# Measuring Light Pollution Worksheet Answers

1. In the list below, circle all the LEGO kit parts you need to build a light meter.

   a. ~~sound sensor~~  (b. color sensor)  (c. LEGO intelligent brick)  (d. touch sensor)  e. ~~LEGO brick~~

2. Which of the items below is/are a unit(s) to measure light intensity?

   a. ~~meter~~  (b. lux (lx))  (c. candela (cd))  d. ~~decibel~~ (dB)

3. Using your light meter, measure the light intensity in the classroom.
   Record the measurements in the table below.

| Experiment | Location | Light Intensity Level (dB) |
|---|---|---|
| E1 | All lights in the classroom turned OFF | |
| E2 | One row of lights in the classroom ON | |
| E3 | Two rows of lights in the classroom ON | |
| E4 | All rows of lights in the classroom ON | |
| E5 | Full sunlight | |

⬅ **Teacher note:** Please modify this worksheet in accordance with your classroom lighting sources (or use other lighting sources) with the idea to obtain data showing an increasing light intensity.

4. Use your collected data to plot a line graph. Use the graph paper on page 2 of this worksheet.

   Using data from the table, an increasing line is obtained. A linear shape is not required.

5. Which experiment produces the highest level of light?

   In the table above, experiment E4 (in the classroom) or E5 (outside).

6. Which experiment produces the lowest level of light?

   In the table above, experiment E1.

7. Examine the levels of light intensity obtained and describe the pattern you see in the data.

   Turning on more bulbs or fluorescent tubes increases the light intensity in the classroom.

8. Describe an example of light pollution in your neighborhood or community?

   Example answers: Sky glow, glare, light trespass (artificial lights shining beyond the area intended to be illuminated), energy waste (such as people not turning off lights when they are not needed).

9. What type of engineering technologies could be put in place to reduce light pollution?

   Better direct the light by using specific lighting fixtures for the situation (such as chandeliers, pendant lights, sconces, parking lot and street lights that direct light down and not up). Use light-emitting diode (LED) bulbs and compact fluorescent lamps (CFL) to reduce energy use.
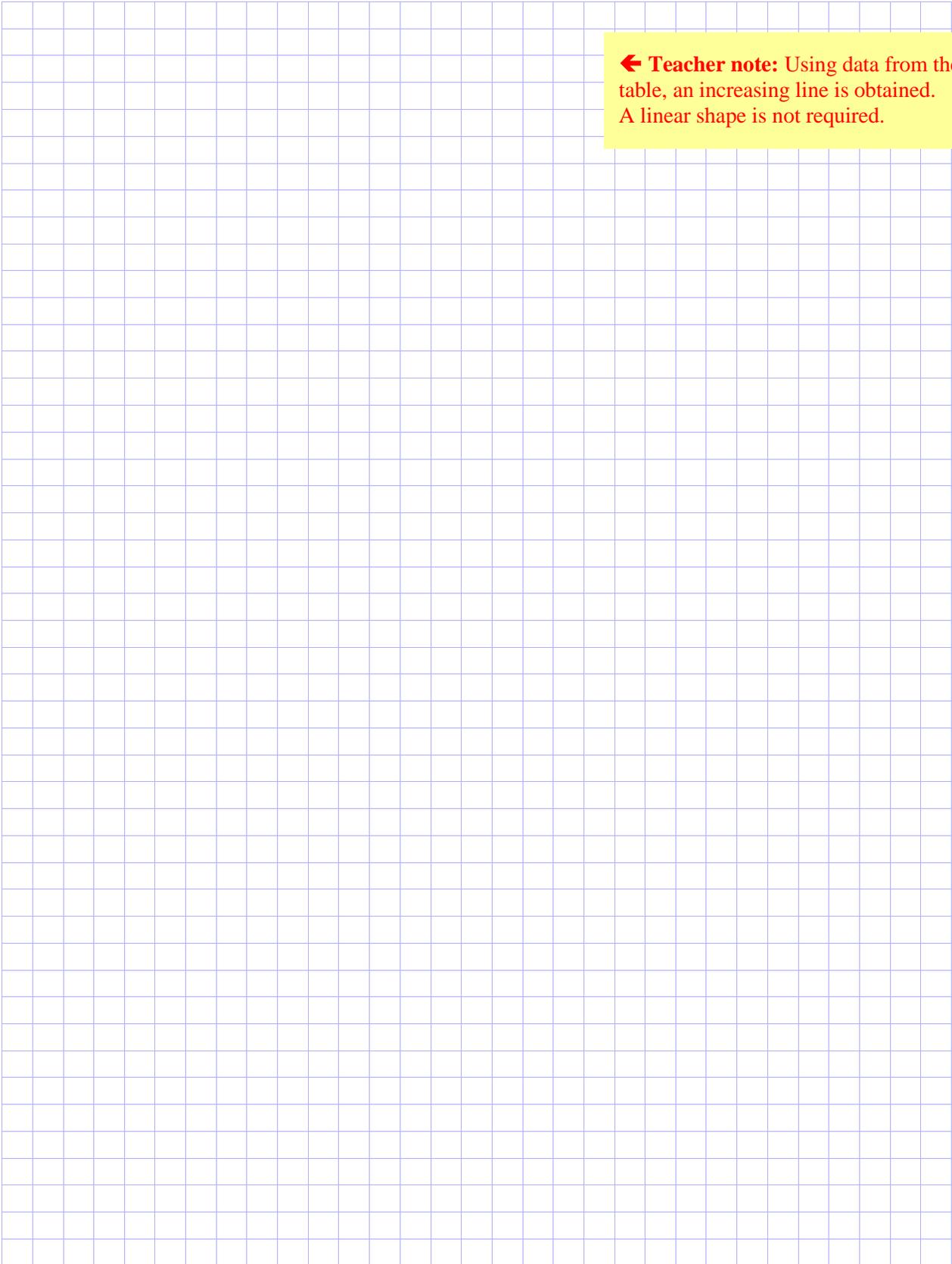
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