Fun-Size: Atoms and Molecules Traffic Lights Teacher notes

Introduction

This game is a revision activity to a lesson or series of lessons on chemical reactions, substances and change.

Running the activity

Give each pupil three small pieces of coloured card about 10 cm square (one red, one yellow or orange, one green). These are used to signal their answers.

Red means FALSE.
Green means TRUE.
Yellow or orange means I'M NOT SURE.

The game follows this sequence:

- Read the question.
- Allow a short period of time for pupils to consider their answer.
- Count "1,2,3 Show your cards!"
- Pupils all hold up one of their card at the same time.

Safety

Not applicable.

More ideas

Use the red, yellow and orange cards to denote solid, liquid and gas. Ask straightforward questions such as 'What state is water?', and more stretching questions like 'What state is toothpaste?' (solid & liquid), 'What state is sponge cake?' (solid & gas). Pupils hold up two cards when appropriate.

Learning outcomes

- Revising and consolidating chemical reactions, substances and change.

Where the activity fits in

QCA SoW 8E and 8F

Skills

Recall.

Fun-Size: Atoms and Molecules Questions

1. Atoms can be seen with a microscope.
   False. They are too small.

2. There are only about 100 elements.
   True. This includes the man made ones.

3. Elements contain only one type of atom.
   True.

4. Most elements are gases.
   False. Actually most are solids. Only two elements are liquid at room temperature.

5. We have found all the possible elements.
   Do not know. More man made elements could be produced

6. Elements react together to form compounds.
   True.

7. Compounds are mixtures.
   False. Compounds are pure substances. Every particle is the same.

8. Compounds contain particles called molecules.
   True. Some do. But others, for example sodium chloride, are a giant lattice of particles

9. Water is a compound.
   True. It is a compound of hydrogen and oxygen atoms

10. Compounds cannot be changed.
    False. Lots of compounds react with each other to make new materials.

11. You cannot see a chemical change.
    False. Most of the evidence for chemical change is what you can see, smell and hear happening.

12. The Periodic Table is a list of elements.
    True.

13. Compounds are made from a fixed ratio of atoms.
    True. Water is H_20, carbon dioxide is CO_2

14. Air is a pure substance.
    False. Air is a mixture. 78% nitrogen, 21% oxygen, 0.03% carbon dioxide and other gases.

15. A compound will melt at one temperature.
    True. This is how you can test of the substance is pure.

16. When ice melts the temperature goes steadily up.
    False. The temperature stays at $0^{o}C$ until all the ice has turned to water.

17. You cannot separate alcohol and water.
    False. Distillation will separate two liquids

18. Forensic scientists use chromatography.
    True. Forgery can be found out by analysing colours in the ink that has been used.

19. Nitrogen is always a gas.
    False. If nitrogen is cooled to $-190^{o}C$ it condenses into a liquid.

20. Chemical reactions cannot be reversed.
    False. For example, aluminium oxide can be turned back into aluminium and oxygen. But energy (electricity in this case) has to be put in to make the reverse reaction happen