Name_____
Date_____
Class_____

Modeling Energy and Matter Cycles

For this unit you will develop a model using red wiggler worms demonstrating how energy and matter cycle through ecosystems.

Conduct a webquest to gather background information on worm bins. You will use this information to build your model.

Suggested Resources:
https://composting.ces.ncsu.edu/vermicomposting-2/
https://extension.okstate.edu/fact-sheets/the-basics-of-vermicomposting.html
https://foodprint.org/eating-sustainably/composting-and-food-waste/vermicomposting-101/
https://www.npr.org/sections/goatsandsoda/2016/08/12/489748719/the-power-of-worm-poop
https://compost.css.cornell.edu/worms/basics.html
https://unclejimswormfarm.com/diy-worm-bin/

Notes:

Materials:

Write down a detailed list of all materials that you will need for your model. Be specific and thorough.

Procedures:

What procedures will you follow to set up your worm bin?

What procedures will you follow to maintain your worm bin once it is set up?

Boundaries

What are the boundaries (limits) of your model in demonstrating how energy and matter cycle through ecosystems?

Interactions

What interactions are happening in your model? How are biotic components interacting? How are abiotic components interacting? How are biotic and abiotic components interacting with each other?

Energy Cycle

How is energy flowing through your model ecosystem? What energy was/is added to your model? What energy leaves your system? Is there any energy that is transformed from one form to another?

Matter Cycle

How does matter flow through your model ecosystem? What matter was/is added to your model? What matter leaves your system? Is there any matter that is transformed from one form to another?

Food Webs

If the components of your model were in a natural ecosystem how would each of the organisms participate in a food web? What organisms are included in your model? In nature where would those organisms get their food? In nature what organisms would eat the organisms in your model?

Biomass Pyramid

Draw a simple biomass pyramid including at least three levels showing how matter (biomass) moves through the trophic levels of your model.