



## CHALLENGE

Use only paper and tape to create a structure that will hold a heavy book. It must be able to stand on its own.



GET  
YOUR  
GEAR



paper



tape



heavy books



## HINT:

Try folding or rolling the paper.  
What shapes are the strongest?



What force does the book show?  
How does gravity affect your structure?



Try making several different structures,  
even if your first one works well. Can you  
improve your design?



Look at pictures of bridges. What do you  
notice? How would you design a bridge?



Use your structure to design a skyscraper  
that can hold a heavy statue on the  
very top.



How much weight can your structure hold?  
Graph the maximum weights of each  
structure you tried.

## WHAT'S GOING ON?

Rolling the paper into tubes creates layers of paper, which add strength.

Folding the paper into tubes with shapes like squares and triangles adds even more strength. It also adds stability, so the book doesn't wobble.

Triangles are the strongest shape. Forces pushing down on the point of a triangle are distributed down the sides and to the base.