

Ohm's Law:  $V = I * R$   $I = V / R$   $R = V / I$

1.

How is this circuit, or a circuit like it, used in everyday life? Provide at least three examples.

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**Did you get your LEDs turned on?**

Great. Load the Circ02Expansion Code. In this code the last LED pin is an analog output using PWM (Pulse Width Modulation). Make sure to use a red LED.

Give values for Voltage, Current and Resistance for each LED circuit setup. Find Resistance with Ohm's Law. Hint: Break the circuit between the RedBoard pin and LED to measure the current.

2.

**PWM @ 63.75 (or 25%)**

$V = \underline{\hspace{1cm}} \text{ v } I = \underline{\hspace{1cm}} \text{ mA } R = \underline{\hspace{1cm}} \Omega$

3.

**PWM @ 127.5 (or 50%)**

$V = \underline{\hspace{1cm}} \text{ v } I = \underline{\hspace{1cm}} \text{ mA } R = \underline{\hspace{1cm}} \Omega$

4.

**PWM @ 191.25 (or 75%)**

$V = \underline{\hspace{1cm}} \text{ v } I = \underline{\hspace{1cm}} \text{ mA } R = \underline{\hspace{1cm}} \Omega$

5.

**PWM @ 255 (or 100%)**

$V = \underline{\hspace{1cm}} \text{ v } I = \underline{\hspace{1cm}} \text{ mA } R = \underline{\hspace{1cm}} \Omega$

6.

Circle all the Power Sources in the circuit.  
(This one is a little trickier)

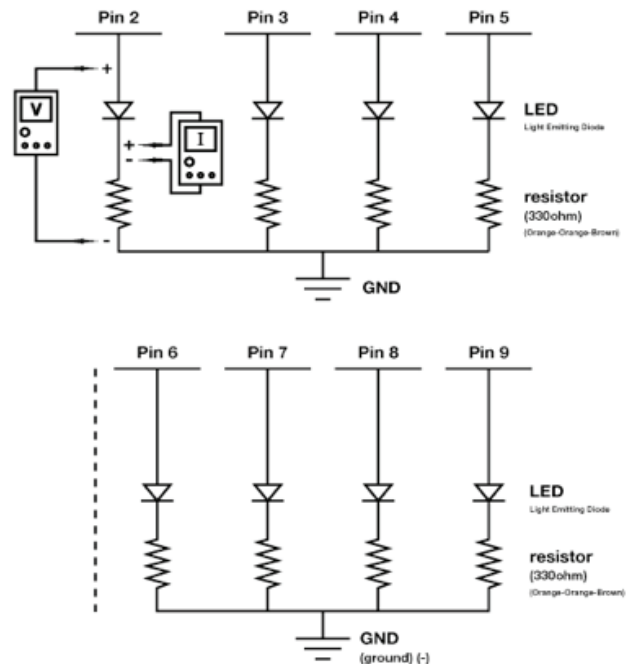
7.

Draw arrows to indicate direction of current on dotted line.

8.

Add an on/off switch for one LED to this schematic.

Circuit:



**Circuit:**



**What circuits or projects would you like to add LEDs to? Can you think of at least three reasons you might add multiple LEDs to an existing circuit or product that you would use? For example: clock that shuts off an LED every time you are done with a class, turning off all the LEDs by the end of the day so you know you are free.**

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**11.**

**Draw one example of how this circuit could be used in everyday life. Label all components and give it a title.**

**9.**

**Draw a logic flow chart of the circuit here:**

Case	Age	Sex	Occupation	Duration of symptoms (years)	Onset of symptoms	Family history of psychiatric illness	Previous psychiatric history	Current psychiatric symptoms	Current medical symptoms	Current medications	Current treatments	Outcome
1	25	F	Student	1	2018	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
2	32	M	Software engineer	2	2016	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
3	45	F	Teacher	3	2015	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
4	58	M	Retired	4	2014	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
5	65	F	Homemaker	5	2013	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
6	72	M	Retired	6	2012	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
7	78	F	Retired	7	2011	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
8	85	M	Retired	8	2010	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
9	92	F	Retired	9	2009	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved
10	98	M	Retired	10	2008	No	No	Depression, anxiety	Headaches, dizziness	Antidepressants, anxiolytics	Psychotherapy	Improved