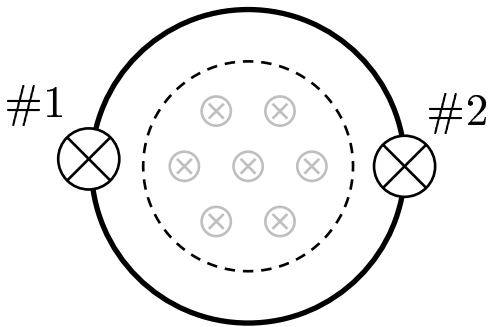


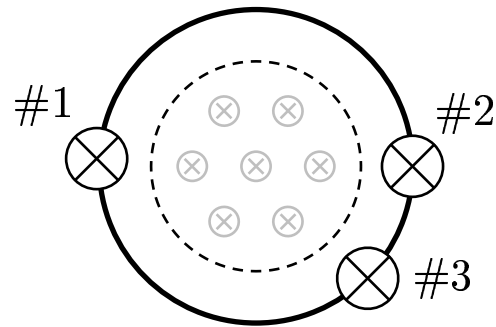
A solenoid is producing a same steadily increasing magnetic flux through two circular circuits shown below.

Case A: Two identical bulbs #1 and #2 are in series. Each has a resistance R . Their brightness (or their electric power) is the same, *i.e.* $P_1 = P_2$.

Case B: Three bulbs are in series, each with a resistance R . #3 is close to #2. Electric powers are labeled by P'_1 , P'_2 and P'_3 .



Case A



Case B

Compare the powers of bulbs #1 and #2.

- A) $P'_1 = P_1$ and $P'_1 = P'_2$.
- B) $P'_1 = P_1$ and $P'_1 > P'_2$.
- C) $P'_1 < P_1$ and $P'_1 = P'_2$.
- D) $P'_1 < P_1$ and $P'_1 > P'_2$.

For case A, denote the current I . The loop equation gives $\mathcal{E} - 2IR = 0$, or $I = \frac{\mathcal{E}}{2R}$. Correspondingly for case B, $\mathcal{E} = 3I'R$, or $I' = \frac{\mathcal{E}}{3R} = \frac{2}{3}I$. Since $I' < I$, $P'_1 < P_1$. Bulb #1 and bulb #2 are in series, so $P'_1 = P'_2$.

Answer **C**.