

# 11.3 Fuels

Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_ **Total: 8 marks**

**KEY WORDS** petroleum • hydrogen • fractions • hydrocarbon  
• fractionating column

## Objective

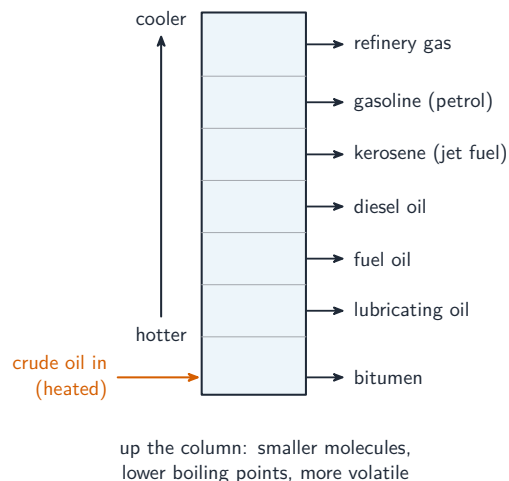
Build the skills to answer exam questions on **fuels** – **fossil fuels**, **hydrocarbons**, and the **fractional distillation** of petroleum.

**You must be able to:**

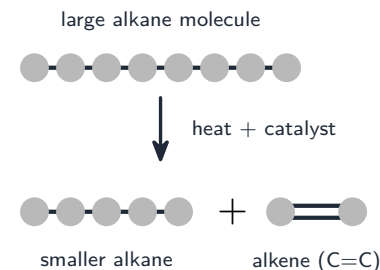
- name the fossil fuels and define a hydrocarbon
- describe fractional distillation and the trends up the column
- match fractions to their uses

## 1 Key knowledge and worked examples

### ■ Fractional distillation



*Hot at the bottom, cool at the top; each fraction condenses at a different height*



*Cracking turns long fractions into useful fuels*

- going **up** the column: shorter chains, higher volatility, lower boiling point, lower viscosity.
- fractions: refinery gas, gasoline, naphtha, kerosene, diesel, fuel oil, bitumen.

## 2 Practice

**2.1** Define a hydrocarbon. [1]

**2.2** Name the fraction used as fuel for cars. [1]

## 3 Exam-style questions

**3.1** Going up the fractionating column, the boiling point of the fractions: [1]

- ☐ **A** increases  
☐ **B** decreases  
☐ **C** stays the same  
☐ **D** increases then decreases

**3.2** Petroleum is separated by fractional distillation.

(a) Explain why the different fractions separate. [2]

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(b) State one use of bitumen. [1]

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**3.3** Explain why a fraction near the top of the column flows more easily than one near the bottom. [2]

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