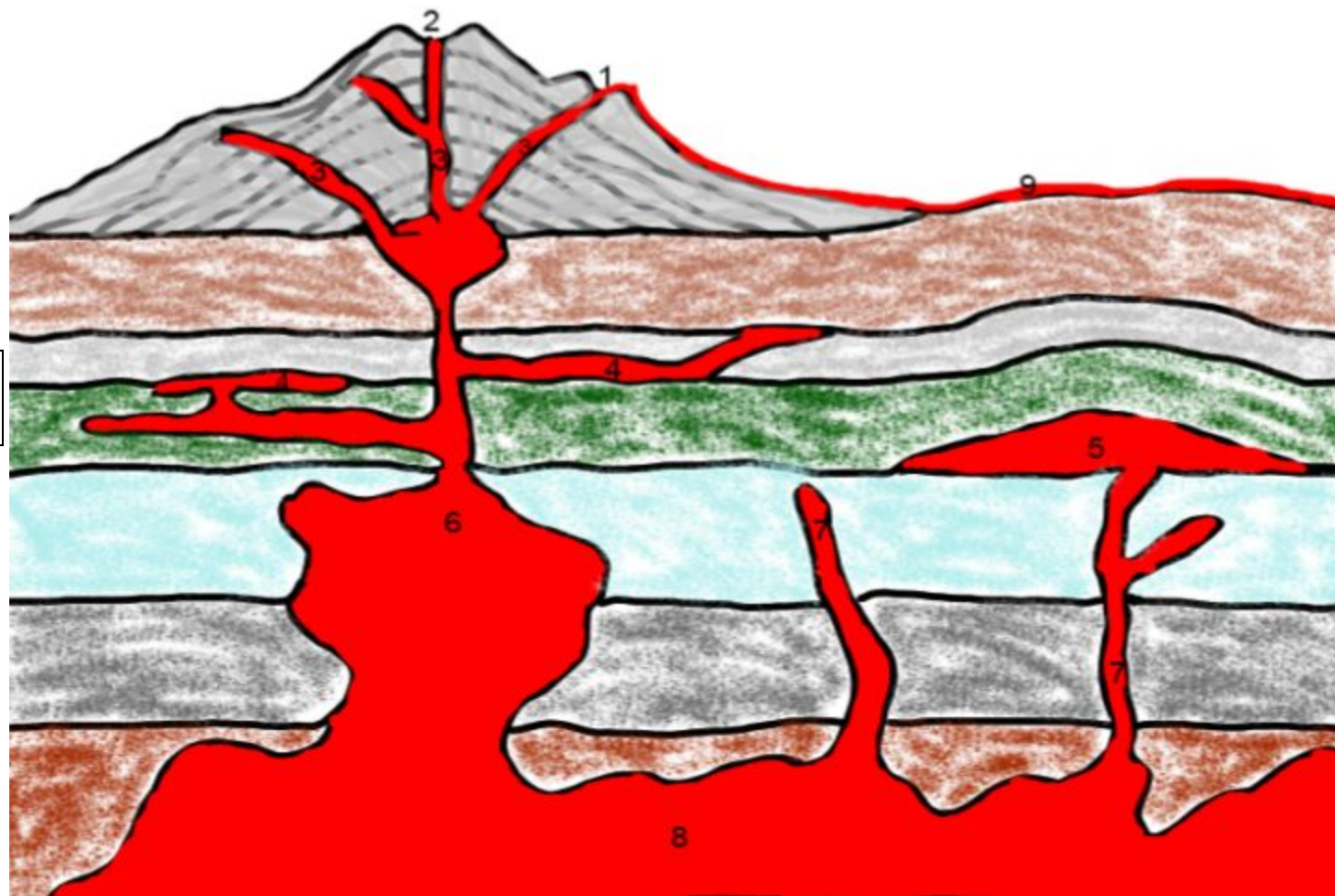


Evidence of Extinct Volcanoes

After a volcano goes extinct, it leaves traces of its existence behind. In this assignment, you need to imagine that someday each of these igneous features that are numbered, may eventually come to the surface and be exposed. Scientists have given names to all of these features. Below is a list of these names. Write them next to the numbers to which they correspond.

