Redox Reactions, DC Circuits, and Power Loss

You have a DC motor that needs to be powered. Available to you are seven potatoes, seven soda can pieces (aluminum), and seven iron nails, with as much wire as you need to connect a voltage source to the DC motor.

1. Using a reduction half-reaction table, find the voltage of the battery constructed from all the material.

2. You connect the battery to the DC motor through an ammeter, and measure a current of 0.009 A. What is the effective resistance of the DC motor?

3. What is the power loss though the DC motor?

4. After running the motor for 10 minutes, you notice a loss in current. How much energy has been used by then?

5. What do you suspect is the problem?