Week 8: Fuels and Hydrocarbons

Lesson 2: Combustion of Hydrocarbons

Complete Starter (in back of class jotter)

Starter

1) What is the test for hydrogen?
2) What is produced during combustion of hydrogen?
3) What is produced during combustion of carbon?
4) How could we test for what is produced in Q3?

Learning Outcomes

By the end of this lesson you should know:

- The fire triangle and how it is used to control fires
- The reactants and products of the combustion of hydrocarbons
- The pollutants that form during combustion reactants

Success Criteria

You will have been successful in this lesson if you:

1. Watch the video lesson
2. Complete questions provided
3. Self-assessed your work with the solutions (posted on Wednesdays on the S2 Team)

If you have any questions about the content of this lesson, you should ask your **class teacher either through your class MS team or via email**. You will be receiving printed notes booklets in the coming months so there **is no need to copy down notes.**

What to do

Complete tasks 1 - 6 – This involves watching the video lesson, answering questions in your class jotter on Combustion and correcting today's starter.

Once completed, your Extension activity can be found at the end of the document.

Task 1: Watch the video lesson and follow the instructions

Follow this link and **watch the recorded lesson** on Combustion of Hydrocarbons:

https://youtu.be/NZhzr494Mrk

Copy down the questions on the final slide, pause the video and attempt to answer these questions.

Resume the video and then self-assess your answers.

If you had different answers, write down the correct answers shown in the video.

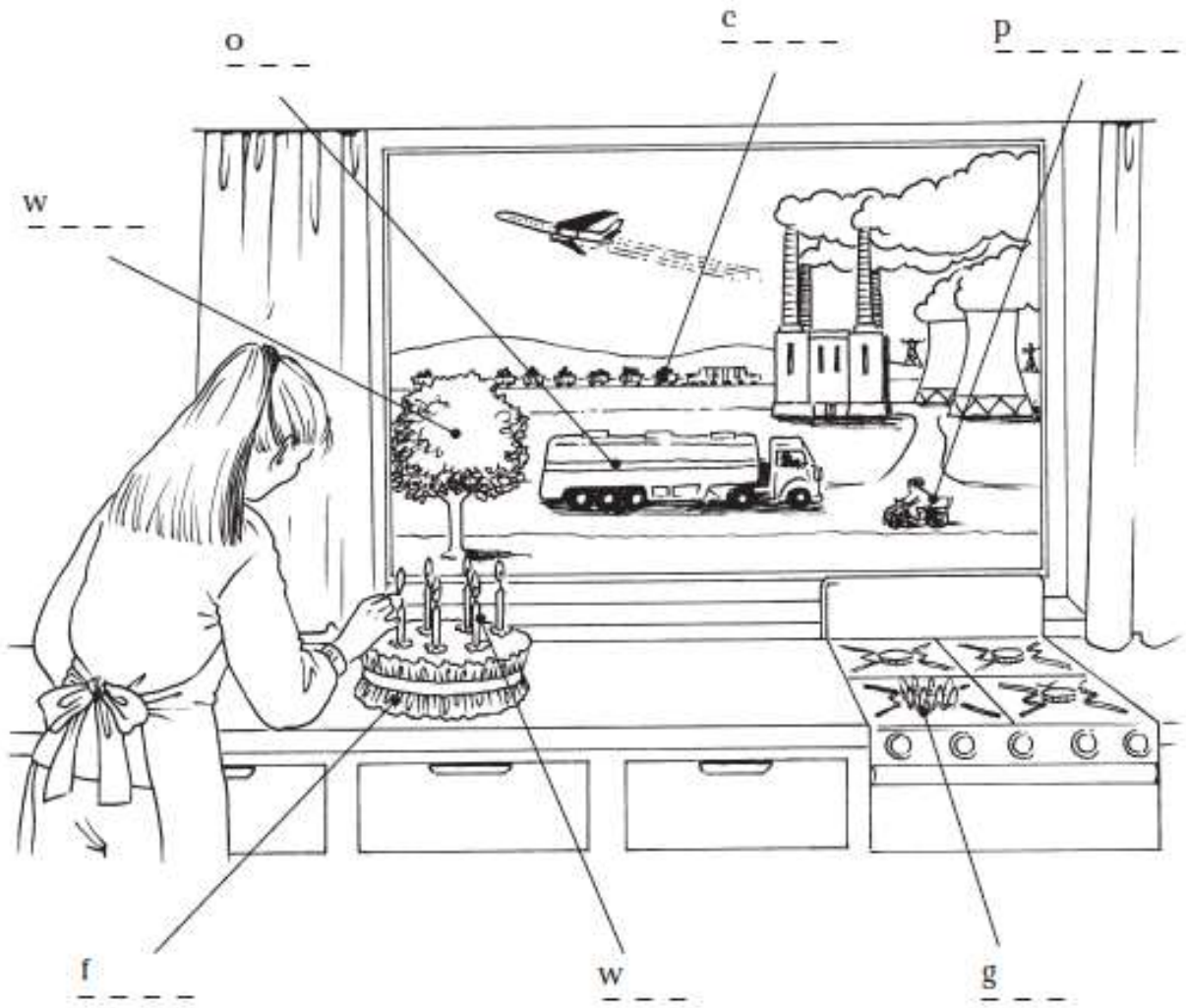
Task 2: Take the heading Fuels in your class jotter and follow the instructions

Complete the following task. If you can't print out the diagram and label it, complete this task by writing fuel 1 is _____ shown as a tree etc.

