**C5 Energy Changes Part 2 for Year 10**

**Cells and batteries:**

1. Cells contain chemicals which react to produce electricity
2. The voltage of a cell depends on:
   * The type of electrode
   * The electrolyte
3. A simple cells requires 2 different metal electrodes and an electrolyte
4. Batteries are 2 or more cells connected together in series (greater voltage)
5. In non-rechargeable cells/batteries, one of the reactants is used up and so the chemical reaction stops e.g. alkaline batteries
6. In rechargeable cells/batteries, the chemical reactions are reversed when an external current is supplied and so they can be recharged.

**Fuel cells:**

1. Fuels such as hydrogen can react with oxygen in a controlled manner to produce energy as electricity
2. The overall reaction is the oxidation of hydrogen to produce water
3. Oxygen + hydrogen 🡪 water
4. Advantages of hydrogen fuel cells: More efficient than engines that burn fuels, fewer moving parts, lighter and more sustainable

**Task 1: Watch Free Science lessons (if you can) and do a mind map of the information**

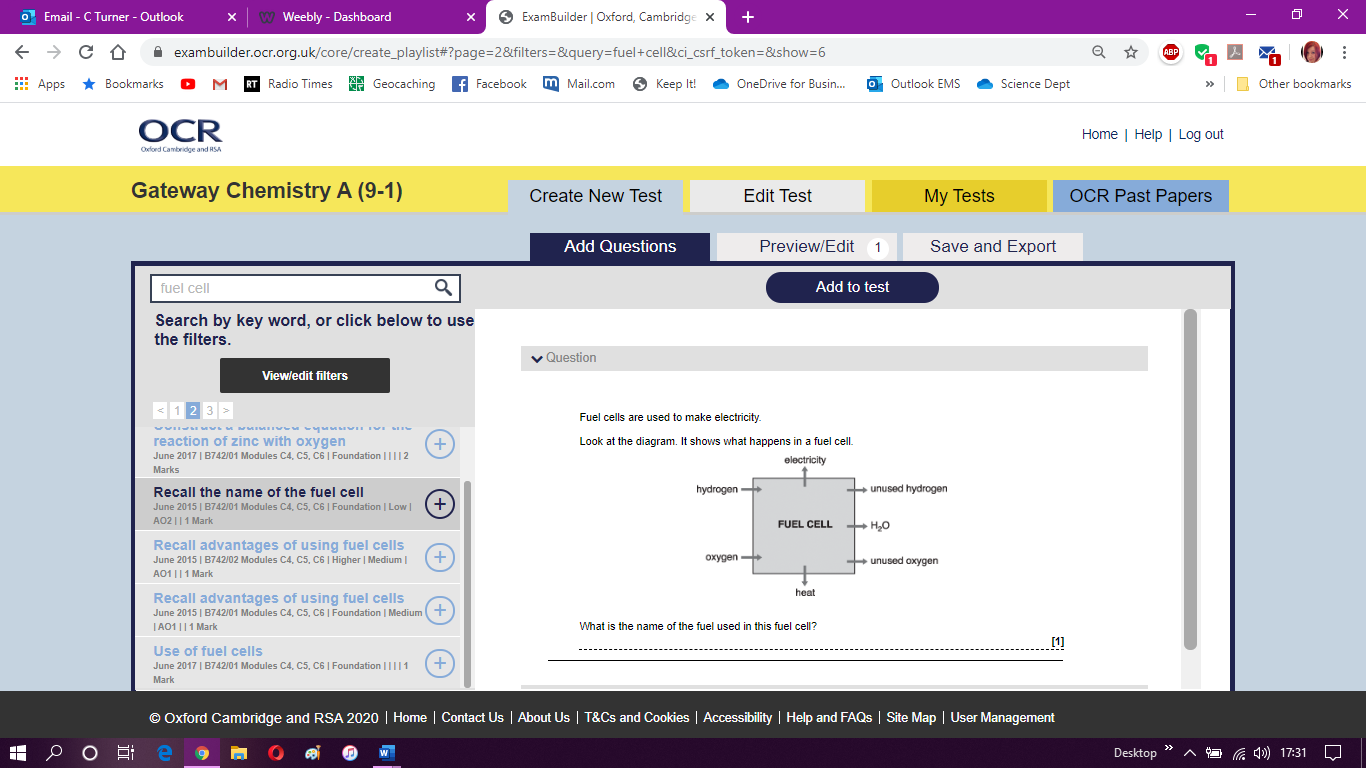
**GCSE Science Chemistry (9-1 Triple) Cells and Batteries**

