

This is ACA # 4, our fourth ACA of the Spring semester. It is OK to use your textbook, but if you can answers the questions without it that is OK too.

I recommend you print out this page and bring it to class. [Click here](#) to show a set of five ACA4 student responses, randomly selected from all of the student responses thus far, in a new window.

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

In this ACA 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. In the upper right corner click on the Mystery option.

1. In the Mystery Option are five labeled cubes. Complete the Table I below

Block	Mass (kg)	Volume (L)
A	65.14 (65.14) 4% DNFI	3.38 (3.38) 5% 103.38 4% DNFI
B	0.64 (0.64)	1.00 (1.00) 4% 100.64 20% 0.164 ← amount submerged students did not measure total volume of container.
C	4.08 (4.08)	5.83 (5.83)
D	3.10 (3.10)	3.38 (3.38)
E	3.53 (3.53)	1 (1.00)

Table I.

2. Determine the density of each of the block and enter the value in Table II.

Block	Density (kg/L)
A	19.27 (19.3)
B	0.64 (0.64)
C	0.700 (0.700)
D	0.917 (0.917)
E	3.53 (3.53)

58% calculate a density less than 1, and saw the object sink.

19% - 1 g/cm³

19% - 1 kg/L

86%

Table I.I

3. In the upper right corner select the Custom Option. In the upper left corner select the MyBlock option. Describe what happens to the block in each of the following conditions:

Condition I : The mass of the block is high and the volume of the block is low.

the block sinks in the fluid as the mass gets larger and the volume gets smaller...the density increases

(The block sinks in the liquid.)

*58% had a density = 10 kg/L
90% had a " greater than 1*

Indicate the density of your block. 4.49 kg/L

Condition II : The mass of the block in kg is equal to the volume of the block in L.

it stays wherever it is dropped, but always stays below the surface of the fluid.

(The block has the same density as the liquid.)

Indicate the density of your block. 1.00 kg/L *91%*

Condition III : The mass of the block is low and the volume of the block is high.

as the mass decreases and the volume increases more of the block is above the level of the fluid

(The block floats in the liquid.)

82% has a density less than 1

Indicate the density of your block. 0.149 kg/L

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

nothing

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

nothing