* Title
  + Edible soil profile
* Objectives
  + Students will create and label a model of the different soil horizons
* Standards
  + K.LS.3 Use observations to describe patterns of what plants and animals need to survive
  + 1.LS.4 Use a model to represent the relationship between the needs of different plants and animals and the places they live
  + 3.LS.2 Plan and conduct an investigation to determine the basic needs to plants to grow, develop, and reproduce
  + 4.ESS.3 Describe how geological forces change the shape of the land suddenly and over time
  + 5.LS.1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment
* Vocabulary
  + Horizon
  + Soil
  + Organic
  + Inorganic
  + Bedrock
  + Substratum
  + Subsoil
  + Topsoil
  + Decompose
  + nutrients
* Materials
  + Enough for each student of
    - 1 clear plastic cup
    - 1 oreo cookie
    - 1 small handful of chocolate and white/peanut butter/butterscotch chips
    - 1 chocolate pudding cup
    - 1 small handful of crushed oreo cookies
    - 1 small handful of shredded coconut, dyed green (toss the coconut in a bowl with some green food dye)
    - 2-4 small gummi worms
    - 1 spoon
    - 1 permanent marker
* Introduction
  + Soil is the upper layer of the earth where plants grow. Humans and animals need soil to grow their food. But what is soil? Soil is made up of mineral particles and organic material. Over time, these particles form layers called horizons. If you dig a deep enough hole, you can see the horizons. This is called a soil profile. Today we aren’t going to be digging a hole. Instead, we are going to make our own soil profiles out of things we can eat!
* Procedure
  + Pass out each student’s materials. Instruct them NOT to open or eat anything yet.
  + There are multiple soil horizons. We will start at the bottom:
    - The R Horizon is also called bedrock. It lies beneath the soil and is very, very deep. The R Horizon is technically not soil, but it is the base for all other soil horizons.
      * Place the oreo at the bottom of the cup. This is your bedrock.
    - The C Horizon is also called the substratum. It is rocky from larger pieces of weathered rocks and has fewer living things than the layers above it.
      * Place the chocolate chips in the cup. This is your substratum.
    - The B Horizon is also called subsoil. It is tougher and harder for plants and animals to use than the layers above it. It has lots of clay and other compounds that seep down from the upper layers.
      * Use your spoon to spoon some of the chocolate pudding into the cup on top of the chips. This is your subsoil. Make sure to only make a small layer so that you have room in your cup for the other layers.
    - The A Horizon is also called topsoil. This is where plant roots grow best. It is also home to many bacteria, fungi, and animals (like worms) that help the soil grow plants and hold water.
      * Sprinkle your crumbled oreos on top of the pudding. This is your topsoil.
      * Now press the gummi worms into the topsoil so that they are sticking out the top.
    - The O Horizon is the top layer of soil. It is made up of plants that have fallen on the ground and decayed and keeps the soil very healthy. The decomposed plant litter breaks down into nutrients that make the soil healthier and help form the next layer beneath.
      * Sprinkle your coconut on top of the oreos and gummi worms. This is your O Horizon.
* Closure
  + Using your marker, label each horizon with either the horizon letter or horizon name (teacher’s choice)
  + Starting from the bottom horizon, read each horizon together.
  + Why do you think it is important to know the horizons? Do horizons look the same everywhere you go? (are they all the same colors, depths, etc.)
  + Now you can eat your profile!