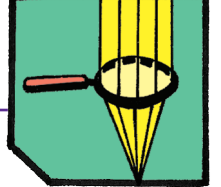


light sensor

## ABSORPTION

### MATERIAL

- a smartphone
- a lamp
- transparent plastic sheets (colored or not)



optics

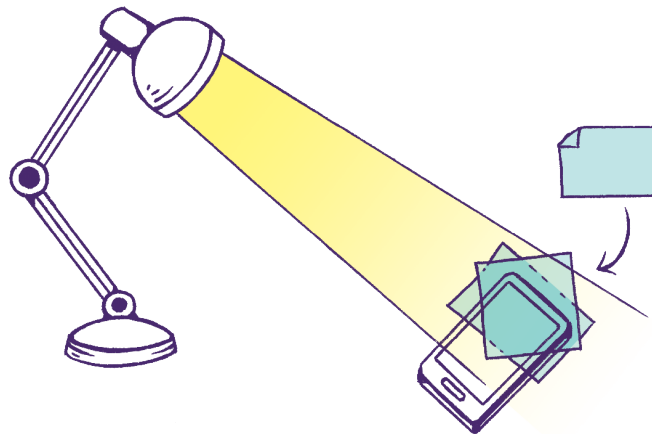
### CHALLENGE

Determine how light gets dimmer when going through thicker materials.

### OVER TO YOU

After having measured with your smartphone the illuminance in full lighting conditions, position on the smartphone's light sensor, 0, then 1 transparent sheet, then 2, etc. The transparent sheets will absorb a small amount of light, which will decrease the illuminance measured by the smartphone.

Determine how the illuminance varies with the number of sheets placed on the light sensor.



Plot the log of light intensity as a function of the number of sheets. Look for "Beer-Lambert law" to understand why this plot is useful.

### THE ULTIMATE CHALLENGE



Analyze the variation of the illuminance when the absorbing medium is colored water (with ink for example) in function of its concentration or in function of the liquid thickness.