

EE 220 Circuits I

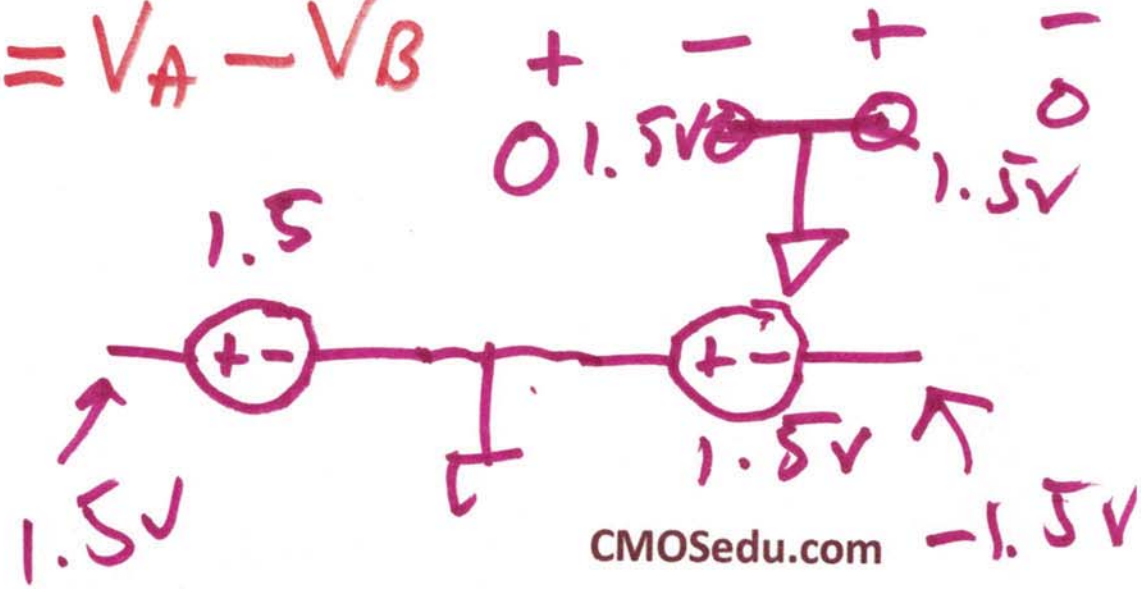
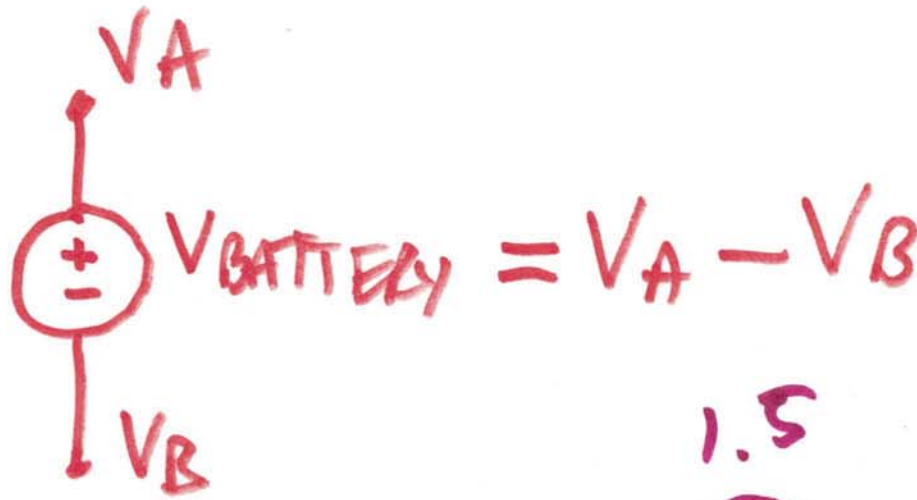
