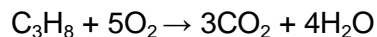
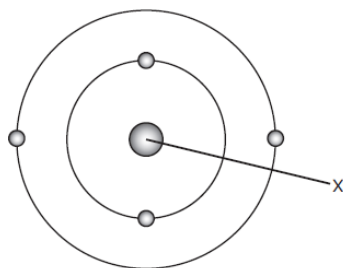


Name _____

Objective 1: Matter and Energy



1. How many different elements are involved in the reaction shown above? Record and bubble in your answer in the grid on the right. (6.5C)

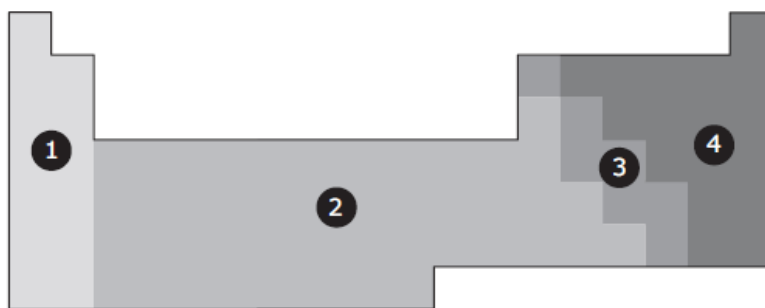


				.		
0	0	0	0		0	0
1	1	1	1		1	1
2	2	2	2		2	2
3	3	3	3		3	3
4	4	4	4		4	4
5	5	5	5		5	5
6	6	6	6		6	6
7	7	7	7		7	7
8	8	8	8		8	8
9	9	9	9		9	9

2. Which of these best describes one of the subatomic particles that could be found at location X in the model of an atom shown above? (8.5A)
- It has mass but no charge.
 - It has no mass and a positive charge.
 - It has a large mass and a negative charge.
 - It has no mass and an equal number of positive and negative charges.

3. An element has a metallic-gray appearance. It also has the properties of both a metal and a nonmetal. In which section of the periodic table indicated above would the element most likely be found? (8.5C)

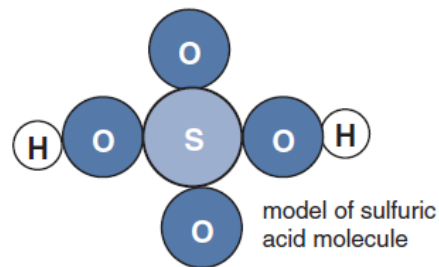
- 1
- 2
- 3
- 4



4. A student observes some sugar as it is heated and burns. The student concludes that a chemical reaction has occurred. Which of the following observations about the burning sugar provides evidence of a chemical reaction? (8.5E)
- Heat is added to the sugar crystals.
 - The sugar melts and becomes a liquid.
 - The temperature of the sugar increases.
 - Gas is produced as the sugar turns black.

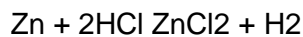
5. Which of the following could be the chemical formula for sulfuric acid? (8.5D)

- a. HSO
- b. HSO₄
- c. H₂SO₄
- d. HS₂O₄



6. All the following chemical equations are balanced except — (8.5F)

- a. $C_3H_8 + O_2 \rightarrow 3CO_2 + 4H_2O$
- b. $RbBr + AgCl \rightarrow AgBr + RbCl$
- c. $WO_3 + 3H_2 \rightarrow W + 3H_2O$
- d. $Zn + 2HCl \rightarrow ZnCl_2 + H_2$



7. Based on the reaction shown above, which statement best supports the law of conservation of mass? (8.5F)

- a. There are more chlorine atoms in the reactant.
- b. There are more hydrogen atoms in the product.
- c. The number of chlorine atoms is unequal in the reactants and products.
- d. The number of reactant atoms is equal to the number of product atoms.

8. All of the following elements are metals except — (8.5C)

- a. lead
- b. iron
- c. gold
- d. silicon

9. An atom of an element contains 20 protons. What is the identity of the element? (8.5B)

- a. Argon
- b. Calcium
- c. Neon
- d. Potassium

10. Elements are arranged in the Periodic Table based on their properties in a particular order. Which of the following best identifies the period and group of the elements listed? (8.5C)

a.

Element	Period	Group
beryllium	2	1
aluminum	13	3
sodium	1	3

b.

Element	Period	Group
beryllium	1	2
aluminum	3	13
sodium	1	3

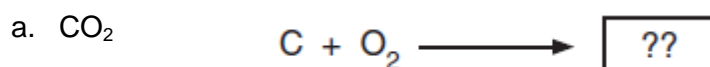
c.

