



CRIME SCENE DO NOT CROSS

Chapter 2: Forensic Science

The Investigations begin

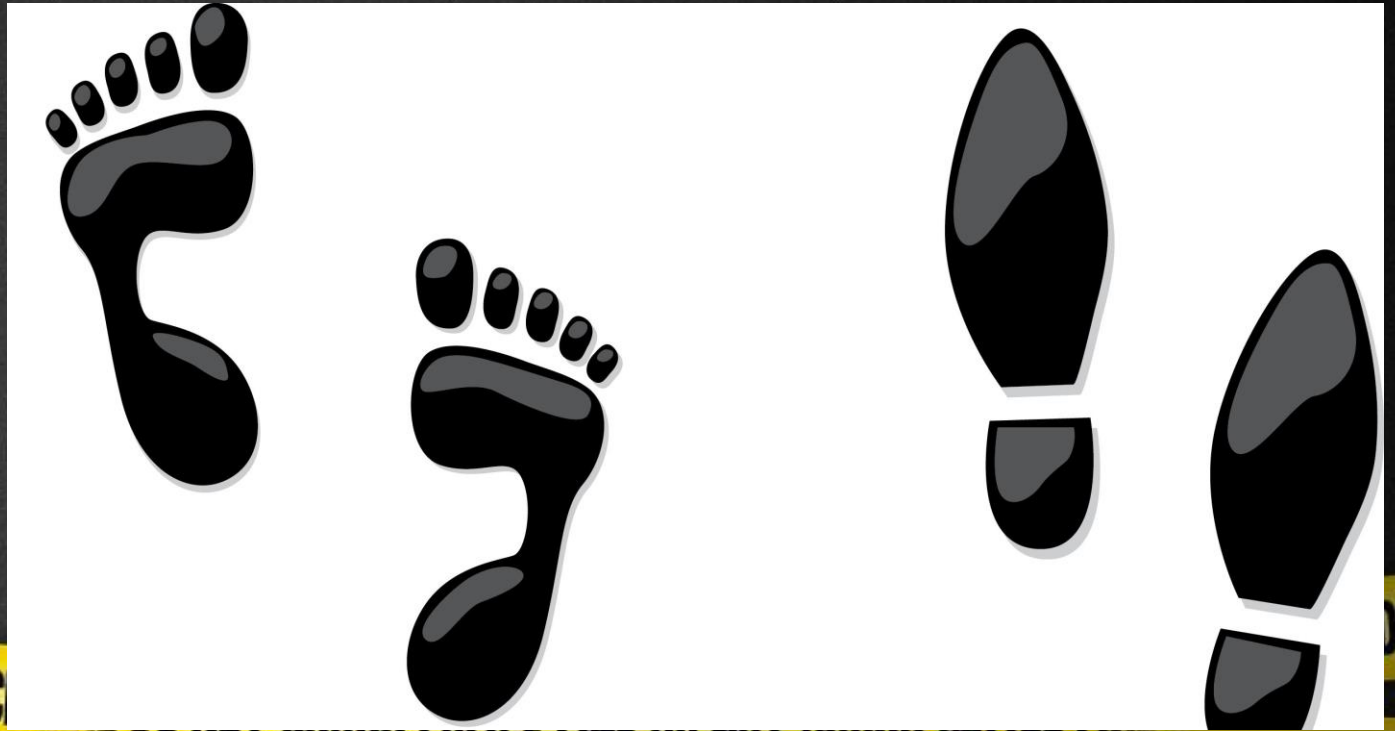


What is Forensic Science?

- Forensic science is the application of scientific methods and techniques to matters under investigation by a court law.

Case #1: Mystery Footprints

Read the case and try and figure out who was right and why.





- An inconsiderate slob dumped trash on Rachel Rabbit's lawn. One of these two suspects is guilty. Slylock Fox found evidence that may identify the loathsome litterbug.

