N5: Rates of Reaction

In all chemical reactions ...

The signs of a chemical reaction taking place are:

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To change the speed of reaction the following can be changed:

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For a reaction to be successful the reactants must _____ _____ _____ _____. To increase the rate of reaction the _____ or _____ of _____ must be increased.

Increasing concentration will _____ the number of _____ in a given volume. This will _____ the frequency of collisions, and therefore increase the rate of reaction.

Increasing surface area by reducing _____ _____ will _____ the frequency of collision, and therefore increase the rate of reaction.

Increasing temperature will _____ the _____ and _____ of collisions. This will increase the rate of reaction.

Adding a catalyst will provide a lower _____ route for reaction, this means the _____ required for _____ is lowered and therefore reaction rate will increase. Catalysts are chemicals that ....

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True or false?

A) Food in a fridge spoils faster than in the cupboard
B) Saw dust burns faster than logs
C) Dilute bleach will work slower than concentrated bleach

?

Put the reactions in order slowest to fastest

A) 20ml of 2M hydrochloric acid reacting with 3g of chalk lumps at 20^{o}C
B) 20ml of 2M hydrochloric acid reacting with 3g of chalk powder at 50^{o}C
C) 20ml of 1M hydrochloric acid reacting with 3g of chalk lumps at 20^{o}C
D) 20ml of 2M hydrochloric acid reacting with 3g of chalk lumps at 50^{o}C

To follow the progress of a reaction the following can be measured:

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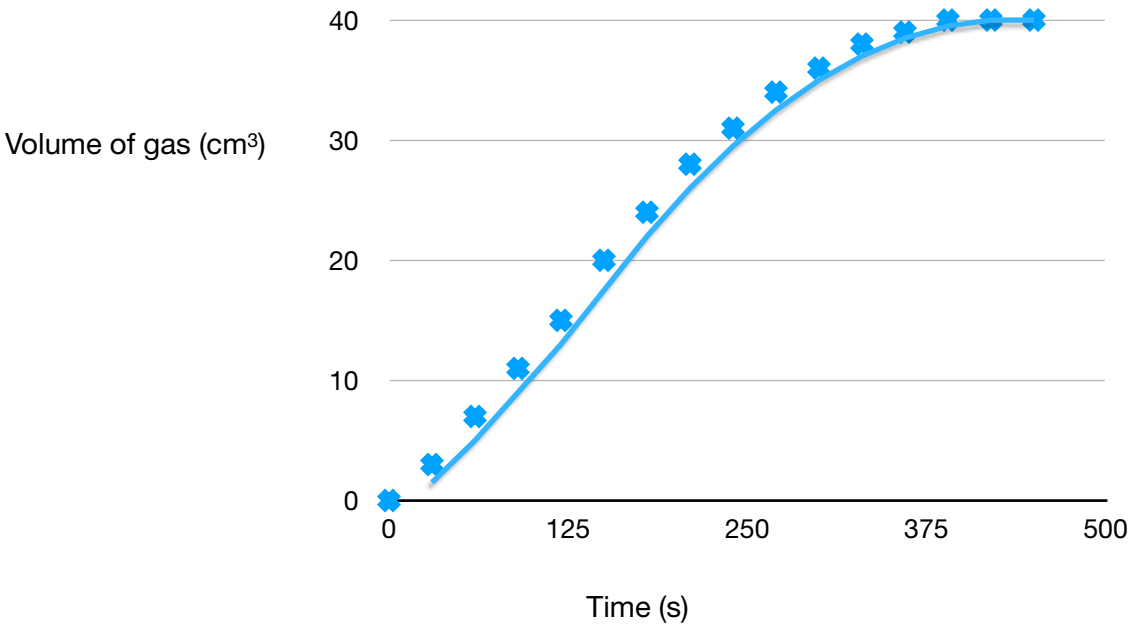
Change in mass

Measuring volume of gas

Using data from experiments, line graphs can be drawn. These can then be used to determine when the end-point of reaction was, quantity of product obtained, quantity of reactant used, or the effect of changing conditions.



This reaction represents the reaction of 2g of calcium carbonate powder reacting with excess 1M hydrochloric acid at room temperature.

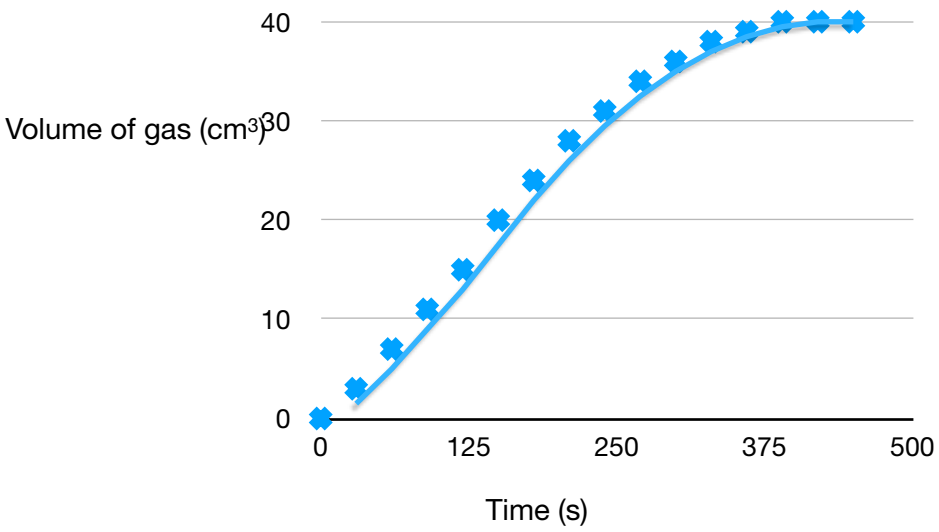
Lines can be added to show different conditions e.g.:

