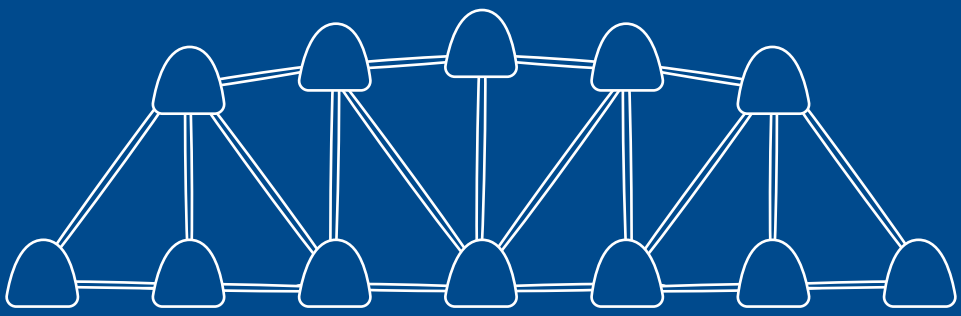
STEM



GUMDROP BRIDGE

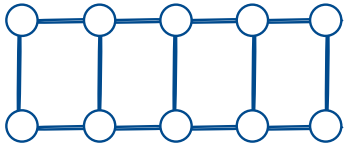
STRUCTURAL INTEGRITY STUDY

Challenge yourself by building a bridge capable of holding a textbook using only candy gumdrops and toothpicks. This activity will require you to think through the engineering aspect of load distribution while also touching on the mathematics of how different shapes affect the strength of a structure.

EMERSON™

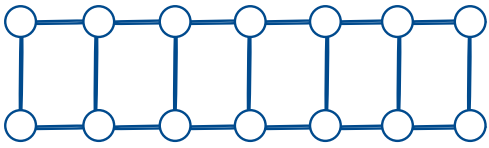
GUMDROP BRIDGE INSTRUCTIONS:

Draw a blueprint of your bridge design in the notebook provided and use it as a reference to build your bridge. Insert toothpicks into the gumdrops to create a bridge structure (see example below). Next, place bridge across support structures, such as books, chairs or boxes. Finally, test the bridge by putting items on it to see how much weight it can hold. Start with lighter items, like paper, before attempting heavier items, like books.

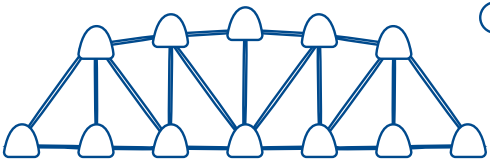


Top View

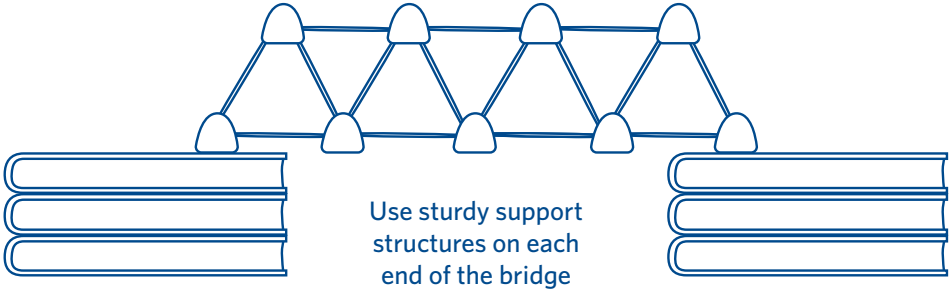
Bridge Design Example



Bottom View



Side View



TRY IT: Try different bridge designs to see which supports the most weight!

HOW IT WORKS:

The bridge (toothpicks and gumdrops) balances forces of compression and tension to channel the load onto abutments (such as books in the above example)