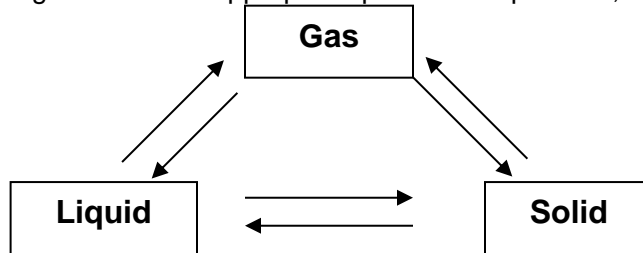# GRADE 10 CHEMISTRY REVIEW

**Chemistry & Matter**

1. What is chemistry?


2. **Matter** is anything that _____ and _____. Matter can exist in any one of three states: _____, _____ *and* _____.
   Add the following labels in the appropriate places: evaporation, condensation, melting, freezing, sublimation.



*Particle Theory of Matter*

1.  All matter is made up of _____.
2.  All particles of a pure substance are _____.
3.  The space between particles is _____ compared to the sizes of the particles themselves.
4.  Particles of matter are always _____.
5.  There are forces of _____ that exist between particles.

*Describing and Classifying Matter*

1. Distinguish between a physical change and chemical change.




2. Classify each situation as either a physical change or a chemical change. Explain your reasoning.

   a. Rose bush from a seed that you have planted and nourished

   b. A green coating forms on a copper statue when the statue is exposed to air

   c. Your sweat evaporates to help balance your body temperature.

   d. Frost forms on the inside of a freezer.

   e. Salt is added to clear chicken broth

   f. Your body breaks down food you eat to provide energy for your body's cells.

   g. Juice crystals dissolve in water.

   h. An ice-cream cone melts on a hot day.

3. What physical property is described by each of the following statements?
   (Use one of the following words: malleability, boiling point, melting point, hardness, conductivity, ductility, density, viscosity)

   a. Ice melts at $0^0C$.
   b. Diamond can scratch glass.
   c. Copper wire is used for electrical circuitry in homes.
   d. One millilitre of water has a mass of one gram

   e. Copper metal can be stretched into wires.
   f. Pancake syrup flows slower that water.
   g. Aluminum can be hammered into thin sheets

4. a) Distinguish between the two terms in each of the following pairs of terms. Provide examples where possible. **(use lined paper)**

   a. atomic number and mass number
   b. metal and nonmetal
   c. qualitative and quantitative property
   d. pure substance and mixture

   e. heterogeneous mixture and homogeneous mixture
   f. element and compound
   g. solute and solvent

   b) Choose one substance and describe its qualitative and quantitative properties.
   **For example**: **Substance:** Liquid water
   **Qualitative:** clear colourless, odourless and transparent liquid
   **Quantitative:** boils at $100^0C$
   Substance:

   Qualitative:

   Quantitative:

c) Identify each property as either physical (P) or chemical (C)
   a.  Hydrogen gas is extremely flammable _____     c.    Chlorine gas is pale green in colour    _____
   b.  The boiling of ethanol is $78.5^0C$     _____     d.    Sodium metal reacts violently with water   _____

5.  Look carefully at the diagrams on page 3 of your textbooks. Decide whether each diagram represents an element, a compound, or a mixture. If the diagram represents a mixture, state how many elements and how many compounds are present in the mixture. Note that each different circle represents a different atom.

   a.   _____              e.    _____

   b.   _____              f.    _____

   c.   _____              g.    _____

   d.   _____              h.    _____

b) List one mixture that you use frequently.

   i)       Explain how you know that it is a mixture

   ii)      Classify the mixture as either heterogeneous or homogeneous

c) List one pure substance that you use frequently.

   i)       Explain how you know that it is a pure substance

   ii)      Try to classify the substance as an element or a compound. Explain your reasoning.

6.  Complete the following table.

**Subatomic Particles**

| Particle | Relative mass | Relative charge | Location within atom |
|---|---|---|---|
| proton | | | |
| electron | | | |
| neutron | | | |

7.  Using the periodic table at the back of your textbook, list the elements that belong to each of the following groups in the periodic table:
(a) halogens (Group VIIA or 17)

   (b) alkali metals (Group IA or 1)

   (c) noble gases (Group VIIIA or 18)

   (d) alkaline earth metals (Group IIA or 2)

8.  Each of the following chemical formulae represents a compound. Describe the composition of each molecule. (i.e., name the element and state the number of atoms found in each).

   a)  $HNO_{3(aq)}$  e.g.,    Name: **Nitric acid**

| Atom | |
|---|---|
| Hydrogen | 1 atom |
| Nitrogen | 1 atom |
| Oxygen | 3 atoms |
| **Total # of atoms** | **5 atoms** |

   b)  $C_6H_{12}O_{6(s)}$

| Atom | |
|---|---|
| | |
| | |
| | |
| **Total # of atoms** | |

   c)  $(NH_4)_3PO_4$

| Atom | |
|---|---|
| | |
| | |
| | |
| | |
| **Total # of atoms** | |

   d)  $NH_3$

| Atom | |
|---|---|
| | |
| | |
| **Total # of atoms** | |