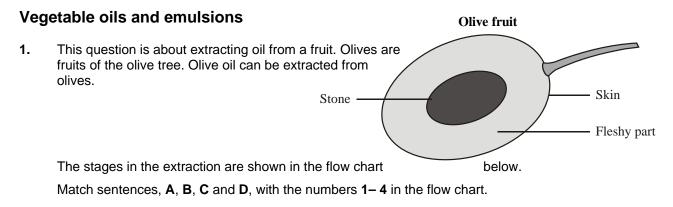
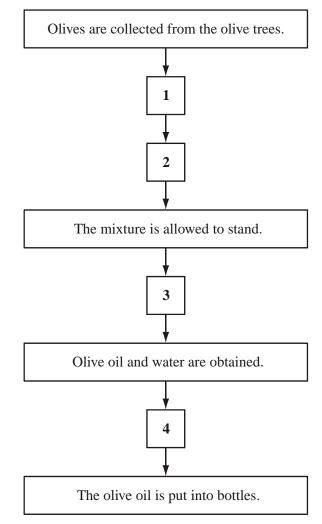
Unit C1, C1 .6.1 and C1.6.2





- A Olive oil separates from the water.
- **B** The mixture is pressed.
- **C** Water is added and the mixture is stirred.
- **D** The olives are crushed.





Unit C1, C1 .6.1 and C1.6.2



2. Plant oils have many uses.

Match words, A, B, C and D, with the numbers 1-4 in the sentences.

- A a fuel
- B an emulsion
- **C** energy
- D temperature

Vegetable oil can be burned as ... 1

Vegetable oils are useful foods because they contain a lot of ... 2

Vegetable oils cook food at a higher ... 3 ... than water.

In some foods, vegetable oil is mixed with another liquid to form 4

3. Ice-cream is a foam because it has small air bubbles trapped inside it.

Ice-cream is sold by volume. Ice-cream manufacturers increase the volume of air in a product so that they make more money.

A student investigated the volume of air in four different ice-creams, K, L, M and N. The four ice-creams were kept in the same freezer.

For each ice-cream, the following procedure was carried out:

- the student measured the volume of some ice-cream straight from the freezer
- the ice-cream was then melted down, allowing the air to escape
- the volume of the ice-cream was re-measured to give the final volume.

The results are shown in the table.

| Ice-cream | К | L | М | Ν |
|-----------------------------------|-----|-----|-----|-----|
| Initial volume in cm ³ | 100 | 100 | 100 | 100 |
| Final volume in cm ³ | 96 | 91 | 87 | 95 |

(a) Which ice-cream originally contained the most air?

- 1 K
- 2 L
- 3 M
- 4 N
- (b) The investigation was fair because . . .
 - 1 the same volume of ice-cream was used each time.
 - 2 four samples of ice-cream were used.
 - **3** the investigation was repeated.
 - 4 the temperature of the ice-creams was kept constant during the investigation.

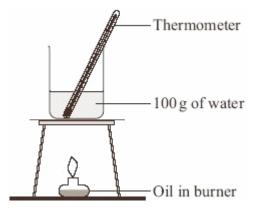


Unit C1, C1 .6.1 and C1.6.2



- (c) The student could have improved the reliability of the investigation by . . .
 - 1 allowing the ice-cream to melt over a longer period of time.
 - 2 checking that the temperature was constant throughout the investigation.
 - **3** using more than four ice-cream samples.
 - 4 repeating the investigation.
- 4. A student was comparing two vegetable oils, **X** and **Y**, to find out how much heat they release when they burn.

She used the apparatus shown in the diagram. The oil was allowed to burn for 6 minutes in each test.



Her results are shown in the table.

| | Oil X | Oil Y |
|--|-------|-------|
| Mass of empty oil burner | 60 g | 60 g |
| Mass of oil burner + vegetable oil | 67 g | 66 g |
| Mass of oil burner + vegetable oil after burning | 62 g | 63 g |
| Initial temperature of water in the beaker | 24 °C | 24 °C |
| Final temperature of water in the beaker after heating | 49 °C | 42 °C |

- (a) How many grams of oil X were burned during the experiment?
 - **1** 2 g
 - **2** 4 g
 - **3** 5 g
 - **4** 7 g
- (b) Oil **X** produced a temperature rise of 5 °C per gram of oil burned.

What rise in temperature was produced by burning 1 g of oil Y?

- 1 3°C
- **2** 6 °C
- **3** 18 °C
- **4** 42 °C



Unit C1, C1 .6.1 and C1.6.2



- (c) How could the student improve the reliability of the results for each oil?
 - 1 Repeat the experiment several times and take the mean (average) value.
 - 2 Burn the same mass of oil X and oil Y in the tests.
 - 3 Burn the same mass of oil X and oil Y but for a shorter length of time.
 - 4 Use several other oils and compare the results with those for oil X and oil Y.
- (d) The student could get more accurate results if she improved the design of her apparatus.

One improvement would be to . . .

- 1 use a larger beaker.
- 2 use a thermometer with a larger range of temperatures.
- **3** burn a smaller quantity of oil each time.
- 4 protect the flame from draughts.

