

**Toilet Paper Columns**

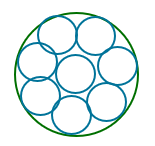
**3-5**

**Estimated Time**: 30 minutes

# **Materials (per student):**

* 3-5 Toilet Paper Rolls
* Masking/Painters Tape (shared)
* Scissors
* Plastic straws cut to height of toilet paper rolls (4 inches)
* Source of weight

# **Instructions:**

1. Start by allowing the students to add weight gradually to the top of an empty toilet paper roll to demonstrate strength of the baseline
2. Allow students to add tape to the toilet paper roll in a design that they feel will increase strength – repeat test with weights to identify differences
3. Instruct students to cut vertical slits into the top and bottom of toilet paper roll to demonstrate weakness caused by deformation of materials
4. ****Instruct students to fill the inside of a new toilet paper roll with straws and repeat test to show added strength

# **Possible Variations:**

* Cut a toilet paper roll in half to show additional strength
* Add weight to a paper towel roll to show reduced strength with taller structure

# **Science Behind the Project:**

Demonstrating the strength and weakness of materials based on supports, deformations, etc.