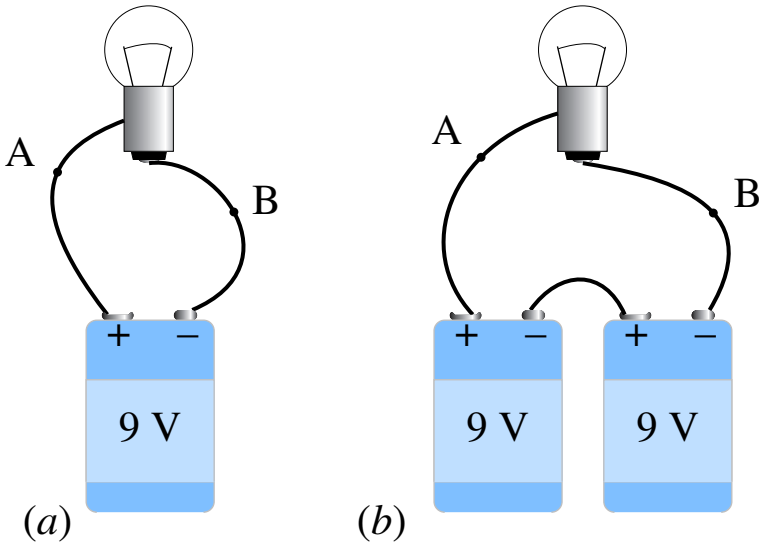
A light bulb is connected to a 9-V battery.



If a second battery is added in a series as shown in (*b*), how many of the following change? The current I at A, the pottential difference V_{AB} between A and B, the resistance R of the lightbulb.

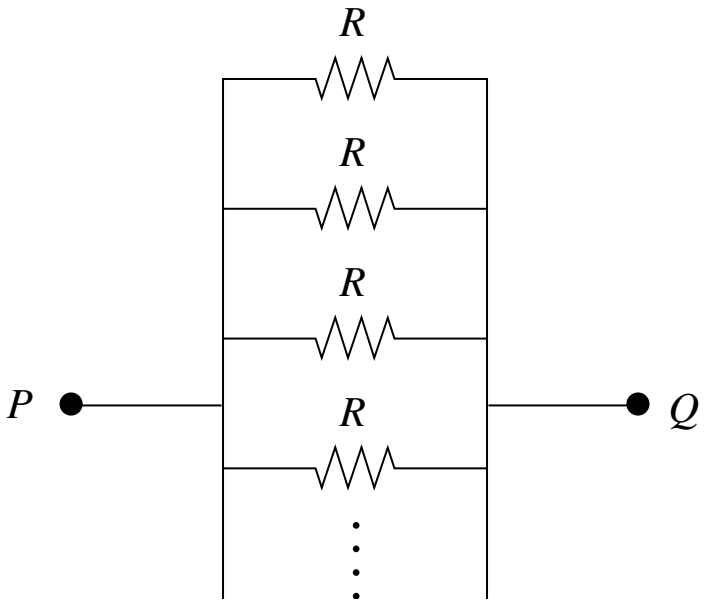
1. All three.
2. Two.
3. One.
4. It depends.

Consider two identical resistors wired in series. If there is an electric current through the combination, the current in the second resistor is

1. equal to
2. half
3. smaller than, but not necessarily half

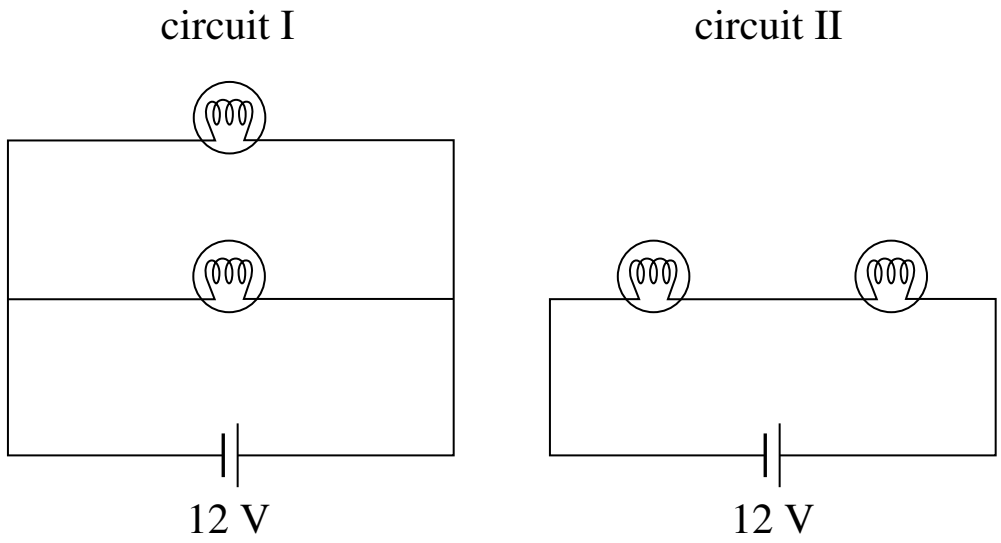
the current through the first resistor.

