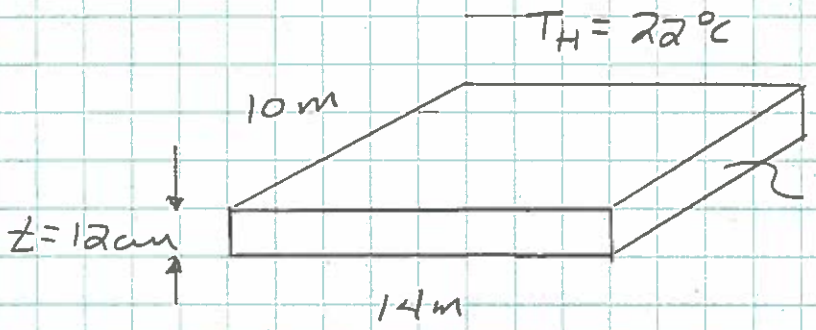

$$\frac{Q}{\Delta t} = k \frac{A}{t} \Delta T = k \frac{A}{t} (T_H - T_C)$$

$$A = 14 \times 10 = 140 m^2$$
$$t = 0.12 m$$

So $\frac{Q}{\Delta t} = 15,870 \frac{J}{s}$ or W