

Relative Age Dating

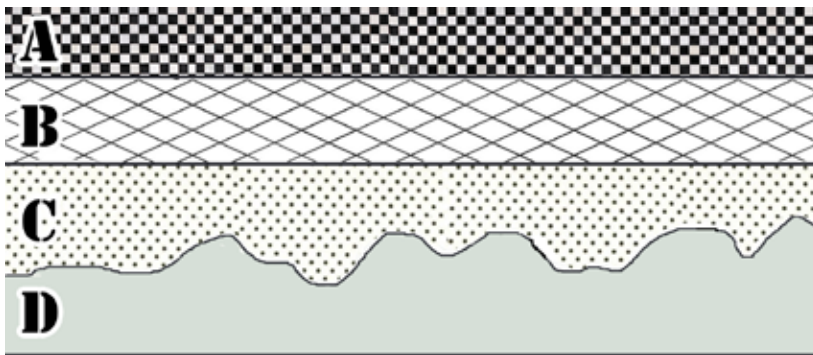
By Nancy Volk

Law of Superposition

One of the fundamental laws of archaeology is the Law of Superposition. The law states that sedimentary layers are deposited in a time sequence, with the oldest on the bottom and the youngest on the top.

Weathering and Erosion

When a rock layer is not parallel and smooth but appears irregular (see the interface between layers C and D), then erosion and weathering occurred and like a big eraser removed part of the history of the rock layer. We compare the rock layers to other areas to try and find clues to the missing evidence. The rock layers below show this abnormality.



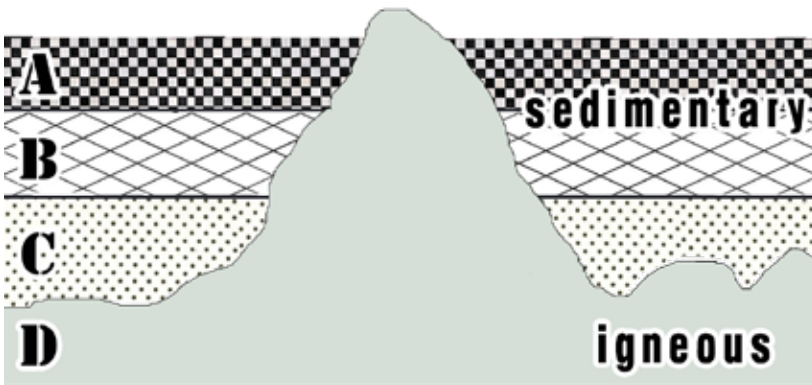
We still know the youngest to the oldest. What is the order?

What type of rock creates layers? _____

What About Igneous Rocks?

When an igneous activity comes into play in an area with sedimentary rock layers it can push through the cracks of layers making interesting formations.

When an igneous activity occurs it is always younger than the rocks it moves, flows through or erupts over. Think about this and see if this makes sense!



What is the order of oldest to youngest rock layers?

MOST*

VOCABULARY

Anticlines

Faults

Folds

Igneous

Law of Superposition

Sedimentary

Synclines

HELPFUL TERMS

Absolute age dating

Fractures

Lava

Magma

Monocline

Relative age dating

Sequence

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New York State Standards

Middle School Activity

Standard 1: Analysis, Inquiry, and Design

Standard 4: Physical Setting

Key idea 2.1c, 2.1f, 2.1g, 2.1h, 2.1i,
2.2a, 2.2c, 2.2g

Demonstration: Age Dating

MATERIALS NEEDED

Canning jar and lid

Food coloring

Modeling clay

Scissors

Tape

Wax paper

Students should be able to:

Identify layers of deposition

Describe the relative ages of sedimentary layers

What to do:

1. Take the glass canning jar and fill it about 1/3 full of sediments that are multi-sized particles.
2. Fill the remainder of the jar with water. Cover tightly and add electrical tape around the perimeter of the lid area to add more security.
3. Shake vigorously.
4. Allow the sediments in the jar to settle for several days. Notice what occurs to the sediments as they are deposited.
5. The students should be able to see layers of sediments settling out from the stirred water. Discuss how this happens in locations on earth in streams, ponds, lakes and oceans.



Demonstration/Activity: Rock Layers

MATERIALS NEEDED

Modeling dough
(recipe provided)

Plastic knife

Wax paper

Paper block printouts

Tape

Students should be able to:

Explain the Law of Superposition_

Explain the difference between sedimentary and igneous rock layers

Using modeling dough (recipe provided below) add three different colors to make three different rock layers. Have students roll out three different layers and place them on top of one another. Have them create **anticlines**, **synclines** and describe how they made these. Have them discuss how this is like the forces in the earth causing rock layers to bend and fold. They can explore ideas about **faults** with the use of a plastic knife as well. Have the students work with the modeling dough on top of wax paper for easy cleaning.