As more identical resistors, R, are added to the parallel circuit shown here, the total resistance between points P and Q



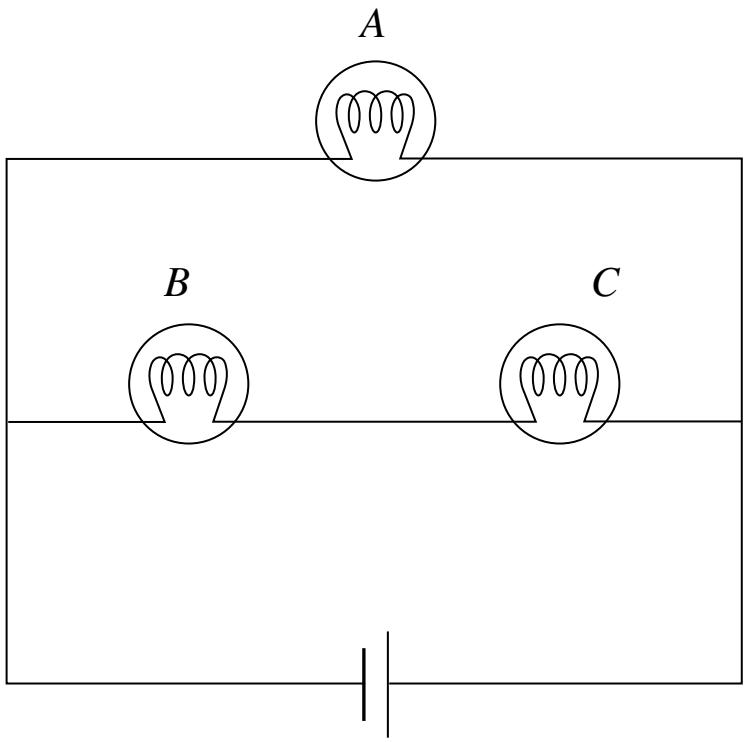
1. increases.
2. remains the same.
3. decreases.

If the four light bulbs in the figure are identical, which circuit puts out more light?



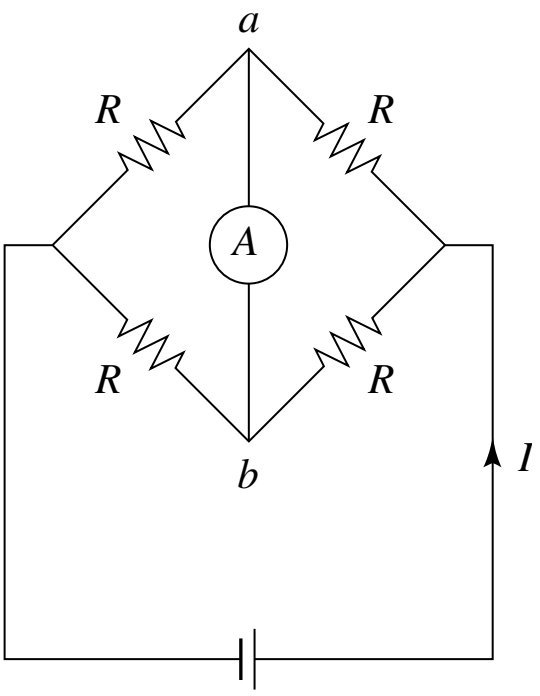
1. I.
2. The two emit the same amount of light.
3. II.