Case #2: TrashToss

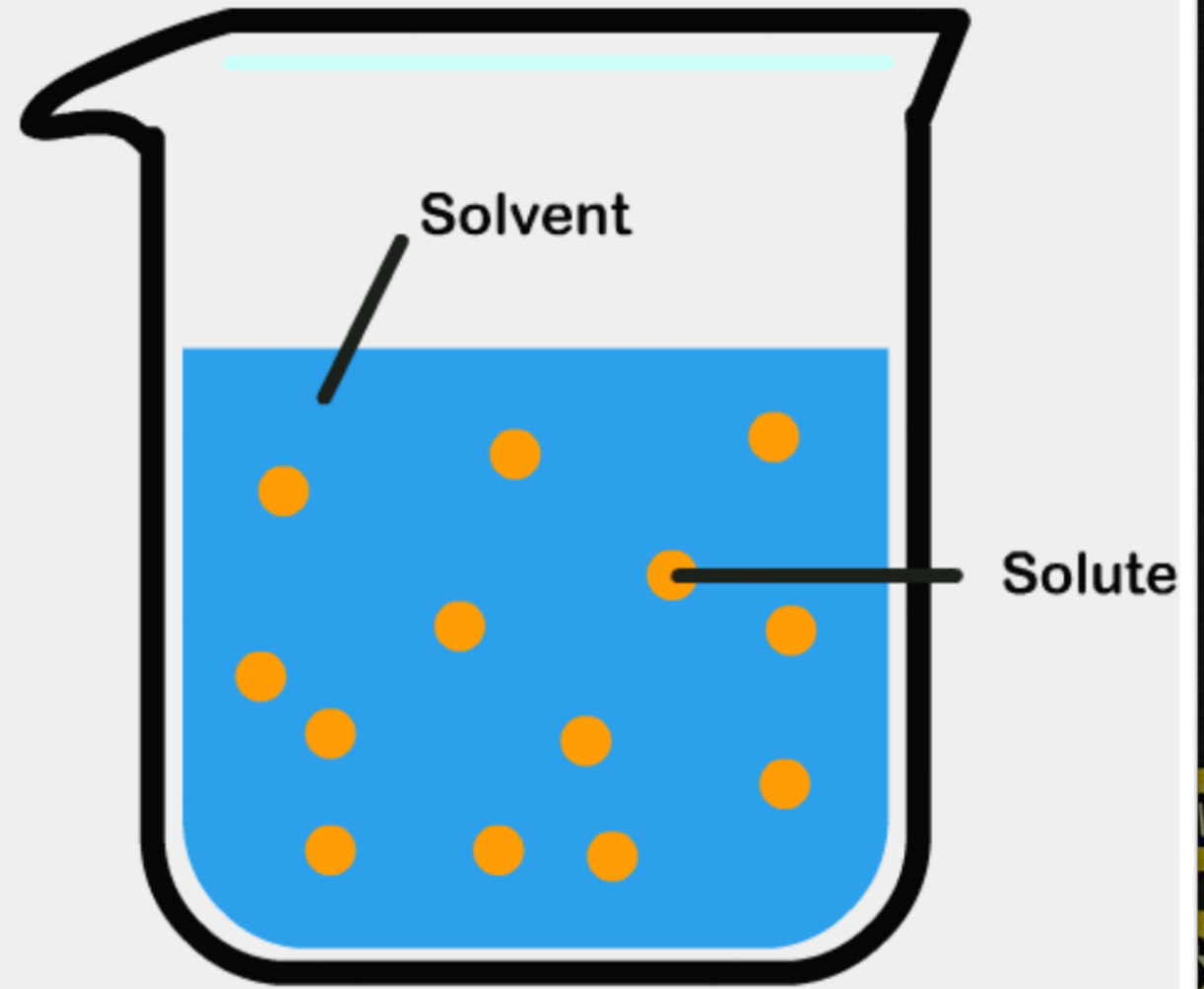


Case #3: Masterpiece

- A painting by a world-renowned artist was stolen from the Forest Museum. The missing masterpiece is now in Kopy Kat's studio. The feline forger has already painted a copy of the artwork. Which one does Slylock Fox suspect is the original painting?

