

## #19: IGNEOUS ROCKS

name:

Go to <http://formontana.net> and then click on picture # 71. Look at the image and read the explanation below the image.

1. What is the difference between the way that “volcanic igneous rocks” and “plutonic igneous rocks” are formed?
2. Which type (volcanic, or plutonic) would have larger grains?
3. Explain why this one (your answer to #2) would have larger grains?
4. **To see the “grains” (crystals that didn’t get to finish their shape) click on the Hot Link titled “An introduction to igneous rocks”.** Compare the photos of the granite and the basalt and read through the explanations. When a geologist says that magma cooled “slowly”, how many years is she/he talking about?
5. What length of time would be considered “fast cooling”?
6. How does the color(s) of the granite compare to the color of the basalt?
7. **Go back to <http://formontana.net/igneous.html>.** Find the Little Rockies southwest of Malta on the highway map. According to the map on the web site, are they made of plutonic rocks or volcanic rocks?
8. Are the Bear Paws south of Havre made mostly of plutonic rocks, or volcanic rocks?
9. What is the name for the volcanic mountains east of Great Falls? NOTE: There are no active volcanoes in Montana, and there aren’t any volcanic cones.

10. Refer to your highway map and the map on the web site. As you drive from Helena to boulder to Butte, are you driving through mountains made of rock that is more like granite, or more like basalt?
11. Use the Internet (dictionary.com) or other resources to find out what the word “weathering” means to a geologist. Write a definition here in YOUR OWN WORDS.

**Go to <http://formontana.net> and then click on picture # 105.**

12. Watch the short video. Describe the sound that these igneous rocks make when they are struck with a hammer.
13. Explain how the mountains between Helena and Butte were formed.
14. What is the most common type of rock in the Boulder Batholith?
15. The Ringing Rocks and the rocks around them are all “plutonic”. What does that mean?
16. Select the link that says, “Click here to see a comparison”. In what two ways is the appearance of the Ringing Rocks different from the granite around them?
17. Go back to <http://formontana.net/ringing.html> . Weathering changed the solid mass of gabbro into the pile of angular rocks shown in the photos. Explain how this happened.
18. Look at the bottom photo, which includes Mr. Benson’s hand. Why is the surface of the black gabbro such a reddish color?