This is BCE#3.

I recommend you print out this page and bring it to class. Click here to show a set of five BCE3 student responses randomly selected from all of the student responses thus far in a new window.

john , here are your responses to the PLE and the Expert's response.

In this BCE we will explore a simulation that allows the mesurement of some properties of matter. This simulation was created by pHET Project at the University of Colorado-Boulder. Click here to open the simulation. Click on the link, open the simulation and re-size the window so you can see the simulation and the BCE.

1. Briefly describe what you see in the simulation window.

In the window are four blocks (of wood), two are adjacent to a balance on the left side of a large container of a liquid (assume the liquid is water). The other two blocks are on the right side of the container of water.

We will use this simulation to gather some data about some blocks of material. Be sure that in the upper right corner the Same Substance button is selected. If it is not, click on the button. Currently the material displayed is wood. You should see four blocks of wood.

2. Using the balance located on the left side of the simulation window, measure the mass of each of the four blocks and enter the data into Table I below. Next, measure the volume of water displayed by each block and enter that number in the volume column in Table I. Confirm the mass and volume for Block A that has already been entered in Table I.

Block	Mass (kg)	Volume (L)
A	15.00	7.50
B	20.00 20.00	10.00 10.00

90%

C	10 10.00	5 5.00
D	5 5.00	2.5 2.50

90%

Table I.

3. As the mass of the blocks increase how does the volume of the blocks change?

increase

As the mass of the block increases the volume of the block increases.

4. In Table II below are four columns combining the variables mass and volume into four different relationships. Calculate the corresponding value of each relationship for each of the blocks.

Block	mass - volume	mass + volume	mass/volume	mass*volume
A	7.5 7.50	22.5 22.50	2 2.00	110 112.5
B	10 10.00	30 30.00	2 2.00	300 200.0
C	5 5.00	15 15.00	2 2.00	50 50.00
D	2.5 2.50	7.5 7.50	2 2.00	12.5 12.5

93%

Table II.

5. Given that the mass of a new brick block is 2.24 kg predict the volume of that brick block.

78% 1.12 L correct

8% 4.48 L

4.48 L

Be sure to bring the Expert's Response page to class. You will discuss this result with the other members of your group.

6. Given that the volume of a different brick block is 9.10 L predict the mass of that brick block.

11% 4.55 kg

78% 18.2 kg

4.55 kg

Be sure to bring the Expert's Response page to class. You will discuss this result with the other members of your group.

7. In the dropdown menu in the right side of the simulation select 'Wood' and complete Table III.

Block	Mass (kg)	Volume (L)
A	93% 3.5 3.00	75% - 3L 7.5 15% - 7.5L 7.50
B	5.0 4.00	10. 16% - 10L 10.00
C	2.00 2.00	5.0 5.00
D	1.00 1.00	2.50 2.50

Table III.

8. Describe any observeable difference(s) between the wood blocks and the brick blocks.

The wood blocks floated on the water, while the brick blocks sank.

9. Is there anything about the questions that you feel you do not understand? List your concerns/questions.

nothing

10. If there is one question you would like to have answered in lecture, what would that question be?

nothing