

# Effect of Changing Temperature on Rate of Reaction Worksheet

Combined Science - Chemistry - Key Stage 4

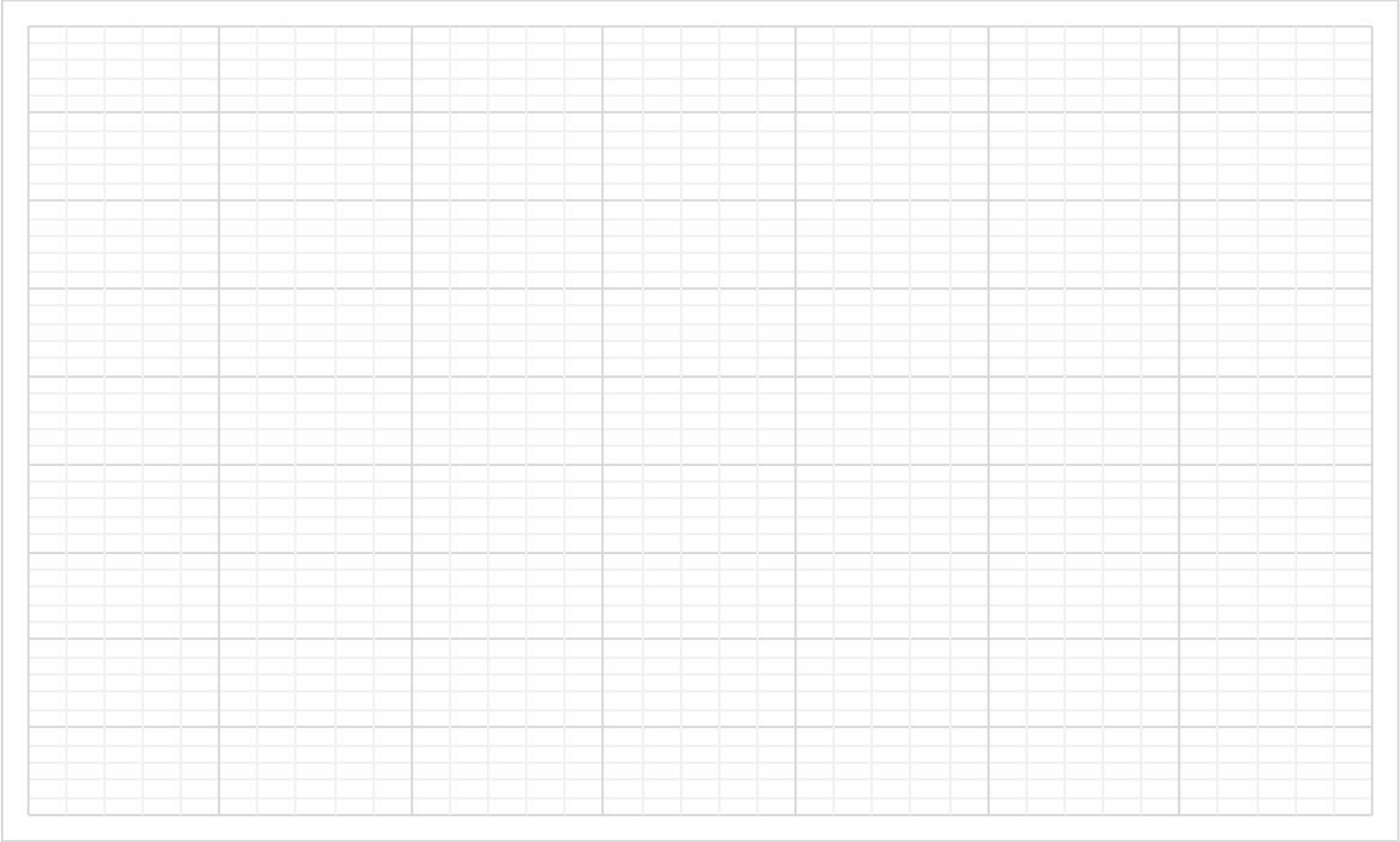
The Rate and Extent of Chemical Change

Dr Deng



# Graph paper





# Exam style questions



## Exam style Question 1 (information)

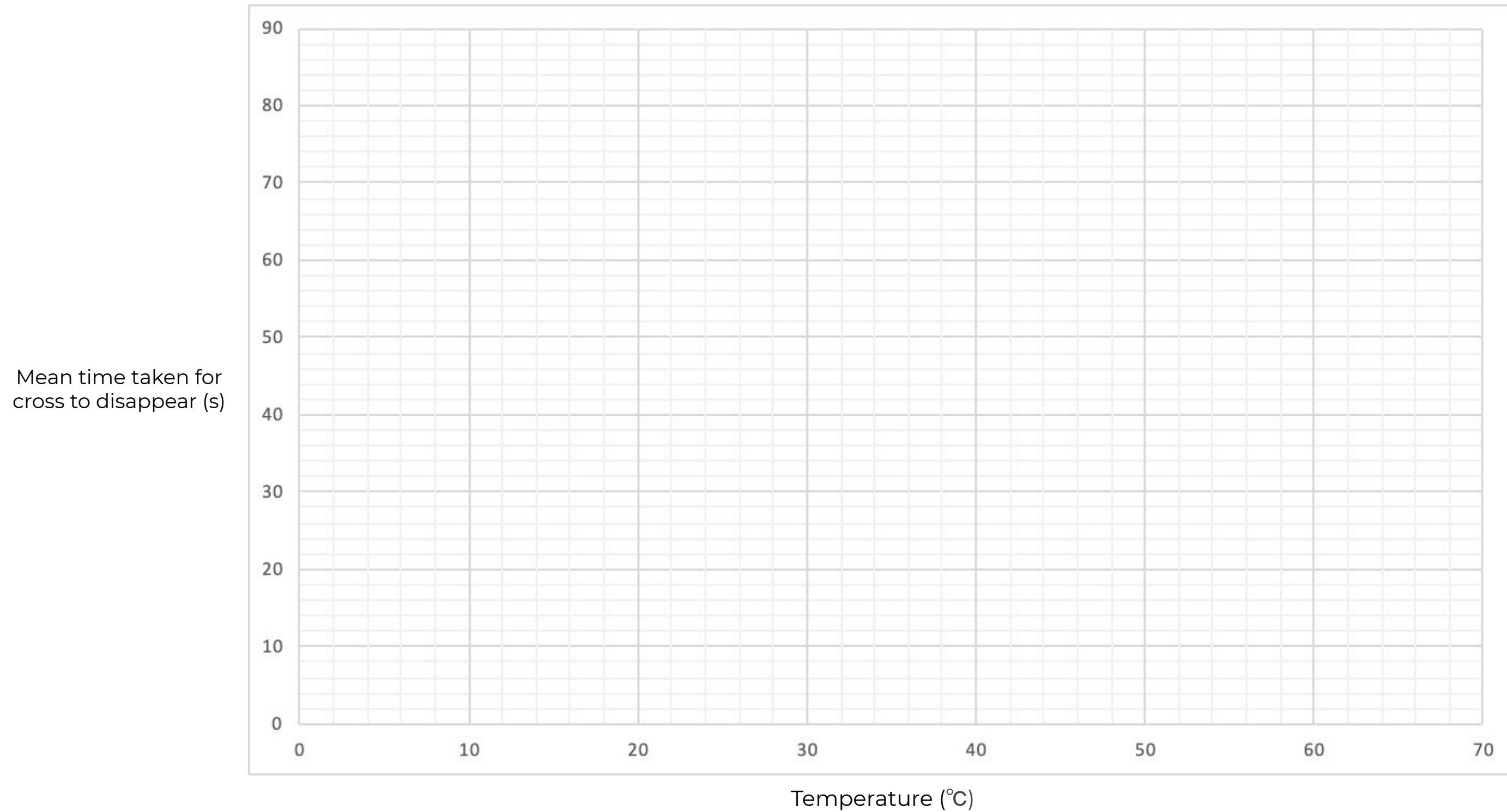
The table shows the results from investigating the effect of changing temperature of sodium thiosulphate with hydrochloric acid.

Temperature (°C)	Mean time taken for cross to disappear (s)
20	85
30	56
40	29
50	13
60	4



# Exam style Question 1

Task: Plot a graph using data from table of results



## Exam style Question 2

From the graph plotted in the previous question, describe the trend of the graph. Use figures from the graph.

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## Exam style Question 3

For the investigation of the effect of changing temperature of sodium thiosulphate with hydrochloric acid, give two control variables.

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## Exam style Question 4

Using collision theory, explain how increasing the temperature of sodium thiosulphate for the reaction with hydrochloric acid increases the rate of reaction.

