Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date\_\_\_\_\_\_\_\_\_\_\_\_\_Class\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Chapter 1 Section 3: The Formation, Mining, and Use of Minerals**

* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in which the mineral forms determines the mineral’s properties.

These are pictured on page 12 and 13 in your textbook.

Types of Environments where minerals form:

**1. Evaporating Salt Water**

* When a body of salt water dries up, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ like gypsum and halite are left behind.

**2. Limestone**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ carry dissolved materials into lakes and seas, where they crystallize on the bottom. Examples are calcite and dolomite

**3. Metamorphic Rock**

* This is when changes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ make-up alter a rock. Examples are calcite, garnet, graphite, mica, magnetite, and talc.

**4. Hot-Water Solutions**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_works its way downward and is heated by \_\_\_\_\_\_\_\_\_\_\_\_.
* Examples are gold, copper, sulfur, pyrite, and galena

**5. Pegmatites**

* As magma moves upward, it can form these \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shaped bodies.
* Examples are topaz and tourmaline

**6. Plutons**

* As \_\_\_\_\_\_\_\_\_\_\_\_\_ rises upward, it can stop before it reaches the surface causing it to cool slowly.
* Examples are mica, feldspar, magnetite, and quartz

**Mining**

* \_\_\_\_\_\_\_\_\_\_-a mineral deposit large enough and pure enough to be mined for profit

**Rocks and Minerals are removed from the ground by one of two methods:**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-when mineral deposits are located at or near the surface of the

 Earth

 Types of Surface Mines are:

* **open pit mining**-used to remove \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ near the surface that are valuable like gold and copper
* **surface coal mining**-is used to mine coal near the surface. It is also called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* **quarries-**are open pit mines that are used to mine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and gravel
* **Subsurface mining-**used when mineral deposits are located \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within the Earth to be surface mined

**Disadvantages to Mining**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ habitats of plants and animals
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ water sources

**Ways to Reduce the Harmful Effects of Mining:**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-a process to return land to its original state or better

 This has been required by law since mid-\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. Reduce use by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**The Use of Minerals**

1. Metallic

* + - * \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
			* \_\_\_\_\_\_\_\_\_\_\_\_\_ cannot pass through
			* Can be processed so they do not \_\_\_\_\_\_\_\_\_\_\_
			* Very good for aircraft, automobiles, computers, and spacecraft

2. Nonmetallic Minerals

* + - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_ passes through them
		- Good \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Widely used in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Examples are sand and gravel

3. Gemstones (nonmetallic)

* + - Highly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the most important characteristic of a gemstone (makes it valuable)
		- Must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, so they can be cut
		- Mass is expressed in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
		- Examples-: diamond, ruby, sapphire, and emerald