Modeling a Landslide

In this lab, you will use a cardboard ramp with a sample of rocks on it to model a hillside. You will change the slope of the ramp and observe what happens to the rocks.

Question: How does the steepness of a hill affect the movement of rocks?

Hypothesis: I think that _____ rocks will have a _____ angle of

repose than _____ rocks will.

Materials: cardboard ramp (1 meter long), assortment of rocks, protractor, safety goggles

Experiment Procedure:

1. From the assortment of rocks your teacher provides, select several of roughly the same size and arrange them at one end of a cardboard ramp. Record the approximate diameter of an average rock from your set. Measure to the nearest tenth of a centimeter.
2. Carefully and slowly raise the end of the ramp where the rocks are piled.
3. Hold the ramp steady at the point where the rocks begin to slide down the ramp.
4. Have a partner use a protractor to measure the angle between the base and the ramp. Record this angle in your table. Then lift the end of the ramp higher until all the rocks slide down.
5. Repeat this experiment with a different set of rocks, until you have observed the angle of repose for large rocks, medium-sized rocks, small rocks, and a mixture of the three sizes of rocks.

Rock Size	Rock Diameter (tenth of cm)	Angle of Repose (degrees)	Other things we noticed
Small			
Medium			
Large			
Mixed Sizes			

Conclusions:

What effect does the steepness of a hill have on rocks' movement? Explain about small, large, and mixed-rock sizes.

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Extend:

What other characteristics of the rocks affect their angle of repose? Explain.

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