The three light bulbs in the circuit all have the same resistance. Given that brightness is proportional to power dissipated, the brightness of bulbs *B* and *C* together, compared with the brightness of bulb *A*, is



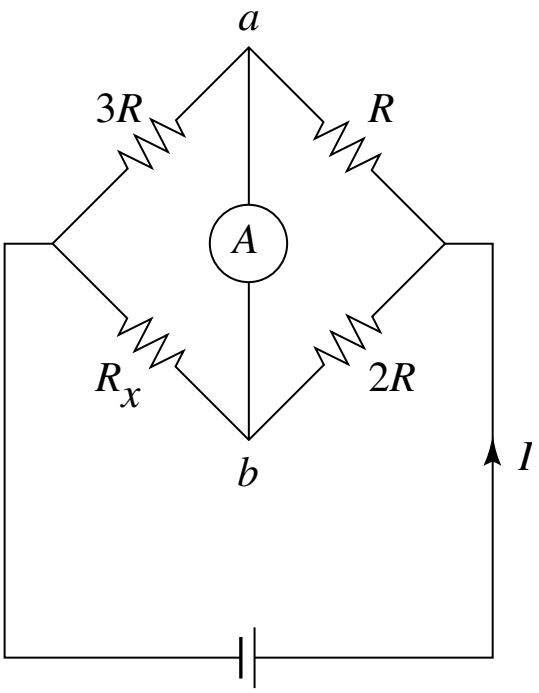
1. twice as much.
2. the same.
3. half as much.

An ammeter *A* is connected between points *a* and *b* in the circuit below, in which the four resistors are identical. The current through the ammeter is



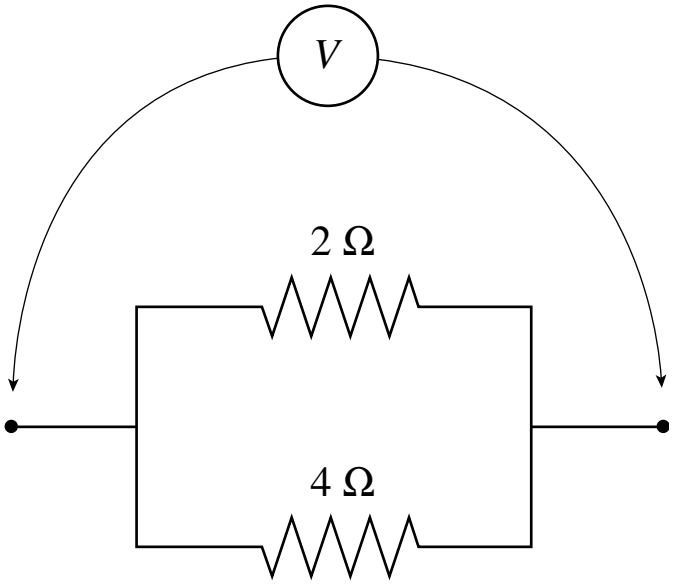
1. *I*/2.
2. *I*/4.
3. zero.
4. Need more information

An ammeter A, which measures current, is connected between points *a* and *b* in the circuit below. It is noted that the current through the ammeter is zero. R_x is a resistor of unknown value, whereas R, $2R$, and $3R$ are known. What is the value of R_x?



1. $2R$
2. $3R$
3. $6R$
4. insufficient information about the ammeter
5. insufficient information about the source V_0

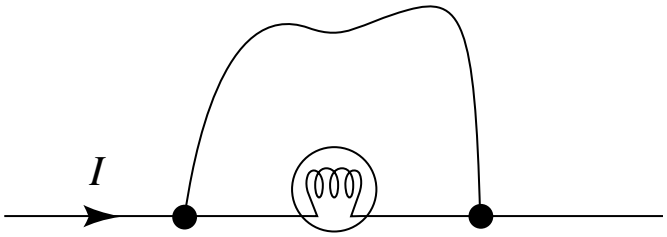
A constant potential difference V is applied across two resistors connected in parallel as shown.



The current through the 2 Ω resistor is 2 A. What is the current through the 4 Ω resistor?

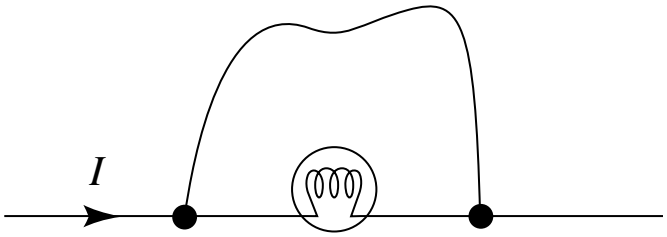
1. 0 A
2. 1 A
3. 2 A
4. 4 A
5. Need to know the potential difference.

