

**Security Pressure Sensor**

**9-12**

# **Duration:** 60 minutes (15 minutes review, 45-minute design and build)

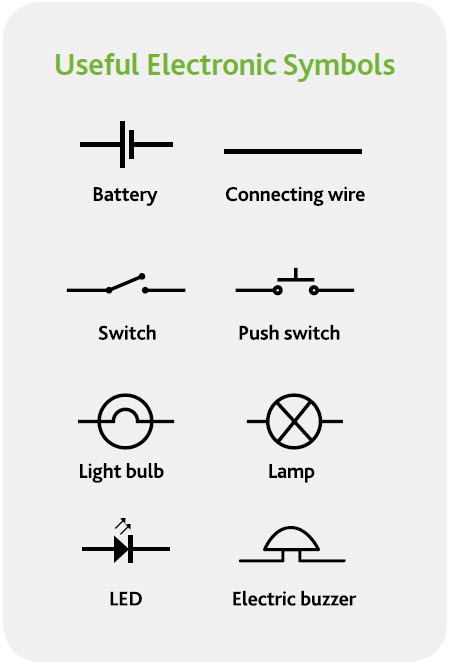
# **Objective**

Design and test pressure pad switches by building simple circuits

# **Engineering Constraints**

* You can only use the materials provided to you
* Everyone on the team needs to contribute and sign off on design
* Must follow Engineering Design Process in order

# **Engineering Design Process**

1. Define the Problem – What is the problem or challenge you are trying to solve or fix?
2. Benchmarking – What do I have to work with? What solutions have been done already? What can we do similar?
3. Specify Customer Requirements – What does my final design need to be successful?
4. Brainstorm Solutions – What are possible solutions to the problem or challenge?
5. Choose the Best Solution – Which solution is the best (think time to build, effectiveness, perimeter covered)?
6. Design a Prototype – You must design your concept before building.
7. Build a Prototype – Build your concept from you approved design.
8. Test – Did it work?
9. Redesign – What could make my design better?

# **Extension Activities**

* Take your current pressure sensor and break it down into two or more separate sensors. Wire each independently from each other.
* If you complete the above task, wire the two sensors in series so both need to be on to turn on indicator.