Modeling Dough Recipe

1 cup flour

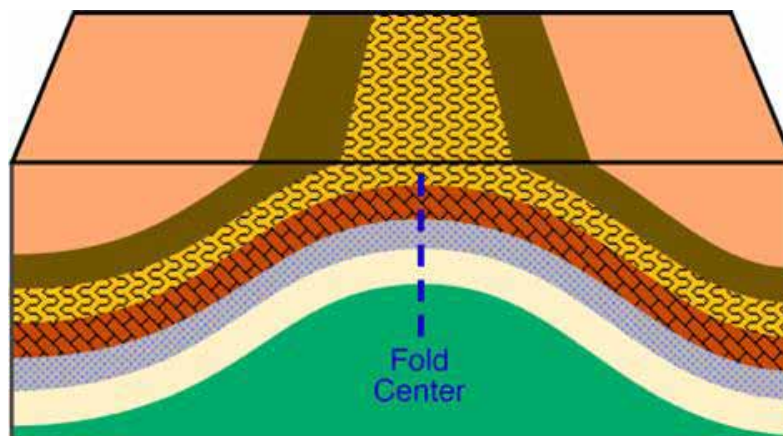
1/2 cup salt

1 cup water

2 tablespoons oil

2 tablespoons cream of tartar

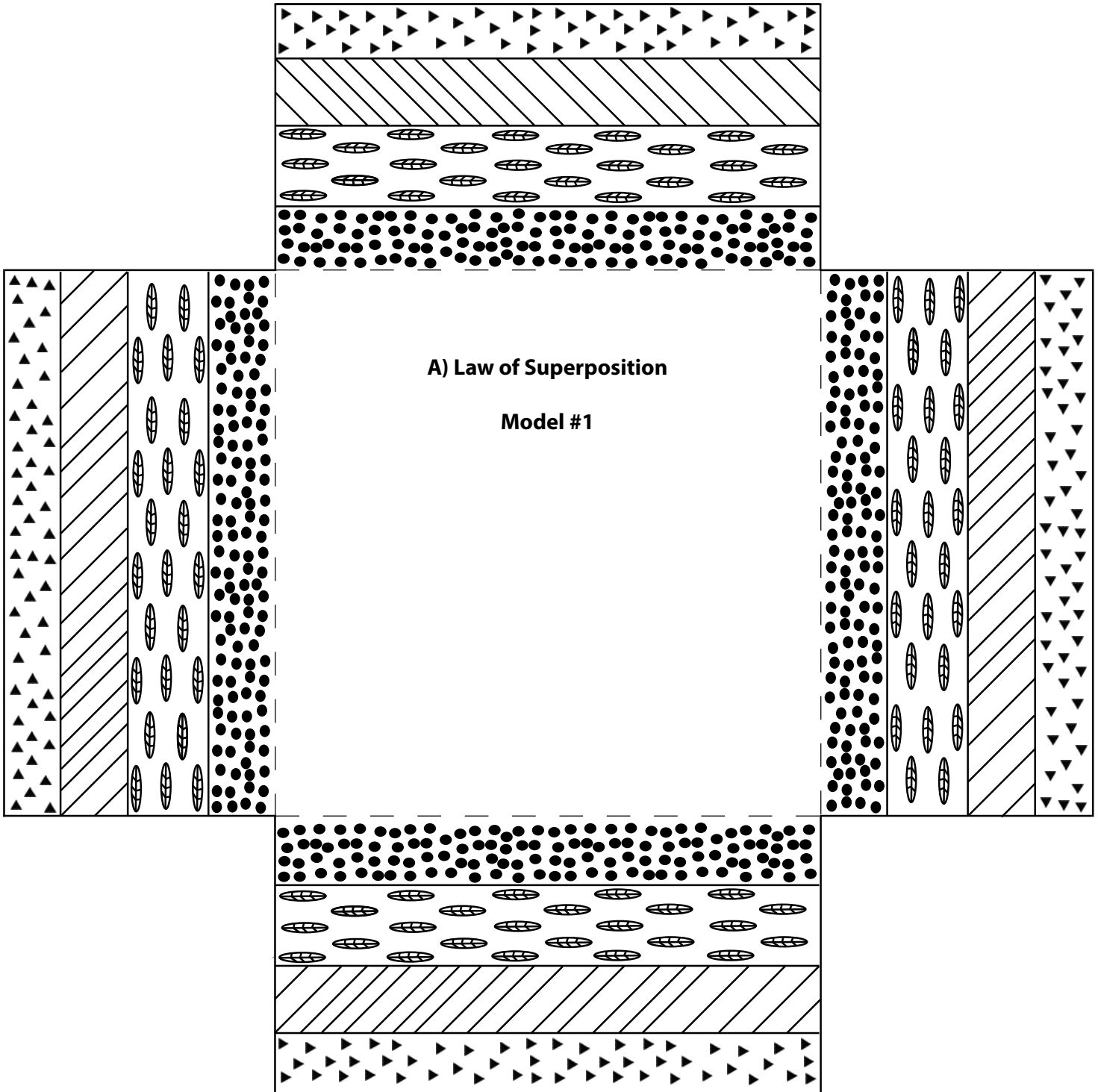
1. Mix flour, salt and oil, and slowly add the water.
2. Cook over medium heat, stirring until dough becomes stiff.
3. Turn out onto wax paper and let cool.
4. Knead the modeling dough with your hands until of proper consistency.
5. Divide the recipe into three portions coloring each one a different color.



