

The Law of Superposition

Standards Covered in this Module

NGSS:

4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.

MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

Common Core:

MP.2 Reason abstractly and quantitatively.

4.MD.A.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.

Guiding Questions

How are rock layers formed over time? How does the Law of Superposition tell scientists which rocks are the oldest?

Word wall

Sedimentary Rock – Rock formed in layers. Often found near water sources and a result of deposition and erosion.

Law of Superposition – The law stating that older rocks are located at the bottom while newer rocks are located on top.

Procedure

Video – [Ben explains the Law of Superposition](#)

Junior Archaeologist Assignment

Record data in log book

Interactive homework

Junior Archaeologist Assignment

You are going to create your own rock layers with a friend! You will need one narrow cup, a timer, and each young archaeologist will need a handful of one type of coin. (This activity will work with multiple friends, each just needs a different type of coin). Each person should have at least 20 of his or her kind of coin.

Taking turns, everyone will take 5 seconds to stack as many coins as they can in the cup; whoever is not putting the coins in the cup can be the timer. After the first person is done, the next person should put as many coins as they can in the cup for 5 seconds. This will continue until all of the coins have been used.

After you are done, measure each layer in cm and record the information in your logbook. Draw what your stack looks like, and label each color with the width of the band. When you are done, answer the questions below.

Interactive Homework

Ask your parents permission before performing this task. Better yet, do this homework with your parent and discuss what you find!

For this homework assignment, you will be collecting a core sample of the soil in your backyard! You will need one small pipe with the smallest circumference you can find that is at least 20cm long. (If you go to a hardware store to get the pipe cut, have them cut it for you at an angle, it makes this a lot easier!)

Next, choose a place in your backyard that you would want to investigate. Before you put the pipe in the ground, predict what the different soil layers will look like that you find. Will it all be the same color and texture? Why do you think that?

You will put the pipe vertically in the ground, hitting it down with either a hammer or other heavy object until the soil level is almost to the top of the pipe. Next, pull the pipe out of the ground and carefully push the contents onto a piece of paper. What do you notice about the different layers of soil? Was your prediction correct? Do the layers all look the same? Are all they all the same width? What do you know about the soil layers based on the Law of Superposition? Repeat this core sample in another part of your yard to see if you get the same results!