**Acoustic Mirrors Analysis Worksheet Answer Key**

**Part 1: Recording Music with Audacity Software**

1. Describe your plot spectrum below:

**Example answer: The graph starts off at a high peak, then decreases, and gets lower towards the end.**

1. While the plot spectrum does not have labels, a graph should have them.
Based on the information displayed on the spectrum:
2. What should the x-axis label be? **Sound Intensity**
3. What should the y-axis label be? **Frequency**
4. The plot spectrum displays a plot of “dB vs. frequency.” What is the graph showing?

**The graph shows sound intensity in air as a function of frequency.**

1. On the plot spectrum, change the axis from linear to log. What is the effect?

**When the axis on the plot spectrum is changed from linear to log, the range of the graph increases.**

**Part 2: Recording Music with Audacity Software and the Acoustic Mirror**

1. Draw a diagram of the experimental setup.

**[Note that the above photograph does not show the microphone at the focal point.]**

1. Radius of curvature (C)
2. What is the radius of curvature of your mirror? **Example answer:** **C = 15 cm**
3. How did you determine the radius of curvature?
**We measured the distance from the vertex to the center of curvature.**
4. Determine the focal length of your mirror. Show your calculations.

**focal length = ½ radius of curvature**

**f= ½ C**

**f= (.5)\*15**

**f = 7.5 cm**

1. Sketch the plot spectrum below:
2. How does your plot spectrum compare to the graph in Part 1?

**Using the acoustic mirror, the magnitude of sound intensity increased.**

**Part 3: Adding Effects with Audacity Software**

1. Describe the effects you added to a sound file that you saved during this investigation.

**Example answers:**

* **Reduced all the background noise**
* **Increased the pitch and the frequency analysis**
* **Added the reverse and echo effects**
* **Amplified the song**
* **Added speed effect**
* **Changed the tempo**