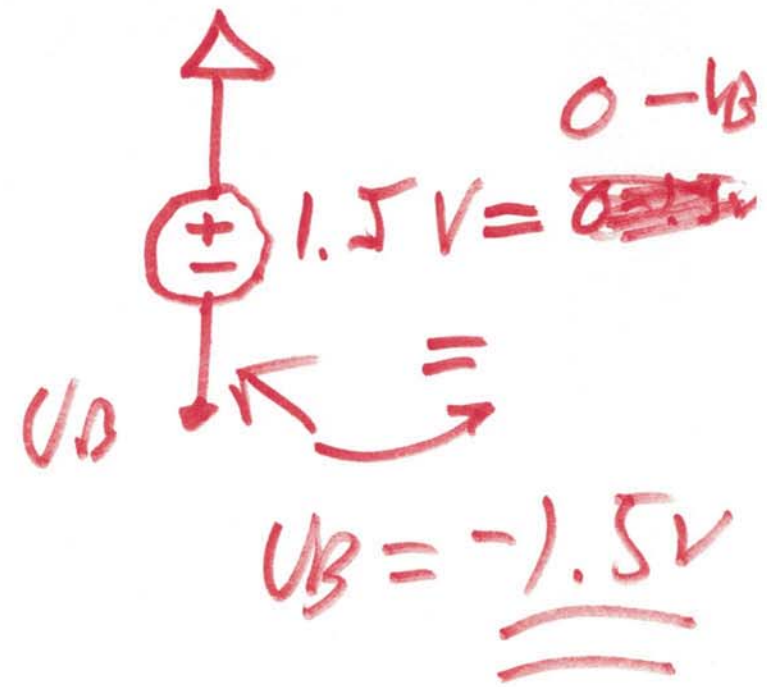
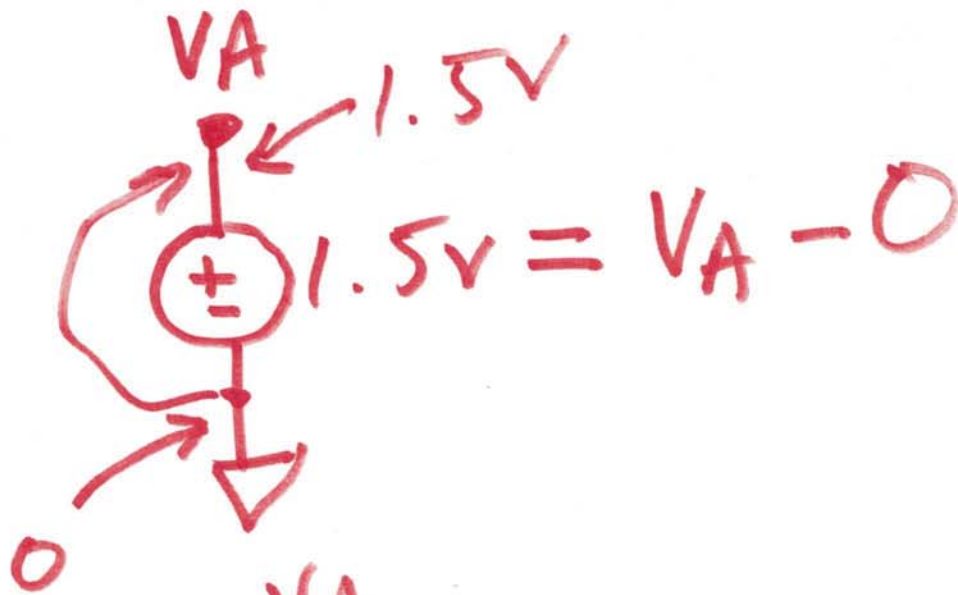
Lecture 1

