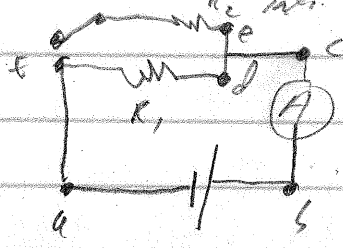
1) $V = Emf - IR_{int}$ So lowered R_{int} = higher V

3) 

when switch is open current is abcdfa and series through R_1 so current $\Rightarrow V = IR_1$

$I = V/R_1$

~~When~~

when switch is closed current is abcdefa so

$I = \frac{V}{\left(\frac{1}{R_1}+\frac{1}{R_2}\right)^{-1}}$ = so Resist decreases and current increases

2) First instance = 1 resistor so $V = IR$

Second instance = 2 resistor so $V = I + R_1 + R_2$

$\frac{V}{R_1 + R_2}$ So R increase so current decreases

4) $V = I(R_1 + R_2)$ initially

$V = I(R_1 + R_2 + R_3)$ after adding

current = current = current (even in the battery)

increased R = decreased current

5) initially = $V = I(R_1 + R_2)$
adding 3rd l = $V = I(R_1 + R_2 + R_3)$

We already noted that current decreases, Resistance is constant at $(R_1 + R_2 + R_3)$

so I decreases
R constant

So <some part> of V must decrease in order to maintain the same Voltage output the E potential between the terminal must increase

6) initially $\left(\frac{1}{R_1} + \frac{1}{R_2}\right)^{-1}$

adding another $\left(\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}\right)^{-1}$ so resistance decreases

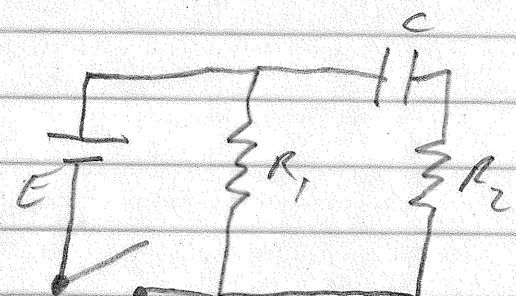
$\frac{V}{\text{decreased } R} = \text{increased } I$

7) initially $\frac{1}{R_1} + \frac{1}{R_2} = R_{tot}^{-1}$

adding 1 R $\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} = R_{Tot}^{-1}$

Resistance goes down
current goes down
✓

8)



$V = IR \quad R = \frac{1}{R} + \frac{1}{R_1} = \left(\frac{2}{R}\right)^{-1} = \frac{R}{2}$

$\underline{I} = V/R = \frac{V}{R/2} = \frac{2V}{R} = \frac{2\mathcal{E}}{R}$

9) "after a very long time" means Cap is fully charged (not that the battery is dead)
Battery is out of the circuit
so no current flows in the circuit.