

## MODULE: *Chemical Change*

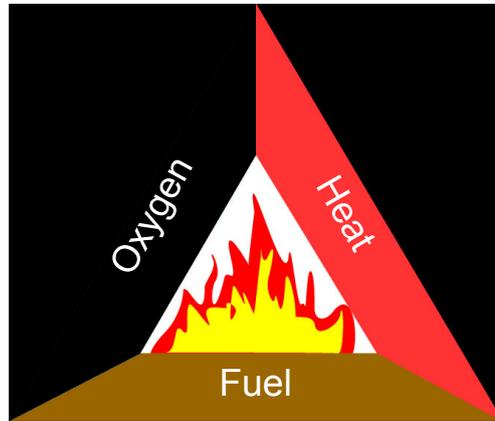
### Intervention Session

This session has been designed to help you to practice answering TIMSS questions about the Chemical Change module. It also helps you to practice explaining the key concepts and apply your understanding.

- 1) Which process below is not an example of a chemical change?
- A. The gas burning in an oven
  - B. Melting ice
  - C. Cooking an egg
  - D. Digesting food
- 2) Which process below is an example of a chemical change?
- A. A can is being crushed.
  - B. An element is heated and evaporates.
  - C. Sand is separated from a mixture by filtration.
  - D. Two substances are stirred together and a temperature rise is measured.
- 3) When a substance undergoes a chemical change all of the following are evidence that this has happened **except**...
- A. odour or smell is detected
  - B. colour change
  - C. change in state
  - D. formation of gas

- 4) A chemical reaction occurs when
- A. a solution is formed
  - B. a change in state occurs
  - C. energy is absorbed or released
  - D. the reaction is reversible
- 5) You can classify chemical reactions as either exothermic or endothermic. In an exothermic reaction...
- A. energy in the form of heat or light is released
  - B. energy in the form of heat is absorbed
  - C. atoms are created
  - D. atoms are destroyed
- 6) You can classify chemical reactions as either endothermic or exothermic. In an endothermic reaction...
- A. energy in the form of heat or light is released
  - B. energy in the form of heat is absorbed
  - C. atoms are created
  - D. atoms are destroyed

7) What is missing from one of the sides of the fire triangle?

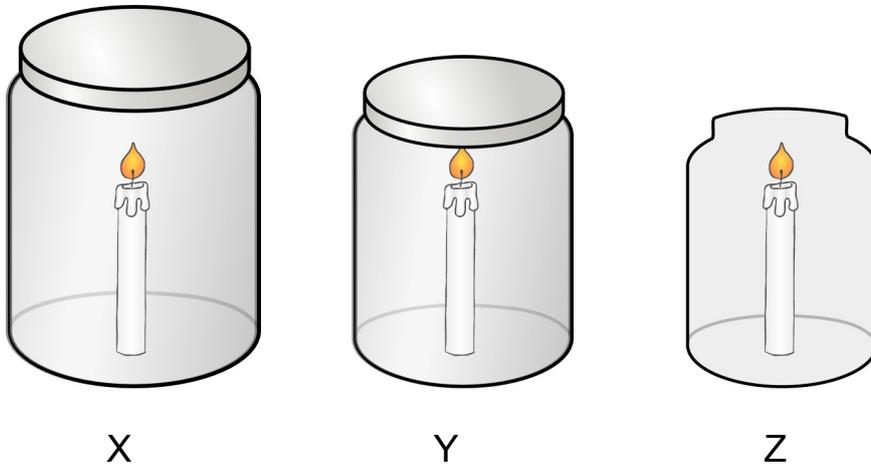


- A. Carbon Dioxide
- B. Hydrogen
- C. Oxygen
- D. Ozone

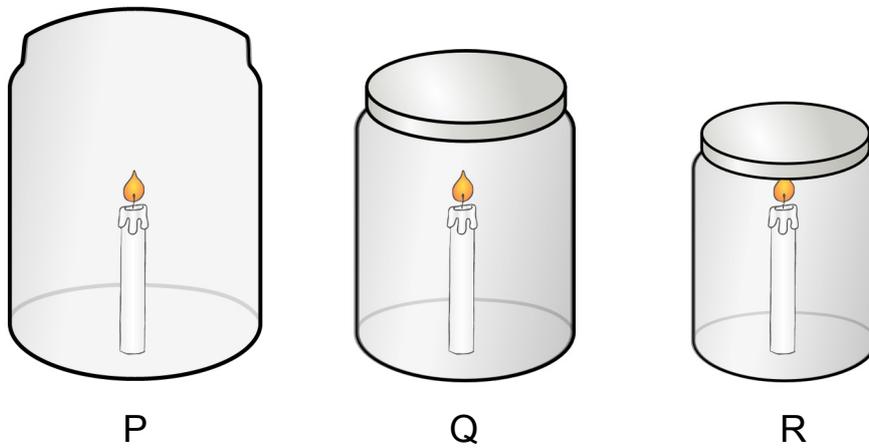
8) Why can a small fire be put out by placing a heavy blanket on it?

- A. It helps to reduce the temperature.
- B. It makes the fire smaller.
- C. It stops oxygen from getting to the fire.
- D. It absorbs the substances that are burning.

- 9) When you burn magnesium ribbon in a Bunsen burner flame the chemical reaction is an example of...
- A. neutralisation
  - B. oxidation
  - C. reduction
  - D. decomposition
- 10) When magnesium burns in a Bunsen burner flame, which type of reaction is NOT taking place?
- A. Combustion
  - B. Reduction
  - C. Oxidation
  - D. Exothermic



- 11) Three identical candles are put into the three jars above and lit at the same time. Jars X and Y have their lids screwed on immediately and jar Z is kept open. Which candle flame will burn for the longest time? Please explain your answer.



- 12) Three identical candles are put into the three jars above and lit at the same time. Jars Q and R have their lids screwed on immediately and jar P is kept open. Which candle flame will go out first? Please explain your answer.

## Longer Questions

1. Explain the difference between a physical change and a chemical change. Give 3 examples of each type of change.
2. A chemical reaction can often be detected by observing changes which take place during the reaction. Describe what type of things you might observe or measure which would help you decide that a chemical change or reaction was taking place.
3. Explain briefly what an exothermic and an endothermic reaction are. Give one example of each type of reaction along with the word equation for each. In your equation show where heat energy is taken in or given out.
4. This question relates to the 'HotCan ' self-heating coffee drink can.
  - (i) Make a labelled line drawing of the can showing where the coffee, calcium oxide and water are located inside the can.
  - (ii) Write out the word equation for the reaction between calcium oxide and water.

(iii) State whether this is an exothermic or endothermic reaction.

(iv) Explain how the coffee drink is heated up.

5. All fireworks contain a fuel and an oxidiser which react together in the firework in a burning reaction. Answer the following:

(i) Give an example of a fuel used in fireworks.

(ii) What is the purpose of the oxidiser in the firework?

(iii) When the fuel and oxidiser react what type of reaction is taking place?

(iv) What types of energy is the chemical energy inside the fuel stored released as?

(v) Explain how fireworks produce different colours.

6. Answer the following:

(i) Complete the word equation below:  
Fuel + ? + ? = Fire

(ii) Make a complete drawing of the Fire Triangle.

(iii) Use the Fire Triangle to explain the ways you could put out a fire.