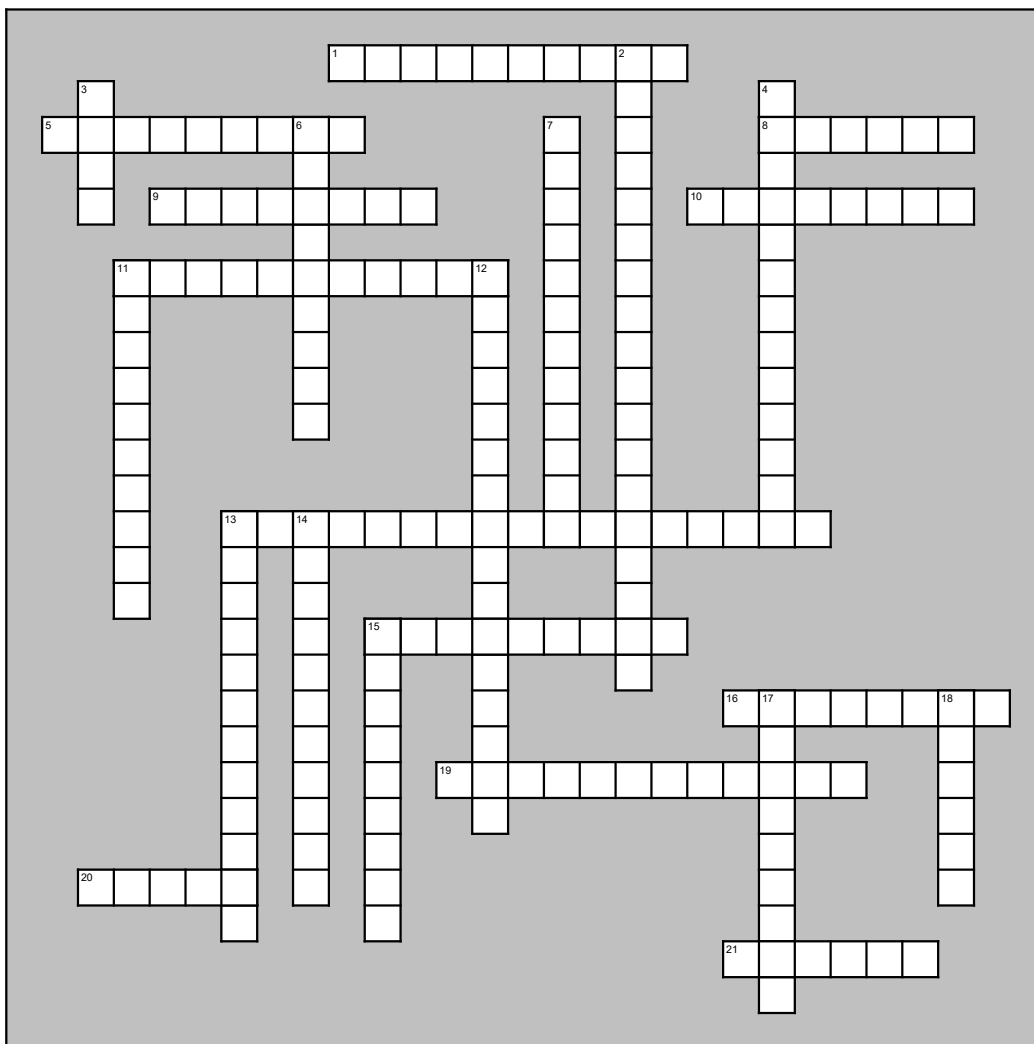


# Crossword



## Across

1. A chemical reaction that requires oxygen gas, producing heat and light. Hydrocarbons combust to form carbon dioxide and water.
5. The mass of one mole of a substance. Masses are given on the periodic table (mass number) when one mole of that element is used.
8. During a chemical reaction, \_\_\_ is either released (exothermic) or absorbed (endothermic).
9. Chemical equations must be \_\_\_, meaning that the same type and number of atoms (elements) are on the reactants side and the products side.
10. The new substances formed in a chemical reaction as a result of a change in the reactants.
11. Any change that absorbs, "gains", takes in energy from its surroundings. The energy required to break the bonds in the reactants is greater than the energy released as the products form.
13. Changes involving the breaking of chemical bonds in the reactants and the formation of chemical bonds in the products.
15. When an element gains an electron during a chemical reaction. The charge of the atom decreases. Chlorine, Cl becomes a chloride anion, Cl<sup>-</sup>.
16. Converting moles of a substance into grams (mass) or grams (mass) of a substance into moles.
19. The law relating to the mass of all elements involved in a chemical reaction. Energy cannot be created or destroyed.
20. When the equilibrium of a chemical reaction is stressed by temperature, pressure or concentration, the equilibrium can \_\_\_\_.
21. A chemical reaction in which TWO different ionic compounds exchange positive ions and form TWO new ionic compounds.  $AB + CD \rightarrow AD + CB$

## Down

2. A chemical reaction in which electrons are transferred from one reactant to another (the charge of the atoms change from reactant to product). e.g. redox
3. The chemical quantity used to compare and represent large numbers of small particles when measuring.  $6.02 \times 10^{23}$  (Avogadro's number).
4. Type of chemical reaction in which ONE reactant is broken down chemically into two or more constituent parts.  $AB \rightarrow A + B$
6. Type of chemical reaction in which two or more reactants produce ONE new substance.  $A + B \rightarrow AB$
7. How fast a reaction proceeds. Temperature, surface area, concentration, agitation and catalysts all affect it.
11. Any change that releases, gives off, or "loses" energy to its surroundings. The energy released as the products form is greater than the energy required to break the bonds in the reactants.
12. Representation of the change in reactants to products in a chemical reaction. Formulas and arrows are used.
13. Numbers that appear before formulas in a chemical equation. Used to balance the reaction to conserve mass (same type and number of atoms/elements on each side of the equation).
14. When the forward and reverse reactions proceed at the same rate. This happens when the chemical reaction does not go to completion.
15. The substances that undergo change in a chemical reaction to form new substance(s).
17. When an element loses an electron during a chemical reaction. It does NOT have to involve oxygen. Sodium, Na becomes a sodium cation, Na<sup>+</sup>.
18. A chemical reaction in which ONE metal or non-metal replaces another metal or non-metal.  $A + BC \rightarrow AC + B$  (metals replace metals, non-metals replace non-metals).