Battery = voltage source

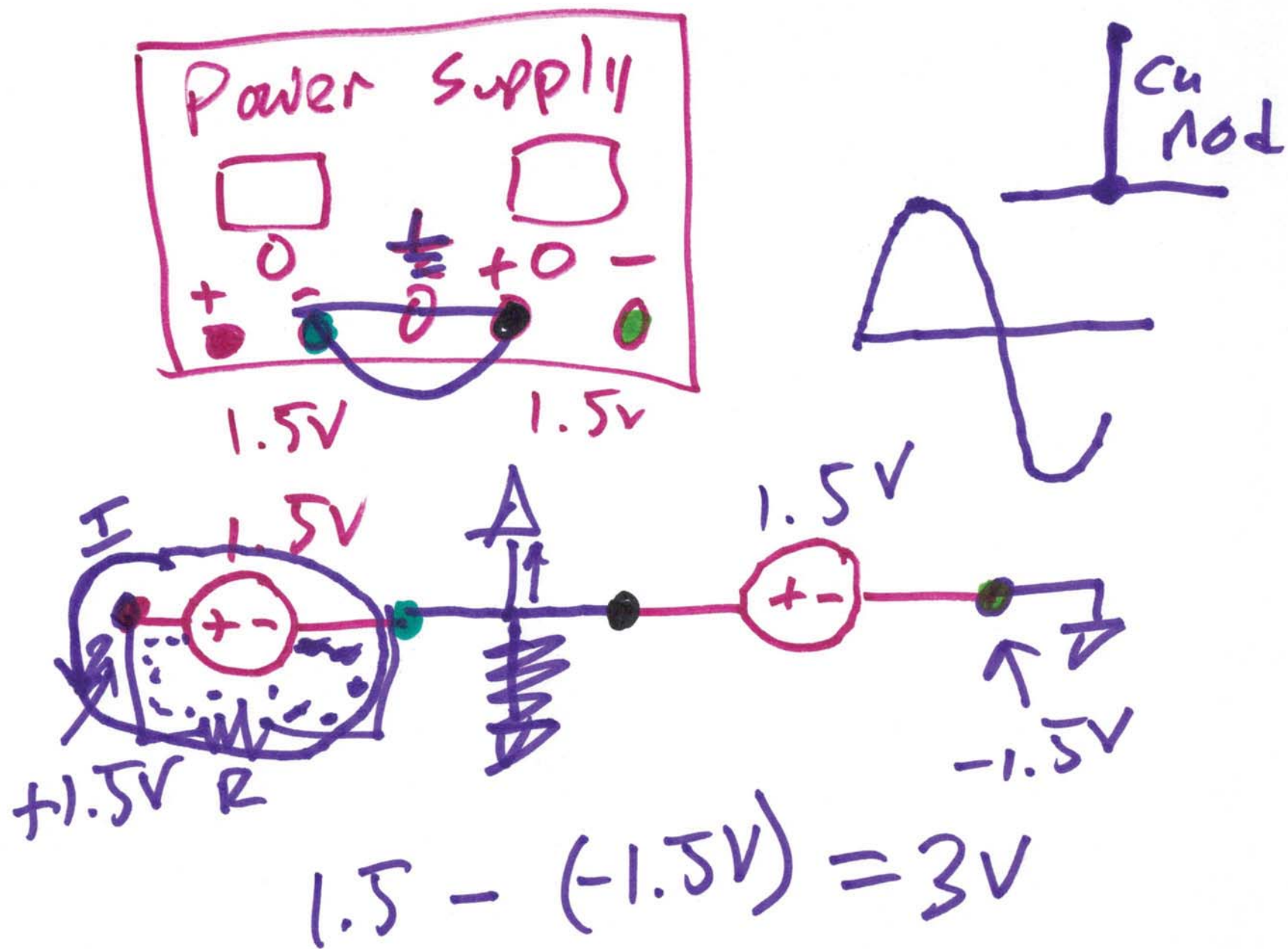


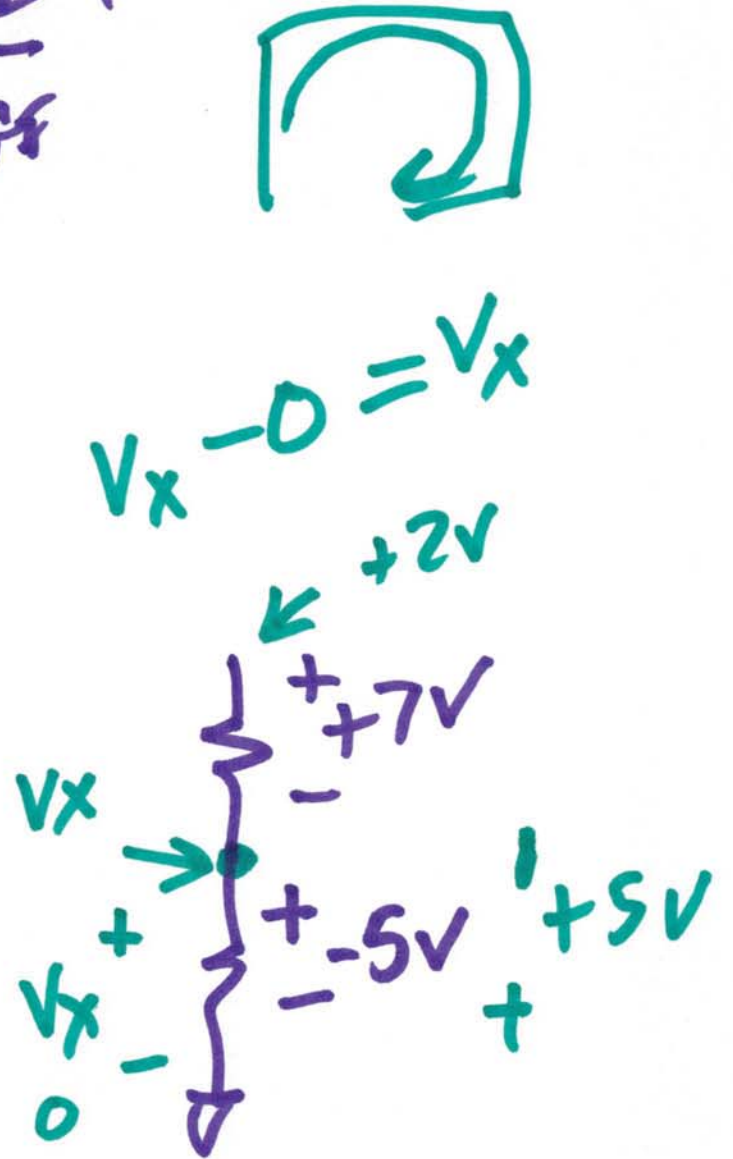
