

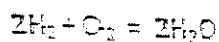
Directions: Read the passage below. Use the context clues that come before and after the numbered blanks to decide which word best fits into the blank. HIGHLIGHT that word.

- | | | | |
|-------------------|----------------|---------------|---------------|
| 1. a. chemicals | b. properties | c. substances | d. textures |
| 2. a. width | b. density | c. height | d. property |
| 3. a. chemical | b. matter | c. described | d. physical |
| 4. a. water | b. molecule | c. liquid | d. atom |
| 5. a. time | b. temperature | c. design | d. cylinder |
| 6. a. chemical | b. physical | c. substance | d. gaseous |
| 7. a. properties | b. physicals | c. degrees | d. substances |
| 8. a. temperature | b. physical | c. chemical | d. color |
| 9. a. similar | b. different | c. familiar | d. original |
| 10. a. battery | b. bulb | c. change | d. switch |

Matter can be described and identified by physical and chemical properties. Physical _____ 1 _____ have to do with appearance. You can observe many physical properties with your senses and by measuring the length, _____ 2 _____, height, mass and density of a substance. _____ 3 _____ properties include color, shape, smell, texture, taste and size. The state of matter (whether it's a solid, _____ 4 _____, or gas) and the _____ 5 _____ at which the substance boils, melts or freezes are also physical properties. Magnetic properties are physical properties as well. _____ 6 _____ properties, on the other hand, have more to do with the atomic or molecular composition of matter. Chemical properties deal with how substances react with other _____ 7 _____ such as water, air or fire.

A physical change has occurred when a substance changes color, size, shape, temperature or state. A _____ 8 _____ change has occurred when a substance has changed into something new or _____ 9 _____ so that the original substances is gone. Digestion, combustion, and radioactive decay are examples of chemical changes. A chemical change takes place in a _____ 10 _____ to produce electricity when you turn on a flashlight.

Chemical changes are sometimes represented by a chemical formula:



This formula states that two hydrogen gas molecules react with one oxygen gas molecule to produce two molecules of water.

Physical Changes

Physical Change: A change in which no new substances form

- Do not change the **type of matter** an object is made of
- You change the **shape, size or more physical properties**.
- Many changes can be easily **reversed**.

Physical Changes	
cutting	tearing
Breaking	Crushing
bending	folding
Warming	cooling
melting	freezing
Evaporating	condensing
mixing	separating
boiling	Dissolving

Changes in State

Matter changes state if you **raise or lower** the temperature.

- **Temperature:** a measure of how warm something is.
- As temperature **INCREASES**, matter has more energy and particles move quickly.

Name	Change in State	Example
Melting (0°C)	Solid to a liquid	When heated, ice changes to water. (ice melts at 0°C)
Freezing (0°C)	Liquid to a solid	Water gets cold, it changes to ice. (water freezes at 0°C)
Evaporation	Liquid to a gas	Water boils, it changes to a gas. (water boils at 100°C)
Condensation	Gas to a liquid	When water vapor cools, it changes to liquid water.

Making and Separating Mixtures

Mixture: a combination of two or more substances.



- Each substance **keeps its own properties**.
- You can **separate mixtures**.
- Examples: a fruit salad, cereal with milk

Ways to separate mixtures:

- Separate by color and shape
- Floating (salt and pepper)
- Filters and strains (pebbles)

Solution: a mixture in which one substance dissolves into another.



- When a substance dissolves, it mixes evenly into another substance and seems to disappear.
- Example: stirring sugar into water
- Ways to separate solutions: Boiling (sugar and water)

Chemical Changes

Chemical Change: a change in which one or more new types of matter form.

- Substances **react to each other**; they **combine in new ways to form other substances**.
- The old matter is not lost, just changes to a different kind of matter.

Chemical Property: is the ability of a substance to **react with other substances in a certain way**.

- Burning
- Rusting
- Reacting to acid

Signs of Chemical Changes

Clue	Examples
Changes color	Green tomato turns red, cake gets brown in the oven, egg frying
Different odor	Burning wood, spoiled food
Changes temperature without being heated/cooled	Rotting leaves in a compost pile become warm.
Bubbles form	Bubbles form when vinegar is mixed with baking soda.
Gives off gas or gases	Burning wood gives off carbon dioxide and water vapor.
New solids form	Rust is created.

One way to tell whether a change is physical or chemical is to ask whether the change can be **easily reversed**. Most **Chemical changes** are much harder to reverse than physical changes.