

# Techbridge Girls@Home

## Bridge Design Challenge

Techbridge Girls is committed to supporting our community by providing access to high-quality at-home STEM activities for our girls and curating resources for families and educators. The below activity was designed to empower girls to lead fearlessly by learning and teaching others while sheltering in place.

Design a bridge that can carry as much weight as possible without breaking. Then build and test your bridge design to see how much weight it can really hold!

### 1 Get your materials.

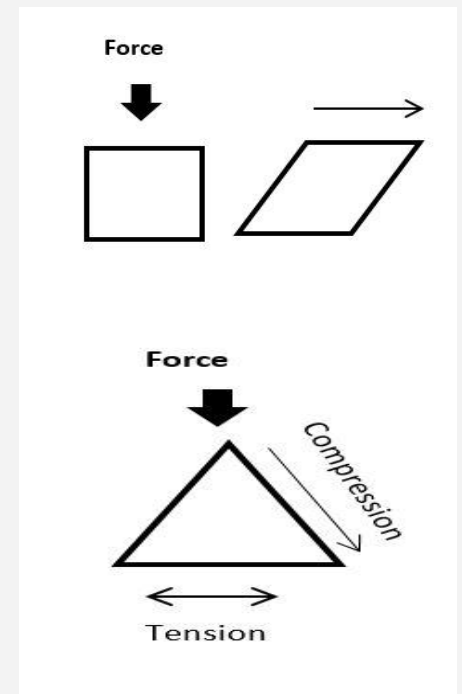
Source materials around the house such as: gumdrops/dots (or any soft candy like marshmallows) playdough or clay, toothpicks, popsicle sticks, skewers, marbles or any small item that can be used a weight (such coins, buttons, keys, or a book).

### 2 Build your design.

When building your bridge, you should think about what shapes you'll use to build the structure. The shape of a structure is very important because it determines how strong it is. Structures like bridges and buildings are all built using strong shapes.

When the **force** applied to the bridge (placing a weight on top) are **balanced** (because of the shape of the structure, and the placement and size of the force), the structure is stable and won't move. If **forces** are unbalanced, the structure will be weakened and may move or even break.

Start brainstorming and building your bridge using toothpicks and gumdrops, or with similar items you can find in your home. When you design your bridge make sure it's around 6 inches long. After, test your design by suspending the bridge between two objects. How much weight can your design hold?



**ASK:** How does the shape of the bridge affect the amount of weight it can hold? Did your bridge collapse? Did it lean to one side? How will you redesign?

### 3 Share!

With permission from your parents or guardians, please post a photo of your completed project on Facebook, Twitter, or Instagram, and tag @techbridgegirls so we can see your great work!

**CAREER CONNECTION:** Structural engineers design and build bridges, buildings, and tunnels after getting a 4-year college degree, and can earn about \$80,000 after working in the field.

We are proud to support our girls' STEM journeys by providing resources to overcome barriers and to thrive and lead in STEM.