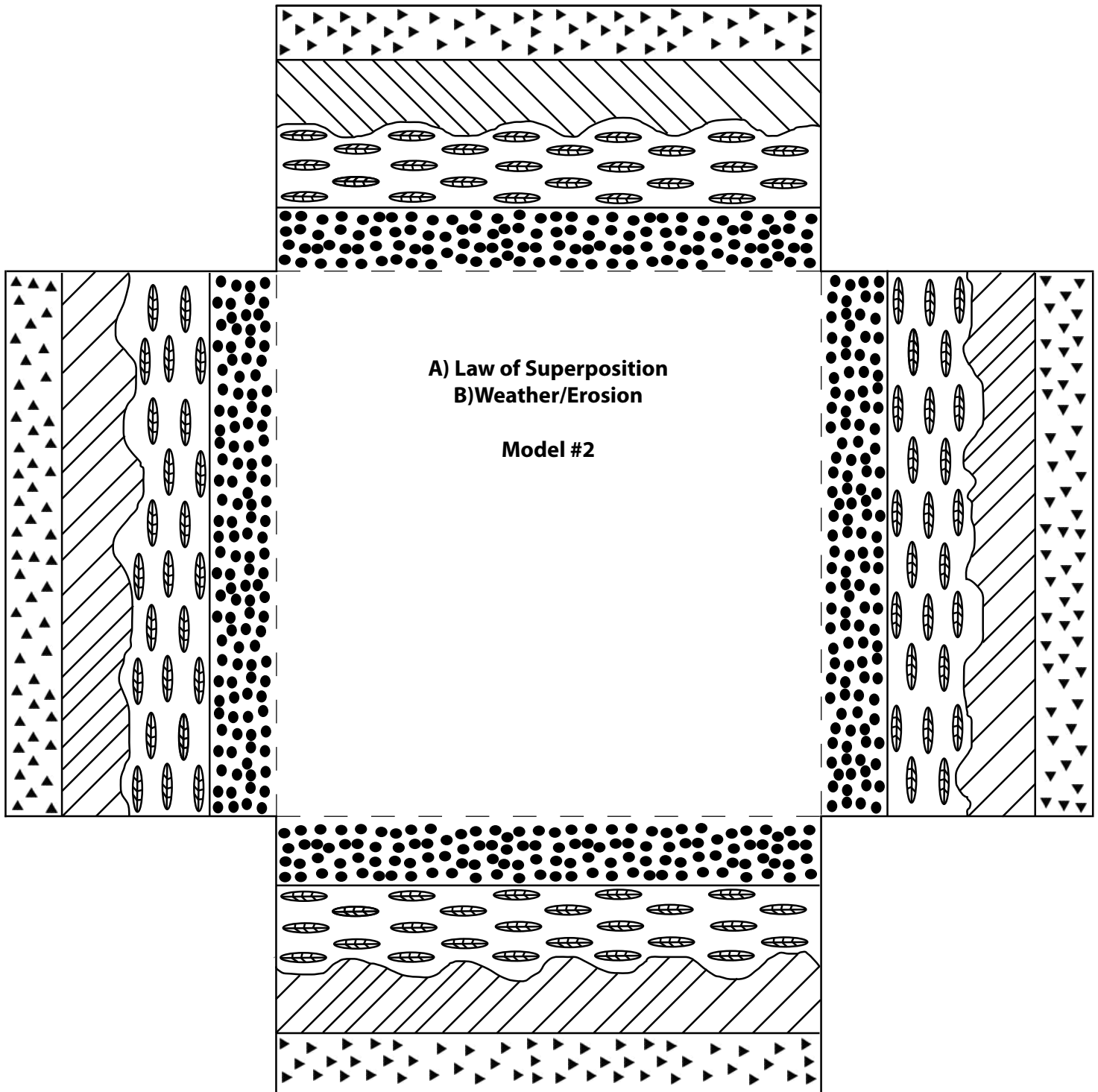
After explaining the notes to the students, have them cut out the perimeter of the paper block printouts provided. Using tape, put the blocks together to show a 3D form of rock layers cut out of a piece of land.

