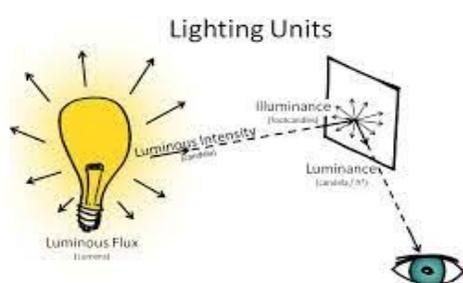


# Iona Physics

## Lab: Exploring Illuminance

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Problem: To explore Illuminance

Illuminance is a measure of how much **luminous flux** (light) is spread over a given area. One can think of luminous flux (measured in **lumens**) as a measure of the total "amount" of visible light generated, and the illuminance (measured in lux, which is abbreviated lx) as a measure of the intensity of illumination on a surface. Since most people are not familiar with this term, the first experiment will be simply to use Phyphox to measure the illuminance under a variety of

circumstances.

Procedure:

1. Start Phyphox and click on Light.
2. Click on the little triangle to start measurement.
3. Assuming you are on the GRAPH tab, you will see a small graph. If you click on the two small arrows to the left of the word illuminance, the graph will become much larger and easier to read.
4. When you have the expanded graph you also see "Pick data" at the bottom of the screen. Click that, then touch the graph and a little window will show up giving the time and reading.
5. Clicking the two parallel lines at the top will pause the readings. You may repeatedly pause and resume by clicking the triangle and parallel lines.
6. Clicking the trash can lets you clear the recorded data.
7. If you do not need a graph, but just want to make a somewhat static measurement, go to the SIMPLE tab. You will see the illuminance as a number which will change as conditions dictate.

Now for the experiment:

For various places in your environment, record the location and the illuminance. For example, you might choose the living room, the kitchen counter, where you do your homework, the dining room table, outside on a sunny day, outside on a cloudy day, etc. Take at least 10 measurements in various locations and under various circumstances. Your teacher will tell you how to report your

observations. If the teacher does not give you specific instructions, then you might report your results like those on the table below:

Illuminance (lux)	Surfaces illuminated by
0.0001	Moonless, overcast night sky ( <a href="#">starlight</a> )
0.002	Moonless clear night sky with <a href="#">airglow</a>
0.05–0.3	Full moon on a clear night
3.4	Dark limit of <a href="#">civil twilight</a> under a clear sky
20–50	Public areas with dark surroundings
50	Family living room lights (Australia, 1998)
80	Office building hallway/ <a href="#">toilet</a> lighting
100	Very dark overcast day
150	Train station platforms
320–500	Office lighting
400	<a href="#">Sunrise</a> or <a href="#">sunset</a> on a clear day.
1000	Overcast day; typical <a href="#">TV studio</a> lighting
10,000–25,000	Full <a href="#">daylight</a> (not direct sun)
32,000–100,000	Direct <a href="#">sunlight</a>