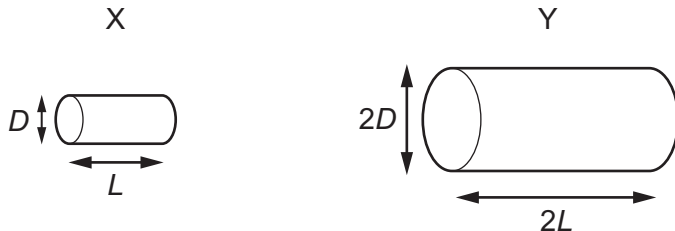


30 Two electrically-conducting cylinders X and Y are made from the same material.

Their dimensions are as shown.



The resistance between the ends of each cylinder is measured.

What is the ratio $\frac{\text{resistance of X}}{\text{resistance of Y}}$?

A $\frac{2}{1}$

B $\frac{1}{1}$

C $\frac{1}{2}$

D $\frac{1}{4}$

31 A battery, with a constant internal resistance, is connected to a resistor of resistance $250\ \Omega$, as