Prelab Practice: Configurations of Resistors

Review the textbook on resistors in series and parallel:

- Phys 1402: Serway/Vuille: Sections. 18.2, 18.3; Quick Quiz 18.3, 18.4, 18.5, 18.6.
- Phys 2426: Serway/Jewett: Sections 28.2; Quick Quiz 28.3, 28.4.

1. In Figure 1, which resistors are connected in parallel and which resistors are connected in series?
(20 Ω and 60 Ω are in parallel; 30 Ω, 15 Ω, and equivalent resistance of 20 Ω & 60 Ω are in series)

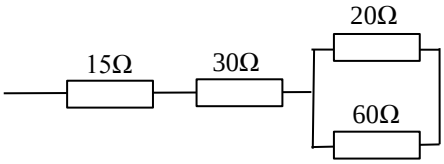

Figure 1. Set of resistors used for Question 1.

2. What is the equivalent resistance of the overall configuration on Picture 1?
(60 Ω. The 20 Ω and 60 Ω form a parallel equivalent resistance of 15 Ω.)

3. In Figure 2, the ammeter reads 1.2 A, and voltmeter reads 3.6 V. If R_1 = 2 Ω, what is emf of the battery?
(6V)

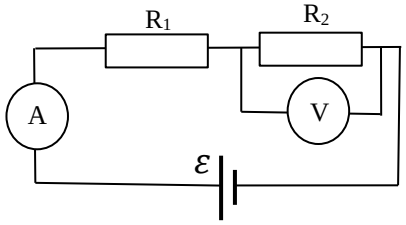

Figure 2. Circuit used for Question 3.

4. In Figure 3, R_1 = 2.1 Ω, R_2 = 3.4 Ω, and R_3 = 1.7 Ω. If the terminal voltage of the battery is 5.8 V, calculate the current through each resistor.
(I_1 = 2.8 A, I_2 = 1.7 A, I_3 = 3.4 A)

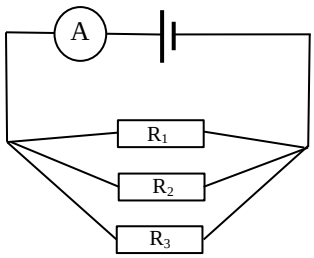

Figure 3. Circuit used for Questions 4 and 5.

5. What is the reading of the ammeter in Figure 3?
(7.9A)