Measuring Noise Pollution Worksheet ANSWER KEY

1. In the list below, circle the parts you need from your LEGO Kit to build a Noise meter?

(a) A Color sensor   **(b)   A Sound Sensor   (c)   A LEGO Brick**   (d)   A motor

2. What is a unit to measure sound level?

(a) Meter   (b) Hertz (Hz)   (c) Pound (lb)   **(d) Decibel (dB)**

3. Now using your Noise Meter, record the sound level in your classroom and write the result in the table below

Experiment	Location	Noise level (dB)
E1	A silent classroom	**0 to 5 dB**
E2	Students silent and only the teacher talking	**15 to 40 dB**
E3	A group of students talking or yelling at the other side of the classroom	**15 to 30 dB**
E4	My group talking loudly or yelling	**30 to 50 dB**
E5	A noisy classroom (everybody talking or yelling)	**50 to 80 dB**

4. From the data recorded above, use a graph paper to plot a bar chart.

5. Which experiment produces the highest level of noise?

E5 (noisy classroom)

6. Which experiment produces the lowest level of noise?

E1 (silent classroom)

7. Compute the difference between the teacher's noise and the noise from experiment E3, E4, and E5 and comment about your results:

$$E3 - E2 \cong range\ 0\ to\ 5,\ \ E4 - E2 \cong range\ 10\ to\ 20\ ,\ \ E5 - E2 \cong range\ 20\ to\ 30$$

Comments: The difference between E3 and E2 is close to zero because they have the same intensity and are produced at similar distance.

The difference between E4 and E2 is significantly different because the source of noise produced by my group is close to the sound sensor and has a greater sound intensity at that distance.

The difference between E5 and E2 is very large because the sound intensity in a noisy classroom is extremely loud. This environment would make it challenging for students to learn because students might not be able to hear the teacher.

8. What is an example of noise pollution in your neighborhood/community?

Examples of noise pollution may include transportation vehicles such as airplanes, trains, cars, trucks, buses and motorcycles. Police car and fire truck sirens can contribute to noise pollution. Construction site equipment, such as pneumatic hammers, air compressors, bulldozers, loaders, dump trucks and pavement breakers, may also be given as examples. Noise pollution may also come from household appliances such as music speakers, television sets, air conditioning, a refrigerators, lawn mowers, leaf blowers.

9. What type of noise protection technologies do engineers design to put in place to protect against undesirable noise?

There are a number of noise protection technologies designed by engineers that could be put in place against undesirable noise. To protect against noise pollution, engineers design noise protection technologies such as noise-cancelling headphones, ear plugs, dampers, mufflers, silencers or barriers. They also use sound-absorbent materials in the construction of rooms or work spaces. In addition, engineers redesign current technologies such as machinery or vehicles to be quieter when operated.