Name _____ Date _____ Block _____

Be a Mineral Detective

Detectives must gather facts and physical evidence to deduce the events that took place during a crime. Much like detectives, geologists gather physical evidence to better understand Earth processes. First, minerals are identified, and then their histories sometimes can be interpreted.
Real-World Problem : How is it possible to distinguish similar-looking materials from each other?

Goals

- **Observe and record** physical properties of minerals.
- **Determine** mineral names using your observations and identification keys.

Materials

Mineral samples
**copper penny*
5% HCl with dropper
Magnifying lens
Glass plate
Moh's scale of hardness
Small iron nail
Reference Handbook "Minerals" (Pg 222)
Mineral Flow Chart
Streak plate

Procedure

1. Use the table provided to record your data. Note the columns labeled: *Mineral Number, Color, Hardness, Streak, Cleavage, Fracture, Specific Gravity, Other Observations* (like smell, feel, or heft), and Mineral Name.
2. Obtain numbered mineral specimens from your teacher. Observe each mineral and accurately record the data based on your tests for physical properties. Be descriptive and broad in your observations.
3. Perform tests to observe your chosen properties first.
    a) To estimate hardness:
        - Rub the sample firmly against objects of known hardness and observe whether it leaves a scratch on the objects.
        - Estimate a hardness range based on which items the mineral scratches.
    b) To determine if it reacts with acid.
        - The only specimens that are to be tested with acid are the white/clear ones.
        - Put one drop of HCL .10m on the specimen.
        - Look closely to see if it bubbles.
        - If it does, then it reacts with acid.

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Mineral Number	Color	Hardness	Streak	Cleavage	Fracture	Other Properties (React to acid/magnetic)	Mineral Name
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

Using the Reference Handbook," Minerals" (Pg 222) at the back of your book, and the flow chart to attempt to identify each unknown mineral. Your teacher may tell you when you are incorrect and allow you to try again.

Data and Observations

Conclude and Apply

1. **Which properties were most useful in identifying your sample? Which properties were the least useful?**

2. **Explain** why certain minerals seemed to be easy to identify.

3. **Determine** two properties that distinguish clear, transparent quartz from clear, transparent calcite. Explain your choice of properties.

Communicating Your Data

For three minerals, list physical properties that were important in their identification and why.