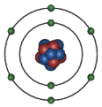
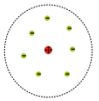
Describe how the atomic model was developed by Dalton, Thomson and Rutherford.



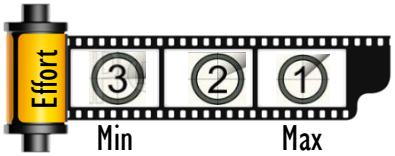


Success Criteria: Description of Dalton's, Thomson's and Rutherford's atomic models. Description of Rutherford's 'Gold Foil' experiment and what it showed.

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'Describe how the atomic model was developed by Dalton, Thomson and Rutherford.'

Record your second draft in the space below:

Target achieved? ☐ Yes ☐ Not yet

Your target is:

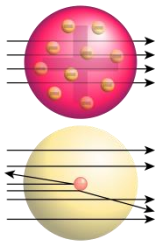
Target achieved? ☐ Yes

Marking guidelines:

Dalton: atoms like billiard balls; are smallest particles and cannot be broken up any further.

Thomson: Plum-pudding model that states that atoms are made from a positively charged sphere which contains negatively charged electrons like the plums in a plum pudding. Idea stemmed from Cathode ray experiment: rays were made of negatively charged electrons.

Rutherford: positively charged alpha particles were fired at a piece of gold foil. Most alpha particles passed straight through the foil, some were refracted, few were reflected. This showed that the atom is made from a tiny positive nucleus orbited by negatively charged electrons.
The majority is empty space



Viewing only
after first attempt.

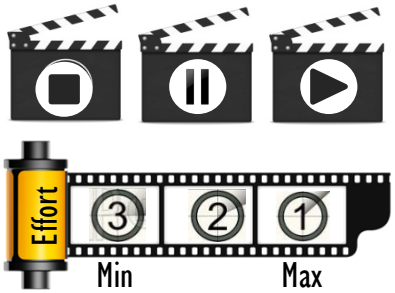
Describe how Mendeleev organised the elements in the Periodic Table.

Success Criteria: which information did Mendeleev gain from other scientists? How did he order the elements (by atomic mass or atomic number)? How did he group them? What did he do differently to other scientists?

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'Describe how Mendeleev organised the elements in the Periodic Table.'

Record your second draft in the space below:

Target achieved? ☐ Yes ☐ Not yet

Your target is:

Target achieved? ☐ Yes

Marking guidelines:

Mendeleev created a card game. Each card contained the name of the element, its mass (which he obtained from other scientists) and chemical properties. He arranged the elements first in mass order but then changed the order to ensure elements with similar properties were in the same group. He left some gaps for elements that he predicted would be discovered in the future. He even predicted what their properties would be. At the time scientists were sceptical. But when the missing elements were discovered, they believed in Mendeleev's Periodic Table.

TG

Viewing only after first attempt.

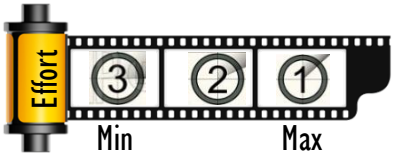
Describe how fossils are formed and explain what they tell us about the rocks they are found in.

Success Criteria: 6 steps of fossil formation; information that can be gained about the fossilised species; type of rock fossils are found in; relationship between rock strata and geological age of rock/fossil

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'Describe how fossils are formed and explain what they tell us about the rocks they are found in.'

Record your second draft in the space below:

☐ Yes

☐ Not yet

Target achieved?

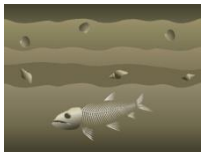
Your target is:

☐ Yes

Target achieved?

Marking guidelines:

Fossil formation: an animal dies and is buried under sand or mud. Bacteria decompose the body. Only the bones are left behind. The sand or mud slowly turn into rock. Water seeps into the rock and washes the bones away. Minerals in the water replace the bones. The fossilised bones are exposed through erosion of the surrounding rock, Earth movements or archaeologists. Fossils are usually found in sedimentary rock layers called strata. The further down the layer is, the older the rock and fossil are. Fossil evidence helps scientists find out when different animals and plants populated the planet and what their diet and habitat was like.



TG

Viewing only
after first attempt.

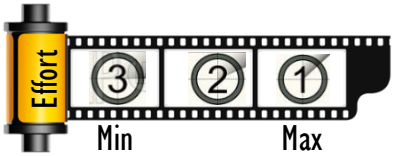
Explain why neutralisation reactions can be used to clear up chemical spillages. Include examples in your explanation.