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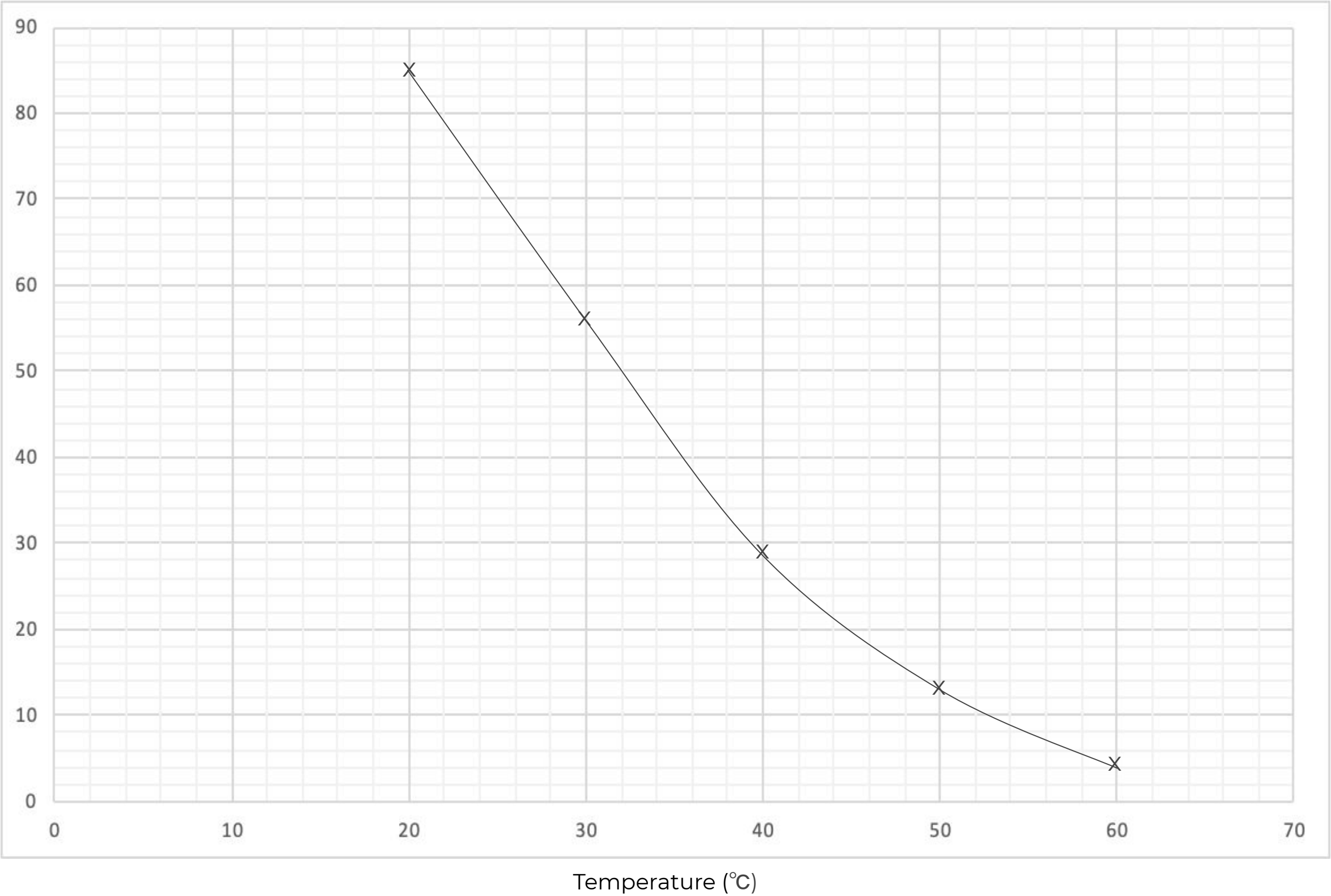
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# Exam style Question 1 answer

Mean time taken for  
cross to disappear (s)



## Exam style Question 2 answer

From the graph plotted in the previous question, describe the trend of the graph. Use figures from the graph.

- As temperature increases, mean time taken for cross to disappear decreases
- Faster rate of reaction
- Comparison of two values from graph (e.g at 20°C, mean time taken for cross to disappear is 85 second. At 60°C, mean time taken for cross to disappear is only 4 seconds)



## Exam style Question 3 answer

For the investigation of the effect of changing temperature of sodium thiosulphate with hydrochloric acid, give two control variables.

*Any two of the following:*

- Volume of sodium thiosulphate
- Volume of hydrochloric acid
- Concentration of sodium thiosulphate
- Concentration of hydrochloric acid



## Exam style Question 4 answer

Using collision theory, explain how increasing the temperature of sodium thiosulphate for the reaction with hydrochloric acid increases the rate of reaction.

- Increasing temperature, reacting particles gain more energy
- Reacting particles move more quickly
- Particles collide more frequently with more energy

