

Activity #7: Solar System Collisions

Please go to the web site: <http://janus.astro.umd.edu/astro/impact/>

It is possible to estimate the diameter of the impacting projectile from the size of the resultant crater. Gather the information needed to answer these questions.

7-1. The Hellas impact basin on Mars is 1800 kilometers in diameter and about 6 kilometers deep. Assume a velocity of 20 km/sec. Estimate the diameter of the projectile necessary to produce the Hellas basin. (You will have 3 answers depending on composition.). Which is the most likely composition? Justify your choice.

7-2. Go to the Mars map at <http://www.mars.google.com>
Locate the Hellas basin and describe its appearance.

7-3. Use your icy and rocky composition answers in 7-1 and find how large a crater would be produced by a similar projectile on the Earth (land only) and the Moon. Find a feature on the Earth and the Moon that would be comparable to these sizes.

7-4. Account for the differences in crater size and depth for the impacts in 7-1 and 7-3.

7-5. How likely is it that catastrophic collisions like those mentioned above would occur in the future? Explain your answer.