Solutions

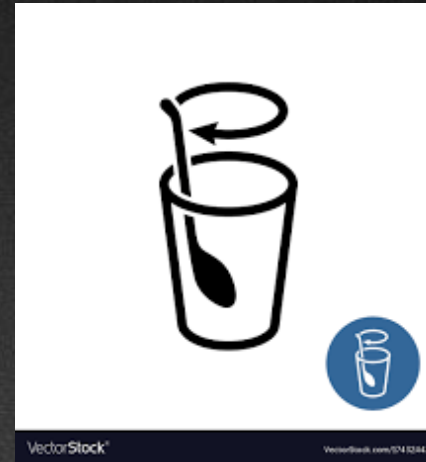
- A solution is a mixture where the solid dissolves in the liquid. This makes the mixture clear or transparent.
- The liquid like water is a _____ whereas the solid like sugar is the _____.
- A substance which dissolves in water is a _____ substance.
- A substance which does not dissolve in water is an _____ substance.



Solution

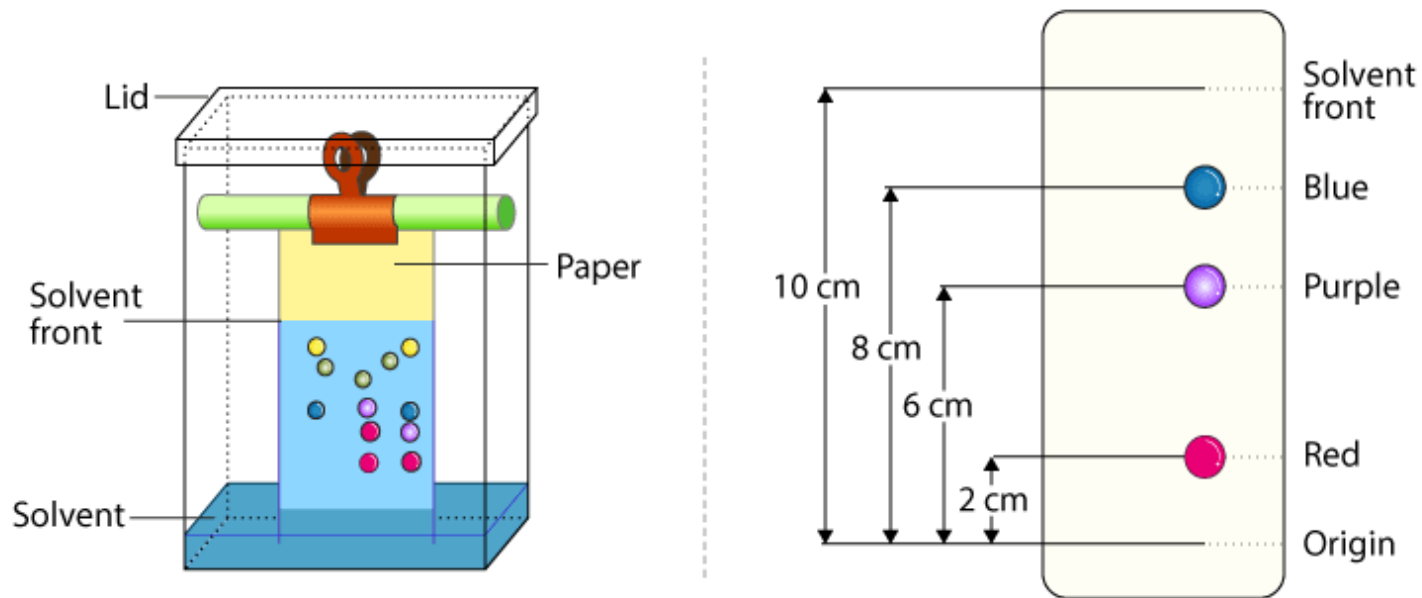
What effects the Solubility rate?

- There are three main factors which effect solubility:
 - Temperature
 - Stirring
 - Amount of solute/solvent.



