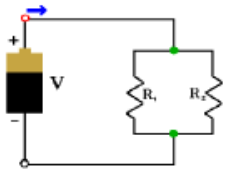
Unit 14 Plan: ***Series and Parallel Circuits***
Physics1 Honors@ PalmHarborUniversityHigh



Day	Date	Topic	Assignments Due /
1		Notes on series circuits **CW#1**: 1, 2, 3,4, 5 (p 619), 11, 12 (p 623)	Read all of Section 23.1
2		Notes on parallel circuits **CW#2**: 15,16,17 (p 626)	
3		Combined circuits **CW#3**: 77, 81 (p 638)	Read all of Section 23.2
4		Circuits Lab Class problems TBA	**HW#1:** 64, 67, 82, 83 (page 637-639)
5		Video ? Review Problems W/S	**HW#2**: p.636: 37-44,48,51,52,54,55,56
6		Review concepts	
7		Unit Test	

Note: *Homework is due on the day following the assignment, unless otherwise noted.*

Objectives / Essential Learnings: (key terms in **bold**)

1. Given a diagram of a battery and a bulb connected by wire, determine whether current will pass through the bulb.
2. Distinguish between series and parallel circuits.
3. Predict what will happen in a series circuit if there is a break at any point.
4. Relate the current at any point in a series circuit to the current at any other point.
5. Predict what will happen to the current at any point in a series circuit if an additional device is connected in series.
6. Predict what will happen in a parallel circuit if there is a break in any branch.
7. Calculate **current**, **voltage drops**, and **equivalent resistance** when devices are connected in **series**.
8. Calculate **current**, **voltage drops**, and **equivalent resistance** when devices are connected in **parallel**.
9. Predict what will happen to the current at any point in a parallel circuit if an additional device is connected in parallel.
10. Explain the cause and prevention of overloading household circuits.

Ohm's law $I = \frac{V}{R}$ $R = \frac{V}{I}$ $V = IR$

$$\textbf{\textit{Power}}\,(\boldsymbol{P}) = \boldsymbol{IV} = \boldsymbol{I}^2\boldsymbol{R}$$

	Series	***Parallel***
Equivalent Resistance	$R_T = R_1 + R_2 + R_3 + \ldots$ **resistances are additive**	$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots..$
Current	$\boldsymbol{I_T} = \boldsymbol{I_1} = \boldsymbol{I_2} = \boldsymbol{I_3} = \ldots$	$I_T = I_1 + I_2 + I_3 + \ldots$ **currents are additive**
Voltage	$V_T = V_1 + V_2 + V_3 + \ldots$ **voltages are additive**	$\boldsymbol{V_T} = \boldsymbol{V_1} = \boldsymbol{V_2} = \boldsymbol{V_3} = \ldots$
Circuit	All devices must be "on-line" and depend on the others	Each device works independently of the others