NOW CARRY OUT YOUR EXPERIMENT**

Your teacher will assess how well you carry out the experiment.

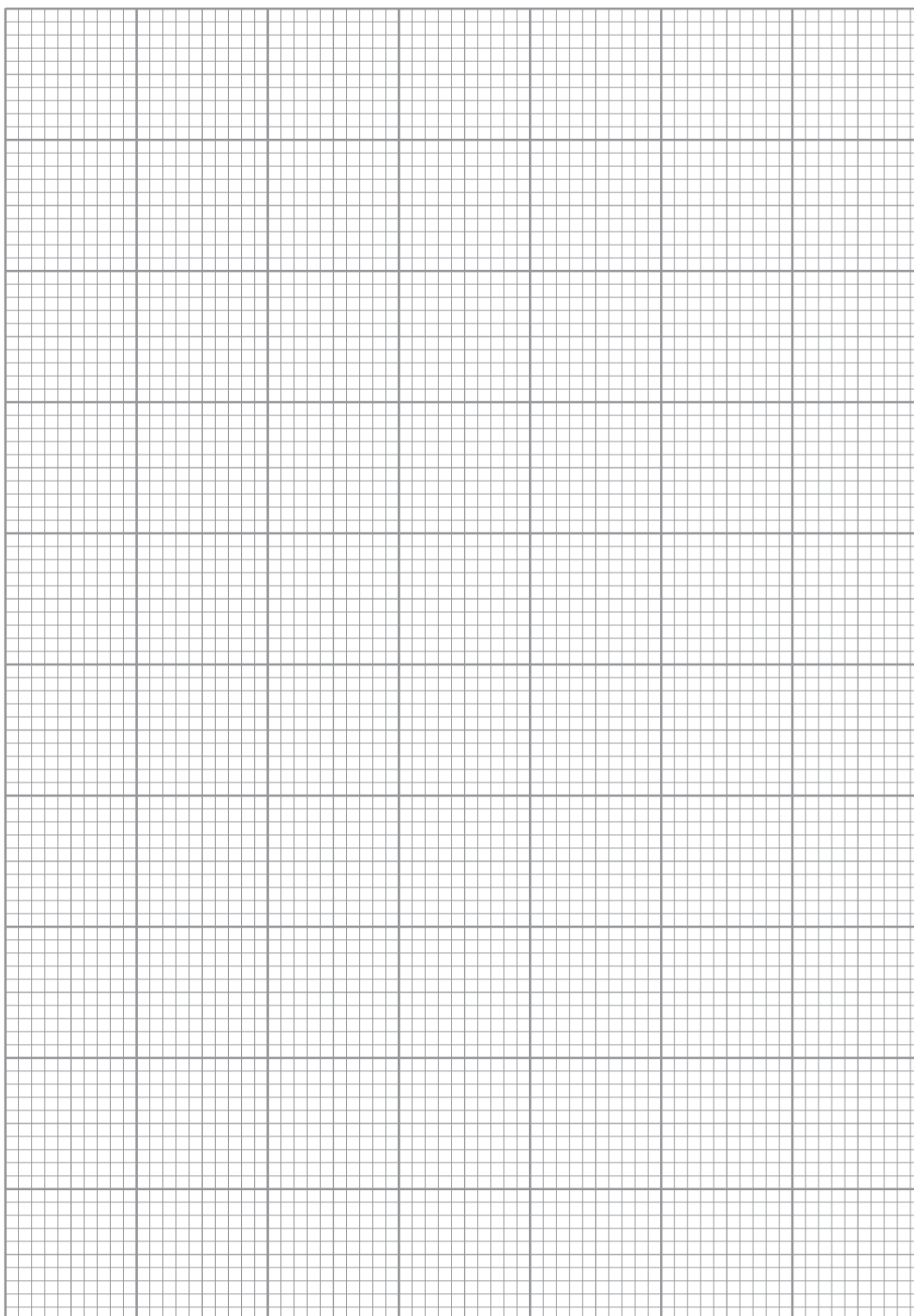
[3]

Make a rough record of your measurements in the space below as you make them.



6. Draw a graph of your results on the grid below.

[6]



7. What does your graph tell you about how the rate of reaction changes with the concentration of thio? [2]

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8. Why does it make sense to record the time to the nearest second rather than tenths or hundredths? [1]

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9. What could you do to make your results more reliable? [2]

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10. (a) How would you change the experiment to find out how the rate of reaction is affected by changes in temperature? [3]

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(b) Draw a sketch graph of the pattern of results you would expect to get from the experiment in part (a). Label the axes of your sketch graph. [1]