1. Matter is composed of atoms.
2. Atoms of different elements have different numbers of protons.
3. Chemical reactions involve the rearrangement of atoms.
4. The properties of compounds differ from those of their constituent elements.
5. The Law of Conservation of Mass states that mass is neither created nor destroyed in chemical reactions.
6. Water (H2O) is a universal solvent.
7. The pH scale measures how acidic or basic a substance is.
8. States of matter include solid, liquid, and gas.
9. Temperature affects the state of matter.
10. Atoms form bonds to achieve a full outer electron shell.
11. Salt dissolves in water but oil does not.
12. Metals conduct electricity while non-metals do not.
13. Ice floats on water.
14. Oxygen is necessary for combustion.
15. Air is a mixture of gases, including nitrogen, oxygen, carbon dioxide, and argon.
16. The color of a flame can indicate the presence of certain elements.
17. Vinegar and baking soda react to produce carbon dioxide gas.
18. Pressure increases the boiling point of water.
19. Plants convert carbon dioxide and water into glucose and oxygen through photosynthesis.
20. The atmosphere is protected from ultraviolet radiation by the ozone layer.
21. Bleach disinfects water by killing bacteria and viruses.
22. Carbon dioxide is more soluble in cold water than in warm water.
23. Magnets attract iron but not copper.
24. Food coloring spreads faster in hot water than in cold water.
25. The sky appears blue because of the way the atmosphere scatters sunlight.
26. Natural water sources contain dissolved minerals and gases.
27. Helium balloons float because helium is lighter than air.
28. Rust forms on iron when it is exposed to oxygen and moisture.
29. The human body is composed of mainly oxygen, carbon, hydrogen, and nitrogen.
30. Plants absorb nutrients from the soil through their roots.
31. Milk curdles when lemon juice is added.
32. Sugar crystals form when a supersaturated solution cools.
33. A match burns due to a chemical reaction with oxygen.
34. Dry ice sublimates, turning directly from solid to gas.
35. Soap removes grease because it acts as an emulsifier.
36. A battery generates electricity through chemical reactions.
37. The expiration of food can be due to chemical changes.
38. Sunscreen protects skin by absorbing or reflecting UV radiation.
39. A candle flame contains different zones of combustion.
40. Effervescence occurs when acids react with carbonates releasing carbon dioxide.
41. Bubbles in soda are due to dissolved carbon dioxide gas.
42. The color change of leaves in autumn results from chemical changes.
43. Fermentation produces alcohol from sugars.
44. Chalk (calcium carbonate) reacts with vinegar (acetic acid) to produce carbon dioxide.
45. Adding salt to ice lowers its melting point.
46. The tarnishing of silver is caused by a reaction with sulfur in the air.
47. Water has a high specific heat capacity, affecting climate and weather.
48. Bread rises due to yeast producing carbon dioxide.
49. The hardness of water is due to dissolved minerals, primarily calcium and magnesium.
50. Cooking changes the chemical properties of food, making it edible or more palatable
51. Dissolving sugar in tea makes it sweet without changing the amount of liquid noticeably.
52. The process of digestion in humans involves chemical reactions that break down food.
53. Non-stick cookware is coated with a material that prevents food from adhering to it due to its chemical properties.
54. The glow of fireflies is a result of a biochemical reaction.
55. Salt lowers the freezing point of water, which is why it's used to melt ice on roads.
56. The process of photosynthesis in plants converts carbon dioxide and water into oxygen and glucose.
57. Helium is used in balloons because it is lighter than air and non-reactive.
58. The smell of rain is caused by chemical compounds released by dry earth and plants.
59. Limestone reacts with acid rain and erodes, affecting buildings and statues.
60. The blue color of copper sulfate is due to its chemical composition.
61. Inflating a balloon with baking soda and vinegar demonstrates a gas-producing reaction.
62. The process of making cheese from milk is an example of a chemical change.
63. Adding chlorine to swimming pools disinfects the water by killing bacteria.
64. The browning of cut apples is due to oxidation.
65. Water droplets forming on the outside of a cold glass are a result of condensation.
66. Certain materials glow in the dark after absorbing light, a phenomenon known as phosphorescence.
