

Rocks and Minerals STEM Enhancement

Created by STEM IT Grant Members

Quinn Donlon, Lorianne Donovan, Stacey Foraker



(Vandalism at _____ Elementary)



Teacher Instructions

Materials

For each student group (Groups 2-4)

- Crime Data Table
- Suspect Bios
- Crime Lab Evidence Report #1
- Crime Lab Evidence Report #2
- Crime Lab Evidence Report #3
- Final Conclusion Report
- Minerals A-L and Q.
- Completed mineral field guides
- Mineral Identification Cards (optional) Lesson 14

For the Teacher

- Parent Letter
- Vandalism Poster (Create using mineral Q or reddish brown tempera paint).
- Tape (to put up poster)
- Scenario Page (See attached)
- Minerals A-L, and Q. For information on Q see lesson 15.
- Guilty suspect is Tommy Talc because of the mineral Hematite that is found on his shoe. The Native American Pottery clue from the Suspect Bio page is referenced in the Lesson 7 Hematite article, paragraph 2.
- Hematite Helen is to be used as a decoy suspect.
- Students should have narrowed suspects to Helen and Tommy. When Crime Lab Evidence Report #3 arrives it will be obvious that Tommy Talc is the guilty suspect.



1. Consider sending home parent letter prior to extension.
2. Prepare vandalism poster using butcher paper and a reddish brown tempera paint stating that “ _____ Elementary Stinks!!”.

Tape

3.



Decide where to put the poster in your school so that students will see it at the beginning of the day. Tape poster to wall. You may want to ask the office to put information in the

bulletin to let the other teachers know that you are doing this as a science project.

4. Determine how the scenario will be delivered to the class.

Suggestions for scenario page delivery:

- DARE Officer (If your building has one)
- Principal/Superintendent
- Custodian
- Colleague

Kit not required to do extension



Procedure

1. Send parent letter home with students.
2. After scenario is delivered to class read to or with students.
3. Read the suspect Bios to or with students.
4. Hand out copies of crime data table to groups. (2-4)
5. Give students time to discuss what information might be helpful from the suspect bio sheets and record that data onto the “other information” column on the crime data table.
6. Introduce “Crime Lab Evidence Report #1”. Give students time to discuss what information might be helpful from this page and record the data in the “Mineral on Shoes” column of the crime data table.
7. Introduce “Crime Lab Evidence Report #2”. Give students time to discuss what information might be helpful from this page and record the data in the “Mineral on Hands” column of the crime data table.
8. Crime Lab Evidence Report #3 arrives. This report will conclusively provide evidence that Tommy Talc is the guilty suspect.
9. Students discuss and predict who they believe is the guilty suspect based on the data. Students circle their hypothesis on the crime data table.
10. Students will consult their “mineral field guide” and/or “mineral identification cards” to search for evidence to prove/disprove their hypothesis.
11. Groups will prepare their “Final Conclusion Report” using all available data.
 - You may decide how students will present their conclusion using the two pieces of evidence that supports the students’ choice. They will also share whether or not their hypothesis was correct or incorrect.
 - You may decide how to tell the students who the guilty party is by: self, principal, DARE officer, etc...



Scenario

Vandalism at _____ Elementary

Crime:

Principal _____ arrived early this morning to open the school. As he/she approached the front doors of _____ Elementary he/she discovered a disturbing message about the school. The message was written in a reddish-brown color. The words said, “_____ stinks!!”

Principal _____ was horrified by this dastardly deed. He/she notified the police. When the police arrived to investigate they took fingerprint samples from the graffiti, as well as a scraping from the reddish-brown lettering.

Once the data was analyzed, 4 suspects that had been known to be near the school on the date of the crime were interviewed. Each of the 4 suspects had a type of mineral on both their shoes and hands. All suspects had been spotted walking by the crime scene. Also, each of the suspects has been angry with the school for one reason or another. The principal heard that this class has been studying Rocks and Minerals, and they need “Mineral Experts” to help solve the crime, and determine which of the suspects should be disciplined.



Suspect Bio

Suspect #1 Tommy Talc



Background: Tommy Talc is a bus driver at _____ Elementary. He has had several issues with students not cleaning up their messes on the bus. He has asked the principal several times to talk to students about being more respectful on the bus. He is upset because the principal told him to deal with it on his own. At the time of questioning Tommy was found at his home painting Native American pottery.



Suspect Bio

Suspect #2 Hematite Helen



Background: Hematite Helen is a substitute teacher for _____ Elementary. She applied for a job at our school and was not hired. Even though she still is a substitute for our school, she is upset that she wasn't hired and is thinking about working for another school. At the time of questioning she was found in her garden trimming her lavender bushes.



