$$t = \frac{Volume}{Q} = \frac{50,000L}{849.6\frac{L}{hr}} = 58.9hr$$

Answer D

47.52 $800gpm$ **of gasoline** $(SG = 0.72)$ **is transported through an** $18in$ **steel pipe. The kinematic viscosity of gasoline is** $6 \times 10^{-6}\frac{ft^2}{s}$**. What is the Reynolds number?**

A. 1,800

B. 180,000

C. 250,000

D. 350,000

Use the volume flow rate and diameter to calculate the velocity of gasoline through the pipe. For larger pipes, there is no need to distinguish nominal from actual size.

$$Q = vA$$

$$v = \frac{Q}{A} = \frac{\left(800\frac{gal}{min}\right)\left(\frac{1ft^3}{7.48gal}\right)\left(\frac{1min}{60s}\right)}{\frac{\pi}{4}\left(1.5ft\right)^2} = 1.01\frac{ft}{s}$$

Use the kinematic viscosity, diameter, and velocity to determine the Reynolds Number. The specific gravity is extra information and should be ignored.

$$Re = \frac{vD}{\nu}$$

$$Re = \frac{\left(1.01\frac{ft}{s}\right)\left(1.5ft\right)}{\left(6 \times 10^{-6}\frac{ft^2}{s}\right)} = 252,177$$

Answer C

47.53 A water main is required to transport $8000gpm$ **of water. What is the smallest diameter of pipe that should be used?**

A. $12in$

B. $18in$

C. $24in$

D. $32in$