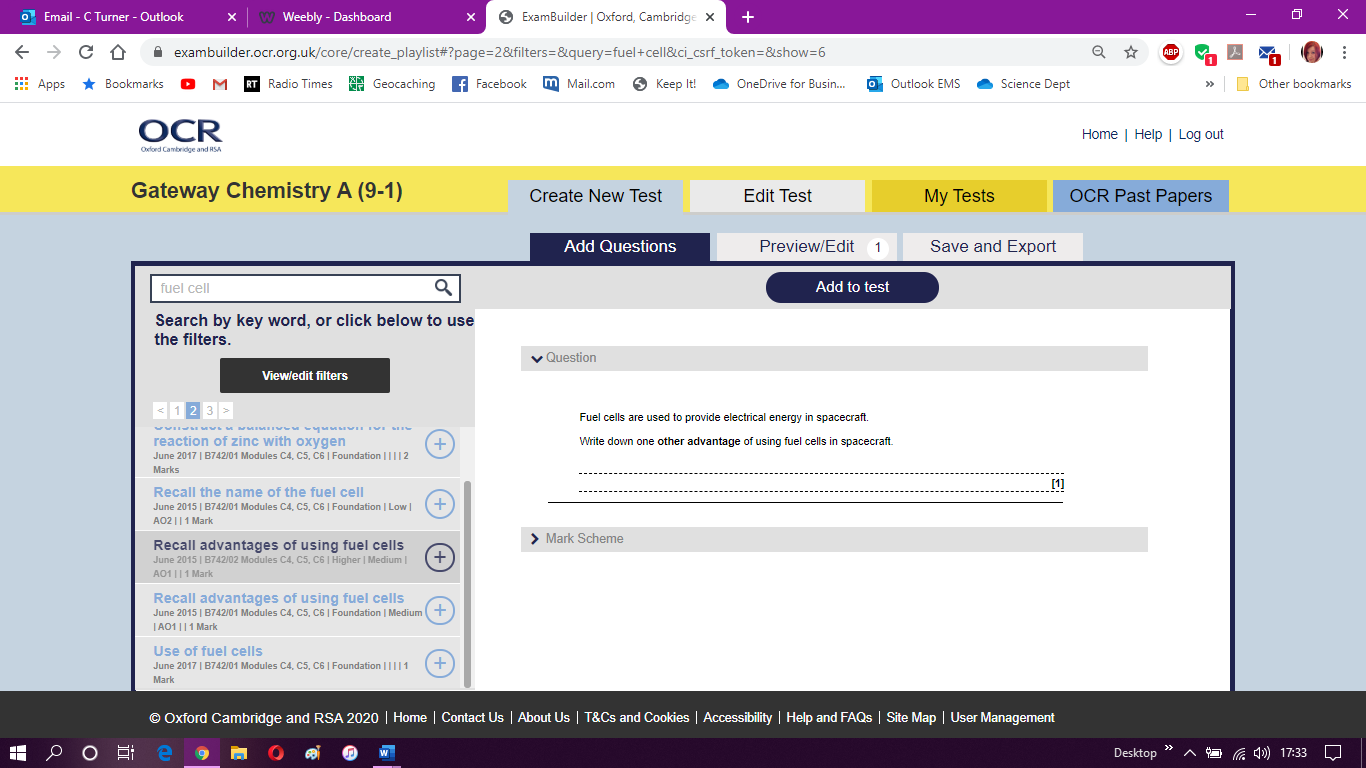
**GCSE Science Chemistry (9-1 Triple) Fuel Cells**

