

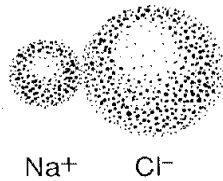
CH 4.2 & Math in Science

Multiple Choice (2 points each)

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

- ___ 1. Elements are arranged on the periodic table
- in order of molecular numbers.
 - in order of atomic numbers.
 - alphabetically.
 - randomly.
- ___ 2. What forces hold together the atoms in molecules?
- chemical mixtures
 - magnetic fields
 - gravity fields
 - chemical bonds
- ___ 3. How do the electrons in atoms form chemical bonds?
- They are either shared or transferred between atoms.
 - They are shared but not transferred between atoms.
 - They are neither shared nor transferred between atoms.
 - They are transferred but not shared between atoms.
- ___ 4. Two types of chemical bonds are
- positive and negative.
 - ionic and covalent.
 - atomic and covalent.
 - ionic and coefficient.
- ___ 5. How do compounds differ from mixtures?
- Compounds are composed of chemically bonded substances; mixtures are composed of substances that are not bonded chemically.
 - Mixtures are composed of chemically bonded substances; compounds are composed of substances that are not bonded chemically.
 - Compounds are composed of physically bonded substances; mixtures are composed of substances that are not bonded chemically.
 - Mixtures are composed of chemically bonded substances; compounds are composed of solutions.
- ___ 6. What describes how substances react to form new substances?
- chemical properties
 - physical descriptions
 - physical properties
 - chemical bonds
- ___ 7. The attractive force between oppositely charged ions that result from the transfer of electrons from one atom to another is known as
- a covalent bond.
 - a physical bond.
 - an atomic bond.
 - an ionic bond.
- ___ 8. Within each column, or group, on the periodic table, the different elements' atoms usually have the same number of
- electrons.
 - valence electrons.
 - atomic numbers.
 - mass numbers.
- ___ 9. What are used to balance chemical equations?
- chemical formulas
 - exponents
 - coefficients
 - superscripts
- ___ 10. Which of the following is NOT an example of a mixture?
- an alloy of two or more metals
 - sea water

- _____ 11. Signs of a chemical change include all of the following, EXCEPT:
 a. precipitant
 b. gas production
 c. exothermic
 d. mixture
- _____ 12. Elements that emit atomic particles and energy are called
 a. radioactive.
 b. stable.
 c. magnetic.
 d. fluorescent.
- _____ 13. What is an atom that has a different number of neutrons than other atoms of the same element?
 a. ion
 b. electron
 c. isotope
 d. molecule



- _____ 14. According to this diagram, which of the following most accurately describes the formation of sodium chloride (NaCl)?
 a. Chlorine gains an electron.
 b. Sodium gains a proton.
 c. Chlorine loses an electron.
 d. Sodium loses a proton.
- _____ 15. Quarks are elementary particles used to form
 a. protons
 b. neutrons
 c. both A & B.
 d. neither A or B.

Short Answer (10 points each)

16. Which is more stable, a neutral sodium atom or a positive sodium ion? Explain your answer.

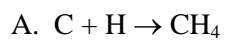
17. Complete the Venn Diagram Chart.

Ionic Bonding	Similar	Covalent Bonding

18. Complete the data table

Subatomic Particle	Charge	Addition/Deletion of particle creates...
Proton		
Neutron		
Electron		

19. Draw Lewis Dot diagrams for:

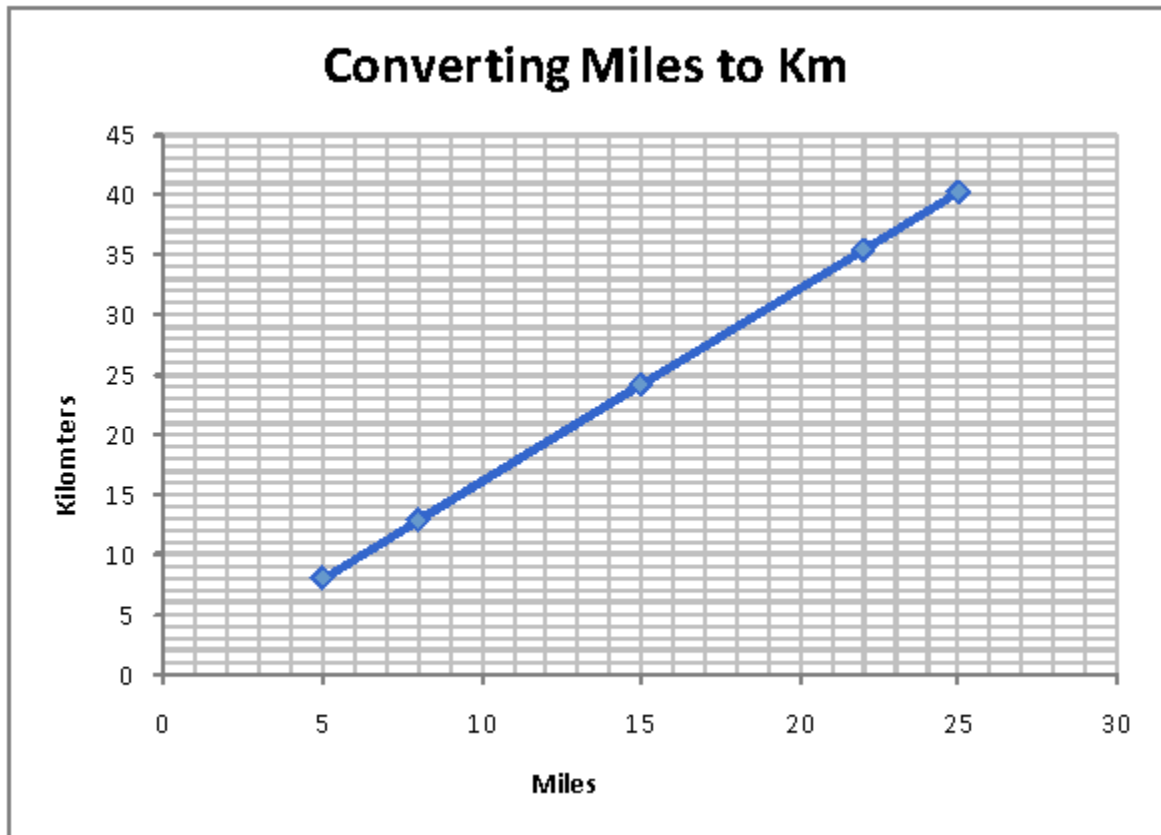


Problem (10 points)

20. Methane burns to produce carbon dioxide and water. An equation to express this is $CH_4 + O_2 \rightarrow CO_2 + H_2O$, but this equation is not balanced. Balance the equation. Explain your answer.

21. Use dimensional analysis to convert your age in years to seconds. Be sure to follow the steps of dimensional analysis.

22.



A. Predict the number of miles in a 10K run?

B. Calculate slope: $Y_2 - Y_1 / X_2 - X_1$

Bonus

23. Write the chemical equation for photosynthesis. Balancing doubles the bonus. (5 point

