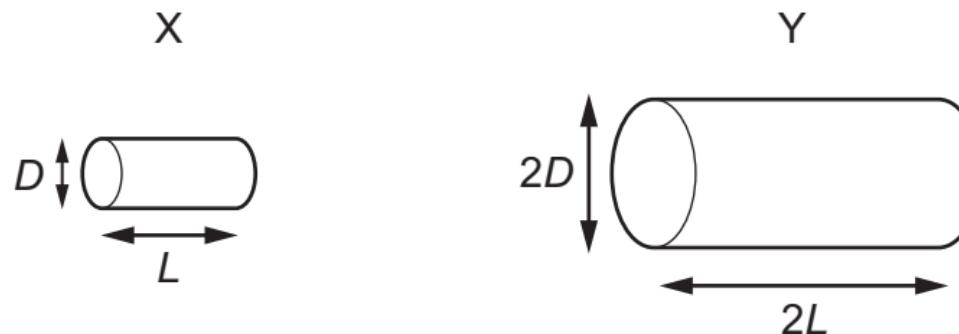


**30** Two electrically-conducting cylinders X and Y are made from the same material.

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