

## **Science 6 – Semester 2 Study Guide ANSWERS TO QUESTIONS**

- 1) What are the characteristics of a mineral?**  
Naturally occurring, inorganic, solid, crystal structure, definite chemical composition
- 2) Name ways in which minerals are identified.**  
Each mineral is identified by its unique properties
- 3) Name and describe the properties of minerals.**  
Hardness- Based on Moh's Hardness Scale  
Color –  
Streak – color of its powder  
Luster – How a mineral reflects light from its surface  
Density – Amount of mass per unit of volume  
Crystal Systems – based on number and angle of crystal faces  
Cleavage – splits easily along flat surfaces  
Fracture – how a mineral looks when it breaks apart in an uneven way  
Fluorescence – glows under ultraviolet light
- 4) List and describe the processes by which minerals form**
  - a. Through crystallization of melted materials
  - b. Through crystallization of materials dissolved in water
- 5) What characteristics are used to identify rocks?**  
Color, texture, mineral composition
- 6) Name and describe the three major groups of rocks.**
  - a. Igneous – Forms from cooling magma/lava
  - b. Sedimentary – forms from compaction and cementation of sediment
  - c. Metamorphic – Can form from any type of rock that undergoes extensive heat and pressure.
- 7) Know the steps and pathways of the rock cycle. Draw a diagram showing all the steps and possible pathways.**  
See the following web page:  
<http://www.learner.org/interactives/rockcycle/diagram.html>
- 8) What is a physical change? What are ways we can identify a physical change? Name some examples of common physical changes.**  
A physical change is one in which only the physical properties of a substance change, but the chemical structure of the

substances involved do not change. No new substances are formed. It can be very difficult to distinguish between a physical and chemical change, because there are exceptions to almost every observable “rule.” However, if it involves typically only a change in size, shape, or can be reversed easily, those can be good signs that it’s a physical change. Examples include: dissolving, changes in state, and mixing.

**9) What is a chemical change? What are ways we can identify a chemical change? Name some examples of common chemical changes.**

A chemical change is one in which new substances with new properties are formed. It can be very difficult to distinguish between a physical and chemical change, because there are exceptions to almost every observable “rule.” However, if it involves heat loss or gain, burning, color change from reactions, those can be good signs that it’s a chemical change. Examples include: cooking food, baking soda and vinegar reacting, rusting.

**10) Explain how it is that two containers of the same volume can have different masses if filled with different substances?**

Because the two substances have different densities, they can fill the same volume and have different masses. Density is the amount of mass per unit volume. The greater the density, the more tightly packed together the atoms/molecules of that substance are. The greater the density of a substance, the greater the mass will be for a constant volume.

**11) What are fossil fuels? Why are they considered non-renewable?**

Fossil Fuels are formed over millions of years from the remains of living things. Coal, oil, and natural gas are examples. They are considered non-renewable because it takes so long to produce that it is not practical to just produce more of that energy source.

**12) What does it mean for a resource to be renewable? List examples of renewable resources.**

A resource is considered renewable if we are able to collect/gather more of that resource on a continual basis. Examples include: solar, wind, geothermal, biomass, and hydroelectric

13) Make a table listing major renewable and non-renewable resources, and list advantages and disadvantages of each. Example of column headings below:

**NOTE: This list is NOT exhaustive.**

<b>Resource</b>	<b>Renewable or Non-renewable?</b>	<b>Advantage(s)</b>	<b>Disadvantage(s)</b>
Oil	Non-renewable	Our infrastructure for utilizing this is already in place	We have to import from other countries, pollution, and limited supply.
Coal	Non-renewable	Plentiful in U.S.	Pollution in atmosphere, mining
Natural Gas	Non-renewable	Cleaner burning	Limited supply
Wind	Renewable	Clean,	Limited areas, land use for wind farms
Solar	Renewable	Clean, plentiful	Limited areas, land use for solar collectors, environmental impact of production of PV cells
Geothermal	Renewable	Clean, plentiful	Very limited areas to harness
Nuclear	Non-renewable	No atmospheric pollution, produce much energy from small fuel source	Radioactive waste