

**Spaghetti Tower Challenge**

**9-12**

# **Duration:** 30 minutes (5-minute review, 20-minute design and build, 5-minute measure)

# **Objective**

To build the tallest tower possible in 18 minutes that will support the marshmallow.

# **Engineering Constraints**

* You can only use the materials provided to you
  + 20 sticks of spaghetti
  + One yard of string
  + One yard of tape
  + One marshmallow
* Each team may consist of up to 4 people

# **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?

# **Interesting Facts**

* In Tom Wujec’s TED Talk “Build a tower, build a team” he shares multiple outcomes that he learned from performing this task with more than 70 groups.
  + The AVERAGE tower from 70 groups came out to be 20 inches.
  + The WORST towers based on average height came from recent business school graduates (average at 10 inches).
  + The BEST towers based on average height came from kindergarten students (average of 26 inches).
  + Why?? Graduates tended to wait until the end of 18 minutes to add the marshmallow whereas kindergarten students tested their designs early on, averting last-second crises.
  + Groups of CEOs averages 21 inches, but when an executive administrator was added, they averaged 30 inches (they helped in facilitation).
  + When incentivized with $10,000 to the winning team, a group of 10 teams didn’t even have 1 complete structure (even a 1-inch structure would’ve won).