Element	Period	Group
beryllium	2	2
aluminum	3	13
sodium	3	1

d.

Element	Period	Group
beryllium	2	2
aluminum	13	3
sodium	1	3

11. In the chemical equation, the elements are rearranged to form new products. Which of the following compounds should be placed in the box? (8.5E)



b. H₂O

c. Co

d. CaCl₂

12. Which table best summarizes the subatomic particles and their electrical charge? (8.5A)

a.

proton	negative
neutron	positive
electron	no charge

b.

proton	positive
neutron	no charge
electron	negative

c.

proton	positive
neutron	negative
electron	no charge

d.

proton	no charge
neutron	positive
electron	negative

13. Which of the following elements is malleable? (6.6A)

a. Iron

b. Hydrogen

c. Carbon

d. Sulfur

14. Which subatomic particle defines the identity of an element? (8.5B)
- Nucleus
 - Electron
 - Neutron
 - Proton
15. How many elements are found in $2\text{H}_2\text{SO}_4$? (6.5C)
- 2
 - 3
 - 7
 - 14
16. Which two compounds contain the same total number of atoms? (8.5D)
- C_3H_8 and C_2H_6
 - NO_2 and KCl
 - $2\text{Li}_2\text{S}$ and Be_4Cl_2
 - 2CO and CO_2
17. All of the following are indicators of a chemical change except — (8.5E)
- formation of a gas
 - change in temperature
 - change in the state of matter
 - formation of a precipitate
18. Why is the compound $\text{CaH}_{10}\text{P}_4\text{K}_3\text{O}_4$ an inorganic compound? (7.6A)
- The compound does not contain the element carbon
 - The compound contains too many elements
 - The compound contains 5 elements
 - The compound contains 22 atoms

19. Which of the following elements is found in all organic compounds? (7.6A)
- Argon
 - Carbon
 - Neon
 - Potassium
20. When you chew, the particles of food are broken down before they are swallowed. How would you describe this kind of change? (7.6B)
- A physical change because swallowing is a physical motion
 - Both a physical and chemical change because food starts being digested before it is swallowed
 - A chemical change because the particles of food get mixed together
 - A physical change because the particles of food are getting smaller
21. Which of the following is an example of a chemical change related to digestion? (7.6B)
- Stomach acid breaking down food particles to form carbohydrates
 - Muscles moving your food from your mouth into your stomach
 - Teeth chewing on a bite of a sandwich until it is small enough to swallow
 - A knife slicing a tomato into quarters
22. A piece of a substance has a volume of 6.7 cm^3 and mass of 75.7 g . Using the chart, what is the identity of the substance, its classification, and its density? (6.6B)
- 5.32 g/cm^3 ; germanium; metalloid
 - 7.87 g/cm^3 ; iron; metal
 - 11.3 g/cm^3 ; lead; metal
 - 13.6 g/cm^3 ; mercury; metal

Substance	Classification	Density
Germanium	Metalloid	5.32 g/cm^3
Iron	Metal	7.87 g/cm^3
Lead	Metal	11.3 g/cm^3
Mercury	Metal	13.6 g/cm^3

23. Which of the following tables would be used to correctly describe the difference between metals and non-metals? (6.6A)

a.

Metals	Non-metals
Conducts electricity	Does not conduct electricity
Brittle	Malleable
Luster	No luster

b.

Metals	Non-metals
Does not conduct electricity	Good conductor
Malleable	Brittle
Luster	No luster

c.

Metals	Non-metals
Conducts electricity	Does not conduct electricity
Brittle	Brittle
No luster	No luster

d.

Metals	Non-metals
Conducts electricity	Does not conduct electricity
Malleable	Brittle
Luster	No luster

24. If an element is shiny, can be hammered into thin sheets, and is a good conductor of electricity, what type of element is it? (6.6A)

- a. A metal
- b. A metalloid
- c. A non-metal
- d. A gas

25. The following table shows the properties of four different sample materials. One of these materials is cork, a type of wood that floats on water (density of water = 1.00 g/cm³).

What is the density of cork in g/cm³? Fill you answer in the grid below.(6.6B)

Sample	Mass	Volume
1	89 g	75 cm ³
2	26 g	15 cm ³
3	23 g	100 cm ³
4	160 g	125 cm ³

				.		
0	0	0	0	0	0	0
1	1	1	1	1	1	1
2	2	2	2	2	2	2
3	3	3	3	3	3	3
4	4	4	4	4	4	4
5	5	5	5	5	5	5
6	6	6	6	6	6	6
7	7	7	7	7	7	7
8	8	8	8	8	8	8
9	9	9	9	9	9	9