

## Forensics 1 Homework Exercise 1

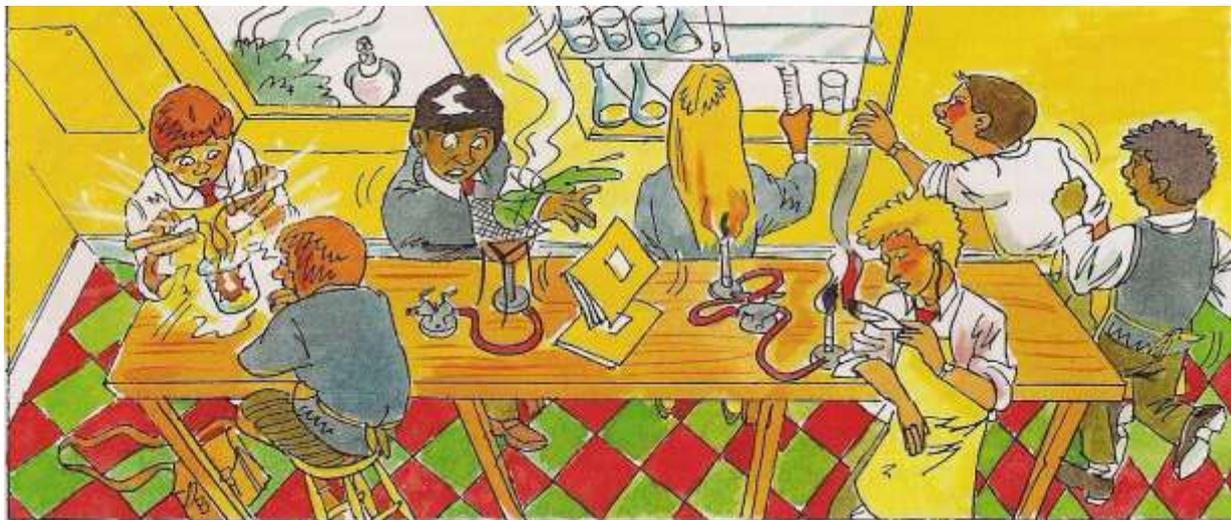


1. a) Identify each of the hazard symbols below.  
b) Explain why each hazard is so dangerous.



2. Look at the picture below.

- a) Identify 5 hazards in this picture.  
b) Explain why each one is dangerous in a science lab.

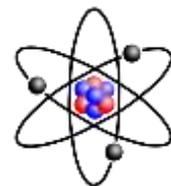


3. a) Copy and complete the following paragraph by filling in the blanks with the correct answers:

Before you light the Bunsen burner, put on \_\_\_\_\_ and make sure you tie back your \_\_\_\_\_ if it is long. Inspect the \_\_\_\_\_ for holes and any other damage. Place the Bunsen burner on a \_\_\_\_\_ mat and light it with the air hole \_\_\_\_\_. Never leave it \_\_\_\_\_ once lit. To put the Bunsen burner off, turn the \_\_\_\_\_ off. Do not \_\_\_\_\_ it out!

- b) A Bunsen burner has 2 flames, a blue flame and a yellow flame. Describe the steps you would take produce each flame.

- c) What are the 2 main differences between each flame? Make sure your answers contain detail.



## Forensics 1 Homework Exercise 2

1. The particles in solids, liquids and gases are arranged in different ways.

a) Name the state of matter represented by each picture.



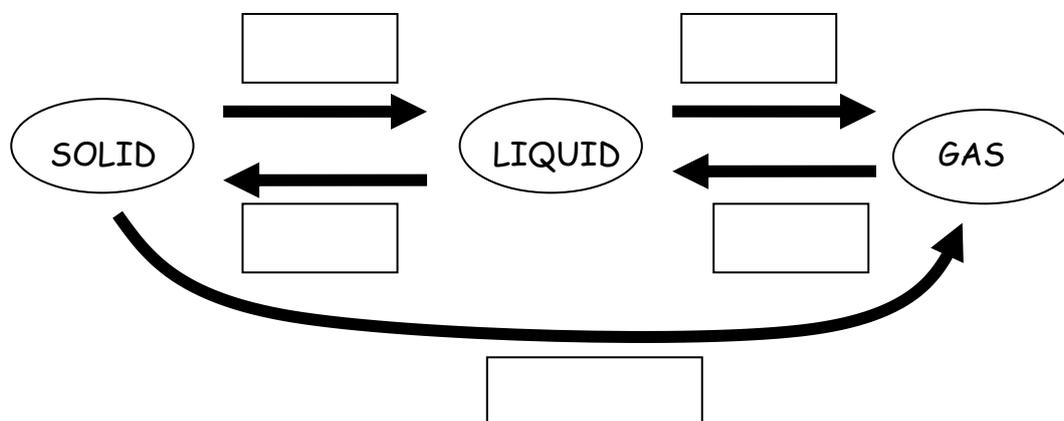
b) Copy and complete the paragraph below. Use the words below to help you.

*Each word may be used more than once.*

**compressed    vibrate    apart    shape    touch    volume    spaces**

In a solid, the particles \_\_\_\_\_ in a fixed position. They are unable to change \_\_\_\_\_ or \_\_\_\_\_. Liquids contain particles which always \_\_\_\_\_ but they are free to move around each other. This gives the liquid the ability to change \_\_\_\_\_ but not \_\_\_\_\_. Gases contain particles which are far \_\_\_\_\_. Due to this, gases can easily change \_\_\_\_\_ and \_\_\_\_\_. It is this space between the gas particles which allows them to easily be \_\_\_\_\_ into smaller \_\_\_\_\_.

