Name: _____ Class: _____ Date: _____ ID: A

Chemical Reactions

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

____ 1. The following equation is balanced.

$$2Mg + O_2 \rightarrow 2MgO$$

____ 2. The following equation is balanced.

$$CaCO_3 \rightarrow 3CaO + CO_2$$

____ 3. The following equation is balanced.

$$2P + 3Cl_2 \rightarrow 2PCl_3$$

____ 4. The following equation is balanced.

$$2Cl_2 + 2NaBr \rightarrow 2NaCl + 2Br_2$$

____ 5. The following equation is balanced.

$$8C_4H_{10} + 8O_2 \rightarrow 8CO_2 + 10H_2O$$

____ 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:

$H_2 + O_2 \rightarrow H_2O$

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:

$H_2 + O_2 \rightarrow H_2O$

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. 4C10H
b. $4CH_{10}$
c. $_4C_{10}H$
d. C_410H
e. C_4H_{10}

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

$$CH_4 + O_2 \rightarrow H_2O + CO_2$$

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

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

$$Na + Cl \rightarrow NaCl$$

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

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

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

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

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

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

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

____ 22. What do the large numbers in fron of compounds tell you?

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

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

$Mg + O_2 \rightarrow MgO$

a. Mg
b. O_2
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 nnumbers 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. HNO_3
c. H_2SO_4
d. KOH
e. H_2CO_3

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

____ 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