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| **What is a Mineral: How do I identify Specific Minerals?** | | |
| **Read the article below with your elbow partner.**  **Read the article below independently.**  **Answer the four text dependent questions.**  **Write an analysis of the article, support your analogy with evidence from the article.**  **(Remember, support by evidence is not coping information from the article.)** | | |
| What is a Mineral? The word "mineral" is used by geologists for a group of naturally occurring crystalline substances. Gold, pyrite, quartz, calcite and fluorite are all examples of "minerals".   To be a mineral a substance must meet five requirements, these are the characteristics of a mineral  1. naturally occurring (not made by humans) 2. inorganic (not produced by an organism) 3. solid 4. a specific chemical composition 5. a specific crystalline structure (ordered atomic structure)   If we compare the properties of water to the five requirements of the mineral definition, we find that it fails to qualify as a mineral. Water is a liquid so it does not meet requirement #3 - being a solid.  However, at temperatures below 32 degrees Fahrenheit or 0 degrees’ Celsius water becomes the solid material that we call "ice". So, if we compare the properties of ice to the five requirements of the mineral definition we find that it clearly meets the last four. However, requirement #1 can present a problem.  A natural snowflake would be considered to be a mineral because it forms naturally in Earth's atmosphere. However, an ice cube made in a refrigerator would not be considered a mineral because it was produced by the actions of people. So, ice is a mineral when it forms naturally but it is not a mineral when people play a role in producing it.  What are properties of a mineral? Properties of a mineral are the specific characteristics of each mineral that identifies exactly which mineral it is. The most commonly used identifies are color, cleavage or fracture, streak, hardness, and luster. Unfortunately, color is not the most reliable because many minerals have the same color. There are also a group of special properties that some minerals may or may not have for identification. Special properties include but are not limited to reaction to acids, magnetism (magnetic), density, odor, and feels like. When attempting to identify a specific mineral, an observer must use two or more properties indicators.   1. **Color** is obvious, it is the color you see with your eyes. 2. **Streak** is the color of powder or residue left when you rub a mineral across white or black ceramic plate. Some mineral leave little to no residue. This is commonly referred to as the scratch test. 3. **Cleavage and fracture.** These are the most difficult physical properties to recognize and describe. Minerals which have fracture are broken in an irregular way, and lack flat, smooth surfaces. They look like the average rock. Cleavage minerals have one or more flat surfaces. 4. **Hardness** is a measurement of how hard the mineral is compared to other minerals. It is referred to as the Mohs’ Hardness Scale, and it ranks hardness from the softest being **Talc** - 1 to the hardiest mineral on Earth being **Diamond** – 10.   1 – talc  2 – gypsum  A bit harder than 2 – fingernail (2.5)  3 – calcite  A bit harder than 3 – copper penny (3)  4 – fluorite  5 – apatite  A glass plate 5.5  6 – orthoclase (K-feldspar)  A steel nail (6.5)  7 – quartz  8 – topaz  9 – corundum  10 – diamond   1. **Luster** is how a mineral reflects light. There are two main groups, metallic” versus “non-metallic. Metallic is just what it sounds like, metal looking like gold, silver, or copper. Non-Metallic includes reflective properties such as pearly, greasy, silky, glassy, earthy, dull, and waxy. 2. **Special Properties** are unique and not shared by multiple minerals. Special properties include minerals that are magnetic, have a smell, feels soapy or reacts to chemicals such as acid. Remember, not all minerals have a special property. | Define:  Natural:  Inorganic:  Ordered Atomic Structure:  Mineral | **Answer the following questions.**  **1.**  **What is the best way to determine if a substance is a "mineral"?**  2.  Is water a mineral? Is ice a mineral?  3.  Explain the text structure of the article.    4.  Explain the authors reasoning for writing. |
| **Analysis:**  Write an eight or more sentence analysis and summery.  **Opening**: What is the topic being discussed and how are you going to discuss it.  **Body**: details about the what you learned with support from the article.  **Conclusion**: Your final statement is a restatement of your opening but with an extra push of the main idea | | |