Task Title: Series and Parallel Circuits

OALCF Cover Sheet – Learner Copy

Learner Name: _____

Date Started: _____

Date Completed: _____

Successful Completion: Yes ☐ No ☐

Goal Path: Employment ☐ Apprenticeship ☐

Secondary School ☐ Post Secondary ☐ Independence ☐

Task Description: The learner will interpret diagrams of circuits and make calculations.

Note: This task assumes some prior knowledge of circuitry and calculations used in electrical work.

Main Competency/Task Group/Level Indicator:

- Find and Use Information/Interpret documents/A2.2
- Understand and Use Numbers/Use measures/C3.3

Materials Required:

- Pen/pencil and paper and/or digital device
- Calculator or digital device with calculator function

Learner Information

Electricians need to accurately interpret diagrams of series and parallel circuits.

Scan the "Definitions" "Formulas", and "Circuits".

Definitions

Series circuits are continuous as a circle. The electricity moves along a continuous path.

Parallel circuits contain more than one path. Branches of the circuit run parallel to each other.

See the Circuits diagram for pictures of Series and Parallel circuits.

Supply Voltage is the amount of power provided for the circuit (e.g. 24 volts). The Total Voltage in a circuit is the sum of the voltages at each resistor in a circuit and is the same value as the Supply Voltage.

Formulas

I = E/R where I = current (amps), E = power (volts) and R = resistance (ohms)

Ω = ohms; you will see this symbol on the series and parallel circuits on the Circuits document.

To calculate total resistance in a series circuit, add all the resistance values:

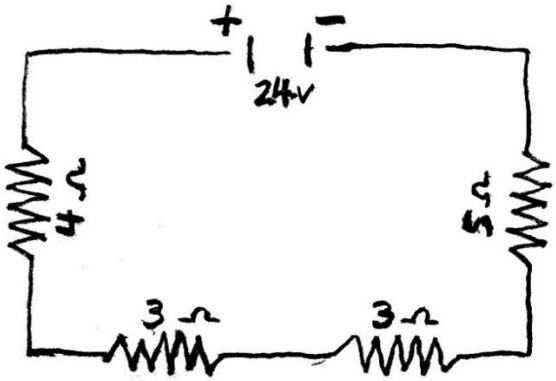
Total $R = R_1 + R_2 + R_3 + ... + R_n$

In a parallel circuit, the current depends on the resistance of the branch. To calculate total current in a parallel circuit, you first have to calculate the current for each branch:

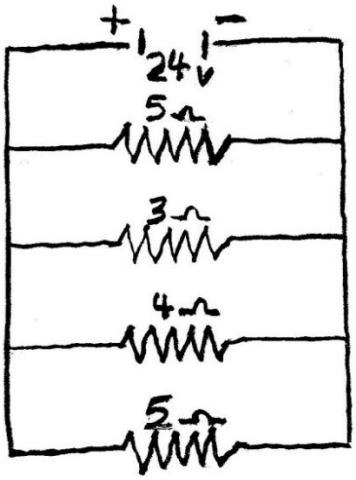
$I_1 = E/R + I_2 = E/R + I_3 = E/R ... I_n = E/R$

The total current is the sum of all the branch amounts.

CIRCUITS



SERIES



PARALLEL

Work Sheet

Task 1: Use the Series circuit to complete these tasks.

a) Calculate the total resistance (ohms) of the circuit.

Answer:

---

b) Calculate the current (amps) of the circuit.

Answer:

---

c) Calculate the voltage (volts) at each resistor if I = E/R, then E = I x R.

Answer:

Task 2: Use the Parallel circuit on the Circuits diagram to complete these tasks.

a) Calculate the current (amps) for each branch.

Answer:

---

b) Calculate the total current (amps) in the circuit.

Answer:

---

c) Calculate the total resistance (ohms) in the circuit.

Answer:

Task 3: Open a web browser on the computer. Search for advantages of using a series circuit. List at least two reasons.

Answer:
