

Escape the classroom

Education in Chemistry

November 2018

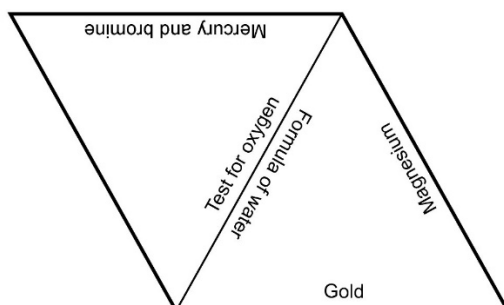
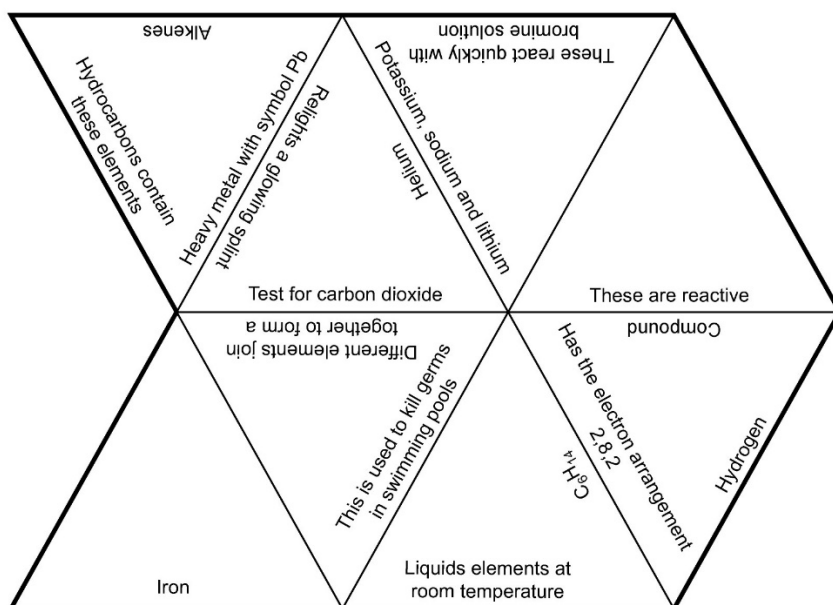
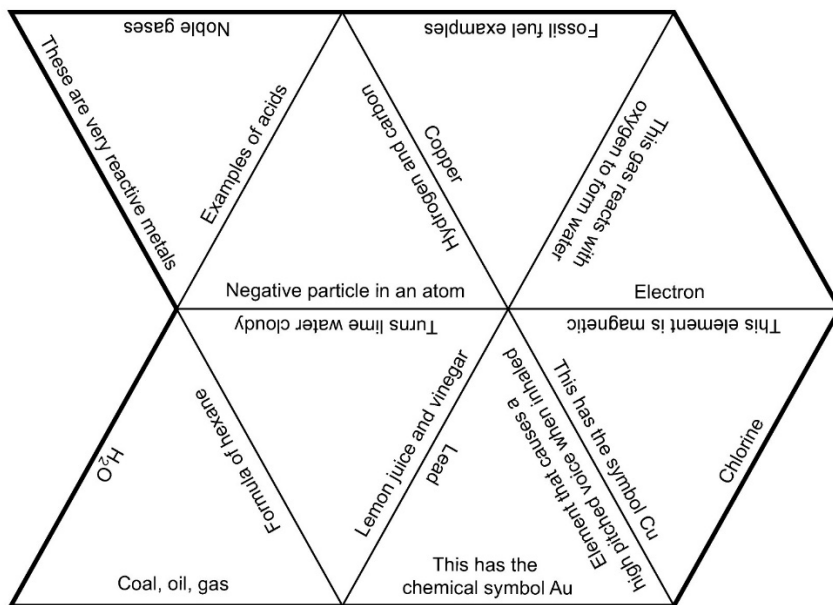
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For this version of an Escape room, challenge students as a group to solve chemistry-based puzzles to open a locked box containing a reward, allowing them to develop problem-solving, knowledge and practical skills in a novel way.

On the following pages are teacher instructions, an example jigsaw and student worksheets.

Jigsaw



Periodic table guess who clues

Close the door of ...

... all elements named after planets.

... all elements named after countries.

... all elements that have full energy levels.

... all elements that are worn as jewellery.

... all elements that are used in coins.

... an element named after a continent.

... the element with an electron arrangement 2,8,3.

... the element required for combustion.

... the element which is a yellow solid at room temperature, found in matches.

... the element that burns with a bright white flame.

... the element used to kill germs in swimming pools.

Microscale chemical changes

Materials

- Dropper bottles with various chemicals
- Universal indicator
- Hydrochloric acid (0.1 M)
- Sodium hydroxide (0.1 M)
- Lead nitrate (0.01 M)
- Potassium iodide (0.01 M)
- Phenolphthalein solution
- Copper sulphate (0.5 M)
- Ammonia (1 M)
- Laminated instruction sheet

Activity

Pupils should add a drop of each the chemicals to each other using the instructions and note the colour. The colour will correspond to a number. This will give the code required to unlock the box. This can be used to introduce pH, precipitation and complexes.

Microscale chemical changes worksheet

- 1) Add 1 drop of lead nitrate to 1 drop of potassium iodide in the circle.



- 2) Add 1 drop of universal indicator to 1 drop of hydrochloric acid in the circle.



- 3) Add 1 drop of copper sulfate to 1 drop of ammonia in the circle.



- 4) Add 1 drop of phenolphthalein to 1 drop of sodium hydroxide in the circle.



Conductivity code

Materials

- Carbon fibre
- Copper
- Electrolycra
- Perspex (cover slip)
- Rock
- Rubber band
- Sandpaper
- Wooden splint
- Zinc
- Microscale conductivity meter (see SSERC or CLEAPSS website for construction) or any set-up that can test for electrical conductivity.

Conductivity code worksheet

Rubber	Wood	Electrolycra	Rock	Perspex	Copper	Zinc	Sand	Carbon fibre
1	2	3	4	5	6	7	8	9

Which conducts electricity? Test to see. The conductors will reveal the key.