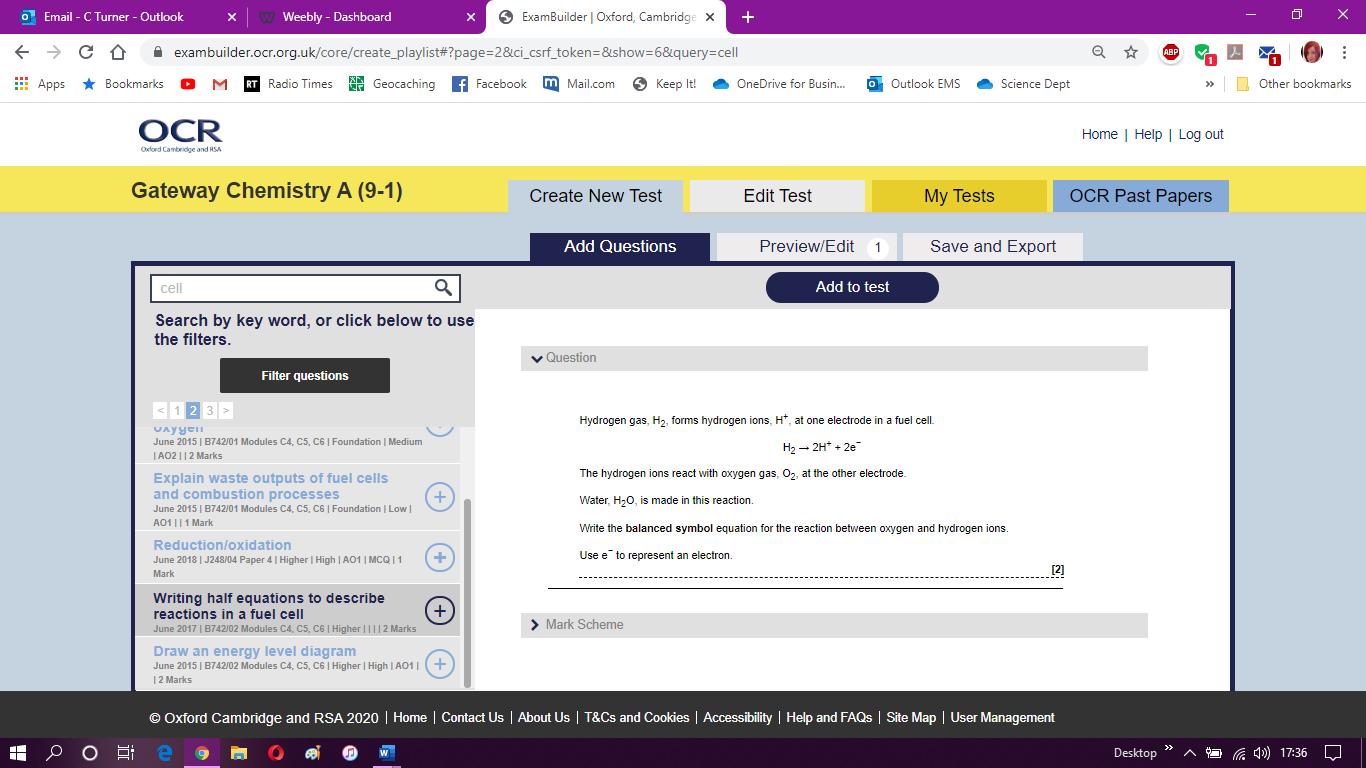
**Task 2: Test yourself! Answer these quick fire questions.**

