Name_____ Period _____ Date _____

Buckyball STEM Sims

Lesson 2: Getting Down to the Hard Facts

Substances differ in their hardness. Some materials, like diamonds, are extremely hard, while others, such as mica, are fairly soft. The Mohs Hardness Scale is a way to compare the relative hardness of materials. Are you ready to do some scratching?

Doing the Science

1. Start the Buckyball Simulation by clicking on the "Sim" tab.
2. Click on the fullerene (C_{60}) container and drag a chunk to the Mohs Hardness Tester.
3. Note and record in Table 1 the hardness of the fullerene.
4. Click the "Reset" button at the bottom of the screen.
5. Click on the fullerene (C_{60}) container and drag a chunk to the blue Hydraulic Press located on the right side of the screen.
6. Click the "On" button to start the press.
7. Note and record in Table 1 the amount of volume compression experienced by the fullerene sample.

Table 1. Fullerene Hardness and Compression Data

Sample	Mohs Hardness Value	Volume Compression Value (%)
Fullerene		

Do You Understand?

1. Use available resources to look up a table of Mohs Hardness Values for common substances. Which substance has a similar hardness to fullerene?

2. Is fullerene harder or softer than quartz? Please explain your response.

3. Use Table 2 below to rank fullerene's ability to have its volume reduced when compressed.

Substance	Volume After Compression by Press (% of Initial Volume Remaining)
Nylon	40
Bone	85
Lead	90
Bronze	95
Gold	98
Steel	99