

## LAB- PART 1 - SHADOWS

Go to the following website and maximize the interactive figure.

<https://juniorofek.cet.ac.il/units/En/Science/unit265/act1.aspx>

**QUESTION:** What factors affect the height of a shadow cast on a screen when an opaque object (whose size is constant) is illuminated by a single light source?

### Formulate your hypothesis

- What factors affect the height of the shadow? Think of at least two such factors. The size of the object and distance between the light and object.
- Hypothesize how each of the above factors affects the shadow.

### Plan an experiment to test the hypothesis

- Choose one of the factors you suggested in the previous section and plan an experiment [or experimental set up] to test your hypothesis.
- What are the dependent variable and independent variable in your experiment, and which parameters must be maintained constant during the experiment?

### Execute your experiment and collect data

- Create your experiment in the computerized laboratory environment. Describe it. Run an experiment it in the virtual laboratory. Position the light source, the base of the object, and the screen so that they are all on the "floor".
- Collect data and present them in a graph.

Fill in the following table according to the measurements you made.

Measurement	Distance of object from light source, X	Height of shadow, Y
1		
2		
3		
4		
5		

### Draw conclusions

- Formulate a conclusion based on the data you collected:
- Does the result you received fit the hypothesis you formulated prior to the experiment? If not, what knowledge or data were you missing in order to improve your hypothesis?
- Give an example from the real world in which you encountered the phenomenon you just explored.

### Additional questions

- How does the height of the light source off the "floor" affect the height of the shadow?
- How will the addition of another light source to the experimental set-up described above affect the nature of the shadow (address various possible locations of the light sources).
- How can you create a colored shadow?
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