67. The color change of hydrangea flowers is influenced by the pH of the soil.
68. The preservation of food by canning involves killing bacteria through heat.
69. The process of making soap, saponification, involves a reaction between fat and lye.
70. Natural indicators, like red cabbage juice, change color in the presence of acids or bases.
71. The process of crystallization can purify substances.
72. Citrus fruits contain citric acid, which gives them their sour taste.
73. Evaporation of water from a solution can leave behind solid salts.
74. A chemical change is irreversible and results in the formation of new substances.
75. Mixing an acid with a base neutralizes both, often producing water and a salt.
76. The presence of carbon dioxide in exhaled breath can be demonstrated by turning limewater milky.
77. Water's surface tension allows insects to walk on its surface.
78. The depletion of ozone in the atmosphere is a chemical issue with environmental impacts.
79. The process of mummification involved chemical preservatives in ancient times.
80. Household bleach and ammonia should never be mixed due to the dangerous gases produced.
81. Salt can cause ice to melt faster by lowering its melting point.
82. The color of a flame can indicate the type of metal salt present.
83. Plastics are made from polymers, long chains of repeating molecular units.
84. The dissolving of sugar in water is a physical change because it can be reversed by evaporation.
85. Rusting of iron is an example of oxidation, a chemical change where iron reacts with oxygen.
86. Baking powder releases carbon dioxide gas when heated, causing dough to rise.
87. Acid rain is caused by sulfur dioxide and nitrogen oxides dissolving in rainwater.
88. The human body uses carbohydrates, fats, and proteins as sources of energy through metabolic reactions.
89. Diamonds and graphite are both made of carbon atoms but have different structures and properties.
90. Neutralization reactions between acids and bases produce salt and water.
91. Wax melts when heated, demonstrating a physical change from solid to liquid.
92. The process of respiration in humans converts oxygen and glucose into carbon dioxide and water.
93. The depletion of the ozone layer increases UV radiation reaching the Earth's surface.
94. Carbonation in drinks is due to dissolved carbon dioxide gas.
95. The litmus test uses a natural dye that changes color to indicate acidity or basicity.
96. The concept of density explains why some objects float while others sink in water.
97. The aurora borealis, or northern lights, is the result of collisions between gaseous particles in the Earth's atmosphere with charged particles released from the sun's atmosphere.
98. Natural water purification involves physical, chemical, and biological processes.
99. Exothermic reactions release heat, while endothermic reactions absorb heat from their surroundings.
100. The formation of dew is a result of water vapor condensing into liquid water.
101. Food cooking involves a series of chemical reactions, including Maillard browning and caramelization.
102. The process of galvanization coats iron or steel with zinc to prevent rusting.
103. Soap scum forms due to the reaction of soap with minerals in hard water.
104. The dissolving process of table salt in water is an example of a physical change.
105. The fermentation process in yogurt production converts lactose into lactic acid.
106. Natural pigments in fruits and vegetables change color with pH variations.
107. Water's anomalous expansion upon freezing causes ice to float.
108. The human body's use of vitamins involves complex biochemical reactions.
109. The streak test can help identify minerals by the color of their powder.
110. The brittleness of ceramics is due to ionic and covalent bonding in their crystalline structures.
111. Freezing point depression is a phenomenon where the freezing point of a liquid is lowered by adding another compound.
112. The process of distillation separates mixtures based on differences in their boiling points.
113. Indicator solutions change color to show the end point of a titration.
114. The periodic table classifies elements into metals, nonmetals, and metalloids based on their properties.
115. Photosynthesis in plants converts carbon dioxide and water into glucose and oxygen, using sunlight.
116. Bioluminescence in some organisms is due to chemical reactions that produce light.
117. The principle of flotation is based on differences in density, allowing some substances to float on or sink in water.
