

20. **REASONING** The pressure P_2 at a lower point in a static fluid is related to the pressure P_1 at a higher point by Equation 11.4, $P_2 = P_1 + \rho gh$, where ρ is the density of the fluid, g is the magnitude of the acceleration due to gravity, and h is the difference in heights between the two points. This relation can be used directly to find the pressure in the artery in the brain.

SOLUTION Solving Equation 11.4 for pressure P_1 in the brain (the higher point), gives

$$P_1 = P_2 - \rho gh = 1.6 \times 10^4 \text{ Pa} - (1060 \text{ kg/m}^3)(9.80 \text{ m/s}^2)(0.45 \text{ m}) = \boxed{1.1 \times 10^4 \text{ Pa}}$$