

44. (a) We use $Av = \text{const.}$ The speed of water is

$$v = \frac{(25.0 \text{ cm})^2 - (5.00 \text{ cm})^2}{(25.0 \text{ cm})^2} (2.50 \text{ m/s}) = 2.40 \text{ m/s} .$$

(b) Since $p + \frac{1}{2}\rho v^2 = \text{const.}$, the pressure difference is

$$\Delta p = \frac{1}{2}\rho\Delta v^2 = \frac{1}{2}(1000 \text{ kg/m}^3)[(2.50 \text{ m/s})^2 - (2.40 \text{ m/s})^2] = 245 \text{ Pa} .$$