Charge flows through a light bulb. Suppose a wire is connected across the bulb as shown. When the wire is connected,



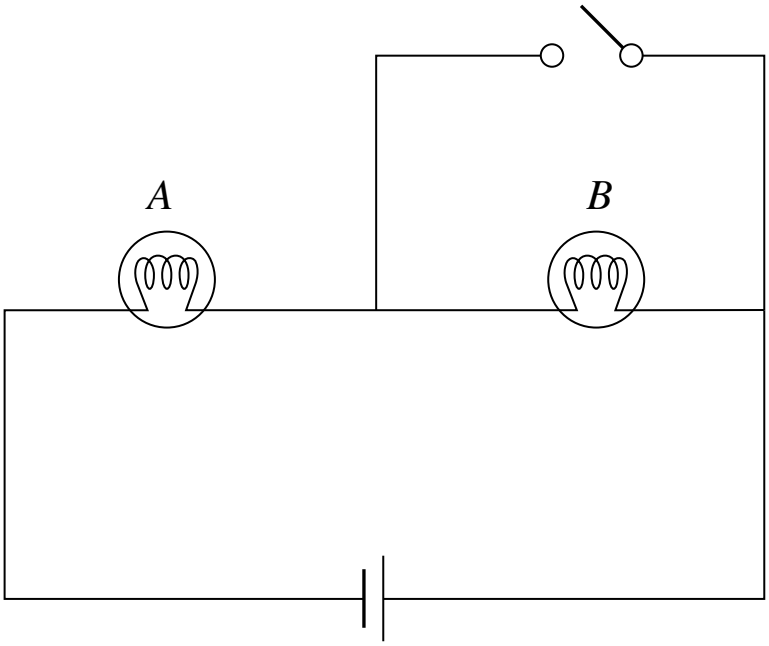
1. all the charge continues to flow through the bulb.
2. half the charge flows through the wire, the other half continues through the bulb.
3. all the charge flows through the wire.
4. none of the above

Charge flows through a light bulb. Suppose a wire is connected across the bulb as shown. When the wire is connected,



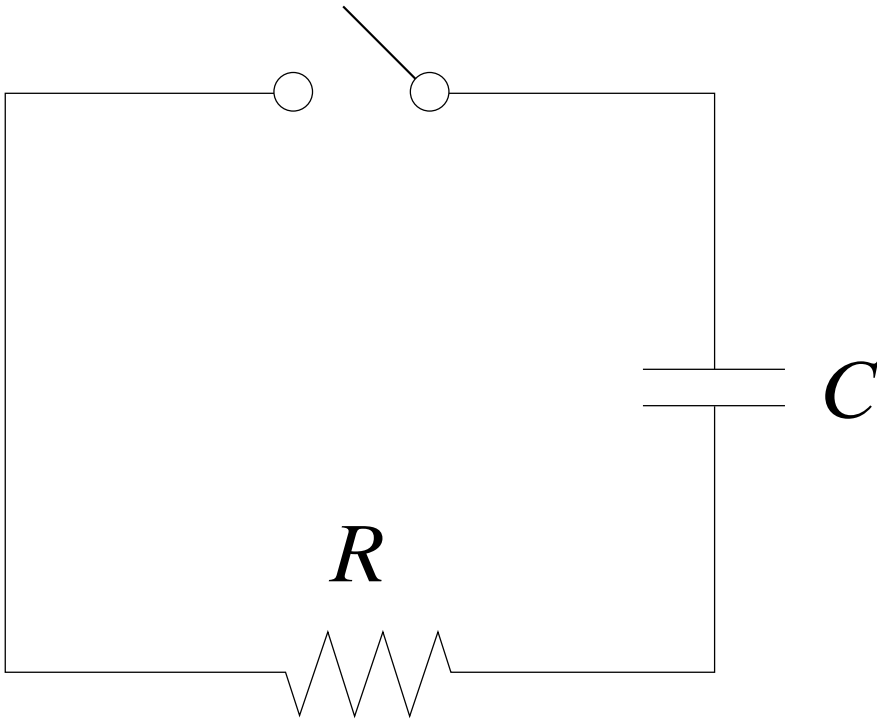
1. all the charge continues to flow through the bulb.
2. half the charge flows through the wire, the other half continues through the bulb.
3. all the charge flows through the wire.
4. none of the above

The circuit below consists of two identical light bulbs burning with equal brightness and a single 12 V battery. When the switch is closed, the brightness of bulb *A*



1. increases.
2. remains unchanged.
3. decreases.

A simple circuit consists of a resistor, R, a capacitor, C, charged to a potential V_0, and a switch that is initially open, but then thrown closed. Immediately after the switch is thrown closed, the current in the circuit is



1. V_0/R.
2. zero.
3. need more information

You apply a potential difference V to a wire-resistor, causing a current to flow through the resistor. Next, the resistor is removed from the circuit and the wire in it is cut in half lengthwise. One of the halves is placed back into the circuit, with the same potential difference V applied to it. Is the current through the new resistor

1. larger than
2. smaller than
3. the same as

the current which flowed through the original resistor?