

Erosion Model Experiment



Name :

Guiding Question: What are the factors that impact erosion?

Materials:

- Cardboard
- Plastic trash bag
- Scissors
- Sediment (sand, soil, rocks, pebbles, gravel)
- Protractor
- Watering can with a shower-type head
- Water
- Ruler



Instructions:

- Cut one end out of the box so that water will be able to flow out of the model.
- Cover the box or cardboard with the bag so that the cardboard stays dry.
- Create a model of the arroyo bottom, arranging the soil, sand, pebbles, gravel and larger rocks. Wet down the model slightly, so it is moist, but not saturated.
- Practice adding water to your model. Watch how the water flows. Observe how the different materials react to the water, how the rate you pour the water changes the arroyo model, the angle of the model, and more.

Take some notes about what you notice:

- Use your protractor to choose three angles (preferably less than 30°) to test the impact of the slope on the arroyo erosion rate. Remember that the larger the angle, the higher the potential energy of the water when it enters the model.
- Remember to keep as many variables the same. After each test the materials should be returned to the same place in the model. The same amount of water should be used each time. The water should be poured at the same height and at the same rate.
- Record your observations after each test. Make sure to have a tub at the end of your model so you don't make a mess!

The three angles we will test are:

- Test Angle 1: _____
- Test Angle 2: _____
- Test Angle 3: _____

Test 1 Observations:

Test 2 Observations:

Create a diagram that explains how water, erosion, solar energy, sediment, gravity, and slope are connected in the arroyo. Make sure you show how the kinetic and potential energy are related to the way that water flows through the arroyo.

Test 3 Observations:

Reflection:

Would you expect to see more erosion in an arroyo filled with sand or pebbles? Why do you say that?

Would you expect to see more erosion in an arroyo with a slope of 5 degrees or 10 degrees? Explain how water and gravity impact erosion.
