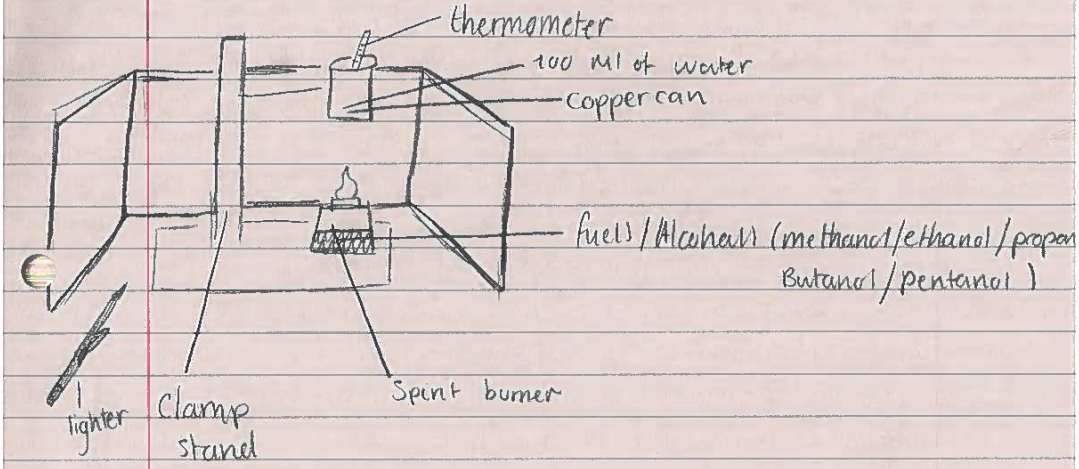
Candidate 2 evidence

Combustion of Alcohol's

The aim of this experiment was to investigate the burning of fuels and how much energy would be released.



In this experiment You need the above:↑

- You will carry an experiment ~~out~~ by Burning alcohols /fuels using a Spirit burner ~~to~~ to raise the temperature by 10°C.

Name of alcohol	Time taken to raise temperature by 10°C (s)			~~Average~~ Average
	1	2	3	
Methanol	88.6	69.7	82.9	80.4
Ethanol	77.3	72.1	87.9	79.1
Propanol	76.9	78.7	79.6	78.4

Underlying chemistry

By replacing the last H (Hydrogen atom) in a chemical structure with an (OH) from the hydroxyl group. You will be changing it to an alcohol.

The alcohols are part of the homologous series which means they have the same General formula and similar chemical properties.

Name	Structure	Shortened Structural formula	Molecular Formula
methanol		CH_3OH	CH_4O
Ethanol		CH_3CH_2OH	C_2H_6O
Propanol		$CH_3CH_2CH_2OH$	C_3H_8O

(Table 7.1 - Names and formulae of common alcohols)

