



### **Which Paper Column Can Hold the Most Books?**

#### **Supplies:**

- 3 Sheets of Construction Paper
- Tape
- Books

#### **Directions:**

1. Fold one sheet of paper into a cube tower (square), and tape to maintain shape
2. Fold one sheet of paper into a pyramid tower (triangle), and tape to maintain shape
3. Fold one sheet of paper into a cylinder tower(circle), and tape to maintain shape
4. Stand each shape on its end
5. Begin by placing one book on each tower, and continue until they collapse.
6. Which shape is the strongest?

#### **STE(A)M Subject(s):**

Math and Engineering

\*Leader/Parent Note: The cylinder can support the most books because its walls don't have any edges. The force of the books cannot become concentrated in a particular area. The load is distributed evenly. In other words, all parts of the cylinder are sharing the load of the books. All parts of the cylinder, therefore, contribute to its overall strength until, finally, it collapses.

#### **Related Badge(s) or Journey(s):**

(J) Investigation, Innovator

#### **Additional Resources:**

Advanced Structures: <http://www.2025labs.com/structures>

Shapes and strength: <http://www.pbs.org/wgbh/buildingbig/lab/shapes.html>

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