Conceptual

You will be hooking up a speaker and making some noise.

- ☐ Read Arduino tutorials (they are similar) and Sparkfun information
  - Tutorial: Melody and Play Melody
  - Reference: Tone (this is a good resource page)
  - Sparkfun: Using a piezo buzzer
- ☐ Make a list of useful speaker commands. Write this in your Maker Journal
  - Note: make sure to write down how you include libraries of extra functions.

Basic Make

- ☐ Make your circuit - hook up the speaker to your Arduino.
  - Note: the speaker does not need external power but should be connected to a PWM pin.
- ☐ Make a program to control the speaker.
  - Note: there are a couple different (but similar) programs in the tutorials to try.

Advanced/Extended Make

- ☐ Program a song – like "*Mary had a little lamb*"
- ☐ Make a graph of the PWM value and the waveform (note) of the speaker.
- ☐ Duplicate diagrams using Fritzing

Equipment

- ☐ Computer with access to Fritzing and Arduino
- ☐ Circuit components: Arduino and misc electronic parts
- ☐ Speaker – piezoelectric buzzer

Objective

Physics Concepts

- ☐ Piezoelectric effect

Experimental analysis

- ☐ Circuit design

Technology Concepts

- ☐ Schematic Symbols
- ☐ Programming Concepts – including and using libraries