

B4. For a simple pendulum,  $\omega = \sqrt{\frac{g}{L}}$  so

$$T = \frac{2\pi}{\omega} = 2\pi\sqrt{\frac{L}{g}}$$

$$T^2 = 4\pi^2 \frac{L}{g} \Rightarrow g = \frac{4\pi^2 L}{T^2}$$

$$g = \frac{4\pi^2 (1.00\text{m})}{(1.95\text{s})^2} = \boxed{10.4 \text{ m/s}^2}$$

B5. In an incompressible fluid such as water, pressure increases with depth  $h$  according to

$$P_2 = P_1 + \rho gh$$

The gauge pressure at a depth  $h$  is  $\rho gh$ .

$$\therefore P_{\text{gauge}} = \rho gh$$

$$h = \frac{P_{\text{gauge}}}{\rho g} = \frac{1.52 \times 10^5 \text{ Pa}}{(1000 \text{ kg/m}^3)(9.80 \text{ m/s}^2)}$$

$$\boxed{h = 15.5 \text{ m}}$$