

Your grades have been modified to give extra credit for attendance.
The grade on your quizzes follows the grading key below. However your final grade on class website is calculates as follows;

$$\text{Final Grade} = (\text{Grade on Quiz}) * 0.8 + 2$$

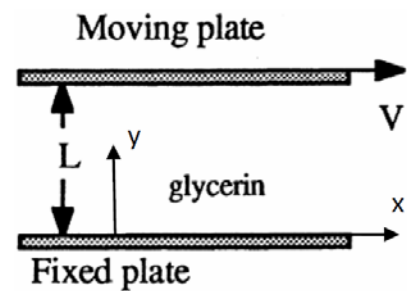
NAME

Fluids-ID

Quiz 1.

In the figure shown at the right, the fluid is glycerin at 20°C ($\mu = 1.5 \text{ N}\cdot\text{s}/\text{m}^2$), the width between plates is $L = 6 \text{ mm}$ and the velocity of upper plate is $V = 5.5 \text{ m/s}$. What is shear stress (in Pa) on the upper plate? The fluid velocity profile between the plates is given as

$$u(y) = \frac{V}{L} \cdot y$$



Solution:

$$\tau = \mu \frac{du}{dy}$$

(+5 points)

$$\frac{du}{dy} = \frac{V}{L}$$

(+3 points)

$$\tau = \mu \frac{V}{L} = \left(1.5 \frac{\text{Ns}}{\text{m}^2}\right) \frac{(5.5 \text{ m/s})}{(0.006 \text{ m})} = 1375 \text{ Pa}$$

(+2 points)