

**Survival Rope**

**9-12**

# **Duration:** 30 minutes (5-minute review, 25-minute build and test)

# **Objective**

You and your team will be using one of the few resources you notice around you – plastic bags – to make a strong rope. Brainstorm a way to make the longest/strongest rope.

# **Engineering Constraints**

* You can only use the materials provided to you
* Everyone on the team needs to contribute and sign off on design
* Need to build loops on each end to hook and attach weights.
* Must be greater than 4 ft in length.
* Must be able to hold 80 lbs.
* You can test anytime during your build process multiple times.
* 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?

