Answer on Question #65741 – Physics / Electric Circuits | Complete

You wired up this circuit in lab and measured the current through the 2-Ω resistor to be 4 A. Unfortunately, the ammeter then broke before you could measure the current through the other three resistors. Use Kirchoff's Rules to determine the current in each of the other three resistors.

1ohm
2ohm 3ohm
20v 4ohm 9v

Solution.
1. Find voltage 2ohm resistor:
$U_2 = I_2 * R_2;$
$U_2 = 4 * 2 = 8V;$

2. Find current 4ohm resistor:
$I_4 = \frac{U_4}{R_4} = \frac{E_1 - U_2}{R_4}; I_4 = \frac{20-8}{4} = \frac{12}{4} = 3A;$

3. Find current 3ohm resistor:
$I_3 = \frac{U_3}{R_3}; I_3 = \frac{9}{3} = 3A;$

3. Find current 1ohm resistor:
$I_1 = \frac{U_1}{R_1} = \frac{U_3 - U_2}{R_1}; I_1 = \frac{9-8}{1} = \frac{1}{1} = 1A;$

Answer
Current of 1ohm resistor is 1A;
Current of 2ohm resistor is 4A;
Current of 3ohm resistor is 3A;
Current of 4ohm resistor is 3A;