PROPOSED THEORY

Assume that what is stated below is just a theory and perform experiments (as suggested in the procedure) to test its validity.

In the textbook (section 19-6) it is mentioned that a simple *RC* circuit can be constructed by connecting a capacitor, a resistor and a battery in series. When the circuit "is closed, current immediately begins to flow through the circuit … As charge accumulates on the capacitor, the potential difference across it increases … and the current is reduced until eventually the voltage across the capacitor equals the emf of the battery … The potential difference across the capacitor … thus increases in time … by the formula"

$$V = V_0 \left(1 - e^{-t/RC}\right)$$

When the capacitor is "allowed to discharge through a resistor R … charge begins to flow … from one side of the capacitor toward the other side, until it is fully discharged. The voltage across the capacitor decreases" by the exponential formula

$$V = V_0 \, e^{-t/RC}$$

where V_0 is the initial voltage across the capacitor.