Worksheet 7.4 EMF and Terminal Voltage

1. Calculate the equivalent resistance of each of the networks of resistors in the following circuits.





1. Use the circuit above to answer the following:
	1. What is the equivalent resistance of the circuit above?
	2. What is the voltage across the 6.0 Ω resistor?
2. A dry cell with an emf of 1.50 V has an internal resistance of 0.050 Ω. What is the terminal voltage of the cell when it is connected to a 2.00 Ω resistor?
3. What is the emf of the battery if the current in A is 1.2 A and the internal resistance of the battery is 0.0833 Ω in this circuit?



1. What is the internal resistance of the battery shown here?



1. A dry cell with an emf of 1.50 V and an internal resistance of 0.050 Ω Is “shorted out” with a piece of wire with a resistance of only 0.20 Ω. What will a voltmeter read if it is connected to the terminals of the dry cell at this time?
2. A battery has an emf of 12.50 V. When a current of 35 A is drawn from it, its terminal voltage is 11.45 V. What is the internal resistance of the battery?
3. A battery with an emf of 6.00 V has an internal resistance of 0.20 Ω. What current does the battery deliver when the terminal voltage reads only 5.00 V?



1. The in the diagram above is short-circuited with a wire of resistance 0.10 Ω. What is the terminal voltage under these conditions?

Answers:

1. a. 7.0 Ω b. 2000 Ω c. 314 Ω
2. a. 10.0 Ω b. 1.2 V
3. (1.46 V)
4. (10 V)
5. (0.50 Ω)
6. (1.20 V)
7. (0.030 Ω)
8. (5.0 A)
9. (0.25 V)