Batholith, Crater, Dike, Laccolith, Lava Flow, Sill, Stock, Vent, Neck

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____



Remember, igneous rock, that works its way into other rock, is called intrusive igneous rock. Crystal sizes of igneous rock are dependent on the length of time it took the magma to crystallize.

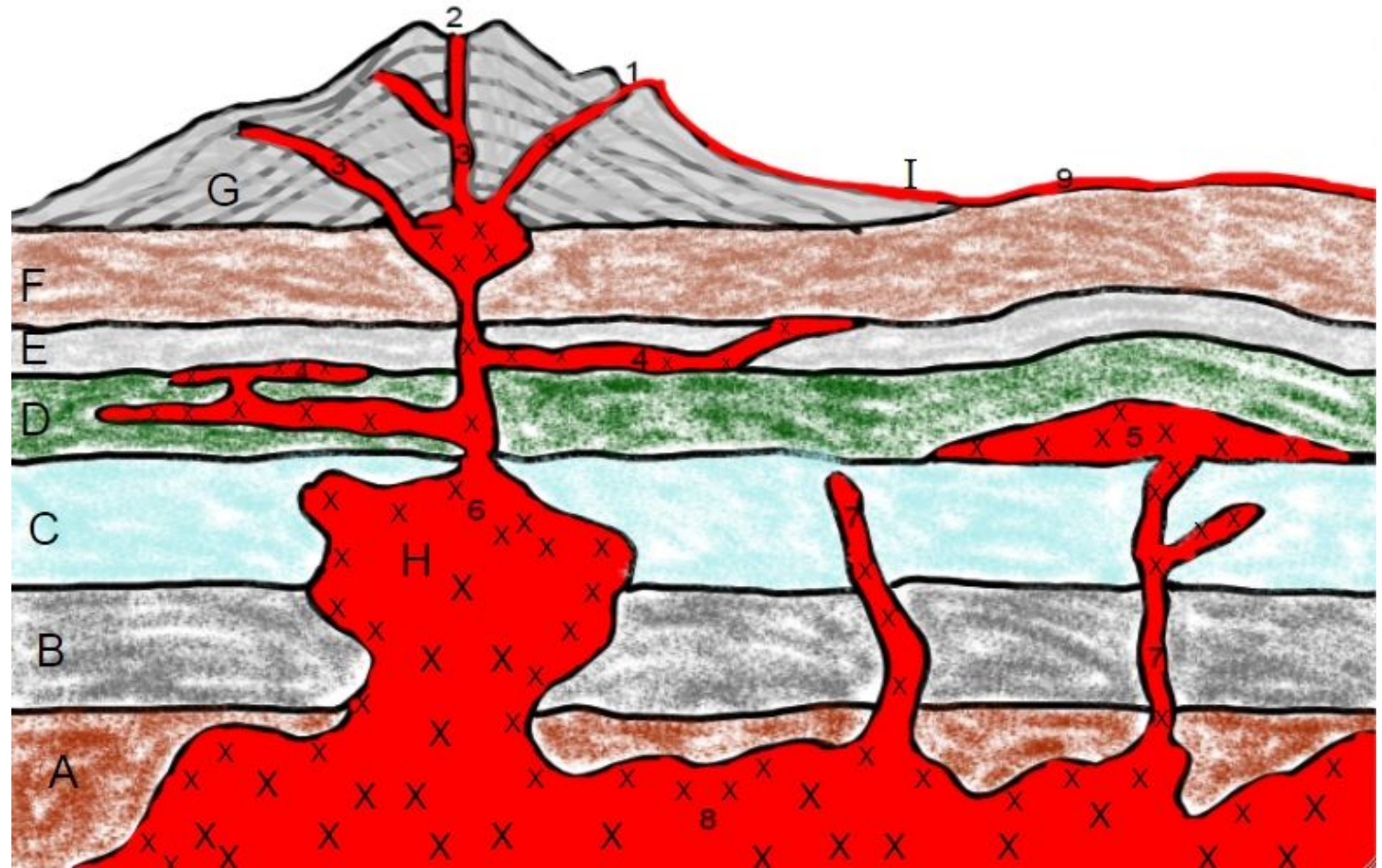
10. Make "x's" on most of the igneous rock. Vary the "x's" in size based on how large you believe the crystal sizes will be. Some of the igneous rock will actually be extrusive, therefore won't need "x's".
11. On the image, place different letters starting with "A" on each layer, the volcano, the lava flow and the igneous rock features below the volcano. The letters should be in order of relative rock age. "A" being the oldest. Ask yourself, "Which came first?" Discuss this with your partners. This is a thinking and reasoning question. You should include letters "A" through "I".
12. With a partner or two create a Google Presentation. Your presentation will include 10 slides, a title slide, and one slide with each of the 9 words from the word list above. Each of those slides will include the name of the rock feature and two images of each word. Make sure the presentation is shared with your teacher and each member of your group.

