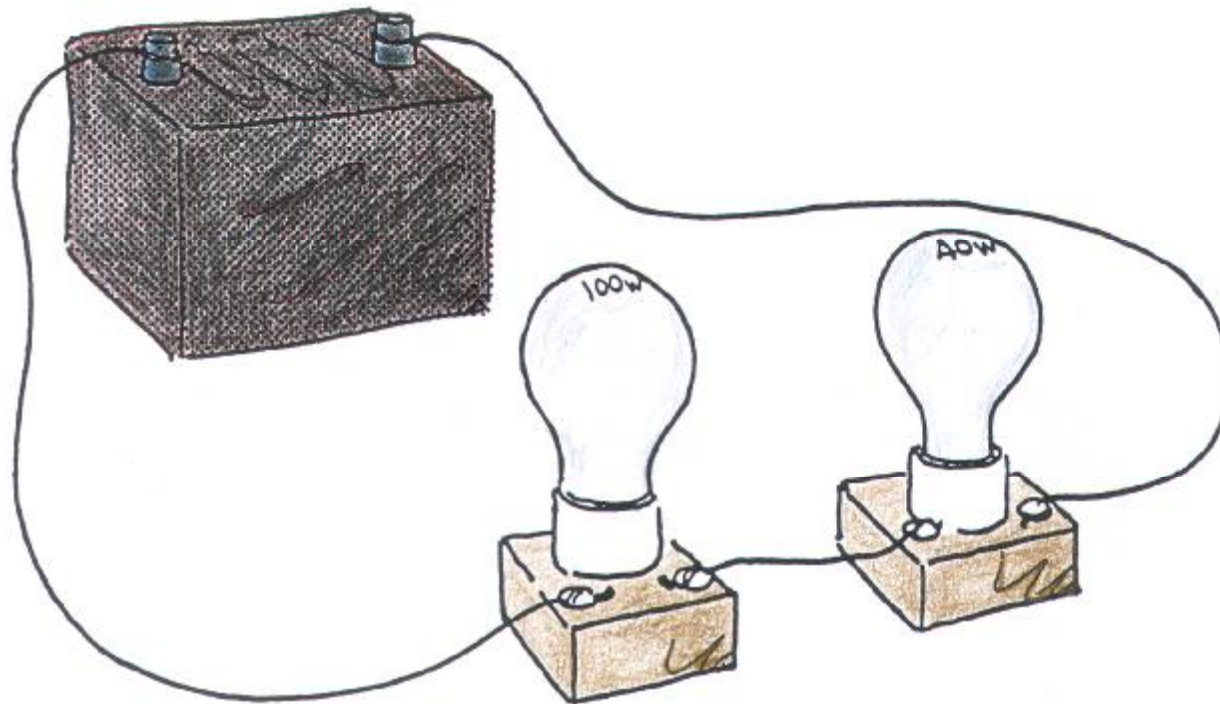


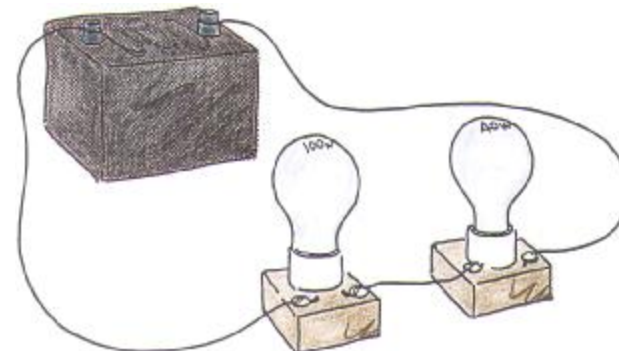
NEXT-TIME QUESTION

The 40-watt bulb and the 100-watt bulb are connected in series to the battery. Which bulb will glow brighter?



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Answer: 40-watt bulb

The 40-watt bulb will glow brighter when connected in series. To understand this you must first understand that the filament in a 40-watt bulb is thinner and therefore of higher resistance than the filament of a 100-watt bulb. It is the higher resistance of the 40-watt bulb that keeps the current to only $\frac{40}{100}$ the current in a 100-watt bulb when both are properly connected in *parallel*. Then more current flows in the 100-watt bulb and it glows brighter. But when connected in series, the current is less but is the same in each. The same amount of current "squeezing" through the finer filament of the 40-watt bulb heats it more and makes it glow brighter than the lower-resistance 100-watt bulb.