Success Criteria: type of chemicals that react in a neutralisation reaction; properties of these chemicals; word equation that identifies the products of a neutralisation reaction; properties of the products; example of a specific neutralisation reaction.

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'Explain why neutralisation reactions can be used to clear up chemical spillages. Include examples.'

Record your second draft in the space below:

☐ Yes

☐ Not yet

Target achieved?

Your target is:

☐ Yes

Target achieved?

Marking guidelines:

During a neutralisation reaction, an acid reacts with a base to form salt and water. Acids are corrosive and many bases are as well. However, salt and water are less harmful and can be washed down the drains after a chemical spill (provided the salt is not dangerous to the environment).

Example:

Sodium hydroxide + Hydrochloric acid → Water + sodium chloride

$NaOH + HCl \rightarrow H_2O + NaCl$

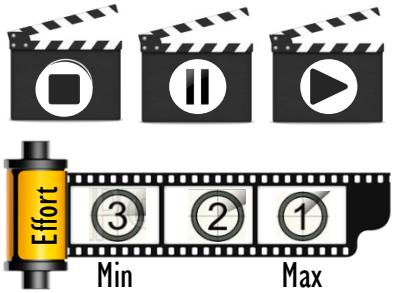
Describe how to separate a mixture of an insoluble solid, soluble substance and water.

Success Criteria: Suitable apparatus identified; clear, orderly method; separation techniques named.

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'Describe how to separate a mixture of an insoluble solid, soluble substance and water.'

Record your second draft in the space below:

Target achieved?

☐ Yes

☐ Not yet

Your target is:

Target achieved?

☐ Yes

Marking guidelines:

During a neutralisation reaction, an acid reacts with a base to form salt and water. Acids are corrosive and many bases are as well. However, salt and water are less harmful and can be washed down the drains after a chemical spill (provided the salt is not dangerous to the environment).

Example:

Sodium hydroxide + Hydrochloric acid → Water + sodium chloride

$NaOH + HCl \rightarrow H_2O + NaCl$

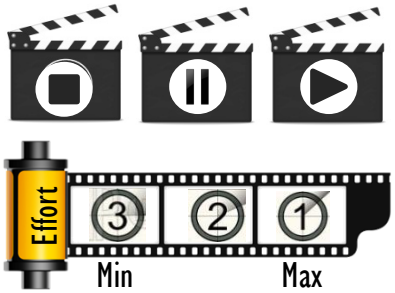
Describe how to produce a paper chromatogram. Give a reason for each step and explain why paper chromatography can separate the dyes in ink samples.

Success Criteria: labelled diagram drawn; mobile and stationary phases identified; identified which dye travelled fastest; explanation why some dyes travel faster than others; reason for pencil line given; purpose of lid stated

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'Describe how to produce a paper chromatogram. Give a reason for each step and explain why paper chromatography can separate the dyes in ink samples.' Record your second draft in the space below:

☐ Yes

☐ Not yet

Target achieved?

Your target is:

☐ Yes

Target achieved?

Marking guidelines:

Stationary phase: paper

Mobile phase: water/solvent.

Draw a pencil line 1cm above the base of the paper. Pencil will not smudge. Place the ink sample on the pencil line and place the tip of the paper into the solvent. As the solvent rises up the paper, dyes that dissolve in the solvent will rise up the paper. The better the dye dissolves, the higher up it will travel. Dyes that have a strong affinity to the paper will not travel far. Use a lid to prevent the solvent from evaporating.

TG

Viewing only after first attempt.

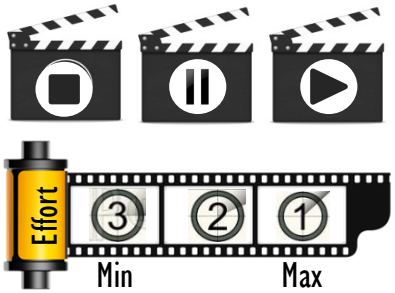
CSI: CRIME SCENE INVESTIGATION

Compare paper chromatography to gas chromatography.

Success Criteria: mobile and stationary phases compared; chromatogram differences and similarities described; purpose of both methods stated; brief outline of each method given.

TAKE 1 | MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'Compare paper chromatography to gas chromatography.'

