FLINN SCIENTIFIC

Name_____

Be a Mineral Detective

Going a little further…

Ideas, questions and things to do related to each mineral test!

Test #2. Light Interaction Test

1. Which of the minerals might be used for the panes of windows? What other tests should be performed to determine if the mineral(s) could be used for windows?

Test #3. Streak Test

2. Some of the minerals had white streaks; some had clear streaks. How could this test be changed to tell the difference between minerals with white streaks and minerals with clear streaks?
3. Some minerals are so hard that they won't crush into a powder when rubbed on a ceramic streak plate (tile). Did any of the minerals seem to scratch the streak plate instead of being crushed? Which? Why did the minerals do this?
4. What common minerals may scratch the ceramic streak plate (tile)?

Test #4. Mineral Hardness Test

5. Sometimes pieces of minerals are added to different kinds of soap to make the soap gritty so it can scrub off really tough dirt or scum. The idea is that the gritty mineral will scrub off the scum, without scratching the surface being cleaned. Would it be a good idea to put pieces of quartz into soap used to clean glass? Explain.
6. Most beaches are made of quartz. When rocks weather, most of the other minerals wear away, but the quartz is left behind. Why is the quartz left behind after all the other minerals are worn away?
7. Many very expensive saw blades are coated with diamonds. Diamond-covered saw blades can cut right through metal, rocks, even concrete! Why are diamonds so good at cutting almost everything?

Test #5. Cleavage Test

8. Jewelers sometimes use their knowledge about cleavage to split large gemstones into smaller ones. Which minerals tested in this lab could easily be split into smaller pieces with the same or similar shape as the original mineral?

Test #6. Smell Test

9. Have one of your classmates close his/her eyes. Scratch the mineral with the strongest odor on the ceramic plate, then hold it by his nose. Ask him to identify the smell!
10. Have you ever smelled anything similar to the odors produced by any of the minerals? If something smells similar, it is probably because the chemical compositions are similar. The atoms that make up the mineral are probably the same atoms that make up the object that smells the same!
11. Things that smell a lot usually have very loosely bonded atoms. Which mineral smelled the most? Which mineral was the softest? Which mineral probably has the most loosely bonded atoms?

Test #7. Ice Test

12. Would any of these minerals still melt through the ice if the ice cube had been put in the freezer? Try it!
13. What will go through an ice cube faster, a big piece of mineral or a small piece? Try the experiment!
14. Companies mine thousands of tons of one of these minerals each year to melt snow and ice on roads. Which mineral is it? Explain.
15. Which mineral or minerals would be a good choice to spread on a snowy road to provide traction for a long time?

Test #8. Solubility Test

16. Some buildings and statues are made with limestone. Limestone has a lot of mineral #4 in it. Would you like to live in a house made of limestone if the house was in an area that received a lot of acid rain?
17. Acid rain poisons some lakes. Lakes can be treated by adding limestone that contains a lot of mineral #4 in it. Limestone can neutralize the acid in the lakes. Would water, with limestone dissolved in it, have a pH above or below 7? Why?
18. Which dissolves better in water, sugar or salt? Obtain two beakers of the same size. Fill each ½ full of water. Start adding level spoonfuls of sugar to one beaker, and level spoonfuls of salt to the second beaker. After adding the sugar or salt, stir the water until all of the solid is dissolved. Which dissolves better in water, sugar or salt?
19. Will sugar and salt dissolve in oil? Pour some vegetable oil into a cup. Try dissolving sugar in the vegetable oil. Repeat this test for salt. Does it work as well as the water?
20. Minerals that dissolve in water have bonds between their atoms that can be pulled apart by the water molecules. Based on the water dissolving test, which minerals are held together by bonds that can be pulled apart by water molecules?

Be a Mineral Detective
Observations and Evidence

Place Mineral Sample Below	Mineral Number	Observations (Color, Physical Description)	Light Interaction	Streak	Hardness	Cleavage	Smell	Ice	Solubility in Water	Solubility in Acid
	1									
	2									
	3									
	4									
	5									
	6									
	7									
	8									