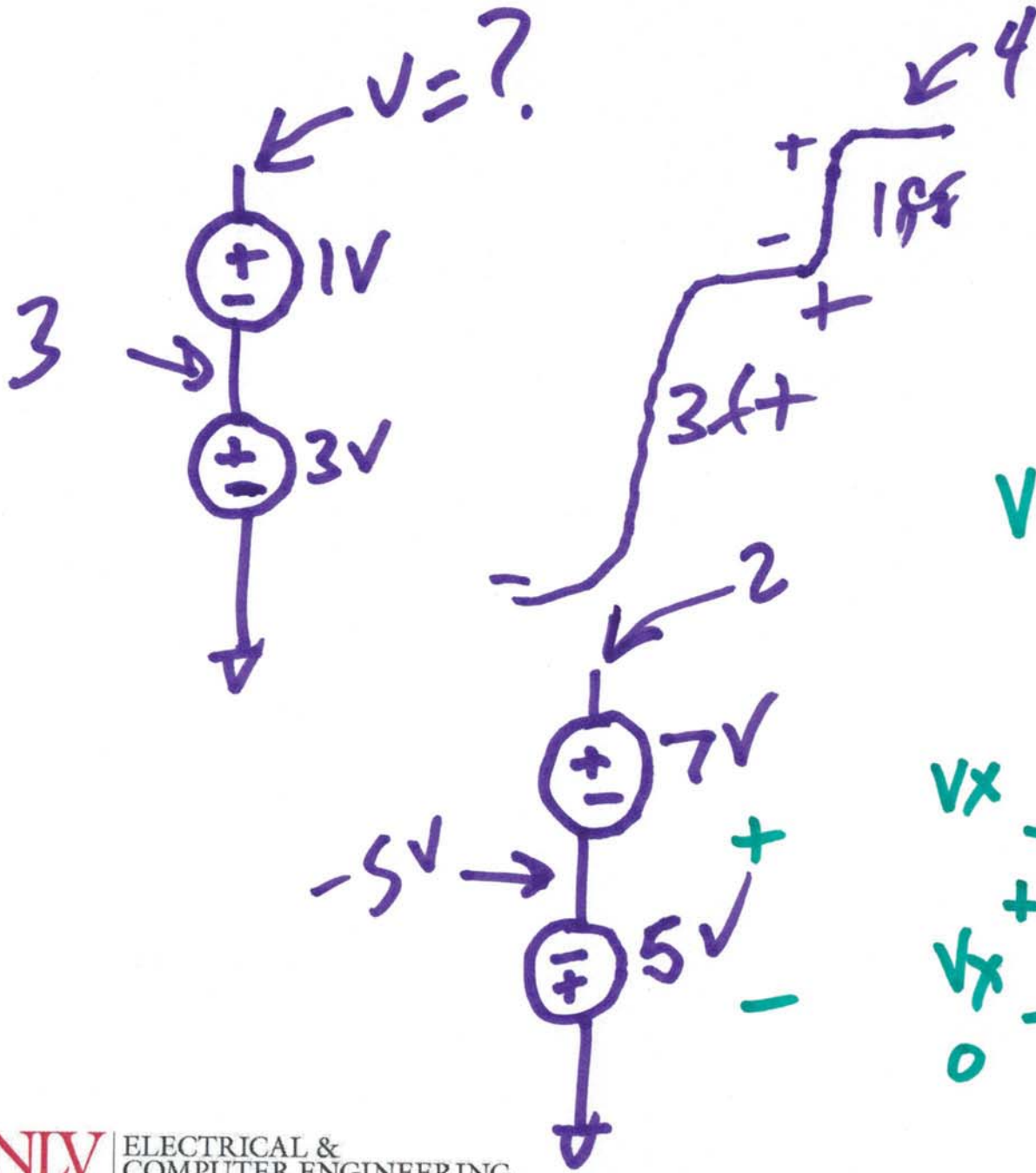
Ground = 0V = reference





