

1. An element is a substance that (CAN/CANNOT) be broken down to other substances by ordinary chemical reactions.
2. Label the atom by drawing a line from the words to the correct structure (5pts).

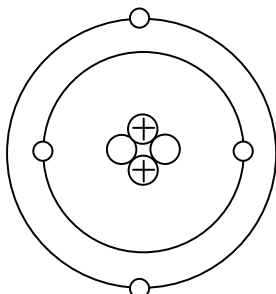
Proton

Neutron

Electron

Nucleus

Orbital



3. It is the \_\_\_\_\_ orbital of atoms that is involved in chemical reactions.
4. A stable atom has the same number of \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
5. An \_\_\_\_\_ is an atom that has a different number of neutrons than protons in the nucleus.
6. Isotopes may be stable, but many are unstable in that they spontaneously lose protons and/or neutrons from the nucleus. Such isotopes are said to be \_\_\_\_\_.
7. Atoms or groups of atoms with unequal numbers of protons and electrons, thus having a non-zero charge, are called \_\_\_\_\_.
8. Make a drawing of a Calcium atom (5pts).
9. \_\_\_\_\_ bonds occur between atoms that transfer their electrons in their outer orbitals, and \_\_\_\_\_ bonds occur between atoms that share their electrons in their outer orbitals.
10. \_\_\_\_\_ is the most abundant atom in Earth's crust, making up \_\_\_\_\_ % by volume and \_\_\_\_\_ % by weight of all the atoms on the Earth.
11. When oxygen and silicon bond together, a \_\_\_\_\_ is formed. These represent the most abundant \_\_\_\_\_ on the Earth.
12. What is the natural geometric shape for minerals containing O and Si?
13. A \_\_\_\_\_ is a naturally occurring, inorganic, crystalline solid, which is physically and chemically distinctive, and has an exact chemical \_\_\_\_\_.
14. Two or more minerals chemically bonded together are called \_\_\_\_\_.

15. The following are non-silicate mineral types. In the blank next to each type, write the chemical formula that classifies minerals into these groups.

Carbonates \_\_\_\_\_ Oxides \_\_\_\_\_

Sulfates \_\_\_\_\_ Sulfides \_\_\_\_\_

16. \_\_\_\_\_ minerals have a commercial value, and \_\_\_\_\_ are valued because of their beauty and often their hardness.

17. Match the following mineral properties with their correct definition.

_____ Color	A. Fizzes in the presence of dilute HCl
_____ Streak	B. Visible hue of a mineral
_____ Luster	C. Color left behind when a mineral is scratched on porcelain
_____ Hardness	D. Attracted to a magnet
_____ Crystal form	E. Breakage along flat planes
_____ Cleavage	F. Density relative to that of water
_____ Fracture	G. Scratch-resistance
_____ Specific gravity	H. Manner in which light reflects off the surface of a mineral
_____ Magnetism	I. External geometric form
_____ Chemical reaction	J. Irregular breakage

18. Minerals with one direction of cleavage will form \_\_\_\_\_.

19. Explain the general public's confusion with the term mineral (5pts).

20. How might it be argued that ice is actually a mineral (5pts)?

21. 5. How can graphite and carbon have the same composition (5pts)?

22. Is plastic a mineral? Why or why not (5pts)?

23. Why are silicates the most common minerals in the Earth's crust (5pts)?

24. Write the minerals found in Moh's Hardness Scale.

**Hardness**

**Mineral**

1

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2

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3

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4

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5

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6

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7

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8

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10

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