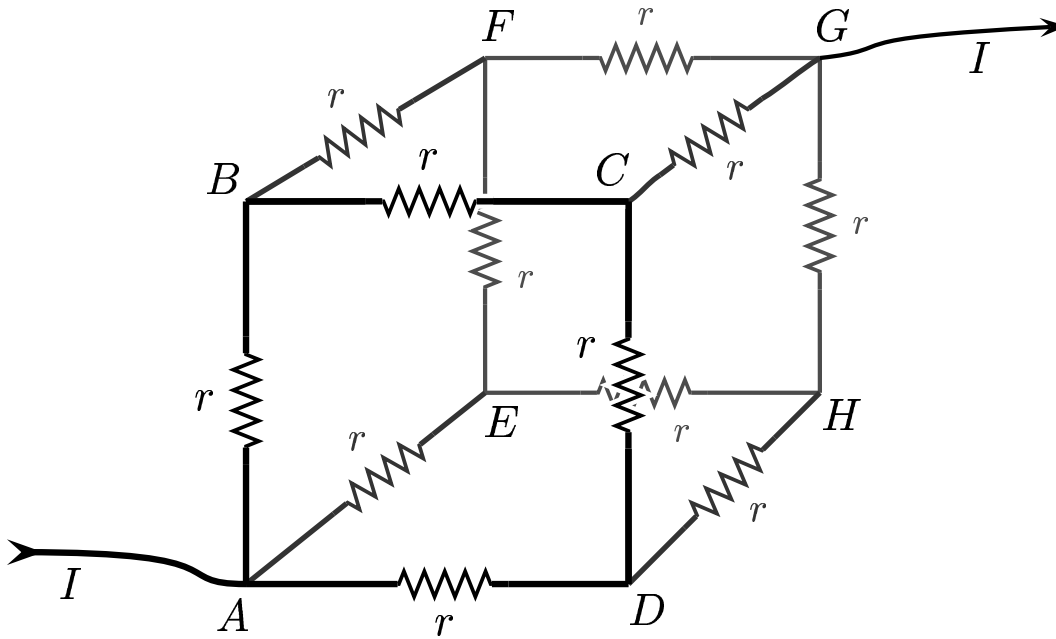


Given: A cubic network has identical resistors, each with a resistance r . A current I enters the network at A and leaves at G .



Find the network resistance r_{total} in terms an individual resistor r .

A) $r_{total} = \frac{2r}{3}$

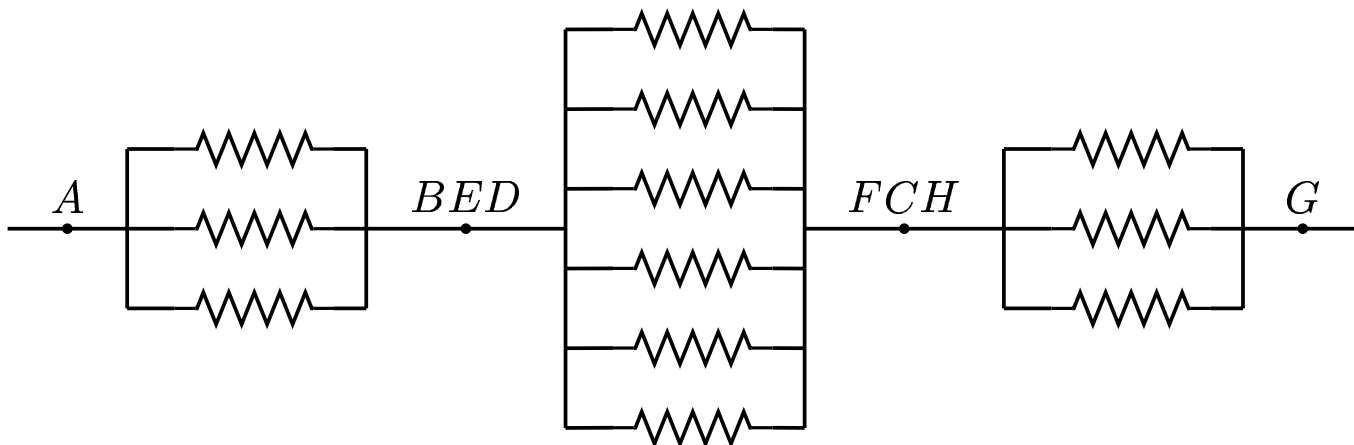
B) $r_{total} = r$

C) $r_{total} = 2r$

D) $r_{total} = \frac{4r}{3}$

E) $r_{total} = \frac{5r}{6}$

By symmetry, at A , I is equally divided into 3 equal branches and the potential at the junctions B , E , and D are the same, the these points can be joined together without changing the network resistance r_{total} . The same is true at the junctions F , C , and H . The redrawn network is shown below.



Answer **E**. $r_{total} = \frac{1r}{3} + \frac{1r}{6} + \frac{1r}{3} = \frac{5r}{6}$.