

# Complete and Incomplete Combustion

 Assignment – Student Edition

## I. Comparing Types of Combustion

The data table below shows an investigation conducted into the two types of combustion using a Bunsen burner to heat 100mL of water. In each test the water was heated for a total of 3 minutes (180 seconds) with the temperature of the water measured every 30 seconds.

Use the information to help you complete each of the tasks which follow.

Time (s)	Temperature (°C)	
	<i>Yellow Flame</i>	<i>Blue Flame</i>
0	15	15
30	22	24
60	24	26
90	26	44
120	28	66
150	36	86
180	47	91

1. What was the aim of this investigation?

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2. Describe three variables that would need to be measured or controlled in some way to ensure that this was a fair test.

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3. Name the independent variable in this investigation.

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4. Name the dependent variable in this investigation.

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## II. Analyzing Data

- Using the information from the table, draw a graph of the results in the space below.


- What do these results suggest about the amounts energy released during complete and incomplete combustion?

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- Propane is a common component of the gas used in Bunsen burners.

a) Give the formula for propane. \_\_\_\_\_

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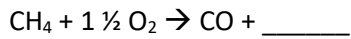
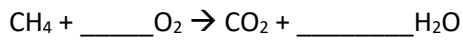
b) Write the word equation for the complete combustion of propane.

\_\_\_\_\_

c) Write the word equation for the incomplete combustion of propane.

\_\_\_\_\_

d) Methane is another gas used in Bunsen burners. Complete the gaps in the equations below for complete and incomplete combustion of methane:



4. When using the yellow flame, a black residue was noted on the sides and base of the beaker.

a) Name this residue \_\_\_\_\_

b) Explain why this residue forms

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\_\_\_\_\_  
\_\_\_\_\_

5. Describe the dangers of the products the of incomplete combustion to the body.

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