

CHEMICAL vs. PHYSICAL CHANGE

Name _____

In a physical change, the original substance still exists, it has only changed in form. Energy changes usually do not accompany physical changes, except in phase changes and when substances dissolve.

In a chemical change, a new substance is produced. Energy changes always accompany chemical changes. Physical changes usually accompany chemical changes.

Classify the following as being either a chemical or a physical change.

1. Sodium chloride dissolves in water. _____
2. Hydrochloric acid reacts with sodium hydroxide to produce a salt, water and heat. _____
3. A pellet of sodium is sliced in half. _____
4. Water is heated and changed to steam. _____
5. Food is digested. _____
6. Starch molecules are formed from smaller glucose molecules. _____
7. Ice melts. _____
8. Plant leaves lose water through evaporation. _____
9. A red blood cell placed in distilled water will swell and burst. _____
10. The energy in food molecules is transferred into molecules of ATP. _____
11. The roots of a plant absorb water. _____
12. Iron rusts. _____
13. Oxygen is incorporated into hemoglobin to bring it to the cells. _____
14. A person gets cooler by perspiring. _____
15. Proteins are made from amino acids. _____
16. A match burns. _____
17. A toothpick is broken in half. _____

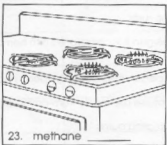
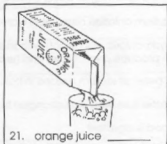
ELEMENTS, COMPOUNDS AND MIXTURES

Name _____

An element consists of only one kind of atom. A compound consists of two or more different elements chemically combined in a fixed ratio. The components of a mixture can be in any proportion and are not chemically bound.

Classify each of the following as an element, compound or mixture by writing E, C or M in the space provided.

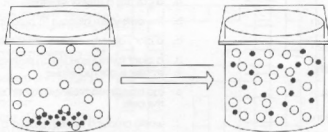
1. sodium _____
2. water _____
3. soil _____
4. coffee _____
5. oxygen _____
6. alcohol _____
7. carbon dioxide _____
8. cake batter _____
9. air _____
10. soap _____
11. iron _____
12. salt water _____
13. ice cream _____
14. nitrogen _____
15. eggs _____
16. blood _____
17. table salt _____
18. nail polish _____
19. milk _____
20. cola _____



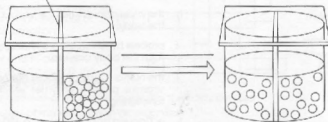
DIFFUSIONS AND OSMOSIS

Name _____

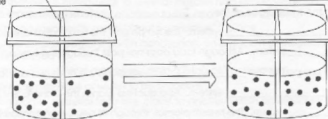
The diagrams below show what each solution would look like after a period of time has passed. Label each as osmosis or diffusion.



semipermeable
membrane



semipermeable
membrane



Key

○ = salt molecule
● = water molecule

ELEMENT SYMBOLS

Name _____

Write the symbol for the following elements which are common in living things.

- | | |
|--------------------|----------------------|
| 1. oxygen _____ | 10. sulfur _____ |
| 2. hydrogen _____ | 11. phosphorus _____ |
| 3. chlorine _____ | 12. iodine _____ |
| 4. potassium _____ | 13. magnesium _____ |
| 5. fluorine _____ | 14. nitrogen _____ |
| 6. manganese _____ | 15. copper _____ |
| 7. carbon _____ | 16. iron _____ |
| 8. zinc _____ | 17. calcium _____ |
| 9. sodium _____ | 18. cobalt _____ |
-

Write the name of the element indicated by each of the following symbols.

- | | |
|--------------|--------------|
| 19. As _____ | 30. Al _____ |
| 20. Pb _____ | 31. Cu _____ |
| 21. Kr _____ | 32. Ag _____ |
| 22. Ba _____ | 33. Pu _____ |
| 23. He _____ | 34. Sr _____ |
| 24. Ne _____ | 35. Am _____ |
| 25. Si _____ | 36. Au _____ |
| 26. U _____ | 37. Ra _____ |
| 27. Sn _____ | 38. Ge _____ |
| 28. Pt _____ | 39. Br _____ |
| 29. Rh _____ | 40. Hg _____ |

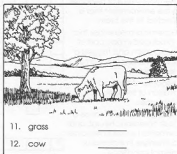
AUTOTROPHS VS. HETEROTROPHS

Name _____

An autotroph is an organism that is capable of forming organic compounds from inorganic compounds in its environment. In other words, an autotroph can make its own food. Heterotrophs must get their food from other organisms.