A) increased temperature

B) 2g of calcium carbonate lumps

C) 1g of calcium carbonate powder

D) 2M hydrochloric acid



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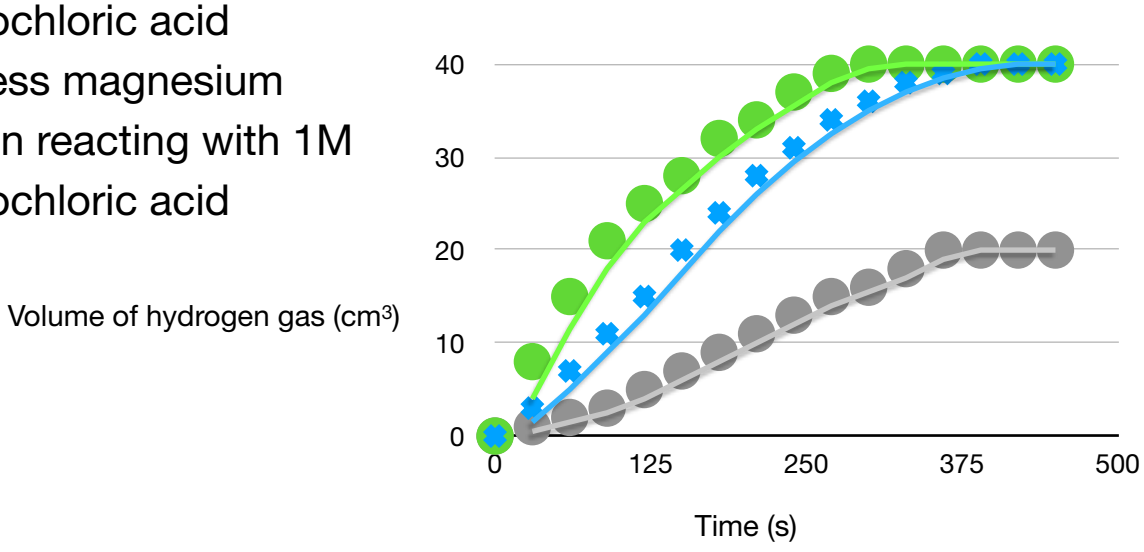
Which line represents:

A) Excess magnesium powder reacting with 2M hydrochloric acid

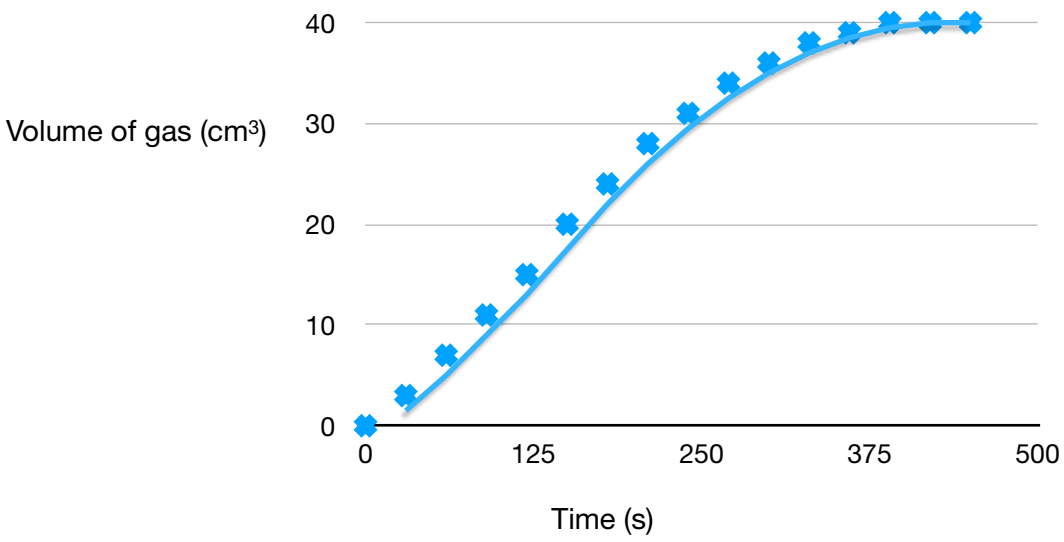
B) Excess magnesium ribbon reacting with 2M hydrochloric acid

C) Excess magnesium ribbon reacting with 1M hydrochloric acid



The average rate of a chemical reaction can be calculated using this equation:

The units of average rate are quantity/time e.g



Data from the graph can be used to calculate average rate:

A) Between 0 and 125 s

B) Between 250 and 400 s

Average rate can also be calculated using data from a table of results.

Time (s)	Volume of gas (cm^3)
0	0
30	3
60	7
90	11
120	15
150	20
180	24
210	28
240	31
270	34
300	36
330	38
360	39
390	40
420	40
450	40

A)Between 0 and 150 s

B) Between 180 and 300 s

?

Use the table above to calculate the average rate between:

A) 120 and 210 s

B) 360 and 450 s