The boiling points of liquids can be used to separate mixtures

Going off the boil

1 Imagine you made a cup of tea at home for a friend and accidentally put in sugar. Instead of making a new cup of tea, you decided to use your knowledge of science to separate this mixture. So you decide to pour the cup of tea into a saucepan and put it on the stove.

a What method of separation are you using?

b What crystals would remain in the saucepan?

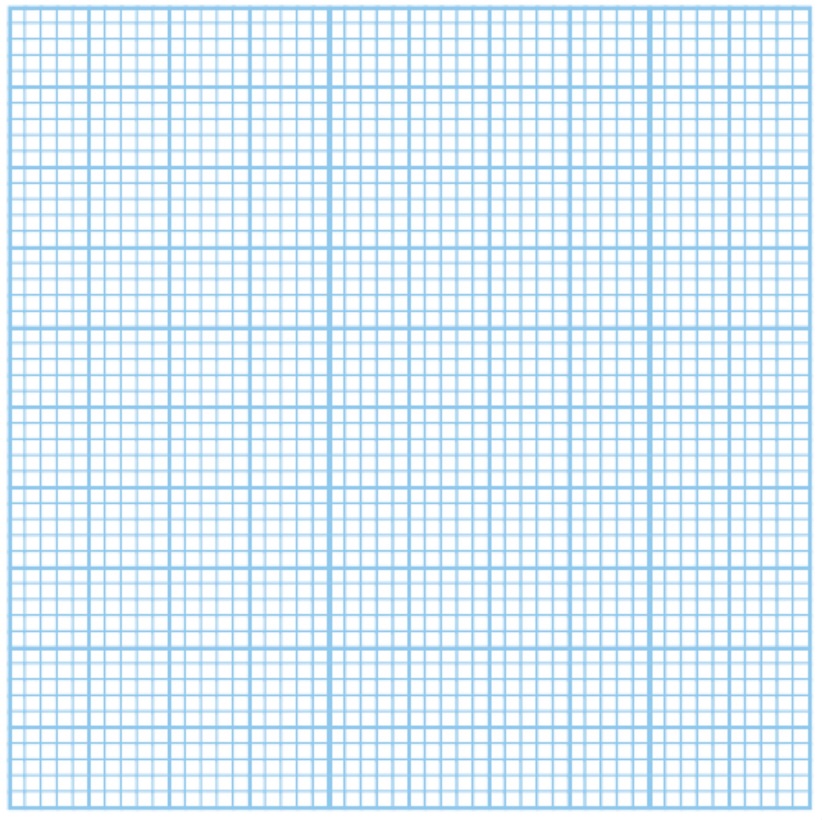
c What would happen to the liquid tea?

d Would it have been better to make another cup of tea for your friend?

2 The table below shows the boiling points of common liquids.

a Use the data to create a column graph ranging from the lowest to the highest boiling point in the space provided.

|  |  |
| --- | --- |
| Liquid | Boiling point (°C) |
| Water | 100 |
| Alcohol | 78 |
| Petrol | 95 |
| Olive oil | 300 |
| Tar | 300 |
| Turpentine | 160 |



b What would be some safety concerns if you tried to separate a mixture of all of these commons liquids at home?

3 Evaporation and vaporisation are very similar because they both describe the change of state from a liquid to a gas. However, they are not the same, as vaporisation only occurs when the liquid has reached its boiling point, and evaporation can occur at a temperature below the liquid’s boiling point. Use this information to decide whether the following are examples of evaporation or vaporisation.

a As you are cooking some pasta, you observe the water level in the saucepan has gone down.

b You notice a puddle on the ground during your morning walk to school, but by the time you walk home that afternoon, it has disappeared.

c You notice that you have to top up the pool water more often when you forget to put the pool cover on.

d You observe steam rising from the kettle as you prepare a cup of tea.

4 The salt you sprinkle on your fish and chips originates from salty sea water. Explain the process of how we could extract salt from the sea water.

