

$$A_4 = \frac{\pi}{4} D_4^2$$

$$D_4 = \sqrt{\frac{4}{\pi} A_4} = 0.38 \text{ ft} \left(\frac{12 \text{ in}}{\text{ft}} \right) = 4.6 \text{ in}$$

Answer C

47.48 What is the Reynolds number for 1500gpm of 70°F water flowing in a standard weight steel pipe with a diameter of 10in?

- A. 32,000
- B. 380,000
- C. 480,000
- D. 5,800,000

Use the [Schedule 40 Steel Pipe](#) table or the [Steel Pipe Friction Tables](#) to find the diameter of nominal 10in pipe.

$$D = 10.02 \text{ in}$$

Use the [Steel Pipe Friction Tables](#) to find the velocity for 1500gpm flowing in a 10in pipe. This saves time as compared with calculating $v = \frac{Q}{A}$, which is equally valid.

$$v = 6.1 \frac{\text{ft}}{\text{s}}$$

Look up the kinematic viscosity for 70°F water in the [Properties of Water](#) table.

$$\nu_{@70^\circ F} = 1.059 \times 10^{-5} \frac{\text{ft}^2}{\text{s}}$$

Calculate the [Reynolds Number](#).

$$Re = \frac{vD}{\nu} = \frac{\left(6.1 \frac{\text{ft}}{\text{s}}\right) \left(\frac{10.02 \text{ in}}{12 \frac{\text{in}}{\text{ft}}}\right)}{1.059 \times 10^{-5} \frac{\text{ft}^2}{\text{s}}} = 480,000$$

Answer C

47.49 A gauge reads the static pressure for air flowing in a pipe as 1psig. A pitot tube reads the total pressure as 60mm of mercury. What is the velocity of the air?

- A. 5600fpm
- B. 8400fpm