Record your second draft in the space below:

☐ Yes

☐ Not yet

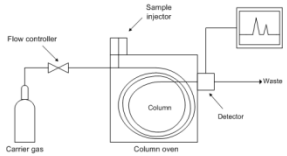
Target achieved?

Your target is:

☐ Yes

Target achieved?

Marking guidelines:



In paper chromatography the mobile phase is a liquid, in gas chromatography it is an inert gas. In paper chromatography the stationary phase is paper, in gas chromatography it is a silica gel filled column. In gas chromatography the mixture has to be vaporised first. The gas chromatogram shows the type and amount of each component of the mixture. Both types of chromatography separate mixtures.

TG

Viewing only after first attempt.

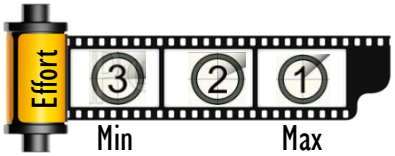
A treasure hunter has found some ancient gold, silver and iron coins buried in a field. Describe and explain the appearance of each type of coin.

Success Criteria: Describe the appearance of gold, silver and iron coins that have been buried in the ground for many years; with reference to the reactivity series and any reactions that occurred explain the difference in appearance of each type of coin.

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'A treasure hunter has found some ancient gold, silver and iron coins buried in a field. Describe and explain the appearance of each type of coin.' Record your second draft in the space below:

☐ Yes

☐ Not yet

Target achieved?

Your target is:

☐ Yes

Target achieved?

Marking guidelines:

Gold is at the bottom of the reactivity series and therefore very unreactive. The gold coins will be unchanged and still be shiny and gold in colour. Silver is a little more reactive than gold and the silver is likely to be black. This is because it has reacted with any sulfur compounds in the soil and air. Iron is above both silver and gold in the reactivity. It will have reacted with the water and oxygen in the soil and air and formed rust (hydrated iron oxide).

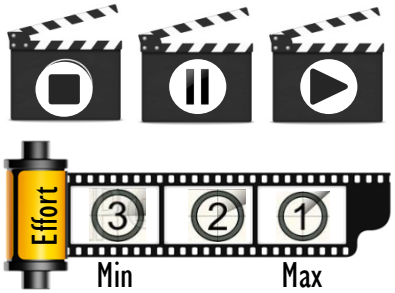
Describe an experiment you can use to compare the reactivity of iron, silver and lithium.

Success Criteria: Suitable equipment listed; suitable chemical selected to react metals with; observations stated; conclusions made from observations.

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2

MARKS /6

'Describe an experiment you can use to compare the reactivity of iron, silver and lithium.'

Record your second draft in the space below:

Target achieved?

☐ Yes

☐ Not yet

Your target is:

Target achieved?

☐ Yes

Marking guidelines:

Wear safety goggles for this experiment.

Use three test tubes and fill them with 10cm^3 of water. Add a small amount of iron into test tube one. Add a small amount of silver into test tube two. Add a small amount of lithium into test tube three. The sodium will skid across the surface of the water and lots of hydrogen bubbles will be produced. With iron only few bubbles should be produced. With silver no bubbles should be produced. This shows that lithium is most reactive and silver is least reactive.

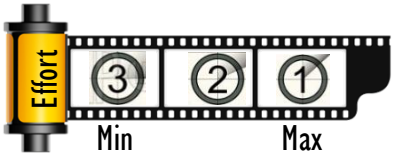
Describe the advantages and disadvantages of non-biodegradable fibres such as carpet and rope fibres.

Success Criteria: Definition of non-biodegradable stated; example of a non-biodegradable fibre given; at least 2 advantages and at least 2 disadvantages stated.

TAKE 1

MARKS /6

Self assessment:



Student comment:

Teacher assessment

Teacher feedback:

TAKE 2 | MARKS /6

'Describe the advantages and disadvantages of non-biodegradable fibres such as carpet and rope fibres.'

Record your second draft in the space below:

Target achieved?

☐ Yes

☐ Not yet

Your target is:

Target achieved?

☐ Yes

Marking guidelines:

Non-biodegradable substances cannot be broken down by micro-organisms such as bacteria. This means that they do not decompose. Examples are plastics such as polyethene (plastic bags) or polypropene (used to make ropes and carpet fibres). Carpet fibres made from polypropene are hard-wearing and can easily be cleaned. However, because carpets made from this material are non-biodegradable, they use up valuable landfill space and have to be incinerated which can release harmful gases into the atmosphere.