Metal and Non Metal Oxides

KS3 Chemistry · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Is magnesium oxide acidic or basic?

Step 1 · Is magnesium a metal?

Yes.

Step 2 · Rule

Metal oxides are bases. Those that dissolve make alkaline solutions.

Answer: Basic (its solution is alkaline)

Check: Universal indicator turns blue.

2. Now try one with the steps

Write word equations for sulfur burning and its oxide dissolving in water.

Step 1 · Burning

Step 2 · Dissolving

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What is formed when a metal reacts with oxygen? [1]

2. Are metal oxides acidic or basic? [1]

3. Are non-metal oxides usually acidic or basic? [1]

4. Name the oxide formed when carbon burns completely. [1]

5. Sodium oxide dissolves in water. Will the solution have a pH above or below 7? [1]

6. What colour does universal indicator turn in a solution of sulfur dioxide? [1]

7. Name the gas that dissolves in rain and makes it naturally slightly acidic. [1]

8. Name TWO gases that cause acid rain. [2]

9. Give TWO effects of acid rain. [2]

10. Why do power stations use 'scrubbers' with powdered limestone or lime in their chimneys? [2]

11. Is calcium oxide a base, an alkali, or both? It dissolves a little in water. [1]

12. Element Z burns to form an oxide whose solution has pH 2. Is Z more likely a metal or a non-metal? [1]

13. Write the word equation for magnesium oxide reacting with hydrochloric acid. [2]

14. Lakes in Scandinavia were treated with powdered limestone in the 1980s. Explain why. [2]

4. Before you hand it in

"All oxides are acidic because oxygen is in them."
Metal oxides are basic; non-metal oxides are acidic.

Calling every metal oxide an alkali.
Metal oxides are bases; only the soluble ones (like sodium oxide) form alkalis.

"Carbon dioxide is a strong acid."

Carbon dioxide gives about pH 5–6; sulfur dioxide gives a lower pH.

"Acid rain comes from carbon dioxide."

Acid rain is mainly caused by sulfur dioxide and nitrogen oxides.