

ES2506: What if Earth and the Moon Were Hit by Twin Asteroids? Question #11

Earth Science/Geology

Mr. Traeger

Name: _____

Period: _____

Date: _____

Instructions

This sheet goes along with question #11 on your Internet investigation sheet. Fill in the following charts based upon the idea of controls and variables. You will vary one parameter while controlling the others. Attach this sheet to your Internet investigation sheet when you are finished.

Use the *What if The Earth and Moon were Hit by Twin Asteroids?* Internet Investigation Slide 8 to fill out the chart below.

				Earth			Moon		
Speed (km/sec)	Impact Angle (degrees)	Diameter (meters)	Composition (iron, dense rock, or ice)	Energy (Mega Tons)	Crater Diameter (km)	Crater Depth (km)	Energy (Mega Tons)	Crater Diameter (km)	Crater Depth (km)
Keep Impact Angle, Diameter, and Composition Constant, Vary Speed (Do 3 different trials)									
5	90	500	Iron						
10	90	500	Iron						
20	90	500	Iron						
Keep Speed, Diameter, and Composition Constant, Vary Impact Angle (Do 3 different trials)									
50	5	500	Iron						
50	45	500	Iron						
50	90	500	Iron						
Keep Speed, Impact Angle, and Composition Constant, Vary Diameter (Do 3 different trials)									
50	90	5	Iron						
50	90	100	Iron						
50	90	10,000	Iron						
Keep Speed, Impact Angle, and Diameter Constant, Vary Composition (Do 3 different trials)									
50	90	500	Iron						
50	90	500	Rock						
50	90	500	Ice						

1. Analyze your data and then fill in the following chart based on the previous calculations.

How does increasing each of the following affect the size of the crater?			
Effects of Increasing Speed?	Effects of Increasing Impact Angle?	Effects of Increasing Diameter?	Effects of Increasing Composition Density?

2. **Use the *Impact Earth* Website to answer the following.** Pick speed 50 km/s, impact angle 90 degrees, diameter = 500 meters, and composition iron. Test the following impacts in to different materials and report what happens. Put distance from impact at 1 km.

Water of Depth of 100 meters	Sedimentary Rock	Crystalline Rock

3. Inspect the parameters from the *Impact Earth* site such as Atmospheric Entry, Energy, Global Damages, Crater, Ejecta, Thermal Radiation, Seismic Effects, Airblast, and Tsunami. Make the worst-case scenario (Armageddon) that you can possibly think of and describe how each of the parameters turns out. Attach an additional page to this report if needed.