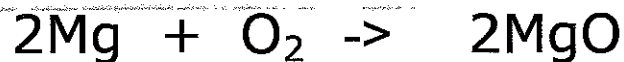


Chemical Reactions

True/False*Indicate whether the statement is true or false.*

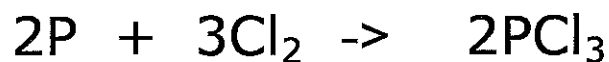
- _____ 1. The following equation is balanced.



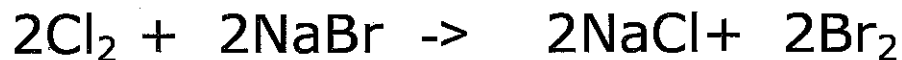
- _____ 2. The following equation is balanced.



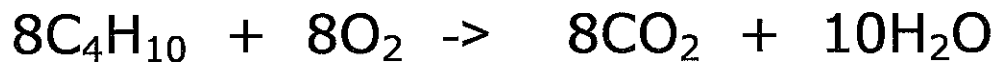
- _____ 3. The following equation is balanced.



- _____ 4. The following equation is balanced.



- _____ 5. The following equation is balanced.



- _____ 6. You can change the little numbers to balance a chemical equation.
- _____ 7. The goal of balancing equations is to have the same number of atoms on both sides of the reaction arrow.
- _____ 8. During a synthesis reaction two, small compounds are joined together to make one larger compound.
- _____ 9. During a combustion reaction a large compound is taken apart into two smaller parts.
- _____ 10. In a single replacement reaction one atom takes the place of another in a compound.

Multiple Choice

Identify the choice that best completes the statement or answers the question.

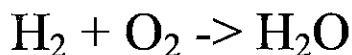
_____ 11. Chemical reactions happen when the atoms

- a. Are rearranged
- b. Lose a proton
- c. Gain a proton
- d. Change state
- e. Change size

_____ 12. In a chemical formula the arrow tells us:

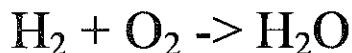
- a. That a chemical reaction happened
- b. That a physical reaction happened
- c. The direction of the reaction
- d. Both 'A' and 'B' are correct
- e. Both 'A' and 'C' are correct

_____ 13. What are the **reactants** in this equation:



- a. H_2
- b. O_2
- c. H_2O
- d. A and B
- e. A and C

_____ 14. What are the **products** in this equation:



- a. H_2
- b. O_2
- c. H_2O
- d. A and B
- e. A and C

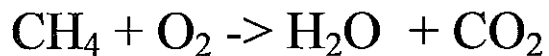
_____ 15. The idea that matter cannot be created or destroyed in chemical reactions is called:

- a. The Law of Conservation of Energy
- b. The Law of Conservation of Mass
- c. The Law of Conservation of Volume
- d. Spatial Relativity
- e. Chemical Thermodynamics

_____ 16. What is the correct chemical formula for a substance has 4 Carbon atoms and 10 Hydrogen atoms?

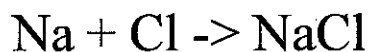
- a. $4\text{C}10\text{H}$
- b. 4CH_{10}
- c. $4\text{C}_{10}\text{H}$
- d. C_410H
- e. C_4H_{10}

_____ 17. How many atoms of Hydrogen are in the **reactants** for the following equation?



- | | |
|------|------|
| a. 6 | d. 2 |
| b. 5 | e. 1 |
| c. 4 | |

_____ 18. How many DIFFERENT elements are found in the following equation?



- | | |
|------|------|
| a. 4 | c. 2 |
| b. 3 | d. 1 |

_____ 19. Which of the following substances is an ELEMENT?

- | | |
|---------|-------------------|
| a. NaCl | d. Water |
| b. HBr | e. Carbon Dioxide |
| c. Ne | |

_____ 20. Which of the following substances is a COMPOUND?

- | | |
|-------|-------|
| a. Na | d. Xe |
| b. Br | e. BP |
| c. Pb | |

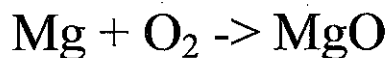
_____ 21. The small numbers tell you what information about a compound?

