

- 13** A volume  $V$  of water in a perfectly insulating container is at a temperature of  $60^{\circ}\text{C}$ . A second volume  $\frac{V}{4}$  of water in a separate perfectly insulating container is at a temperature of  $20^{\circ}\text{C}$ .

The second volume of water is added to the first and an equilibrium temperature is reached.

Assume that the density of water does not vary between  $20^{\circ}\text{C}$  and  $60^{\circ}\text{C}$ .

What is this equilibrium temperature?

- A**  $28^{\circ}\text{C}$                       **B**  $30^{\circ}\text{C}$                       **C**  $50^{\circ}\text{C}$                       **D**  $52^{\circ}\text{C}$

- 14** A mass  $M$  is suspended vertically from a spring. The mass is displaced vertically downwards a small