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# Introductory Circuit Analysis | (13th Edition)

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## Step-by-step solution

### Step 1 of 2

Given

Conductance of wire  $G = 100\text{ S}$

Let  $A_1, l_1$  are the initial area and length of the wire.

If the area is increased by two third of the initial value,

i.e.

$$\begin{aligned} A_2 &= A_1 + \frac{2}{3}A_1 \\ &= \frac{5}{3}A_1 \end{aligned}$$

If length is decreased by two third of the initial value,

i.e.

$$\begin{aligned} l_2 &= l_1 - \frac{2}{3}l_1 \\ &= \frac{1}{3}l_1 \end{aligned}$$

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### Step 2 of 2

Therefore, conductance is,

$$G = \frac{A}{\rho l}$$

Where,  $\rho$  is constant,

$$\frac{G_1}{G_2} = \left(\frac{A_1}{A_2}\right)\left(\frac{l_2}{l_1}\right)$$

$$\frac{100}{G_2} = \left(\frac{3}{5}\right)\left(\frac{1}{3}\right)$$

$$G_2 = 500\text{ S}$$

$$\boxed{G_2 = 500\text{ S}}$$

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Given, The wiper arm on a linear potentiometer is one-fourth the way around the contact surface. The total resistance =		To find the conductance s of given resistances. (a) Conductance of 120 We know conductance is a reciprocal resistance. Then, ...		
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