**Analyze a Geologic Map of Maine**

You and your partners have worked together to create geologic maps of Maine. These maps should be color coded in a way that identifies locations in Maine where igneous, metamorphic, and sedimentary rocks are formed. Our next task will be interpreting these maps in order to develop some hypotheses around how the movements of tectonic plates in Maine’s past created the rocky state that we now call home.

Let’s take some time to review the rock cycle and the theory of plate tectonics. Please work with your partners to produce clear, complete responses to these prompts:

**Igneous Rocks—**

How do intrusive igneous rocks form?

How do extrusive igneous rocks form?

When examining igneous rocks, how can you tell whether the rock is intrusive or extrusive?

What kinds of plate boundaries generally produce igneous rocks?

Explain how the plate movements that you identified in the previous question produce igneous rocks.

What kinds of plate movements can produce extrusive igneous rocks?

What kinds of plate movements can produce intrusive igneous rocks?

Name an intrusive igneous rock that is found in Maine. What is one location in Maine where this type of rock is found, and how old is it?

Name an extrusive igneous rock that is found in Maine. What is one location in Maine where this type of rock is found, and how old is it?

Generate a hypothesis: Based on what you know about tectonic plate movement and the creation of igneous rocks, what is one reasonable hypothesis that you could make about Maine’s past to explain why igneous rocks are found in Maine today?

Igneous rocks in Maine hypothesis:

**Metamorphic Rocks—**

What causes metamorphic rocks to form?

What are the primary physical characteristics of metamorphic rocks?

What kinds of plate movements generally produce metamorphic rocks?

Explain how the plate movements that you identified above produce metamorphic rocks.

Name two different metamorphic rocks that are found in Maine. What are three locations in Maine where these types of rock are found, and how old are those rocks?

Generate a hypothesis: Based on what you know about tectonic plate movement and the creation of metamorphic rocks, what is one reasonable hypothesis that you could make about Maine’s past to explain why metamorphic rocks are found in Maine today? What might have happened to produce these metamorphic rocks?

Metamorphic rocks in Maine hypothesis:

**Sedimentary Rocks—**

Where (in what types of environments) do sedimentary rocks start to form?

How do sedimentary rocks form?

What are some indicators that a rock sample is sedimentary?

What kinds of plate movements tend to create environments that encourage the build up of sediments??

What kinds of plate movements tend to lift sedimentary rocks from deep below the ocean to up above sea level?

Name two types of sedimentary rocks that are found in Maine. Which region of Maine contains most of the State’s sedimentary rock, and how old is it?

What is a type of fossil that is found in Maine? How old is it?

Generate a hypothesis: Based on what you know about tectonic plate movement and the creation of sedimentary rocks, what is one reasonable hypothesis that you could make about Maine’s past to explain why sedimentary rocks are found in Maine today?

Sedimentary rocks in Maine hypothesis:

Analyzing your map of Maine:

Work with your partners to identify the primary trends in the types of bedrock found in Maine. Examine the maps that you made, and think about the following questions:

a) Where is metamorphic rock found in Maine? Where isn’t it found?

b) Where is sedimentary rock found in Maine? Where isn’t it found?

c) Where is intrusive igneous rock found in Maine? Where isn’t it found?

d) Where is extrusive igneous rock found in Maine? Where isn’t it found?

Grab a new blank copy of the map of Maine, and sketch your conclusions to the above questions on this map.