Suspect Bio

Suspect #3 Mario Muscovite

cartoonFaces.net



Background: Mario Muscovite has been teaching music at _____ Elementary for 20 years. This last year he was forced to only teach part time, which means he makes less money and has been forced to play his guitar on the street. He is heartbroken since he loves teaching music to the children of our school. At the time of questioning he was found near the river playing guitar for incoming fishermen.



Suspect Bio







Suspect #4 Gracie Graphite



Background: Gracie Graphite is the librarian at _____ Elementary. She has worked at our school for 30 years and is fed up with students not returning books. When the books are returned they are ripped, torn, and full of pencil marks which she spends hours each night erasing and taping. She is tired of working with ungrateful children and she is angry with the principal who refuses to do anything about it. At the time of questioning she was hiking near Mt. St. Helens which is still an active volcano.






Names _____






Crime Data Table			
Suspects	Mineral on Hands 	Mineral on Shoes 	Other Information (Bios/Motives)
Tommy Talc 			
Hematite Helen 			
Mario Muscovite 			
Gracie Graphite 			

Who committed the crime? **Circle the guilty suspect when data has been collected.**



Crime Lab Evidence Report #1	
Suspects	Mineral on Shoes
<p>Tommy Talc</p> 	 <p>Feel/Texture: Rough Smell: Rusty/Metallic Color: Reddish Brown Luster: Dull</p>
<p>Hematite Helen</p> 	<p>Feel/Texture: Gooney/Slimy Smell: Floral Color: Purple Luster: Glassy</p>
<p>Mario Muscovite</p> 	<p>Feel/Texture: Spiky/Sharp Smell: Fishy Color: Greenish Gray Luster: Dull</p>
<p>Gracie Graphite</p> 	<p>Feel/Texture: Smooth/Bumpy Smell: Rotten Egg Color: Yellow Luster: Waxy</p>



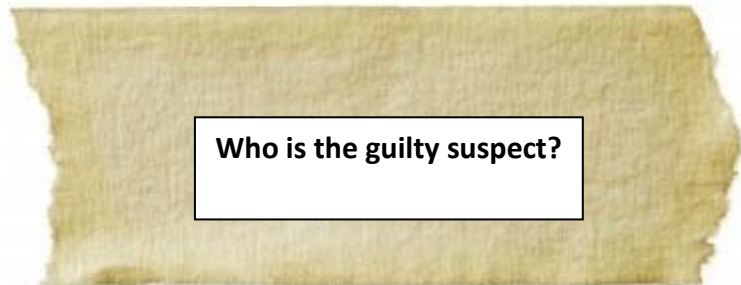
Crime Lab Evidence Report #2	
Suspects	Mineral on Hands
<p>Tommy Talc</p> 	
<p>Hematite Helen</p> 	<p>Feel/Texture: Rough and Gritty Smell: Metallic and Rusty Color: Grayish-Blue with Reddish-Brown Luster: Metallic</p>
<p>Mario Muscovite</p> 	<p>Feel/Texture: Glassy and Smooth Smell: Earthy and Dirt-like Color: Sparkly gold Luster: Glassy</p>
<p>Gracie Graphite</p> 	<p>Feel/Texture: Smooth and Slippery Smell: Burnt Charcoal Color: Shiny Gray Luster: Metallic</p>



Crime Lab Evidence Report #3



Evidence Results: Results of the analysis on the tape from the poster show trace amounts of a waxy, white powder with an earthy smell.



Final Conclusion Report

Names _____



I/We believe that _____ is the suspect who committed the crime.

Two pieces of evidence that support our reasoning are:

- _____
- _____

My/Our hypothesis was (correct/incorrect) because the evidence proved that _____ was guilty of committing the crime.



Dear Parents,

For the last 9 weeks your child has been studying Rocks and Minerals. They have been learning about minerals' distinctive properties that may be identified by testing. Students have also studied the properties of rocks and minerals which determines their use.

In the coming weeks students will be involved in an investigation/design challenge that will allow them to use the information they've learned.

The investigation/design challenge is a **"fictional"** scenario about vandalism at our school. The purpose of this is to engage the students so that they can use their knowledge of minerals to help solve the "crime."

Please don't be alarmed if your child comes home talking about a "crime" at the school. It is all part of the Rocks and Minerals unit and intentionally designed to get them excited. Also, please don't discuss this with your child prior to the experience as this will hinder the authenticity of the lesson. I encourage you to "play along!"

Thank you for your assistance and support. If you have any questions, please feel free to contact me at the school.

Sincerely,

