

### Chemistry Worksheet

#### Define each of the following:

**Element:** a substance consisting of atoms that cannot be broken down by conventional means

**Atom:** composed of protons, neutrons and electrons; smallest form of an element

**Neutron:** neutrally charged particles that are located in the nucleus

**Proton:** positively charged particles located in the nucleus

**Electron:** negatively charged particles located outside the nucleus in shells or orbits

**Atomic number:** equals the number of protons

**Mass number:** equals the number of protons plus the number of neutrons

1) What is an isotope? Two atoms of the same element with different number of neutrons.  
Carbon 12 and Carbon 13 are isotopes.

2) An atom of element with a neutral charge has the same number of protons and electrons.

3) An element has an atomic number of 12.

How many protons does it have? 12

How many electrons does it have? 12

4) This atom element has an atomic weight of 27. How many neutrons does it have?  
 $27 - 12 = 15$

5) An atom has an atomic number of 16. How many electrons are in its third shell? 2

How many shells? 3

How many valence electrons does it have? 6

How many valence electrons does it have? 6. These are the electrons in the outermost shell.

6) Define a covalent bond. Two atoms that share electrons.

Draw an example of a single covalent bond and a double covalent bond.

$H_2$        $O_2$

7) Define an ionic bond. A bond that is formed when one atom loses an electron to

another atom. This causes a positive charge and a negative charge which keeps the two together.

What is a cation? A positively charged ion

What is an anion? A negatively charged ion

8) Define a hydrogen bond. A bond where a hydrogen atom is attracted to one other atom.

9) Define an acid. Use the pH scale in the definition.