- | | |
|--|---|
| a. The size of the atoms | d. The number of protons in the element |
| b. The number of atoms in the compound | e. The size of the ions |
| c. The number of valence electrons | |

_____ 22. What do the large numbers in front of compounds tell you?

- | | |
|--|---|
| a. How many compounds are involved in the reaction | d. The number of valence electrons |
| b. The number of atoms in the compound | e. How quickly the reaction will happen |
| c. The number of protons in the nucleus | |

_____ 23. What are the PRODUCTS in the following equation?



- a. Mg
- b. O₂
- c. MgO
- d. A and B
- e. A and C

_____ 24. If a chemical equation is balanced:

- a. There are equal numbers of atoms on both sides of the arrow
- b. There are different numbers of atoms on both sides of the arrow
- c. The equation follows the Law of Conservation of Mass
- d. A and B
- e. A and C

_____ 25. Which of the following are properties of Acids?

- a. Makes H⁺ ions
- b. Taste sour
- c. Taste bitter
- d. A and B
- e. A and C

_____ 26. Which of the following are properties of Bases?

- a. Turns Red Litmus paper blue
- b. Makes OH⁻ ions
- c. Are slippery to the touch
- d. A and B
- e. All of the above

_____ 27. You are testing a mystery substance and discover that it is sour and turns blue litmus paper red. What do you think the substance is?

- a. Acid
- b. Base
- c. Neutral
- d. Alcohol
- e. Hydrocarbon

_____ 28. Acetic Acid (vinegar) reacts with sodium bicarbonate (baking soda) to form a gas. What gas is formed during the reaction?

- a. Oxygen
- b. Nitrogen
- c. Carbon Dioxide
- d. Neon
- e. Acetic Gas

_____ 29. Which of the following is a base?

- a. HCl
- b. HNO₃
- c. H₂SO₄
- d. KOH
- e. H₂CO₃

- ____ 30. pH refers the chemical potential of...
a. Hydrogen
b. Oxygen
c. Nitrogen
d. Potassium
e. Helium
- ____ 31. A substance with a pH of 3 is
a. an acid
b. a base
c. neutral
- ____ 32. A substance with a pH of 8 is
a. an acid
b. a base
c. neutral
- ____ 33. A substance with a pH of 6 is
a. an acid
b. a base
c. neutral
- ____ 34. A substance with a pH of 7 is
a. an acid
b. a base
c. neutral
- ____ 35. A substance with a pH of 14 is
a. an acid
b. a base
c. neutral
- ____ 36. If a substance makes a lot of H^+ ions when placed in water. What would be its pH?
a. 14
b. 9
c. 7
d. 3
- ____ 37. The strongest bases have a pH of
a. 0
b. 6
c. 7
d. 8
e. 14
- ____ 38. The strongest acids have a pH of
a. 0
b. 6
c. 7
d. 8
e. 14
- ____ 39. What is the range of the pH scale?
a. 0-6
b. 8-14
c. 0-16
d. 0-14
e. 7-18
- ____ 40. If a substance makes a lot of OH^- ions when placed in water. What would be its pH?
a. 2
b. 4
c. 7
d. 12

Matching

- | | |
|--------------------------------|--------------------|
| a. Acid | i. Physical change |
| b. Compound | j. Base |
| c. pH | k. Balanced |
| d. Coefficient | l. Chemical change |
| e. Law of Conservation of Mass | m. Indicator |
| f. Products | n. Synthesis |
| g. Niels Bohr | o. Element |
| h. Reactants | |

- ___ 41. What is made during the reaction.
- ___ 42. A substance that makes H^+ ions in water
- ___ 43. The idea that matter cannot be created or destroyed in a chemical reaction
- ___ 44. A way of measuring the chemical potential of Hydrogen
- ___ 45. A substance made of 2 or more different types of atoms
- ___ 46. A substance that makes OH^- ions in water
- ___ 47. When the atoms in a substance are rearranged
- ___ 48. A substance that changes color depending on the pH
- ___ 49. A substance made of only one type of atom
- ___ 50. The starting materials in a chemical reaction