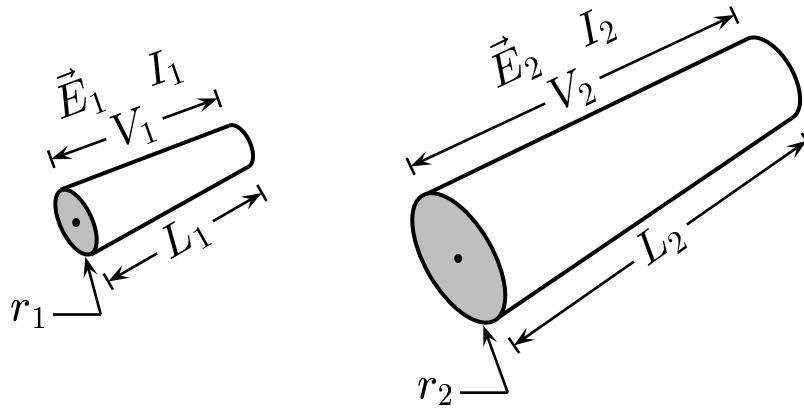


Given :  $A = \pi r^2$ ,  $\rho_2 = \rho_1$ ,  $A_2 = 2 A_1$ ,  $L_2 = 2 L_1$ , and  $V_2 = V_1$ .



Find the ratio  $\frac{E_2}{E_1}$  of the electric field in the conductors.

- A)  $\frac{E_2}{E_1} = 2$ .
- B)  $\frac{E_2}{E_1} = 1$ .
- C)  $\frac{E_2}{E_1} = \frac{1}{2}$ .

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Using Ohm's law, we have

$$\begin{aligned}\frac{E_2}{E_1} &= \frac{\left(\frac{V_2}{L_2}\right)}{\left(\frac{V_1}{L_1}\right)} \\ &= \frac{L_1}{L_2} \\ &= \frac{1}{2}\end{aligned}$$

Answer C.