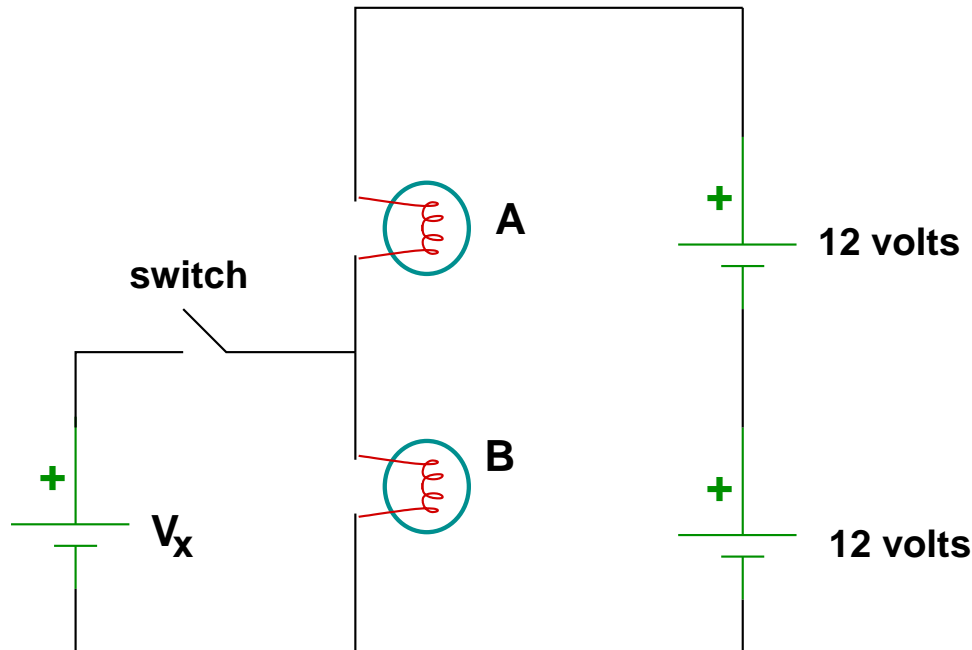


Physics 122: Practice Problem of the Day

Problem #08: Throwing in a Voltage Source

Thursday, 29 Jan 2008



A circuit is constructed as shown above. Assume that the batteries represent ideal voltage sources. Assume that each bulb can be modeled as a resistor of 24 Ohms.

Part a) With the switch open calculate the total power in Watts for each bulb. Which bulb is brighter, Bulb A or Bulb B?

Part b) Suppose we assume that the third battery has voltage $V_x = 12$ volts. Calculate the power in each bulb. Which bulb is brighter, bulb A or Bulb B? What is the current running through the voltage source V_x and which direction is it flowing?

Part c) Now, suppose we assume that the third battery has voltage $V_x = 8$ volts. Calculate the power in each bulb. Which bulb is brighter, bulb A or Bulb B? What is the current running through the voltage source V_x and which direction is it flowing?

Part d) Now, suppose we assume that the third battery has voltage $V_x = 20$ volts. Calculate the power in each bulb. Which bulb is brighter, bulb A or Bulb B? What is the current running through the voltage source V_x and which direction is it flowing?