

Science 10-Electricity & Magnetism

Activity 6

Worksheet on Ohm’s Law



10

Name _____
Due Date _____
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1. Write the three forms of the equation for **Ohm’s Law**.

2. A certain light bulb has a resistance of 100 Ω. If a current of 1.2 A is going through it, calculate the **voltage** applied.

Answer _____volts

3. A voltage of 120 volts is applied to a 200 Ω resistor. Calculate the **current** through the resistor.

Answer _____A

or _____mA

4. A voltage of 80 volts is applied to a resistor and the current going through is found to be 200 mA.

a) Convert the current to Amperes. Answer _____ A

b) Calculate the **resistance** of the resistor.

Answer _____ Ω

5. A kettle operates from a 120 V outlet. It has a heating element with a resistance of 8.0 Ω . Calculate the **current** going through the element.

Answer _____ A

6. A certain electric stove has a 16 Ω heating element. (The resistance is 16 Ω .) The current going through the element is 15 A. Calculate the **voltage** across the element.

Answer _____ v

7. In a small mp3 player, the current going through a 1800 Ω resistor is 1.67 mA.

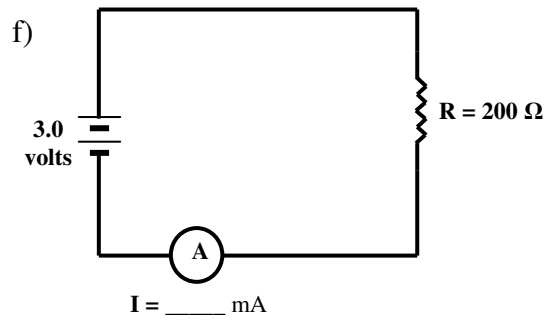
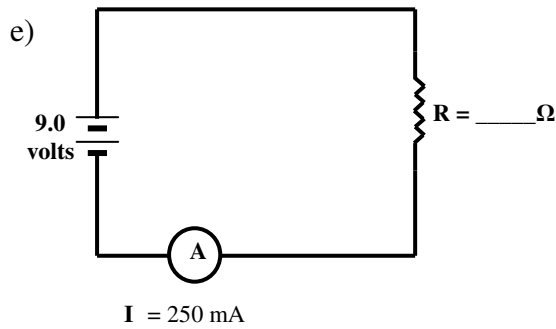
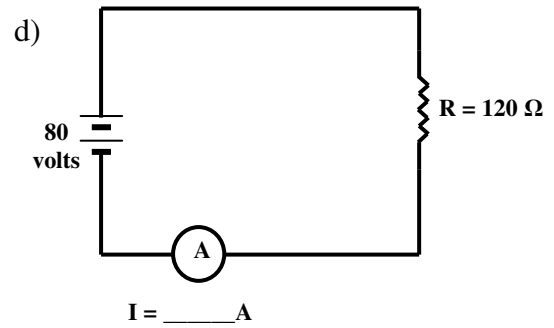
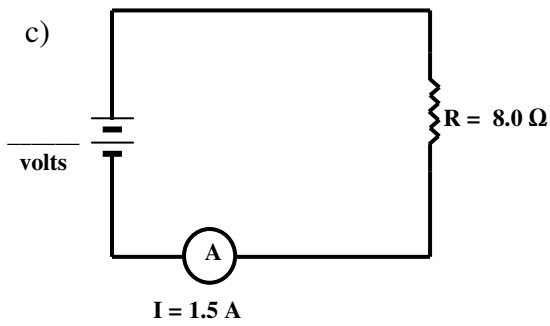
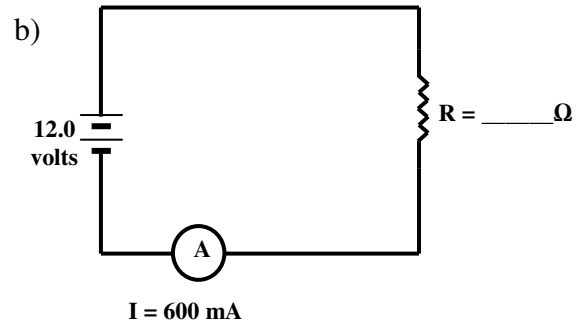
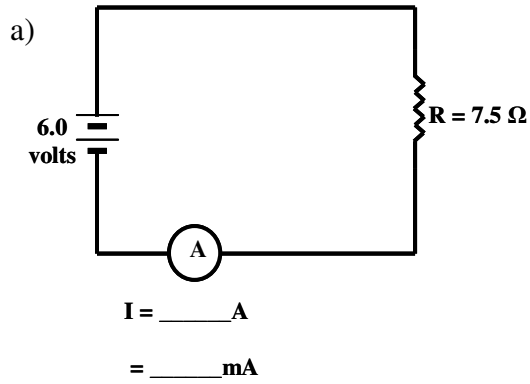
a) Convert the current into Amperes.

Answer _____ A

b) Calculate the **voltage** across the resistor.