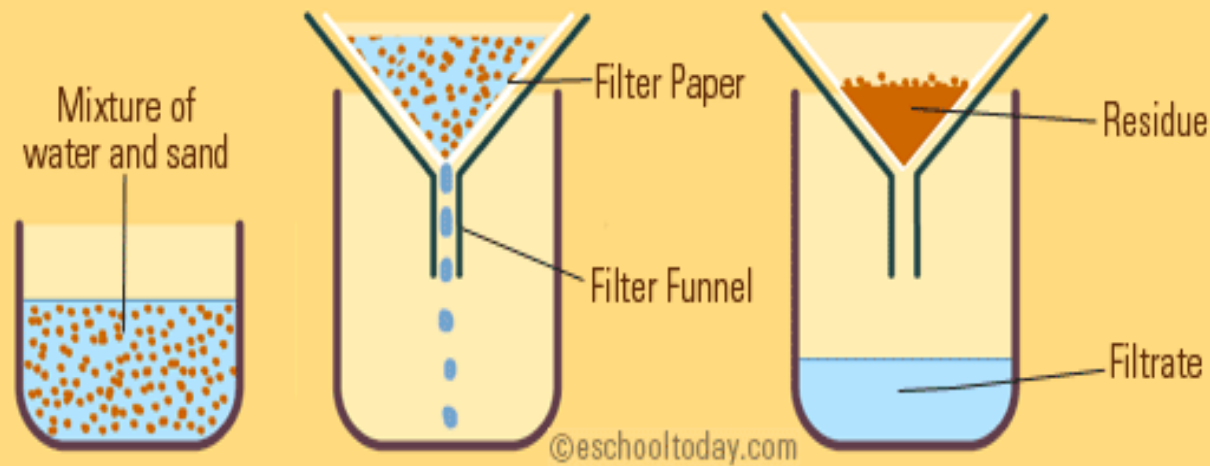
PAPER CHROMATOGRAPHY

BYJU'S
The Learning App



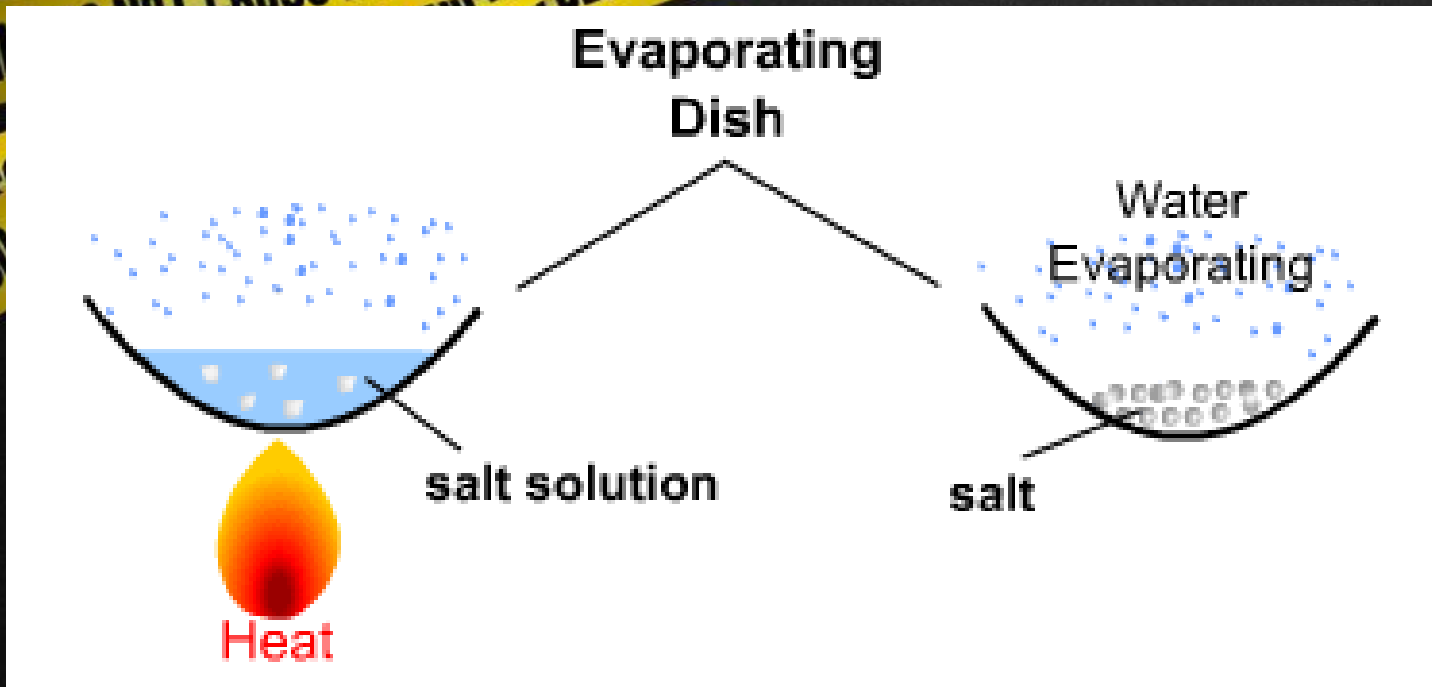
- Chromatography is used in forensic science as a method to separate components from a mixture such as ink.
- On your station you will find a paper where chromatography is already done. That is the ink used in the note. Perform chromatography on your own pens (1 pen per student) and find out who the culprit is,

Chromatography



- Filtration is a separation technique which separates insoluble solids from the solvent.
- The diagram shows how a mixture of sand and water can be separated through the process of filtration.
- To perform filtration you will need:
 - Filter paper
 - Thistle funnel
 - Beaker with solution

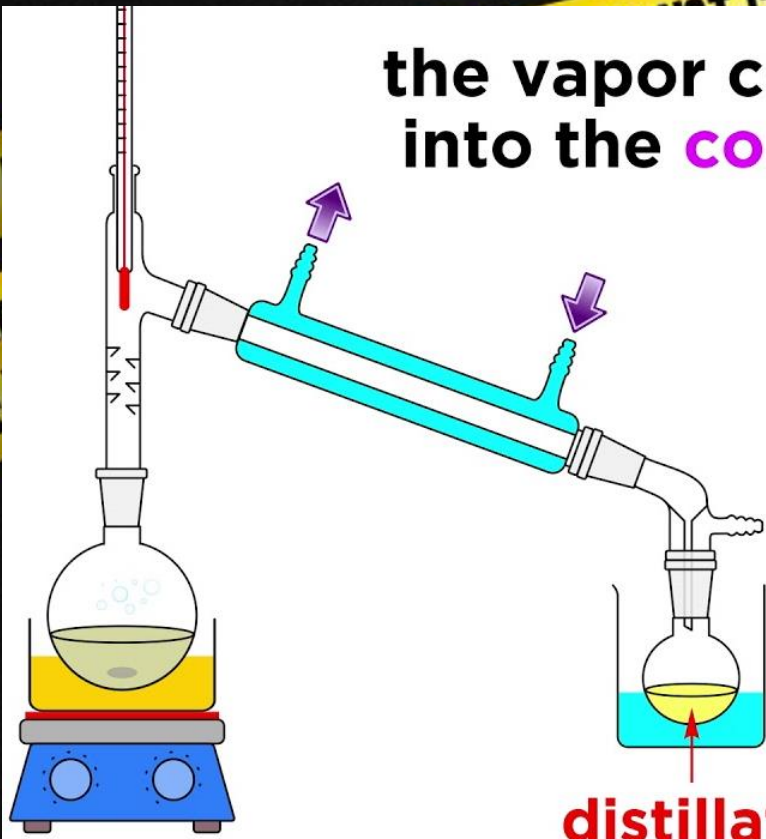
Filtration



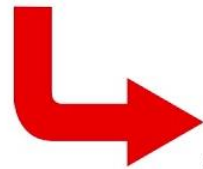
- Evaporation is a separation technique which separates soluble solids from the solvent.
- In evaporation the solvent leaves the solution leaving the solute behind.
- The diagram below shows how evaporation can be used to separate salt from water.
- To perform evaporation you will need:
 - An evaporating dish
 - The solution
 - Bunsen burner