2)





A)

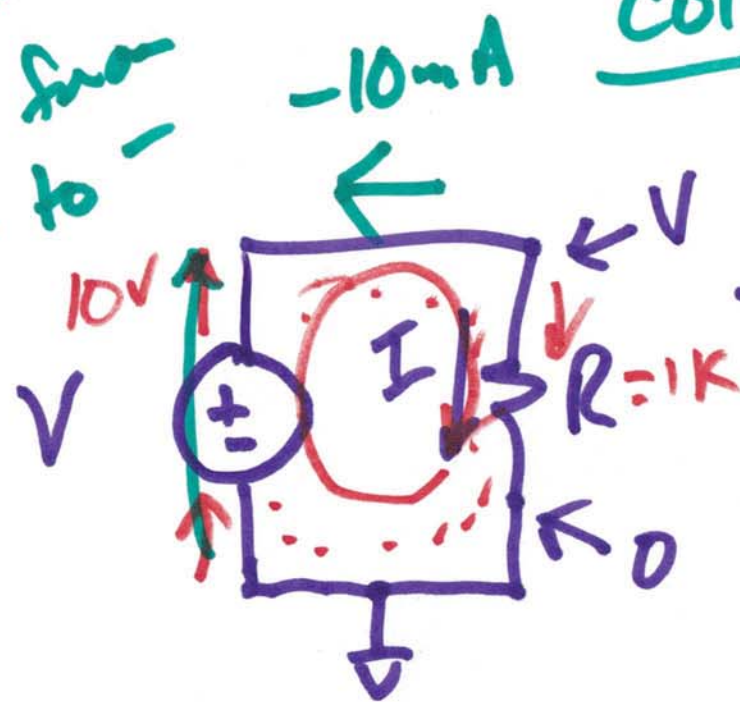
OHM'S LAW

$$V = I \cdot R$$

↑
RESISTANCE, Ω

SPICE + current
flows + to -

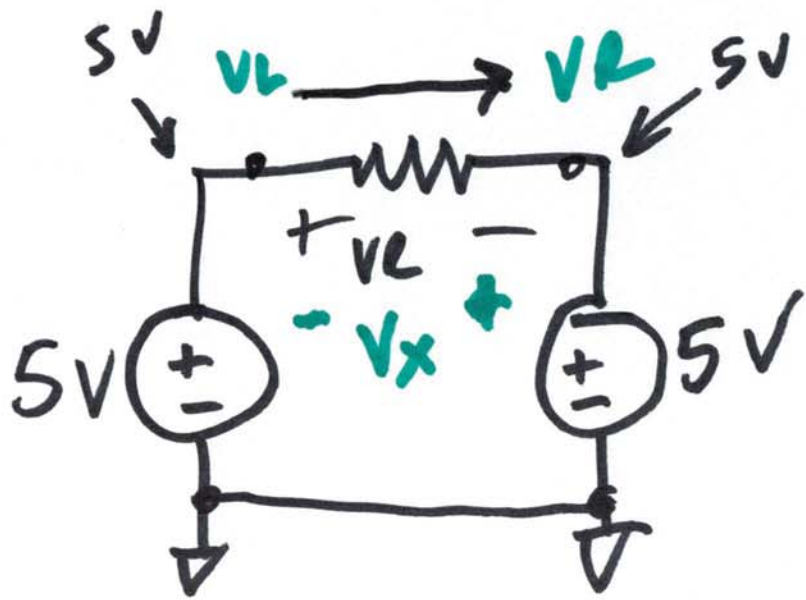
Amperes =
 $\frac{\text{Coulombs}}{\text{s}}$



$$I = \frac{V}{R} = \frac{10V}{1K} = 0.01 = 10mA$$

$10^{-3} =$
milli

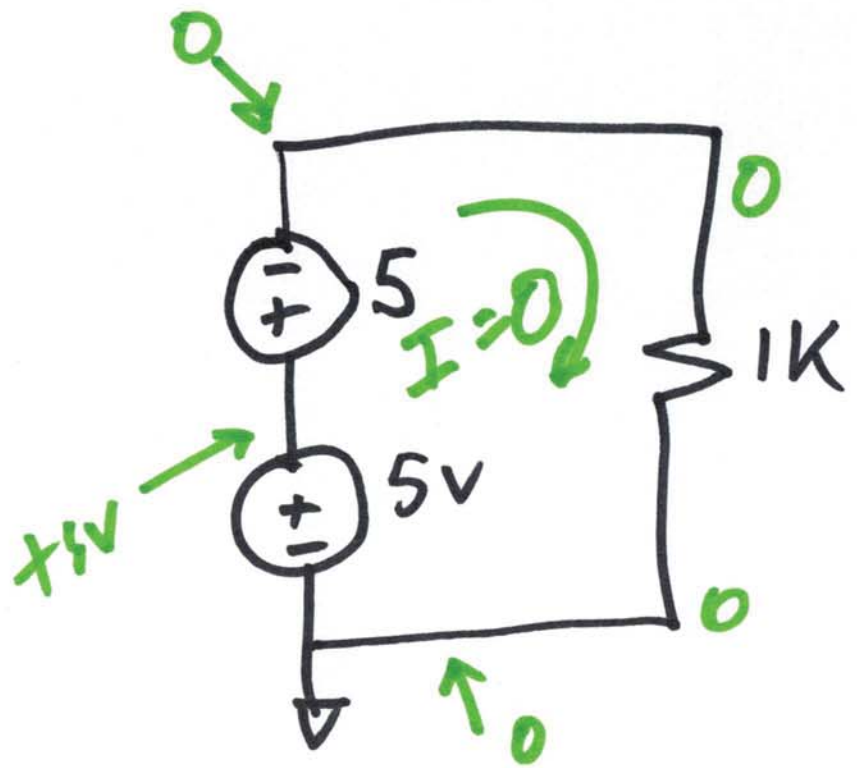
5)



$$V_R = 5 - 5 = 0 = V_L - V_R$$

$$V_x = 5 - 5 = 0 = V_R - V_L$$

6)