General Formula

C_nH_{2n+2} or $C_nH_{2n+1}OH$

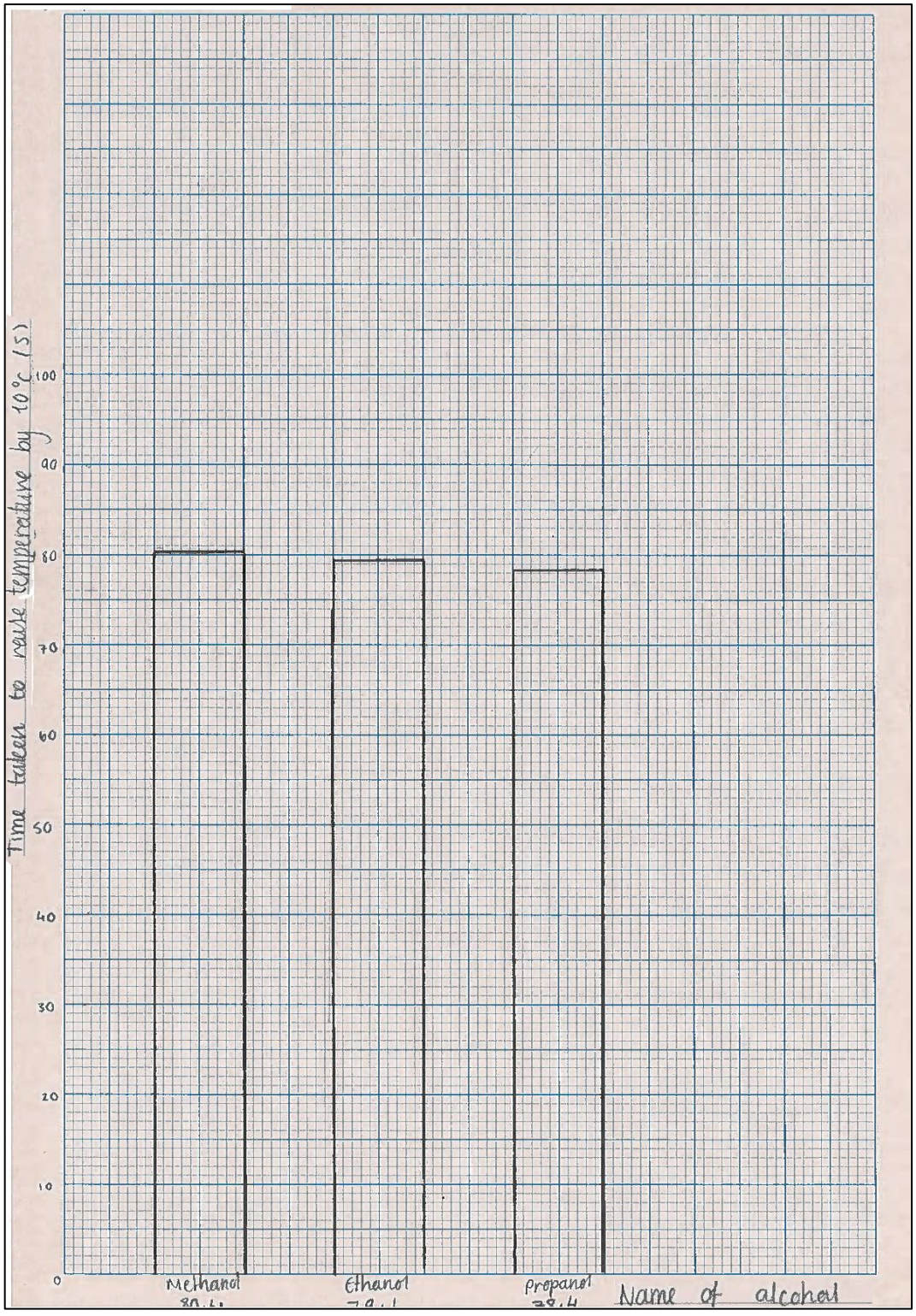
Balanced equations

Methanol - $CH_3OH + 1\frac{1}{2}O_2 \rightarrow CO_2 + 2H_2O$

Ethanol - $C_2H_6 + 3\frac{1}{2}O_2 \rightarrow 2CO_2 + 3H_2O$

Propanol - $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

(Hodder Gibson chemistry with answers National 5)
978-1-4441-8428-0


Time taken to raise temperature by 10°C (s)
100
90
80
70
60
50
40
30
20
10
0
Methanol
80.1
Ethanol
79.1
Propanol
78.4
Name of alcohol

Substance	Standard enthalpy of combustion $kJ\,mol^{-1}$
methanol	-726
Ethanol	-1367
Propanol	-2021

(chemistry data booklet, higher and advanced higher)
Page 20 (2016) 9781 910180 006

Conclusion

In Conclusion the more carbons in an alcohol the less time it takes to heat up by 10°C.

Evaluation

During the experiment, you need to repeat it 3 times to be able to find an average and make sure that the experiment is reliable.