118. Hardness in water is primarily caused by the presence of calcium and magnesium ions.
119. The combustion of fossil fuels releases carbon dioxide, a greenhouse gas.
120. Evaporative cooling is the process by which a liquid's vaporization absorbs heat, cooling down the surroundings.
121. The process of sublimation allows a substance to transition from solid to gas without passing through a liquid state.
122. Neutral water has a pH of 7, indicating a balance between hydrogen ions (H+) and hydroxide ions (OH-).
123. Carbonation in beverages results from pressurized carbon dioxide forming soluble carbonates.
124. The principle of conservation of energy applies to chemical reactions, as energy is neither created nor destroyed.
125. Volcanic eruptions release sulfur dioxide (SO2), contributing to acid rain formation.
126. The color changes in autumn leaves are due to the breakdown of chlorophyll and the visibility of carotenoids and anthocyanins.
127. Dissolved oxygen is crucial for aquatic life, with levels influenced by temperature and salinity.
128. The alloying of metals can alter their properties, such as strength, ductility, and resistance to corrosion.
129. Chemical sunscreens absorb ultraviolet light, preventing it from reaching the skin.
130. The concept of atomic mass provides a way to compare the masses of different atoms.
131. Saltwater conducts electricity due to the presence of ions in solution.
132. The process of dilution decreases the concentration of a solution by adding more solvent.
133. The smell of rain on dry ground is caused by petrichor, a mixture of volatile organic compounds.
134. Alloys, such as bronze and brass, are made by melting and mixing two or more metals.
135. Candle wax burns in a chemical reaction with oxygen to produce water and carbon dioxide.
136. The tarnishing of silverware is due to a chemical reaction with sulfur-containing substances in the air.
137. The increase in global CO2 levels is measured by monitoring atmospheric concentrations and ice core samples.
138. Sunlight causes bleach to decompose, which is why bleach bottles are opaque.
139. Limescale, found in kettles and water heaters, is formed from calcium carbonate precipitating out of hard water.
140. The blue color of the sky is due to Rayleigh scattering of sunlight by the atmosphere.
141. The process of making ice cream involves freezing and the incorporation of air to create a soft texture.
142. Inkjet printer ink is a mixture of dyes or pigments, solvents, and other chemicals to ensure proper flow and adhesion.
143. The presence of iron in water can lead to reddish staining on fixtures and laundry.
144. Bubbles formed by boiling water are due to the conversion of water from liquid to gas.
145. Fruits ripen due to the production of ethylene, a simple hydrocarbon gas.
146. The color of fireworks is determined by the metal salts they contain.
147. The pH of soil affects the availability of nutrients to plants and the color of hydrangea flowers.
148. The process of pickling preserves food through acidity or fermentation.
149. The glow of glow sticks comes from a chemiluminescent reaction.
150. Airbags in cars deploy through a rapid chemical reaction generating nitrogen gas.
151. The browning of an apple after it's cut is due to enzymatic oxidation.
152. Salt and sugar can preserve food by reducing the water activity, inhibiting microbial growth.
153. The process of rusting in metals, such as iron, involves an electrochemical reaction with oxygen and moisture.
154. Water is a universal solvent because it can dissolve a wide range of substances.
155. The density of ice is less than that of liquid water, allowing ice to float.
156. The energy in food is measured in calories, indicating the amount of energy provided by the food when consumed.
157. The reaction between vinegar and baking soda produces carbon dioxide gas, demonstrating an acid-base reaction.
158. The formation of a precipitate in a solution indicates a chemical change, often during a double displacement reaction.
159. Natural indicators, like red cabbage juice, can determine the acidity or alkalinity of a solution based on color change.
160. Helium is used in balloons because it is lighter than air and non-flammable.