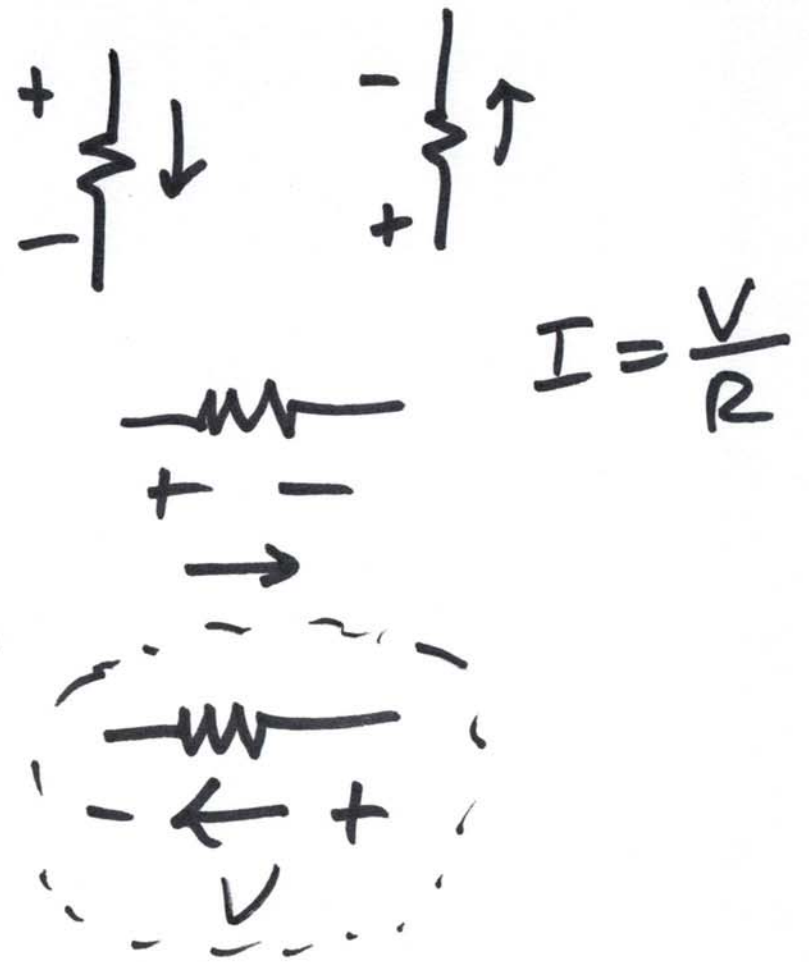
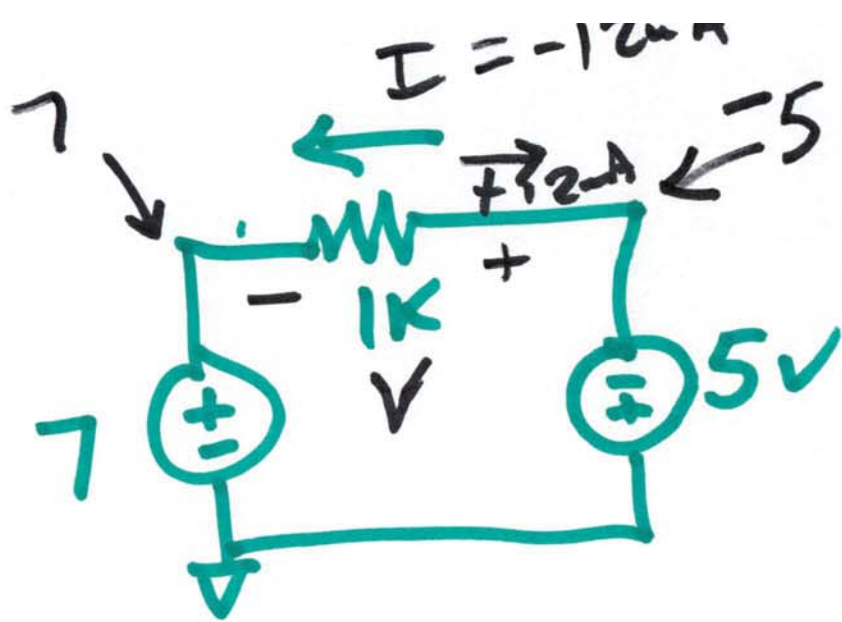


