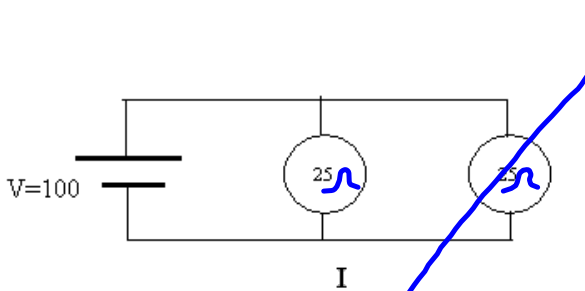
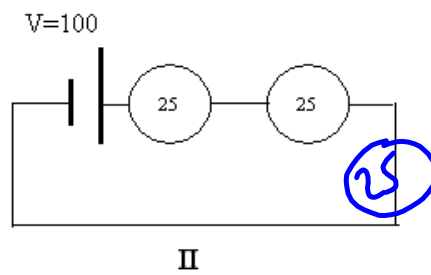


**Which bulb is brighter?**

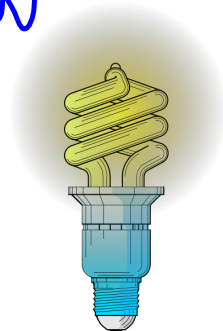


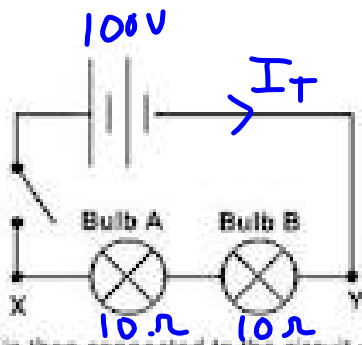
Power

$$\begin{aligned}
 P &= IV \\
 &= 4(100) \\
 &= 400W
 \end{aligned}$$

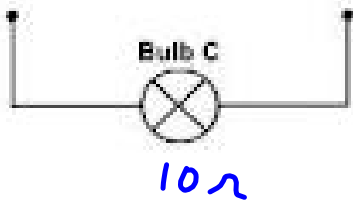


$$\begin{aligned}
 P &= IV \\
 P &= 2(50) \\
 P &= 100W
 \end{aligned}$$





Bulb C is then connected to the circuit at X and Y.



$$P = IV \rightarrow 5(50) = 250W$$

$$P = IV$$

$$(10)(100) \text{ Bulb C}$$

$$P = 1000W$$

$$\text{Bulb A + B}$$

$$P = IV$$

$$P = (5)(50)$$

$$250W$$



Adding a second bulb in series will increase the total resistance in the circuit. The bulbs will be dimmer than the single bulb.  
Adding a second bulb in parallel is a different situation. You have added a second pathway for the electricity to flow, The resistance is greater than a single bulb, but is is not as high as the two bulbs in parallel. The two bulbs will be brighter.

In a series circuit, each bulb you add will make the brightness of the bulbs dimmer and dimmer

In a parallel circuit, the brightness of the bulbs does not change with the addition of more bulbs (but if you added many parallel circuits, eventually all of the bulbs would dim down as you approached the capacity of the battery)

