36.54 $20gpm$ **of oil with specific gravity 0.88 flows through a valve with a valve coefficient of 4.5. What is the pressure drop across the valve?**

A. $3.9psi$

B. $4.4psi$

C. $17psi$

D. $20psi$

The Valve Flow Coefficient for a fluid other than water is given by the equation below which accounts for the specific gravity. The volume flow rate must be in gpm and the pressure drop must be in psi. Rearrange to isolate ΔP, substitute, and solve.

$$C_v = Q\sqrt{\frac{SG}{\Delta P}}$$

$$C_v^2 = Q^2\frac{SG}{\Delta P}$$

$$\Delta P = \left(\frac{Q}{C_v}\right)^2 SG = \left(\frac{20}{4.5}\right)^2 (0.88) = 17.4psi$$

Answer C