ACTIVITY 8 - Rock Density

Asteroids and meteorites represent some of the oldest rocks in the solar system. They were left over after the formation of the planets. Some asteroids were large enough that they differentiated, just like the Earth, with the more dense metallic elements on the inside and less dense elements, such as carbon on the outside. Some were not large enough and do not contain different density layers.

This activity investigates the densities of different types of rock. You will measure and compare the density of five different rocks.

The density of a material can be calculated from

$\rho = \frac{M}{V}$, where ρ is the density in gcm^{-3}, M is the mass in grams, and V is the volume in cm^3.

The volume of a rock is hard to measure using a ruler but can be measured through the displacement of water. When an object is entirely immersed in water, it displaces a volume of water equal to that of the object.

In 5 steps (or less), describe an experiment to measure the density of each rock.

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Use this table to record your results

Rock	Mass/g	Volume/cm^3	Density/gcm^{-3}
A			
B			
C			
D			
E			

Why do you think that rocks of similar sizes can have very different densities? How is it possible to have a meteorite made only from the material from the core of an asteroid?

Extension:
The SI units for density are kgm^{-3}. Convert your values of density to this SI unit.

The density of the metal mercury is 13.6 gcm^{-3}. Mercury is a liquid at room temperature. What would happen if you dropped the most dense rock you measured into a bowl of mercury?