**Geology 12** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Block: \_\_\_\_\_\_\_\_\_\_\_

**Resources**

* **Resources** are materials that are necessary for us to live
* **Natural Resources**: resources that the earth provides
* **Renewable Resources**: a natural resource that can be replaced by nature in a short time
	+ Ex. Water, solar energy, wind energy
* **Nonrenewable Resources:** a resource that exists in a fixed amounts. They can only be replaced by geological, physical, and chemical processes that take millions of years
	+ Ex. Fossil fuels, diamonds, gold, copper

**Resources from the crust**

* **Metals**: mined from minerals in the crust
	+ Ex. Gold, nickel, copper
* **Industrial resources**: mined for their commercial value, are not fuel, and are not sources of metals
	+ Ex. Gravel, gypsum, talc

****

* **Fossil Fuels**: are hydrocarbons (primarily petroleum, coal, or natural gas) formed from the remains of dead plants and animals.
	+ Coal is extracted via mining
	+ Petroleum is pumped from underground
	+ Natural Gas is pumped or “Fracked”
* **Groundwater/Aquifers:** groundwater fills the spaces between soil particles and fractured rock beneath the earth’s surface
	+ We extract groundwater with wells

****

**Mining in Canada**

* Mineral Production: Canada is the leading producer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, 2nd largest producer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and 3rd largest producer of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Canada is a key global producer of \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ These commodities are crucial in the production of solar cells, high-density batteries and wind turbines.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: the search for materials in the Earth’s crust, where concentration and quantity allow for extraction and processing at a profit.
	+ Over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is spent annually on mineral exploration in Canada
* In 2017, the mining sector contributed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to Canada’s GDP (\_\_\_\_\_\_\_\_).
* \_\_\_\_\_\_\_\_\_\_\_\_: The minerals sector employs over \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_people directly, and indirectly
* Canada trades mineral imports and exports including ores, concentrates, and mineral products in excess of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_annually.
* Mineral exports account for nearly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of Canada’s total exports

**Life of a mine**

* Stage 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, this can last anywhere from a few years, to a few decades
* Stage 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, at this stage, geologists have determined that there is enough “ore” to merit a profitable mine
* Stage 3: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Permits for expanding exploration to determine the size and shape of the mine
	+ Environmental impact assessments
* Stage 4: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, companies must not only finance the construction of the mine, but also the future remediation of the mine site
* Stage 5: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Stage 6: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Stage 7: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_