

Science & Technology 404

Ohm's Law Problems

1. A lamp uses 1.0 A when connected to a 12 V battery.
 - a. What is the conductance of the lamp?
 - b. What is the resistance of the lamp?
2. A toaster has a resistance of 300Ω when plugged into a 120 V outlet. What current is flowing through the toaster?
3. An electric motor has a resistance of 200Ω . It will only spin if 4 A of current flows through it. What voltage is needed?
4. An electric kettle is plugged into a 120 V outlet. The current through the kettle is 10 A. What is the resistance of the kettle?
5. An MP3 player uses two 1.5 V batteries. The current through the walkman is 0.5 A. What is the resistance of the device?
6. A flashlight bulb has a resistance of 40Ω and the current must be 0.3 A. How many 1.5 V batteries will it take?
7. A hair dryer has a resistance of 11Ω . What current will flow through the dryer when it is connected to a 120 V source?
8. You connect 5 identical lamps in series and connect them to a 12 V power supply. The current through the circuit is 2.0 A.
 - a. What is the total resistance of the circuit?
 - b. What is the resistance of 1 lamp?
9. You connect 4 identical lamps to four 1.5 V batteries. Each lamp has a resistance of 2Ω .
 - a. What is the total resistance of the lamps?
 - b. What is the total voltage?
 - c. What is the total current?