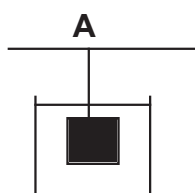


Blocks Suspended in Liquids—Volume of Liquid Displaced ⁹⁹

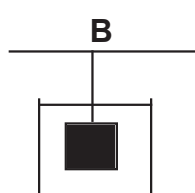
Shown below are six containers that contain various liquids. Blocks of various solids are suspended in the liquids by being hung from a supporting rod. All of these blocks are the same size, but they have different masses (labeled as M_b) since they are made of different materials. All of the containers have the same volume of liquid, but the masses of these liquids vary (labeled M_l) since the liquids are different. Specific values for the masses of the blocks and the liquids are given in each figure. The volume of the blocks is one-fifth the volume of the liquids.

Rank these situations, from greatest to least, on the basis of the volume of the liquid displaced by the blocks.



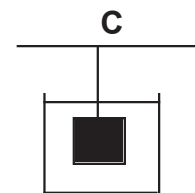
$$M_b = 40 \text{ g}$$

$$M_l = 200 \text{ g}$$



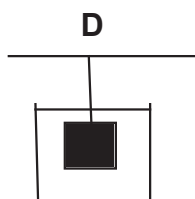
$$M_b = 50 \text{ g}$$

$$M_l = 200 \text{ g}$$



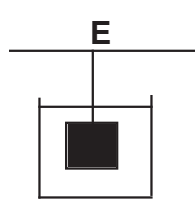
$$M_b = 30 \text{ g}$$

$$M_l = 150 \text{ g}$$



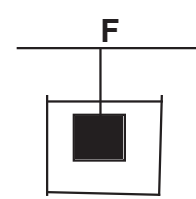
$$M_b = 40 \text{ g}$$

$$M_l = 120 \text{ g}$$



$$M_b = 20 \text{ g}$$

$$M_l = 80 \text{ g}$$



$$M_b = 30 \text{ g}$$

$$M_l = 120 \text{ g}$$

Greatest Volume 1____ 2____ 3____ 4____ 5____ 6____ Least Volume

Or, all of the volumes of the liquids displaced by the blocks are the same. _____

Please carefully explain your reasoning.

How sure were you of your ranking? (circle one)

Basically Guessed

Sure

Very Sure

1 2 3 4 5 6 7 8 9 10

⁹⁹ D. Maloney, C. Hieggelke