Evaporation

the vapor continues
into the **condenser**



distillate



causes the
temperature
of the vapor
to **decrease**
(gas → liquid)

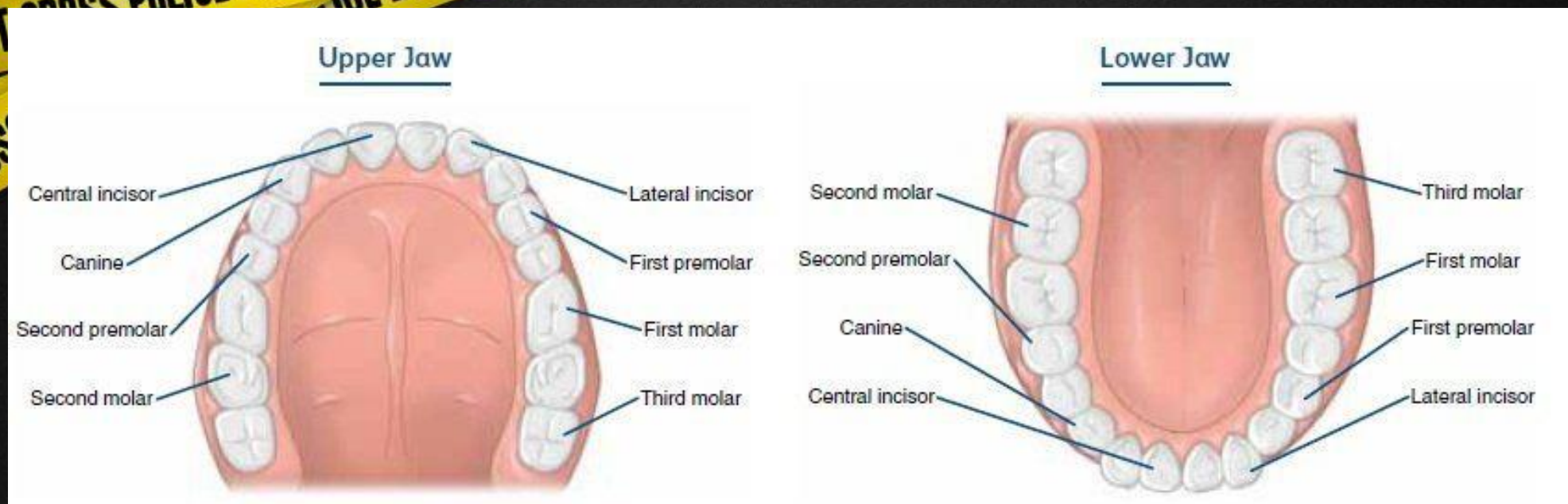


**separation
achieved**

Distillation

- Distillation is a separation technique which does the same thing as evaporation, only this time it keeps the solvent.
- The diagram below shows how distillation can be used to separate salt from water, having a sample of both the water and the salt.
- To perform distillation you will need:
 - A stand and clamp
 - A round-bottomed flask
 - A Bunsen burner
 - A thermometer
 - Some corks
 - A condenser
 - And a conical flask