1. Ask the students to identify the youngest and oldest rock layer in each block.
2. They should be able to share why they chose these.
3. They should be able to explain any abnormalities in the layers.

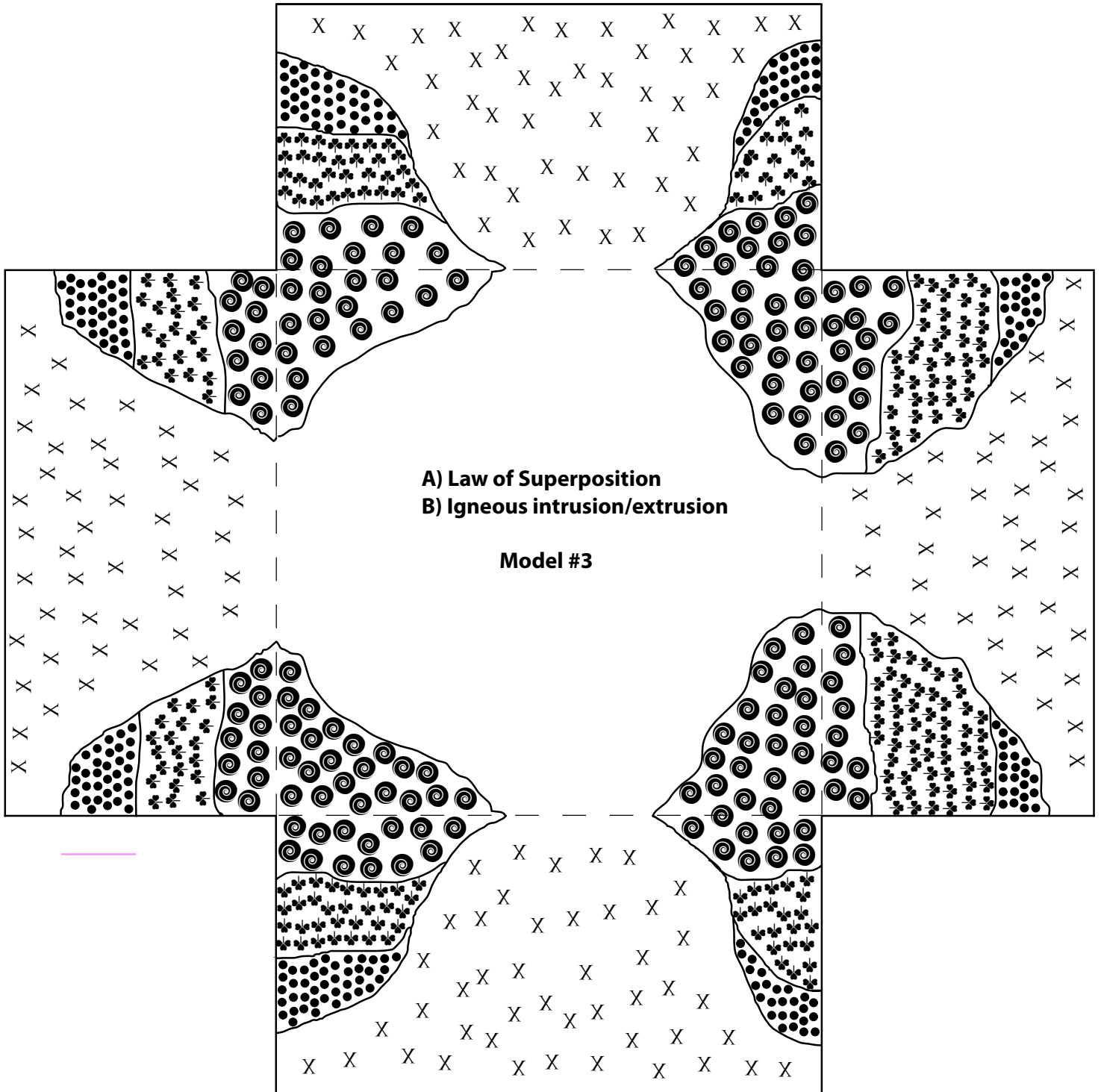
Paper Block Printout #1



Paper Block Printout #2



Paper Block Printout #3



Paper Block Printout #4

