Homework sheet

Name Class Date

**1** The different **fractions** obtained from crude oil have different uses.

**a** Name the fraction that is used:

**i** as a fuel for jet aircraft

**ii** for domestic heating and cooking

**iii** to surface roads and roofs.

**b** State *two* uses for:

**i** fuel oil

**ii** diesel.

**2** Fuel oil has a higher boiling point than diesel. State and explain which of these fractions:

1. contains the smaller hydrocarbon molecules

1. **ignites** more easily

1. has the higher **viscosity**.

**3** Liquids that are *volatile* easily turn into a vapour. The flashpoint of a volatile liquid fuel is the lowest temperature at which it can vaporise to form a mixture with air, capable of igniting. The fuel vapour will only burn if there is a suitable ignition source, such as a flame. If this is removed, the vapour may stop burning.

The table shows examples of flashpoints of some liquid hydrocarbons.

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| |  |  | | --- | --- | | Number of C atoms | Flashpoint (°C) | | 4 | −58 | | 5 | −41 | | 6 | −23 | | 7 | −4 | | 8 | 13 | | 9 | 30 | | 10 | 46 | | 11 | 62 | | 12 | 80 | | 13 | 99 | | 14 | to find | | 15 | 130 | | **a** Plot a scatter graph for these data, with the number of carbon atoms on the horizontal axis and the flashpoint on the vertical axis.  **b** Use your graph to help you answer these questions.  **i** Describe how the flashpoint changes as the number of carbon atoms changes.    **ii** Predict the flashpoint of tetradecane, an alkane with 14 carbon atoms in its molecules. |

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|  | **iii** Room temperature is about 20 °C. Liquid hydrocarbons should be stored in strong metal containers with narrow openings and tightly sealed lids. Suggest a reason that explains why this is particularly important for hydrocarbons with fewer than nine carbon atoms in their molecules. |