Evidence of Extinct Volcanoes Answer Key

After a volcano goes extinct, it leaves traces of its existence behind. In this assignment, you need to imagine that someday each of these igneous features that are numbered, may eventually come to the surface and be exposed. Scientists have given names to all of these features. Below is a list of these names. Write them next to the numbers to which they correspond.

Batholith, Crater, Dike, Laccolith, Lava Flow, Sill, Stock, Vent, Neck

1. Vent
2. Crater
3. Neck
4. Sill
5. Laccolith
6. Stock
7. Dike
8. Batholith
9. Lava Flow



Remember, igneous rock, that works its way into other rock, is called intrusive igneous rock. Crystal sizes of igneous rock are dependent on the length of time it took the magma to crystallize.

10. Make "x's" on most of the igneous rock. Vary the "x's" in size based on how large you believe the crystal sizes will be. Some of the igneous rock will actually be extrusive, therefore won't need "x's".
11. On the image, place different letters starting with "A" on each layer, the volcano, the lava flow and the igneous rock features below the volcano. The letters should be in order of relative rock age. "A" being the oldest. Ask yourself, "Which came first?" Discuss this with your partners. This is a thinking and reasoning question. You should include letters "A" through "I".
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Teacher Reflections and Instructions

1. I give this assignment before students have any idea about the words they will start learning. I do this so that when I do the discussion at the end of the assignment, they will have some idea of what I am talking about and be able to participate better in the discussion.
2. I allow my students to work in groups of 1, 2, or 3. I have them all do the drawing portion though, because if they don't all have their own paper, they just talk while one person does the work. The main purpose of the group opportunity is to be able to divide and conquer the Google Presentation portion of the assignment.
3. The purpose of the "X's" is that students should know from the igneous rock unit that crystal size depends on the amount of time elements and minerals have to create crystals. The deeper in the earth and in the magma chamber the longer it takes the magma to cool. The closer to the edges of the magma chamber the quicker the magma cools. Students should recognize that as magma leaves the Earth and runs along the surface the faster it will cool not allowing time for mineral crystallization and therefore really shouldn't have any "X's." If students decide to put "X's" there though, the "X's" should be extremely small. This is also a good time to reinforce the intrusive and extrusive igneous rock concept.
4. For my classes, in about three weeks from the time I present this lesson, I do a Historical Geology lesson in which students have to understand the relative ages of rock based on layer sequencing. This gives students an opportunity to see if they can infer the correct order of rock layering. The oldest rock layers are on the bottom. The intrusions happened after the layers were placed. The volcano is younger than the intrusive rock, because it would be rock if the volcano was still active. It would be magma still. The lava flow would also have to be younger than the intrusive rock because if the intrusions were already rock then how could it become a lava flow. The intrusions should be the youngest rock.
5. This lesson should take about 55 minutes and can spill into homework if not finished. I only give them the 1 hour of class time to use it.
6. Students may use my website <http://EarthScience.xyz> for a reference. It doesn't have all the answers.
7. After the assignment I use the images and videos found at <http://EarthScience.xyz/EvidenceOfPastVolcanoes> .