

AP Chemistry

Name: _____ Score: _____

1. Select **all** signs that suggest a chemical reaction.

- ☐ a precipitate forming
- ☐ a colour change
- ☐ a gas bubbling out

Tick every correct option.

2. A spectator ion is one that...

- ☐ appears unchanged on both sides
- ☐ forms the precipitate
- ☐ is created in the reaction

3. Observing bubbles and a temperature rise is which level?

- ☐ particulate
- ☐ symbolic
- ☐ macroscopic

4. Burning wood into ash and smoke is a...

- ☐ chemical change
- ☐ physical change
- ☐ no change

5. In $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$, how many moles of water form from 3 mol of O_2 (excess H_2)?

_____ mol

6. 30 mL of acid is neutralized by 15 mL of 0.2 M base (1 to 1). The acid's molarity (in M)?

_____ M

7. $A + B \rightarrow AB$ is which type of reaction?

- ☐ synthesis
- ☐ decomposition
- ☐ combustion

8. In the Bronsted-Lowry model, an acid is a substance that...

- ☐ donates an electron

☐ donates a proton (H^+)

☐ accepts a proton

9. Oxidation and reduction always happen together in a redox reaction.

☐ True ☐ False

10. In a chemical reaction, the total mass of reactants equals the total mass of products.

☐ True ☐ False

AP Chemistry

1. **a precipitate forming; a colour change; a gas bubbling out**

Colour change, gas, and a precipitate all hint at new substances.

2. **appears unchanged on both sides**

Spectators do not change, so they cancel out.

3. **macroscopic**

What you directly see and measure is the macroscopic level.

4. **chemical change**

New substances (ash, gases) form, so it is chemical.

5. **6 mol**

The ratio is 1 O₂ to 2 H₂O, so $3 \times 2 = 6$ mol.

6. **0.1 M**

$M_a(30) = (0.2)(15) = 3$, so $M_a = 0.1$ M.

7. **synthesis**

Two things combining into one is a synthesis.

8. **donates a proton (H⁺)**

An acid is a proton donor; a base is a proton acceptor.

9. **True**

Electrons lost by one species are gained by another.

10. **True**

Atoms are conserved, so mass is conserved.