POLICE LINE DO NOT CROSS POLICE LINE DO NOT CROSS POLICE LINE DO NOT CROSS

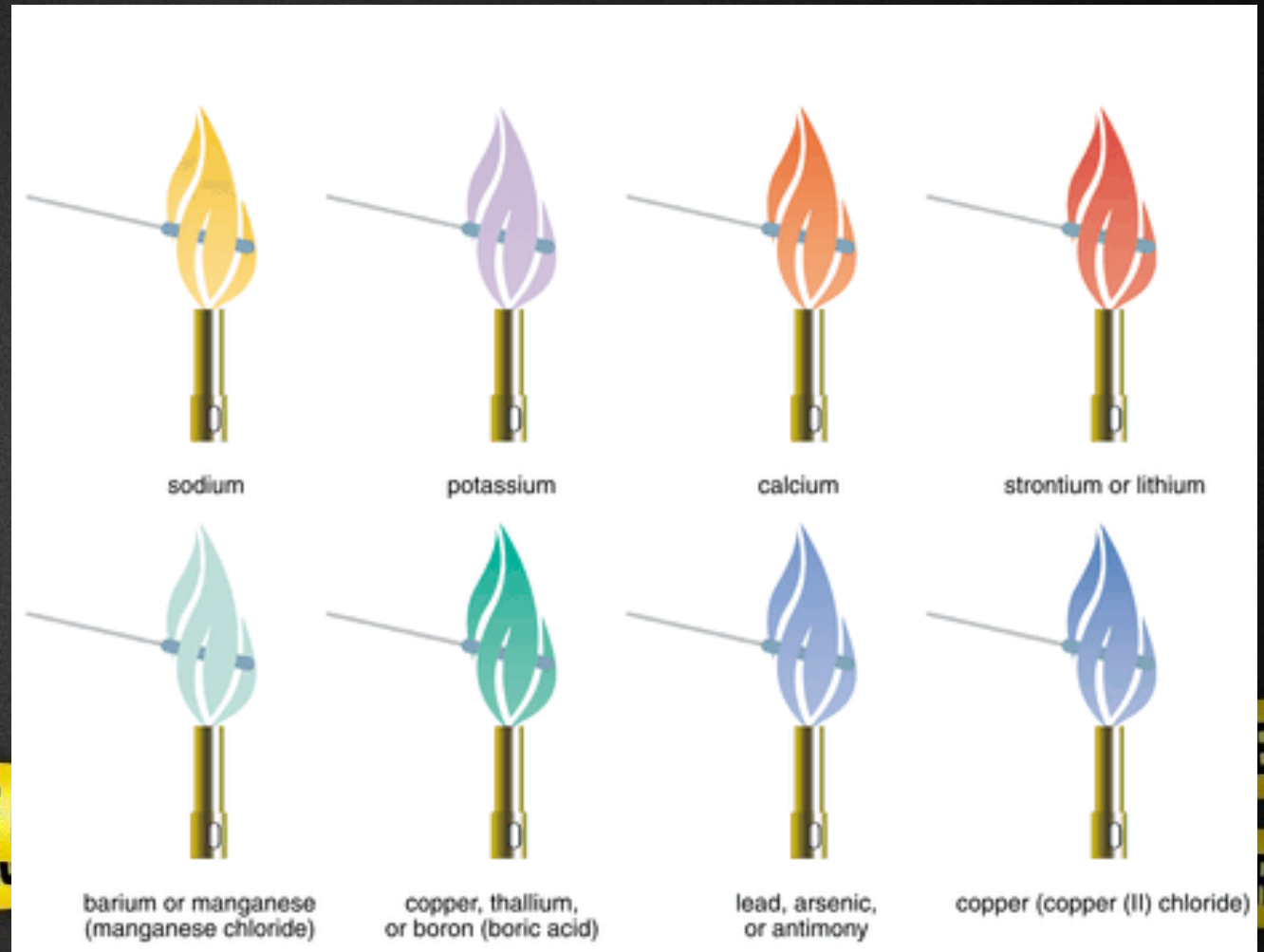


Different Teeth

- Teeth are important in forensic science as missing teeth can quickly identify who the culprit is with the bite marks.
- Label the diagram on your pack like the diagram here.

Flame tests

- Evidence of a fire can be used to check for fraud in forensic science, or to check what material was responsible for the fire. Study and remember the colours of the flames on the pack.





- Friction is a force that an object does with a surface.
- Skid marks, footprints, different surfaces, slippery surfaces are all results of lack of or too much friction.
- Forensic scientists can use this to find whether a car crash was incidental or not, or whether oil was put on purpose etc...

Friction



- In teams as instructed you are going to investigate 5 different cases. Your team is to solve the case and provide a solution and an explanation of how you did so. Goodluck!!

Time to Investigate