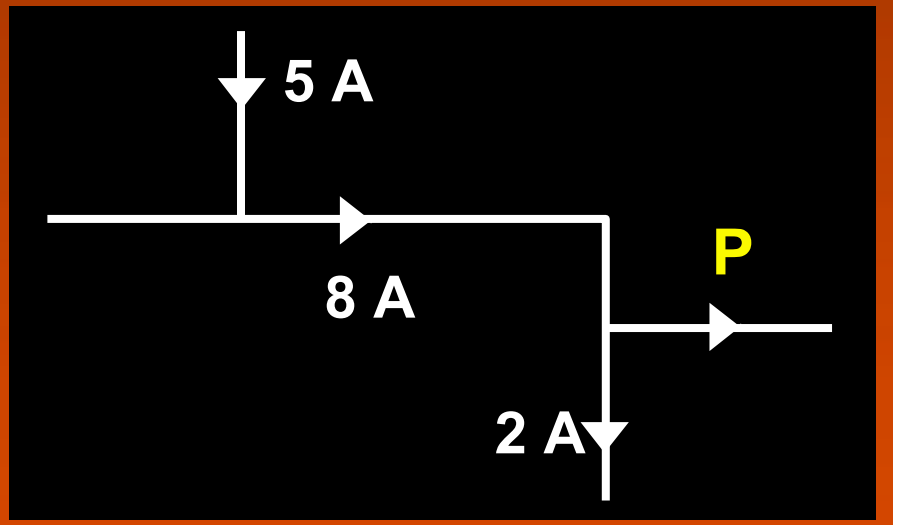
ConcepTest 27.1 Junction Rule

What is the current in branch P?

1) 2 A
2) 3 A
3) 5 A
4) 6 A
5) 10 A

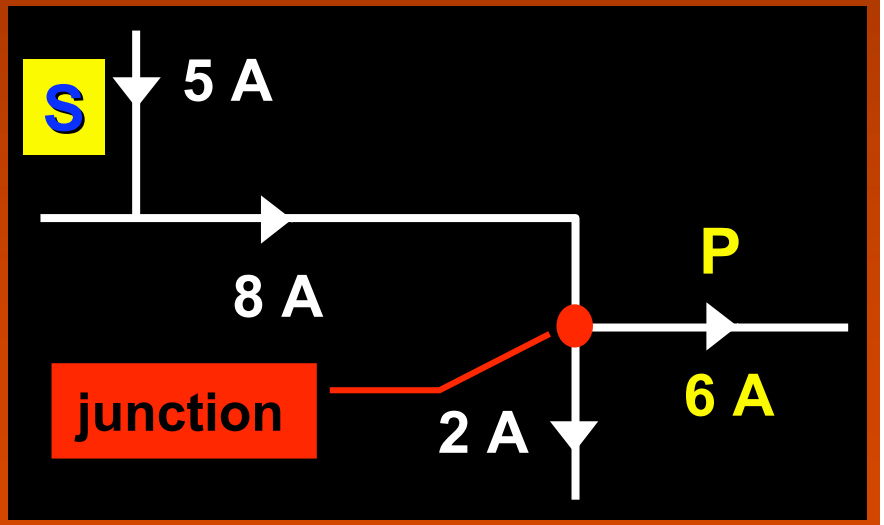


ConcepTest 27.1 Junction Rule

What is the current in branch P?

1) 2 A
2) 3 A
3) 5 A
4) 6 A
5) 10 A

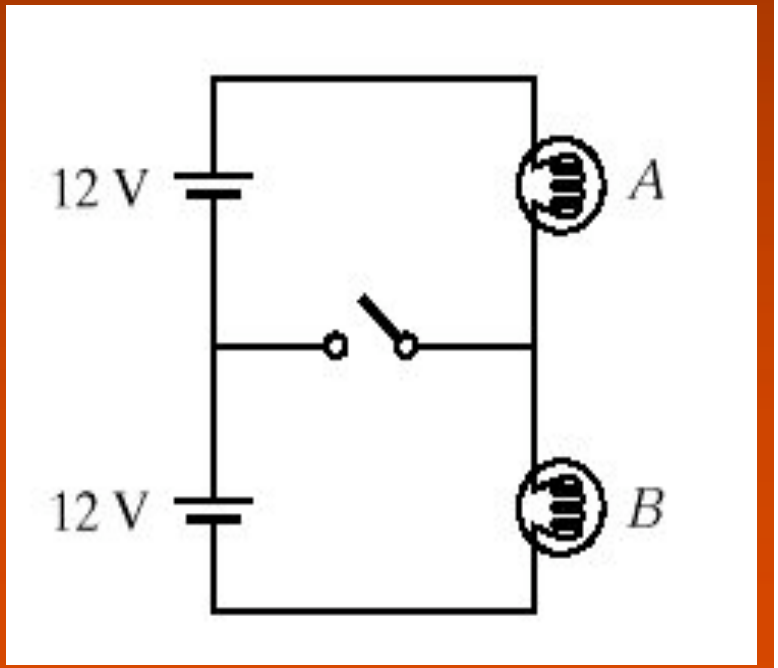
The current entering the junction in red is 8 A, so the current leaving must also be 8 A. One exiting branch has 2 A, so the other branch (at P) must have 6 A.



