A beam of unpolarized light with intensity $80 \text{ W/m}^2$ is sent into a system of two polarizing sheets. If the relative angle between the two polarizing directions is $60^\circ$, what is the intensity of the light transmitted by the system?

$$\text{1st filter} \quad I_{out}^1 = \frac{1}{2} I_0$$

$$\text{2nd filter} \quad I_{out}^2 = I_{in}^2 \cos^2 60^\circ$$

$$= \frac{1}{2} I_0 \cos^2 60^\circ$$

$$= \frac{1}{2} \left(80\right) \left(\frac{1}{2}\right)^2$$

$$= 10 \text{ W/m}^2$$