9. The equation of continuity requires that $v_1 A_1 = v_2 A_2$

We divide both sides of the equation by A_2 to obtain an expression for v_2.

$$v_2 = v_1 A_1 / A_2$$

$$v_2 = (0.3 \text{ m / s}) (80 \text{ cm}^2) / (20 \text{ cm}^2)$$

$$v_2 = 1.2 \text{ m / s}$$

Note that the velocity is greater in the constricted region of the pipe.