ConcepTest 27.2 Kirchhoff's Rules

The lightbulbs in the circuit are identical. When the switch is closed, what happens?

1) both bulbs go out
2) intensity of both bulbs increases
3) intensity of both bulbs decreases
4) A gets brighter and B gets dimmer
5) nothing changes

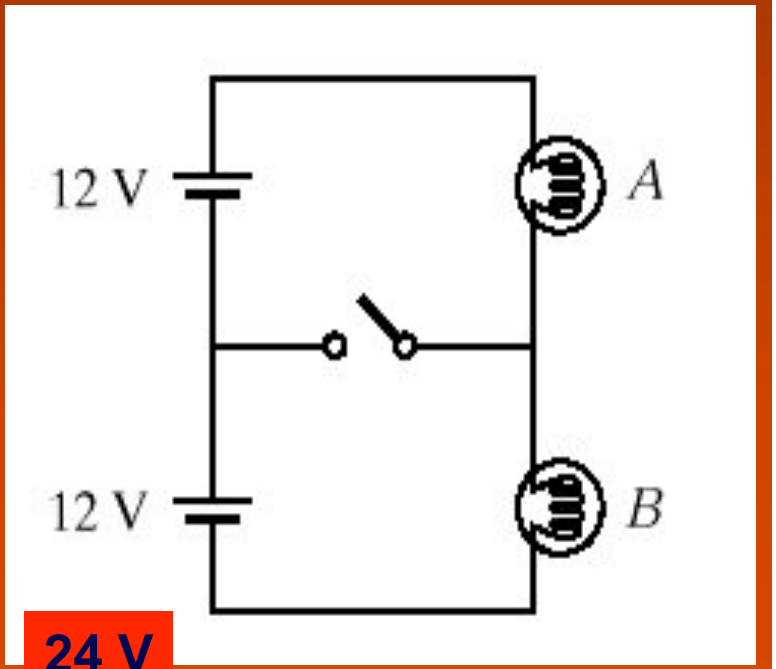


ConcepTest 27.2 Kirchhoff's Rules

The lightbulbs in the circuit are identical. When the switch is closed, what happens?

1) both bulbs go out
2) intensity of both bulbs increases
3) intensity of both bulbs decreases
4) A gets brighter and B gets dimmer
5) nothing changes

When the switch is open, the point between the bulbs is at 12 V. But so is the point between the batteries. If there is no potential difference, then no current will flow once the switch is closed!! Thus, nothing changes.



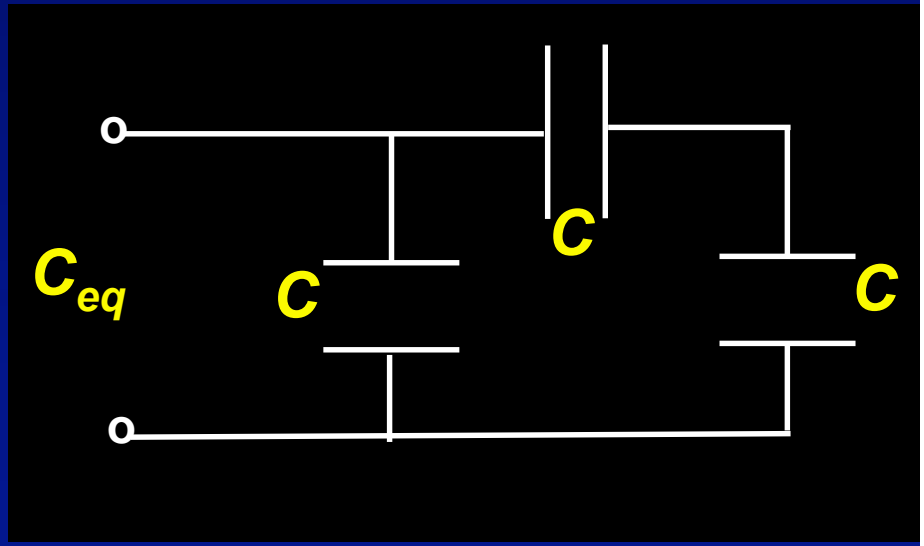
24 V

Follow-up: What happens if the bottom battery is replaced by a 24 V battery?

ConcepTest 25.3a Capacitors I

What is the equivalent capacitance, C_{eq} , of the combination below?

1) $C_{eq} = 3/2\ C$
2) $C_{eq} = 2/3\ C$
3) $C_{eq} = 3\ C$
4) $C_{eq} = 1/3\ C$
5) $C_{eq} = 1/2\ C$



ConcepTest 25.3a Capacitors I

What is the equivalent capacitance, C_{eq} , of the combination below?

1) $C_{eq} = 3/2\ C$
2) $C_{eq} = 2/3\ C$
3) $C_{eq} = 3\ C$
4) $C_{eq} = 1/3\ C$
5) $C_{eq} = 1/2\ C$

The 2 equal capacitors in series add up as inverses, giving 1/2 *C*. These are parallel to the first one, which add up directly. Thus, the total equivalent capacitance is 3/2 *C*.