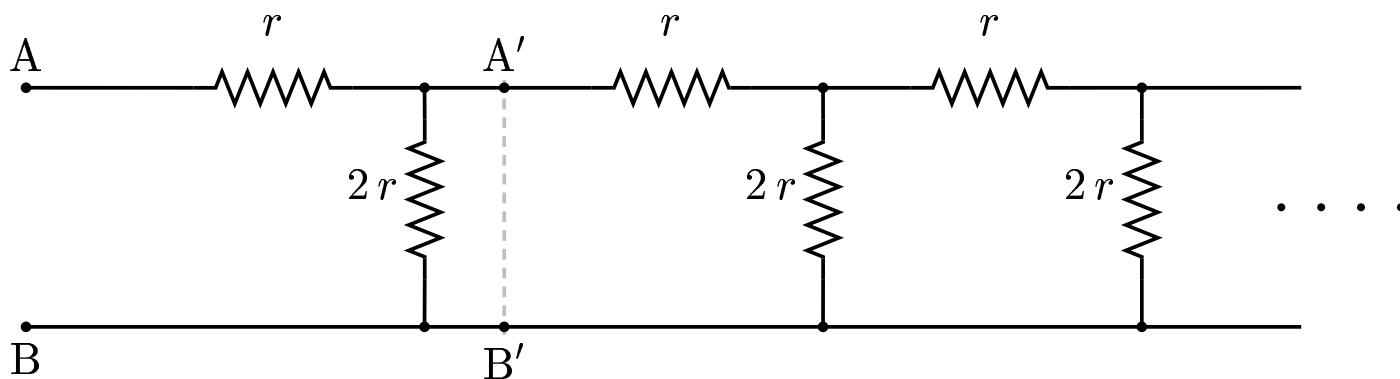


Hint: The resistance to the right of A'B' is the same as the resistance to the right of AB; that is, $R_{AB} = R_{A'B'}$.

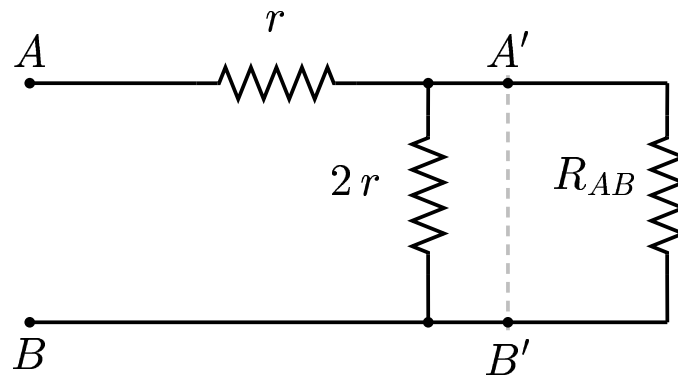
Given an infinite chain with a repetitive pattern as shown.



Select an equation with R_{AB} and r which can be used to solve for R_{AB} in terms of r .

- 1) $R_{AB} = r + \frac{2r R_{AB}}{2r + R_{AB}}$, therefore $R_{AB} = 2r$
- 2) $R_{AB} = r + \frac{2r R_{AB}}{r + R_{AB}}$, therefore $R_{AB} = \frac{5}{2}r$
- 3) $R_{AB} = r + 2r - R_{AB}$, therefore $R_{AB} = \frac{3}{2}r$

So the infinite chain can be redrawn as follows



$$R_{AB} = r + \frac{1}{\frac{1}{2r} + \frac{1}{R_{AB}}} = r + \frac{2r R_{AB}}{R_{AB} + 2r}$$

$$R_{AB}^2 - r R_{AB} - 2r = 0$$

$$R_{AB} = \frac{r \pm \sqrt{r^2 + 4(2r)}}{2} = \frac{r + 3r}{2} = 2r.$$

Answer **A**.

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