

61. We use $v = \sqrt{\tau/\mu} \propto \sqrt{\tau}$ to obtain

$$\tau_2 = \tau_1 \left(\frac{v_2}{v_1} \right)^2 = (120 \text{ N}) \left(\frac{180 \text{ m/s}}{170 \text{ m/s}} \right)^2 = 135 \text{ N} .$$