Monday Reading Assessment: Unit 2, Ohm's Law and Batteries, Kirchhoff's Rules

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1 Memory Bank

- $i_{\text{in}} = i_{\text{out}}$ ... Kirchhoff's junction rule.
- $\epsilon_1 + \epsilon_2 + \epsilon_3 + ... = 0$ ... Kirchhoff's loop rule.

2 Kirchhoff's Rules Tutorial

1. Recall the Kirchhoff's Rules tutorial video 1. We solved for the current i_1 in Fig. 1. (a) What is i_2? Once you find i_2, find i_3 using the junction rule. What does the sign of i_3 tell us about the lower battery? (b) Suppose the emf of battery 2 was raised to $\epsilon_2 = 12$ V, and we observe that $i_1 = 1.2$A and $i_2 = 1.2$A. What is i_3?

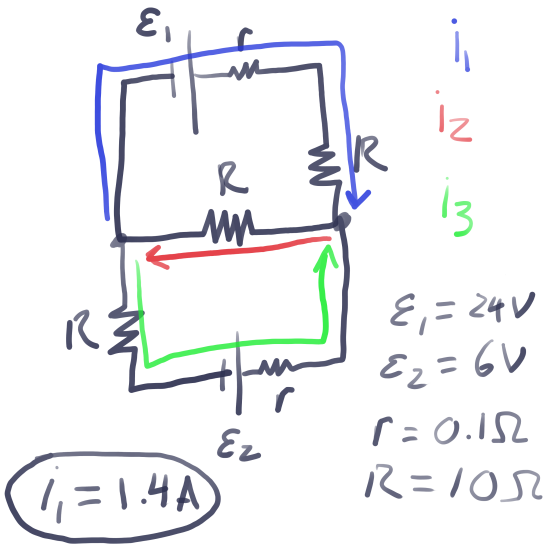

Figure 1: The circuit from Kirchhoff tutorial video 1. Two batteries with internal resistances r are connected to a circuit with resistors R.