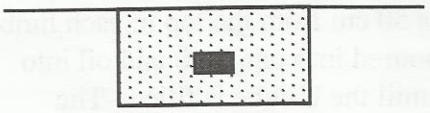
9 (b) A cubical block of ice of edge 5 cm and relative density 0.9 just floats in water with a piece of iron of relative density 8 embedded in it.

Find the mass of the iron.



Let v = volume of iron

volume of ice = $0.05^3 - v$ 5

weight of iron + weight of ice = $B_{ice} + B_{iron}$ 5

= weight of water displaced

$8000\ v\ g + 900\ (0.05^3 - v)\ g =$ 5

$1000\ (0.05^3)\ g$ 5

$80\ v + 9\ (0.05^3 - v) = 10\ (0.05^3)$

$71\ v = 0.05^3$

$v = 0.000001761\ m^3$

mass of iron = $8000\ v$

= 0.01408 kg 5