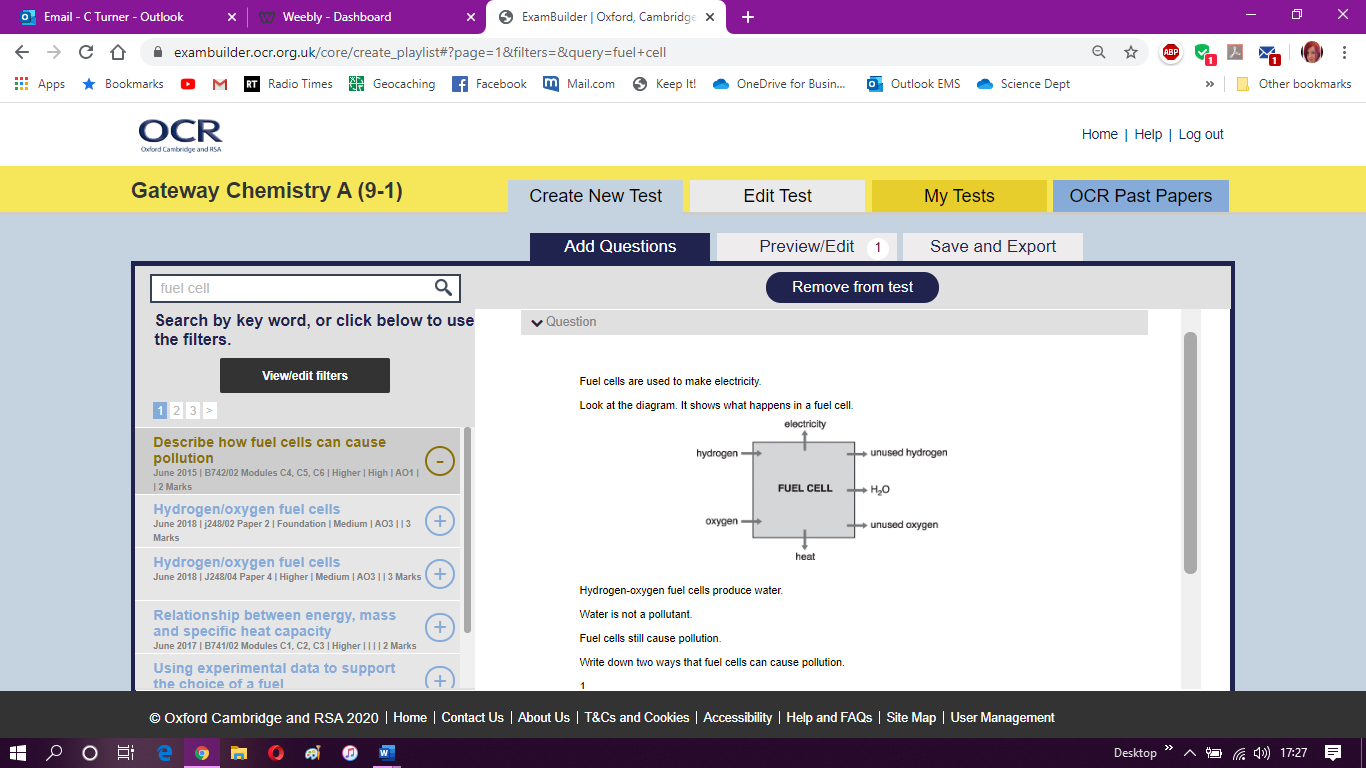
1. How does simple cell work?
2. What is the difference between a battery and cell?
3. What is the difference between rechargeable non-rechargeable batteries?