$$+ V_R = 0$$

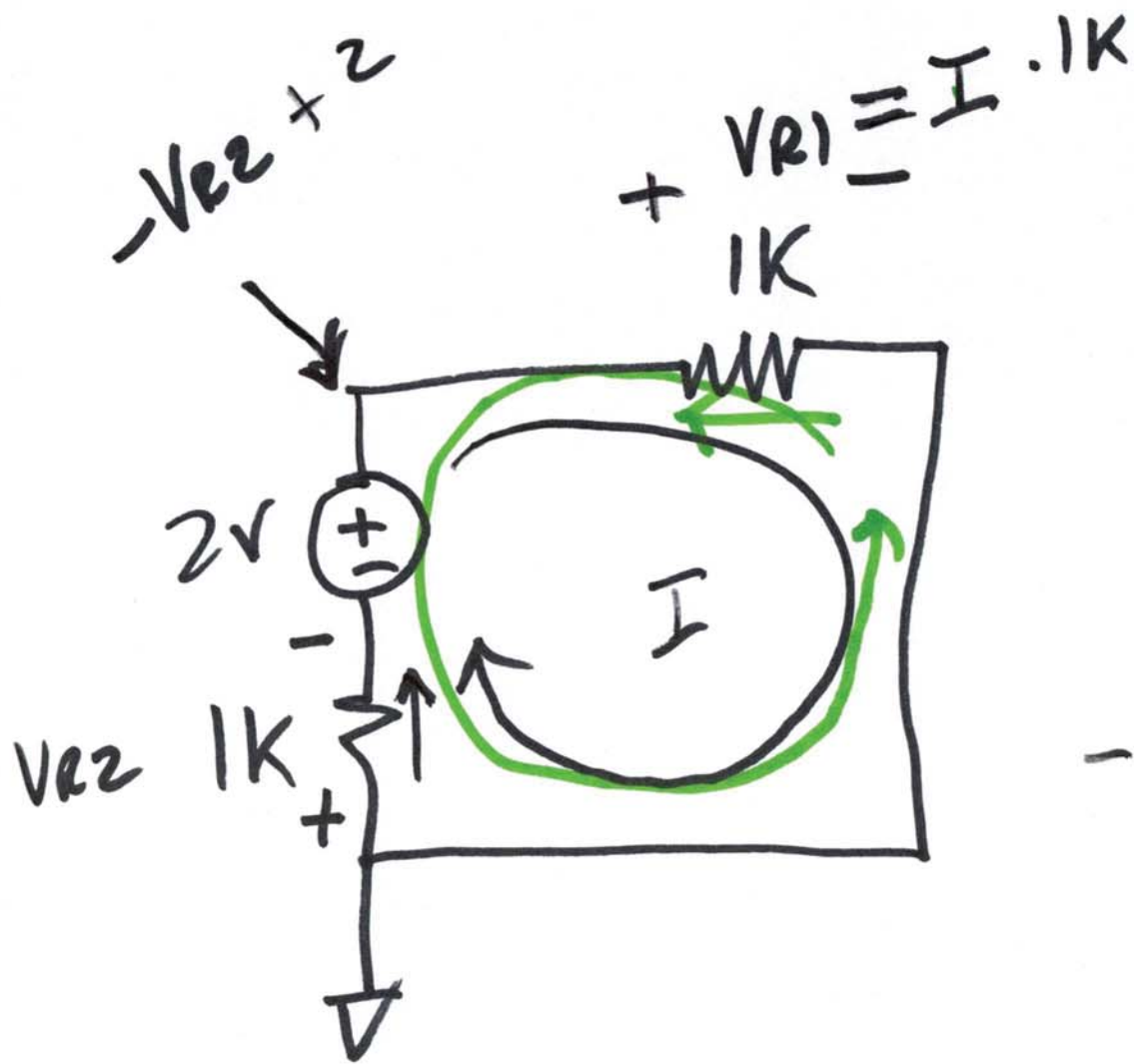
$$-$$

Short $| = 0 \Omega$
 Open $| = \infty \Omega$

8)



