An ice cube is floating on the water as shown in the sketch. The height within the water is $b$ and above the water is $a$.

Define the following set of symbols.

$W_{\text{ice}}^a =$ Weight of the ice above the water.
$W_b =$ Weight of the ice below the water.
$V_a =$ Volume of the ice above the water.
$V_b =$ Volume of the ice below the water.
$W_{\text{water}}^a =$ Weight of water in volume $V_a$.
$W_{\text{water}}^b =$ Weight of water in volume $V_b$.

The equilibrium condition can be expressed as which of the following?

A) $W_{\text{water}}^b = W_{\text{ice}}^a$.
B) $W_{\text{water}}^b = W_{\text{ice}}^a + W_b$.
C) $W_{a} + W_{\text{water}}^b = W_{\text{ice}}^a + W_{\text{ice}}^b$.

Archimedes’ principle implies

Answer B