**Task 3: Complete these shorter answer questions.**





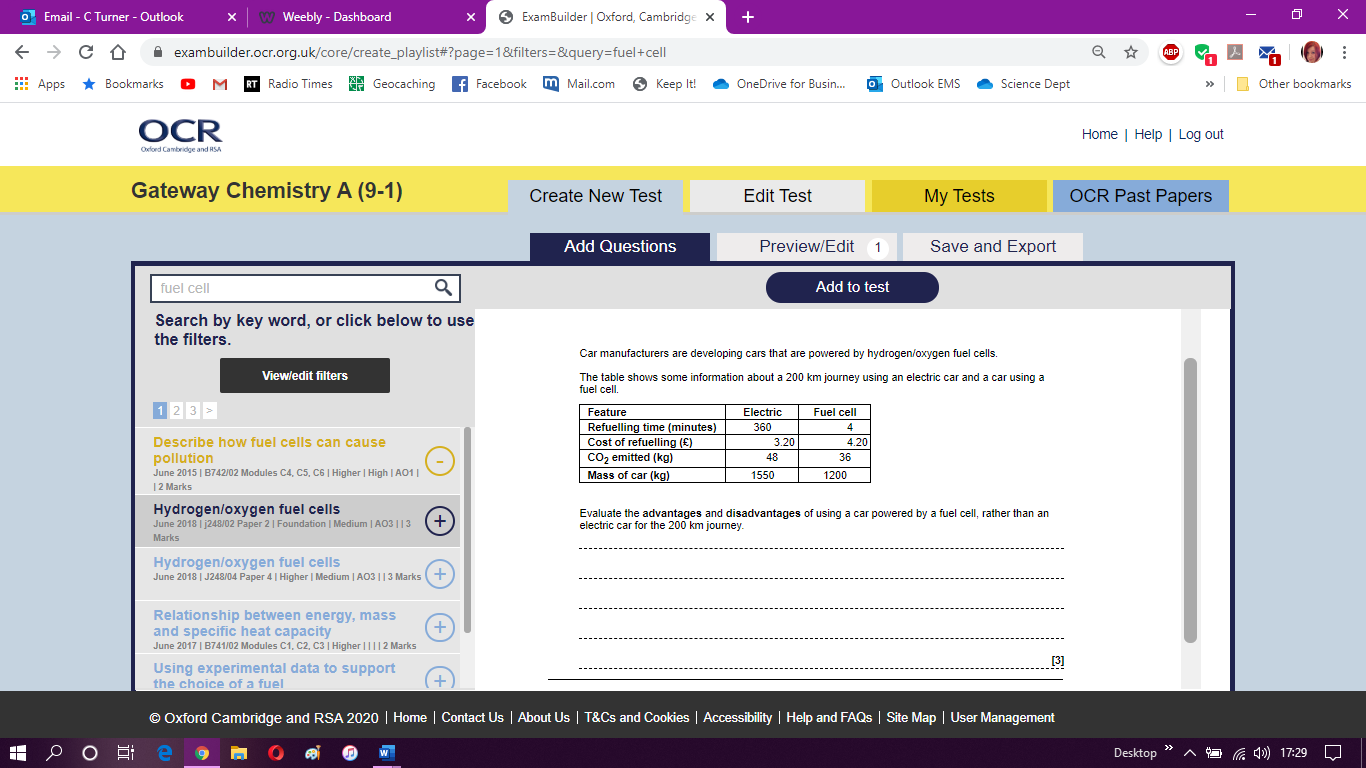




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**Task 4: Complete this longer answer question.**



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**Task 5: Researching batteries and cells**

Find out how to make a cell out of a lemon. Describe a method to make and test the cell, using different metals for the electrodes. Write down an equipment list and your independent, dependent and control variables.

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**Task 6: Comparing Li ion batteries and Fuel Cells**

Read through the revision pages on this website: <https://www.bbc.co.uk/bitesize/guides/z2396yc/revision/3>

Complete the table to compare Li ion batteries and hydrogen fuel cells to power cars. Evaluate which is better and give reasons why.

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| --- | --- |
| **Lithium ion battery** | **Fuel cell** |
|  |  |

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