$$I = \frac{-5 - 7}{1\text{k}} = -12\text{mA}$$



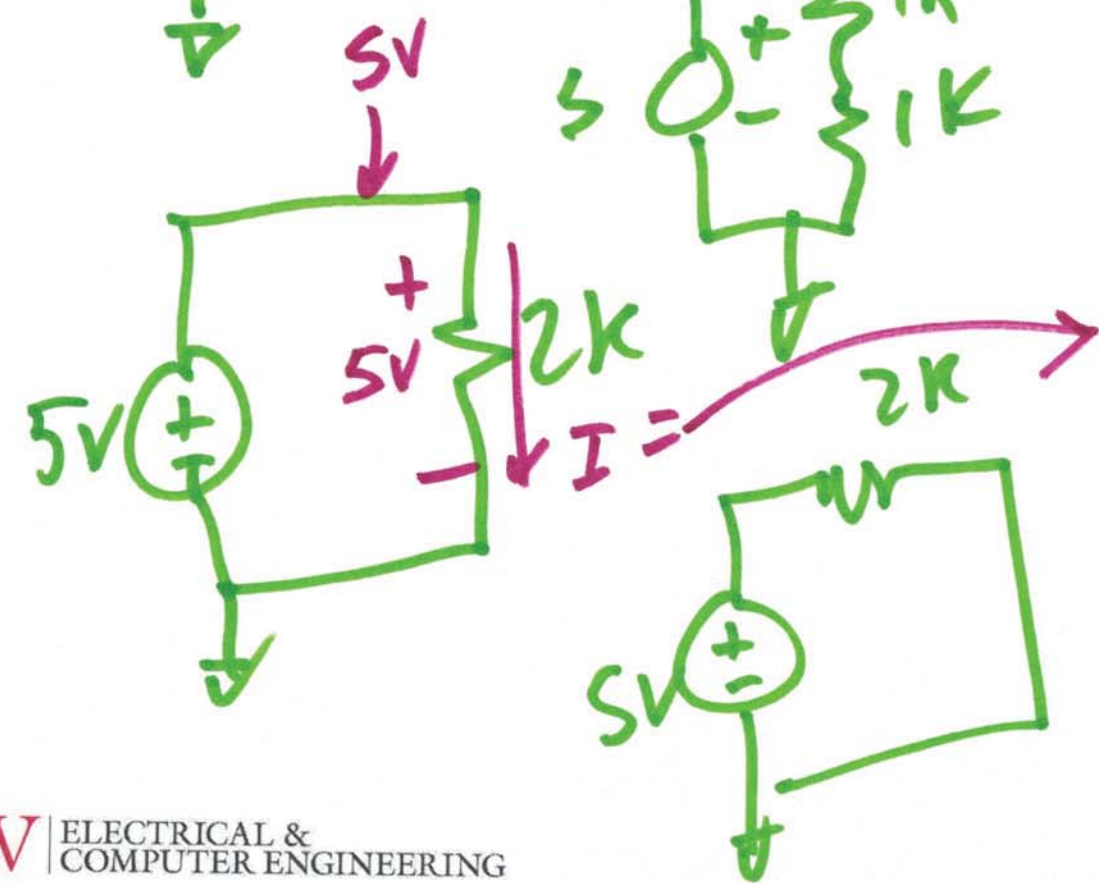
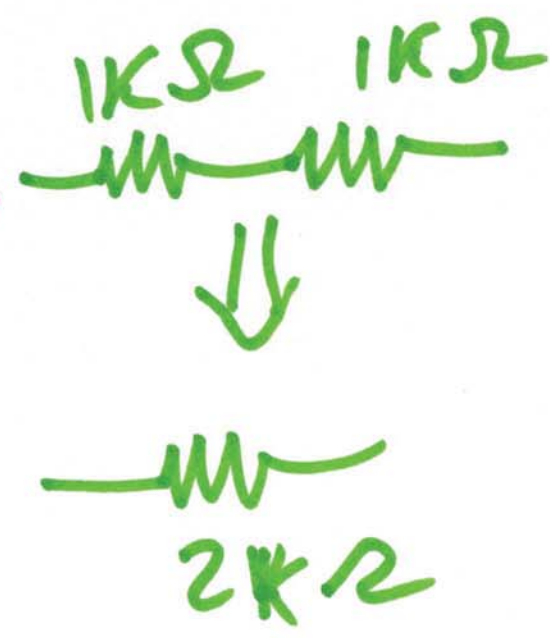
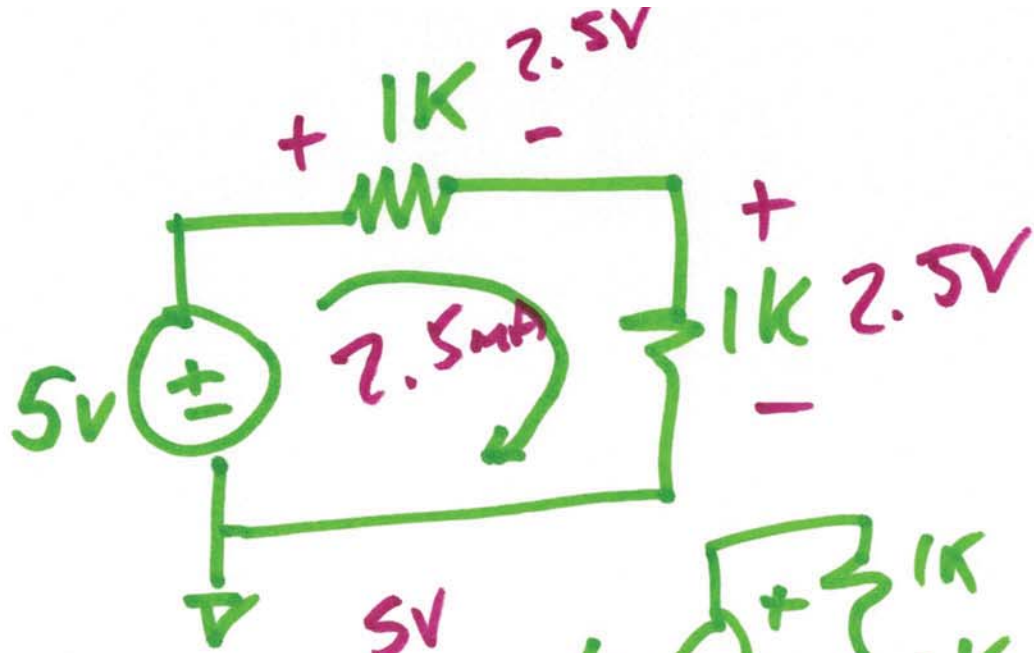
$$V = I \cdot R$$

!
Kirchoff's voltage law

$$-V_{R2} + 2 - V_{R1} = 0$$

$$2 = V_{R2} + V_{R1}$$

9)



$$\frac{5V}{2k\Omega} = 2.5mA$$

107