Checking Density in a Model Resin Float

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A class compares a solid resin block and a foamed block made from the same resin. The foam contains sealed air spaces. The class uses the entire outside volume of each block to calculate average density. Water in the model has a density of 1.00 g/cm^3. A block with an average density below that value floats.

Block	**Mass (g)**	**Outside volume (cm^3)**
Solid	48	40
Foam	24	40

1 Calculate the average density of each block. Show how the measurements enter the calculation. [1]

Answer and work

2 Which comparison fits the model in water?

(1) Both blocks float.

(2) Both blocks sink.

(3) The solid sinks and the foam floats.

(4) The solid floats and the foam sinks.

A student compresses the foam and holds it at a new outside volume of 22 cm^3. No material or air escapes, so it still has a mass of 24 g.

3 Would the compressed foam still float under the model? Use the new measurements. [1]

Answer and work

4 Explain why the different behavior of the original blocks does not require a different resin. [1]

Answer and work