# Simple Series Circuit—Voltage Across Bulb X [168]

The eight circuits below all have one battery, shown as ⊢═══⊣, and three light bulbs, shown as ◌. All of the batteries are identical. The bulbs can have different resistances (resistance is the opposition a circuit element presents to the flow of current) given in units of ohms, Ω. The specific values for these resistances are given in the figures. One of the three bulbs in each circuit is designated by an X. This is the bulb we are interested in. All of the wires in these circuits are identical and of equal length.

Rank these circuits, from greatest to least, on the basis of the voltage drop across the bulb marked X. That is, put first the circuit where the voltage drop across bulb X is the largest of any of the X bulbs, and put last the circuit where the voltage drop across bulb X is the smallest of all of the X bulbs. We are not interested in the voltage drops across any of the other bulbs.
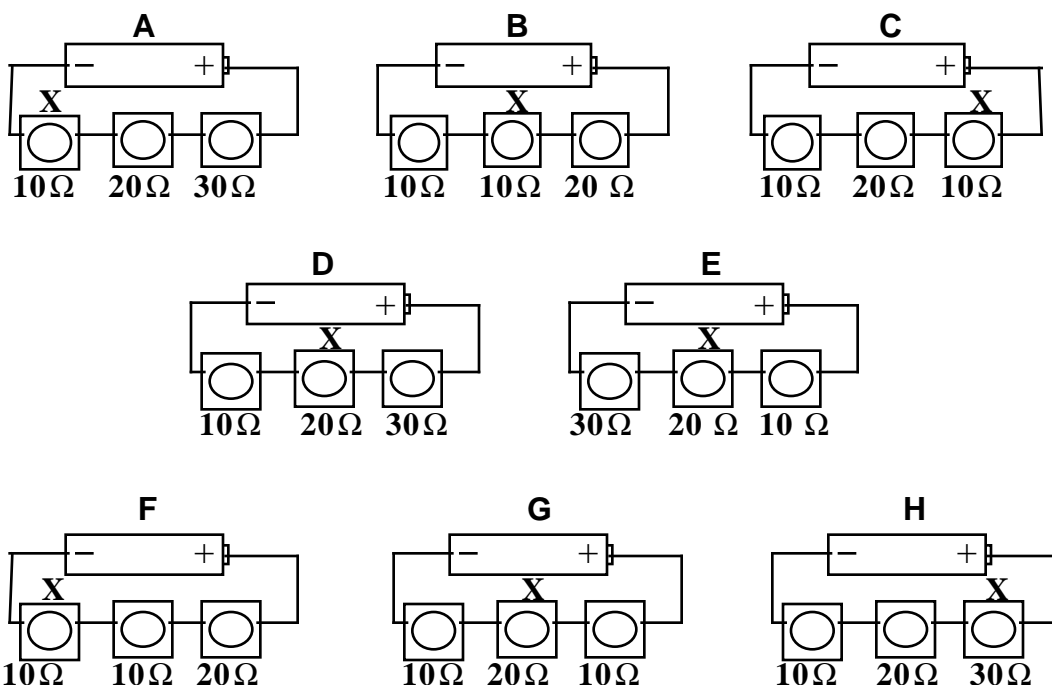
Greatest   1_____ 2_____ 3_____ 4_____ 5_____ 6_____ 7_____ 8_____   Least

Or, all of these circuits have the same voltage drop across bulb X. _____

Or, all of these have zero voltage drop across bulb X. _____

Please carefully explain your reasoning.

How sure were you of your ranking? (circle one)

Basically Guessed   Sure   Very Sure

1   2   3   4   5   6   7   8   9   10