

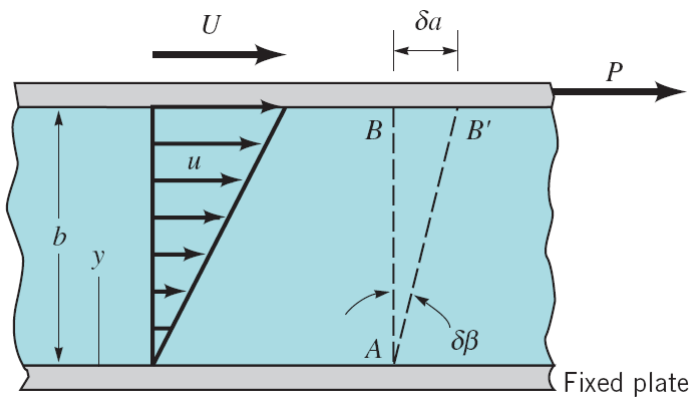
NAME _____

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Quiz 1.

For a parallel plate arrangement shown below it is found that a shearing stress of 150Pa develops at the upper plate when it is pulled at a velocity of 1m/s. Find the distance b between two plates. The viscosity of the fluid between plates is $0.3N \cdot s/m^2$.

(Hint: $u(y) = \frac{U}{b}y$)



Solution:

$$\tau = \mu \frac{du}{dy} = \mu \frac{d}{dy} \left(\frac{U}{b} y \right) = \mu \frac{U}{b}$$

$$\therefore b = \mu \frac{U}{\tau} = 0.3N \cdot s/m^2 \frac{1m/s}{150N \cdot m} = 0.002m = \underline{\underline{2mm}}$$