**Cell Phone Tower Challenge Name:**

**The Problem:**

You are an engineer who needs to build a new cell phone tower prototype that can transfer data at 5G speeds. You and your team need to design and build a prototype of a tower that will stand at 200’ high. In order to produce an accurate replica prototype, your prototype needs to be to scale and must stand at least 25” in the air and must withstand a load of 1.5 ounces or 1 golf ball.

**Materials:**

* 20 straws
* 20 paper clips
* 10 pieces of paper
* 2’ of tape
* 1 string
* 2 cups

**Testing:**

Test your prototype cell phone tower by building your cell phone prototype. Communicate to nearby towers to see if your tower is tall enough to transmit signals at 5G speeds.

**Reflection Questions:**

* How is a string telephone similar to a modern telephone that you would use in your house or school?
* Explain in your own words how a cell phone transmits a voice from one phone to another without the use of wires?
* Does the height of the cell phone tower affect the transmission of voices for the string phones?
* What happens when we introduce additional “phone lines” into the existing towers. Does three-way calling work? Try it out and report your findings.
* What are some environmental considerations that engineers need to considering when building the actual tower structure?