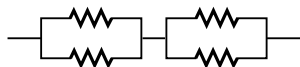


15. What might be an advantage of using two identical resistors in parallel that are connected in series with another identical parallel pair, as shown below, instead of using a single resistor?



Practice Problems

For problems 16–17, see Sample Problem A.

16. A length of wire is cut into five equal pieces. If each piece has a resistance of $0.15\ \Omega$, what was the resistance of the original length of wire?
17. A $4.0\ \Omega$ resistor, an $8.0\ \Omega$ resistor, and a $12\ \Omega$ resistor are connected in series with a $24\ \text{V}$ battery. Determine the following:
- the equivalent resistance for the circuit
 - the current in the circuit

For problems 18–19, see Sample Problem B.

18. The resistors in item 17 are connected in parallel across a $24\ \text{V}$ battery. Determine the following:
- the equivalent resistance for the circuit
 - the current delivered by the battery
19. An $18.0\ \Omega$ resistor, $9.00\ \Omega$ resistor, and $6.00\ \Omega$ resistor are connected in parallel across a $12\ \text{V}$ battery. Determine the following:
- the equivalent resistance for the circuit
 - the current delivered by the battery

COMPLEX RESISTOR COMBINATIONS

Conceptual Questions

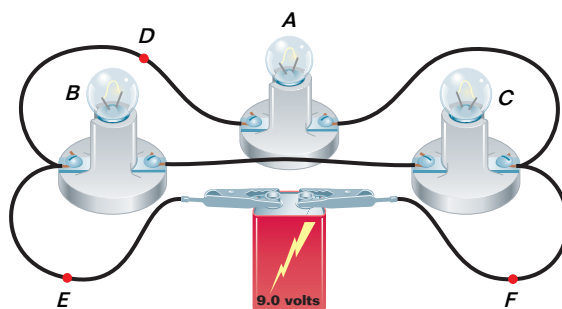
20. A technician has two resistors, each of which has the same resistance, R .
- How many different resistances can the technician achieve?
 - Express the effective resistance of each possibility in terms of R .

21. The technician in item 20 finds another resistor, so now there are three resistors with the same resistance.

- How many different resistances can the technician achieve?
- Express the effective resistance of each possibility in terms of R .

22. Three identical light bulbs are connected in circuit to a battery, as shown below. Compare the level of brightness of each bulb when all the bulbs are illuminated. What happens to the brightness of each bulb if the following changes are made to the circuit?

- Bulb A is removed from its socket.
- Bulb C is removed from its socket.
- A wire is connected directly between points D and E.
- A wire is connected directly between points D and F.



Practice Problems

For problems 23–24, see Sample Problem C.

23. Find the equivalent resistance of the circuit shown in the figure below.

