



The Cycling of Matter through Thermal Convection

One of the challenges scientists face is how to understand things they can't see. For this activity, you will research how geoscientists investigate Earth's structure. Then, you will develop model(s) that describe how matter is cycled in Earth's interior by thermal convection. You will need a one-dimensional model of changes in density within Earth and a three-dimensional model to show the relationship between thermal convection and plate tectonics. Use this worksheet to plan, develop, and execute your model.

Develop Your Model

1. In your own words, describe what process or question your model will illustrate.

2. What type of model will you use? What materials will you need to develop your model?

3. Use the space below to sketch a prototype of your model. If you need more space, you can use a separate page.

4. Complete your model. Below, explain how it works and describe how it addresses the process or question.

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Use Your Model

Answer the questions below using your model.

1. What happens to solid crustal rock when it is subducted into the mantle?

2. What are the processes of “ridge push” and “slab pull”? Why are they important to mantle convection currents?

Apply Your Knowledge

1. Describe how thermal convection and cycling of matter result in the formation of a particular type of feature on Earth’s surface, such as a volcano, seamount, or rift valley.
