Blocks at the Bottom of Liquids—Buoyant Force[106]

Shown below are eight containers that have the same volume of the same liquid in them. Blocks of various solids are at the bottom of the containers. The blocks vary in both size and mass. Specific values for the masses labeled as M_b and volumes labeled as V_b of the blocks are given in each figure.

Rank these situations, from greatest to least, on the basis of buoyant force on the blocks. That is, put first the situation that has the greatest buoyant force on the block, and put last the situation that has the lowest buoyant force on the block.

A	B	C	D

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M_b = 75 g	M_b = 120 g	M_b = 100 g	M_b = 75 g
V_b = 25 cm^3	V_b = 100 cm^3	V_b = 40 cm^3	V_b = 10 cm^3

E	F	G	H
M_b = 80 g	M_b = 100 g	M_b = 125 g	M_b = 60 g
V_b = 40 cm^3	V_b = 50 cm^3	V_b = 50 cm^3	V_b = 25 cm^3

Greatest 1____ 2____ 3____ 4____ 5____ 6____ 7____ 8____ Least

Or, all of the blocks have the same buoyant force. _____

Or, the buoyant force is zero on all these blocks. _____

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

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