

Ohm's Law Practice

- Justine's hair dryer has a resistance of $90\ \Omega$ when first turned on.
 - How much current does the hair dryer draw from the 110 V line in Justine's house?
 - What happens to the resistance of the dryer as it runs for a long time?
- Cam takes her pocket calculator out of her book bag to do her physics homework. In the calculator, a $0.160\ \text{C}$ charge encounters $19\ \Omega$ of resistance every 2.0 seconds.
 - What is the current?
 - What is the voltage of the battery?
- Dinah's oven uses a 220 V line and draws 8 A of current when heated to its maximum temperature. What is the resistance of the oven when it is fully heated?
- Arthur puts new batteries in his flashlight before going trick-or-treating. Until the flashlight shuts off, it draws 0.50 A of current, allowing a total of 5400 C of charge to flow through the circuit. How long will Arthur be able to use the flashlight before the batteries' energy is depleted?
- Household current cannot generally exceed 15 A for safety reasons. What is the maximum amount of charge that can flow through the circuit in a 24 hour period?
- What is the resistance of the heating element in a car lock de-icer that contains a 1.5 V battery supplying a current of 0.5 A to the circuit?
- What voltage is needed to get a current of 0.25 A to flow through a $75\ \Omega$ resistor?

Answers

1. a) 1.22 A b) it actually increases as it gets hotter 2. a) 0.08 A b) 1.52 V 3) $27.5\ \Omega$
4) $10,800\ \text{s} = 180\ \text{min}$ 5) 1,296,000 C 6) $3\ \Omega$ 7) 18.8 V