Charge	$Q = C V$	Coulombs
Current	$I = dQ/dt$	Amperes
Ohm's Law	$V = I R$	Volts
Joule's Law	$P = V I = I^2R$	Watts

Kirchoff's Law

Sum of the Loop Voltages = 0

Sum of the Node Currents = 0

Engineering Notation

Sketch Thevinen & Norton Equivalent Circuits

Describe how to calculate Equivalent Voltage, Current, Resistance from measurements

Thevenin's Theorem and Equivalent Circuit Series voltage source $\{V_{eq}\}$ and resistor equivalent $\{R_{eq}\}$

Any network of resistors and sources having two output terminals,
may be replaced by a series combination of a voltage source V_{eq} and a resistance R_{eq}.
The equivalent emf V_{eq} is the potential at the output terminals when the output current is zero (open-circuit voltage).
The equivalent resistance R_{eq} is the ratio of the V_{eq} to the output current when R_{Load} is zero (short-circuit current).

Norton's Theorem and Equivalent Circuit Parallel Current source $\{I_{eq}\}$ and resistor equivalent $\{R_{eq}\}$

Any network of resistors and sources having two output terminals,
may be replaced by a parallel combination of a current source I_{eq} and a resistance R_{eq}.
The current source I_{eq} is the short-circuit current in the output terminals,
and the resistance R_{eq} is the same as for Thevenin's Theorem.

Calculate Series & Parallel Equivalent Resistance

Sketch Series Resistors Voltage Divider (including voltage source)

Calculate voltage across load resistor

Voltage Divider (Resistors in Series with Voltage Source) $V_2 = V (R_2 / (R_1 + R_2)$

Sketch Parallel Resistors Current Divider (including current source)

Calculate current through load resistor

Current Divider (Resistors in Parallel with Current Source) $I_2 = I (R_1 / (R_1 + R_2)$

Course Handouts

Electrical Theory (PowerPoint)