

MASTERY QUIZ 1

Current and Capacity

Physics and Mathematics of Sustainable Energy

College of the Atlantic

April 2, 2015

Due at the beginning of class on Monday, April 6, 2015

Do these problems on your own—without help from others. If you can, do these without looking at your notes. If you do not do well on this quiz, do not worry. You can take a quiz on this topic again (and again if need be).

1. A voltage of 120 volts is applied across a heater that has a resistance of 9.6 ohms. How much current flows through the resistor?
2. A car battery has a capacity of 50 Ah. You want to use this battery run a device that draws 3 A. How long could you power this device using the car battery?
3. A small 1.55 v battery a capacity of 200 mAh.¹ Suppose I use this battery to power a microphone that has a resistance of 775 ohms.
 - (a) What current flows through the microphone?
 - (b) How long could I power the microphone with this battery?

¹ I use this battery to power a small external microphone that I use when recording math videos. See <http://www.amazon.com/Enercell-200mAh-Button-Battery-3-Pack/dp/B007TV7V0U>.