- Look at the fuels written in the box below.
  See if you can find them in the picture.

gas	wood	oil	petrol	coal	food	wax

- Label the picture to show where the different fuels are.



- Look at the fuels again. Underline the ones that are fossil fuels.

Task 3: Take the heading Self Check 3 in your class jotter

Self Check 3

1) When an acid is added to an alkali, the temperature of the resulting mixture increases.

   a) What name is given to reactions which result in an increase in temperature?

   b) What energy change occurs in these reactions?

2) Addition of ammonium nitrate to water results in a decrease in the temperature of the water.

   a) What name is given to reactions which result in a decrease in temperature?

   b) What energy change occurs in these reactions?

3) Coal is a solid fuel used for heating in houses.

   a) What is meant by the word *fuel*?

   b) What gas is used up when coal burns?

   c) Name the **three** things needed for burning to happen.

4) Squirting water at a fire will often put the fire out.

   Explain why water puts the fire out.

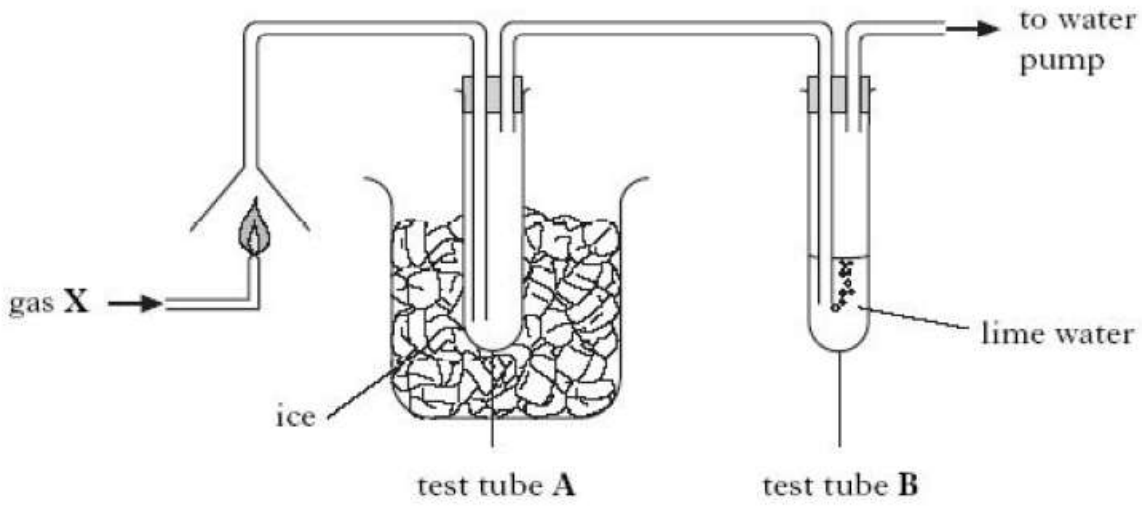
5) Oil fires in the home are fought with fire blankets.

   Explain how a fire blanket will put out a fire.

Task 4: Take the heading Self Check 4 in your class jotter

Self Check 4

1) To detect the products of burning hydrocarbons in excess oxygen the following apparatus is used –



a) What is a hydrocarbon?

b) What are the products of burning hydrocarbons in excess oxygen?

c) How would you show that a liquid trapped in A was water?

d) Container B contains lime water. Which gas turns the lime water chalky?

e) What would you see in the above apparatus if the following substances were burned?

(i) Carbon (ii) A hydrocarbon (iii) Hydrogen

Task 5: Take the heading Products of Combustion in your class jotter

What are the missing words in the following passage?

Write out the paragraph in your jotter and underline or highlight the missing words that you have filled in.

The exhaust gases from a car contain a variety of compounds. Petrol is a 1, which is it consists of compounds of carbon and 2 only. If petrol is burned in 3 (plenty of) air then 4 5 and 6 are produced and the 7 energy in the petrol is changed into 8 energy. The reactions in a petrol engine are much more complex. Insufficient 9 is present for complete combustion and so the exhaust contains carbon 10. Inside the car engine the nitrogen and 11 in the air react and form 12 13, if this gas dissolves in rain it turns the rain 14. The dangerous chemicals in a car exhaust can be converted into harmless products by fitting the car with a 15 converter.

Tasks 3-5 will have solutions posted on Wednesday to the Year group Microsoft Team.

Task 6: Correct today's starter

Starter answers

1) Test for hydrogen is it burns with a pop.
2) Water is produced during the combustion of hydrogen.
3) Carbon dioxide is produced during complete combustion of carbon.
4) We could test for carbon dioxide by bubbling the gas into lime water and this should turn the lime water cloudy.

Extension activity

Once completed all your Chemistry work, here is a link to look further into the Fuels and Hydrocarbons topic:

- Watch this video: https://video.link/w/gwnYb
- Take down 3 sentences in your class jotter about information you learned from watching this video about the Combustion of Hydrocarbons
- **Note: You do not need to know how to balance a combustion equation (anything after 1:40 in the video).**