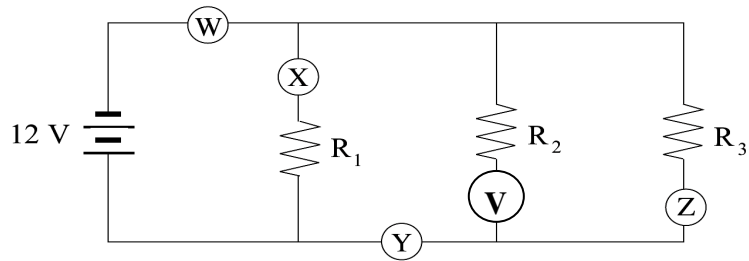
Answer _____ v

8. Given the following circuits, solve for the unknown in each case:



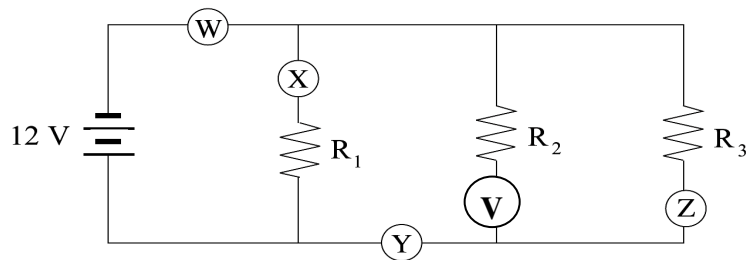
9. What is meant by **resistance**?

10. Given the following circuit diagram:



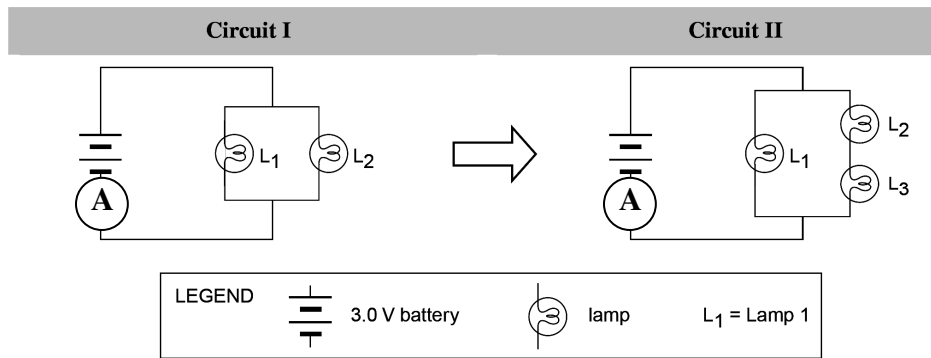
- If $R_1 = 3 \Omega$, calculate the current through ammeter “X”.
- If $R_2 = 4 \Omega$, calculate the current through ammeter “V”.
- If $R_3 = 6 \Omega$, calculate the current through ammeter “Z”.
- Calculate the current going through ammeter “Y”.
- Calculate the current going through ammeter “W”.

11. Given the following circuit diagram:



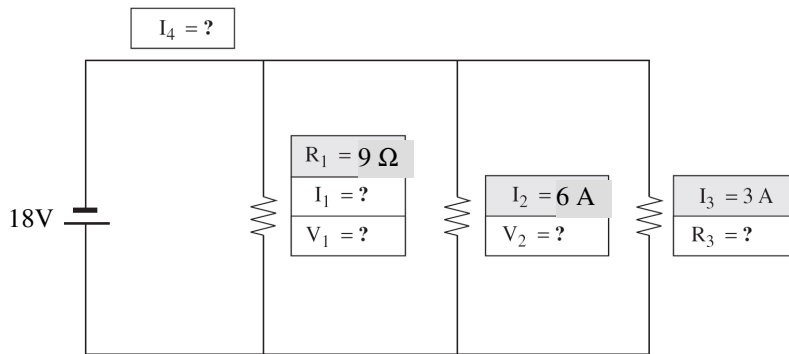
- If $R_3 = 0.5 \Omega$, calculate the current through ammeter “Z”.
- If $R_2 = 1 \Omega$, calculate the current through ammeter “V”.
- If $R_1 = 2.5 \Omega$, calculate the current through ammeter “X”.
- Calculate the current going through ammeter “Y”.
- Calculate the current going through ammeter “W”.

12. Given the following diagram:



- a) Lamp L_1 has a Resistance of $2\ \Omega$. Calculate the current through Lamp L_1 in Circuit I.
- b) Lamp L_2 has a Resistance of $1\ \Omega$. Calculate the current through Lamp L_2 in Circuit 1.
- c) Calculate the Current measured by Ammeter “A” in Circuit I.
- d) In Circuit II, another lamp (L_3) is added in _____ with Lamp L_2 .
- e) The Resistance of Lamp L_3 is $3\ \Omega$. Calculate the total Resistance of L_2 and L_3 . ____ Ω .
- f) Calculate the current through Lamp L_2 in Circuit II.
- g) Did Lamp L_2 get brighter, dimmer or stay the same brightness when lamp L_3 was added in Circuit II? _____
- h) What is the current through Lamp L_3 in Circuit II? _____A
- i) What is the current through Lamp L_1 in Circuit II? ____A. Did Lamp L_1 get brighter, dimmer or stay the same brightness when lamp L_3 was added in Circuit II? _____.
- j) Calculate the Current measured by Ammeter “A” in Circuit II.

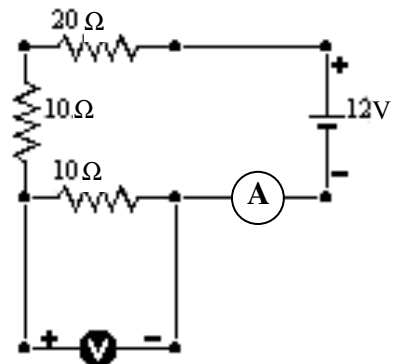
13. Given the following diagram:



- a) What is voltage V_1 ? _____ volts.
- b) What is Current I_1 ?
- c) What is voltage V_2 ? _____ volts
- d) What is Resistance R_3 ?
- e) What is Current I_4 ?

14. Given the following diagram.

- a) The three resistors are arranged in _____
- b) Calculate the Total Resistance of all 3 resistors. _____ Ω
- c) Calculate the current in ammeter “A”



- d) Calculate the Voltage Drop “V” across the bottom 10 Ω resistor.