#### **Lesson 14 - Investigation - Exo vs. Endo**

Chemistry - Key Stage 3

Energetics

Miss Charlton



# Task

# Write a method for the exothermic practical where we react sodium hydroxide and hydrochloric acid together.

- A good method should contain:
- Named equipment
- Volumes/masses of all chemicals
- Step by step instructions
- What will be changed and measured
- What will be kept the same



## Which table titles would be best? Why?

Α			
Time (minutes)	Amount of gas (cm³)		

С			
Volume of gas (cm³)	Time (s)		

В				
Time, every 20 seconds up to 2 minutes	Volume of gas produced by the reaction			
D				
Time (s)	Volume of gas (cm³)			



# Task

# Design a table for the experiment sodium hydroxide and hydrochloric acid. We will repeat the practical 3 times.

- Independent variable in left column.
- Full headings and units.
- Unless told otherwise, included repeating columns and mean column.



# **Answers**



#### Method

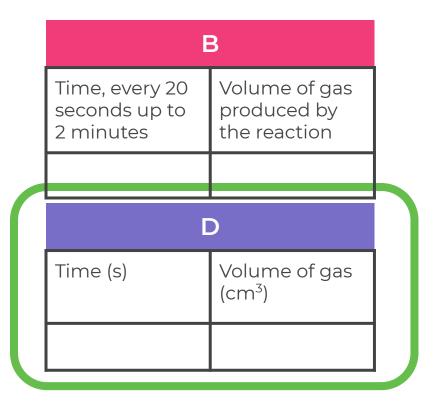
- 1. Fill the <u>polystyrene cup</u> with **20cm**<sup>3</sup> of hydrochloric acid, measured out with a <u>measuring cylinder</u>.
- **2.** Take the start temperature of the acid using a <u>thermometer</u> leaving it for at least 20 seconds. Record the start temperature.
- **3.** Add **20cm**<sup>3</sup> of sodium hydroxide to the cup, stir twice and start the <u>stop clock</u>.
- **4.** Take the temperature every 20 seconds up to 2 minutes. Record your results in a table.
- 5. We will be measuring the change in temperature at 20 second intervals up to 2 minutes. We must keep the polystyrene cup, the number of stirs and the volume of liquids used the same.



## Which table titles would be best? Why?

Α				
Time (minutes)	Amount of gas (cm³)			

С			
Volume of gas (cm³)	Time (s)		





### **Tables**

	Temperature change in (°c)			
Time (s)	1	2	3	Mean
20				
40				
60				
80				
100				
120				

