Year 9 Science: Tests for hydrogen, oxygen, carbon dioxide and water

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. A gas relights a glowing splint. What is it?

2. Marble chips are added to hydrochloric acid. Which test would you use on the gas, and what result do you expect?

3. A clear liquid turns blue cobalt chloride paper pink. Does this prove the liquid is pure water? Explain.

4. Red cabbage indicator turns blue-green in a cleaning spray. Is the spray acidic, neutral or alkaline?

5. A student spills dilute sodium hydroxide on their hand. What should they do first?

Fix the mistake

6. Correct this statement: "A lit splint went out in the gas, so it must be carbon dioxide."

7. Correct this statement: "Hydrogen relights a glowing splint, and oxygen pops with a lit one."

8. Correct this statement: "The liquid turned cobalt chloride paper pink, so it is pure water."

9. Correct this statement: "To dilute an acid, pour the water into the acid."

Answer key (for parents and tutors)

1. A gas relights a glowing splint. What is it?
   Oxygen; only nearly pure oxygen relights a glowing splint.
2. Marble chips are added to hydrochloric acid. Which test would you use on the gas, and what result do you expect?
   Bubble it through limewater; the limewater turns milky because the gas is carbon dioxide from the acid and carbonate.
3. A clear liquid turns blue cobalt chloride paper pink. Does this prove the liquid is pure water? Explain.
   No. It shows water is present, but the liquid could have other things dissolved in it; you would also check its boiling point is 100 °C.
4. Red cabbage indicator turns blue-green in a cleaning spray. Is the spray acidic, neutral or alkaline?
   Alkaline, since red cabbage turns blue to green above pH 7.
5. A student spills dilute sodium hydroxide on their hand. What should they do first?
   Rinse the hand under running water for at least 15 minutes and tell the teacher; sodium hydroxide is corrosive even when dilute.
6. Correct this statement: "A lit splint went out in the gas, so it must be carbon dioxide."
   A splint also goes out in nitrogen and other gases, so only limewater turning milky confirms carbon dioxide.
7. Correct this statement: "Hydrogen relights a glowing splint, and oxygen pops with a lit one."
   It is the other way round: hydrogen gives a squeaky pop with a lit splint, and oxygen relights a glowing one.
8. Correct this statement: "The liquid turned cobalt chloride paper pink, so it is pure water."
   Pink only shows water is present; a pure sample also has a boiling point of exactly 100 °C at sea level.
9. Correct this statement: "To dilute an acid, pour the water into the acid."
   Add the acid slowly to the water, because water poured into concentrated acid heats up fast and can spit acid out.