2. Copy and complete the diagram below. Fill in the boxes near the arrows with the processes involved in changing **states of matter**



3. When I spray air freshener into the corner of the room, it smells lovely and sweet. Over time, this smell spreads throughout the room.



a) Name the process which allows this to happen.

b) Use the idea of **particles** to explain how a gas that could fill the whole room could have fitted inside the spray can. Remember to give details in your answer.

c) Do gel air fresheners work as quickly as the gas ones? Explain your answer.

## Forensics 1 Homework Exercise 3



1. Copy and complete the paragraph below. Use the following words to help you:

***dissolve insoluble soluble different saturated solvent solute solution***

Substances such as salt are \_\_\_\_\_ in water. The water is known as the \_\_\_\_\_ and the salt is known as the \_\_\_\_\_. These make up a \_\_\_\_\_. Sand however, is \_\_\_\_\_ in water but may be soluble in \_\_\_\_\_ solvents such as acetone. A \_\_\_\_\_ solution is one in which no more solute is able to \_\_\_\_\_ in a solvent.

2. In science, it is important that we are able to **separate** different substances so that they are easier to examine.

a) A detective finds a man dead in his house. He suspects that the man's drink may have been poisoned. What **technique** can the detective use to prove that there is poison in the man's drink?

b) Clearly describe how this technique works. You may wish to use the following terms in your explanation: ***boiling point evaporation condensation***

c) A dog wants a drink of water but there is grit and dirt in the water bowl. What **technique** could his master use to remove them from the water?

d) Draw a labelled diagram of the apparatus you would use to carry this out. Remember to use a ruler when drawing diagrams.



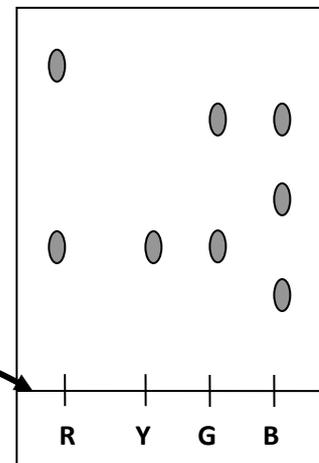
3. Chromatography is a method used to separate components by their **solubility**. The following chromatogram was obtained after separating some pen dyes, *red, yellow, green and blue* (R, Y, G, B):

a) Which pen colour was made up of only 1 pigment?

b) Which pen colour contained a pigment which was the most soluble?

c) Which pen colour contained a pigment which was the least soluble?

d) When carrying out chromatography, a line is drawn. Why must this line be drawn in **pencil**?

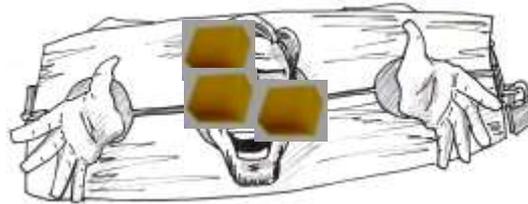


## Forensics 1 Homework Exercise 4



1. It is important to scientists that their results are both *reliable* and *accurate*. Wet sponges were thrown at a man in stocks.

a) Use both of these words to describe each of the following pictures:



b) A variable is something which must be kept the same each time the experiment is carried out. What **variables** should be kept the same in this case?

c) Explain clearly why it is important for *scientific* results to be both reliable and accurate. Remember to give detail in your answers.

2. Class 1B recently sat their science test. They were all given marks out of 20.

a) Sometimes "odd" results are achieved. What do we call these results? What should we do with them when calculating an average?

b) With this in mind, calculate the average test score for the class.

c) Can you think of one way in which the *reliability* of this average may be improved.

Name	Mark /20
Tom	15
Anna	12
Claire	17
Finlay	11
Graeme	2
Poppy	20

## Forensics 1 Homework Exercise 5

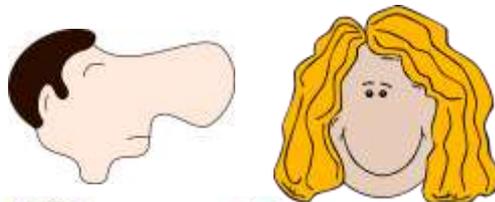


1. Copy and complete the following paragraph by filling in the blanks with the correct answers:

The nucleus of living cells contains \_\_\_\_\_ which are made up of a string of \_\_\_\_\_. These control the development of different \_\_\_\_\_ eg, eye colour, by issuing instructions to the cell. They are made of a molecule called \_\_\_\_\_. This molecule looks like a twisted ladder. This spiral shape is called a \_\_\_\_\_.

2. **Characteristics** of a child are inherited from their parents. For each set of parents below, draw a picture of how their offspring may look. Remember to describe each set of characteristics they have inherited.

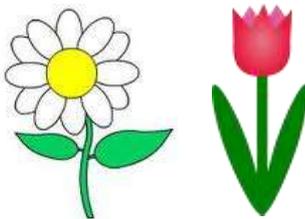
a) Mr and Mrs Smith



b) Mr and Mrs Dog



c) Mr and Mrs Flower



3. DNA Profiling involves taking a "genetic fingerprint" (DNA sample) from a person and storing it so that it can be used to identify that person in the future.

a) How can a DNA sample be taken from a person? List as many ways as you can think of.

b) People have mixed feeling about DNA Profiling. Give **one** advantage and **one** disadvantage of it. Remember to give details.

c) If carried out **accurately** and **reliably**, can DNA Profiling identify the wrong person as being responsible for a crime? Explain the reasons for your answer.