Classify the following organisms as an autotroph (a) or a heterotroph (h).

1. maple tree _____
2. human _____
3. wheat _____
4. fungi _____
5. amoeba _____
6. green algae _____
7. housefly _____
8. fern _____
9. dandelion _____
10. goldfish _____



Most autotrophic nutrition is a result of photosynthesis. Heterotrophic nutrition involves the taking in and processing of food and the elimination of wastes. Classify the following as related primarily to autotrophic nutrition (a) or heterotrophic nutrition (h).

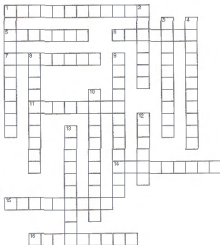
- | | | | |
|---------------------|-------|-----------------------------|-------|
| 13. chlorophyll | _____ | 23. maltose | _____ |
| 14. digestion | _____ | 24. CO ₂ is used | _____ |
| 15. phagocytosis | _____ | 25. ingestion | _____ |
| 16. photolysis | _____ | 26. chloroplasts | _____ |
| 17. rhizoids | _____ | 27. dark reaction | _____ |
| 18. lipase | _____ | 28. grana | _____ |
| 19. carbon fixation | _____ | 29. protease | _____ |
| 20. pseudopods | _____ | 30. glucose production | _____ |
| 21. PGAL | _____ | 31. stroma | _____ |
| 22. light reaction | _____ | 32. bile | _____ |

LIFE ACTIVITIES CROSSWORD

Name _____

Across

- process of producing more organisms in order to continue the species
- information acquired by chemical stimuli or response to the environment that is directed to the brain
- a chemical messenger that is produced in one part of an organism and triggers a reaction in another part of the organism
- Response of the body to invasion of foreign substances
- The organism's actions as a result of sensory, neural, and hormonal factors in response to changes in external or internal conditions
- The ingestion of food for energy and to provide vitamins and minerals the body cannot make for itself
- The breakdown of foods into molecules the body can use
- Distribution of materials within an organism



Down

- The utilization of oxygen and release of carbon dioxide
- System that relays commands to skeletal muscles and stimulates glands and other muscle so the organism may continue to live and respond to stimuli
- Ability to independently move about from place to place
- Series of changes, beginning with conception, an organism undergoes until the adult stage is reached
- The sum of all chemical processes within a living cell or organism
- The homeostatic state of water in an organism
- The transport of material from one place to another within an organism through the use of internal fluid
- An organism's increase in size or number of cells, with no developmental changes
- Control and coordination of all the activities of an organism

STAGES OF MITOSIS

Name _____

Number the following six diagrams of the stages of mitosis in animal cells in the proper order. Label each stage with the proper name.













Do the same for the following diagrams of mitosis in plant cells.













CELLULAR RESPIRATION

Name _____

Fill in the blanks in the following sequences:

Glycolysis



Anaerobic Respiration



or



Aerobic Respiration



Fill in the blanks with the correct term in the questions below.

1. Glycolysis produces a net gain of _____ ATP molecules per molecule of glucose by an anaerobic reaction.
2. Aerobic respiration produces a net gain of _____ ATP molecules per molecule of glucose.
3. _____ respiration is a more efficient producer of energy than anaerobic respiration.
4. The energy contained in a molecule of glucose is changed to a more usable form by combining a _____ atom with _____ to form ATP.
5. When ATP is broken down to _____ and _____, energy is _____.
6. During glycolysis, glucose is first split into two molecules of _____. This requires the energy released from two molecules of ATP being converted to two molecules of _____.
7. The _____ is then converted to _____, producing four _____ molecules and two _____ molecules, which are part of the electron transport chain.
8. The _____ transport chain, which supplies the energy needed for the formation of ATP, requires the formation of _____ from NAD^+ , and _____ from FAD.
9. The hydrogen necessary in this chain comes from the breaking apart of _____ molecules.
10. The oxygen released is used to form _____.