Tracking a Hidden Water Layer in a Cup

Scoring guide · one credit per question · review written work against each rubric

Tracking a Hidden Water Layer in a Cup

Question 1

Choice (1)

Thermal energy transfers from the warmer water to the cooler water. The model wall keeps the water portions separate.

Question 2

The portions have equal heat capacities, so the hotter one cools by as many degrees as the cooler one warms. Their common temperature is 30 °C.

Question 3

All three masses are equal, so the common temperature is (20 + 40 + 20)/3 = 26.7 °C, about 27 °C. The hot portion’s energy loss is shared by two cool portions.

Question 4

The sealed pocket began cooler and gained energy. It can lower the final temperature of the original two portions even though the three portions together exchange no energy with the surroundings.