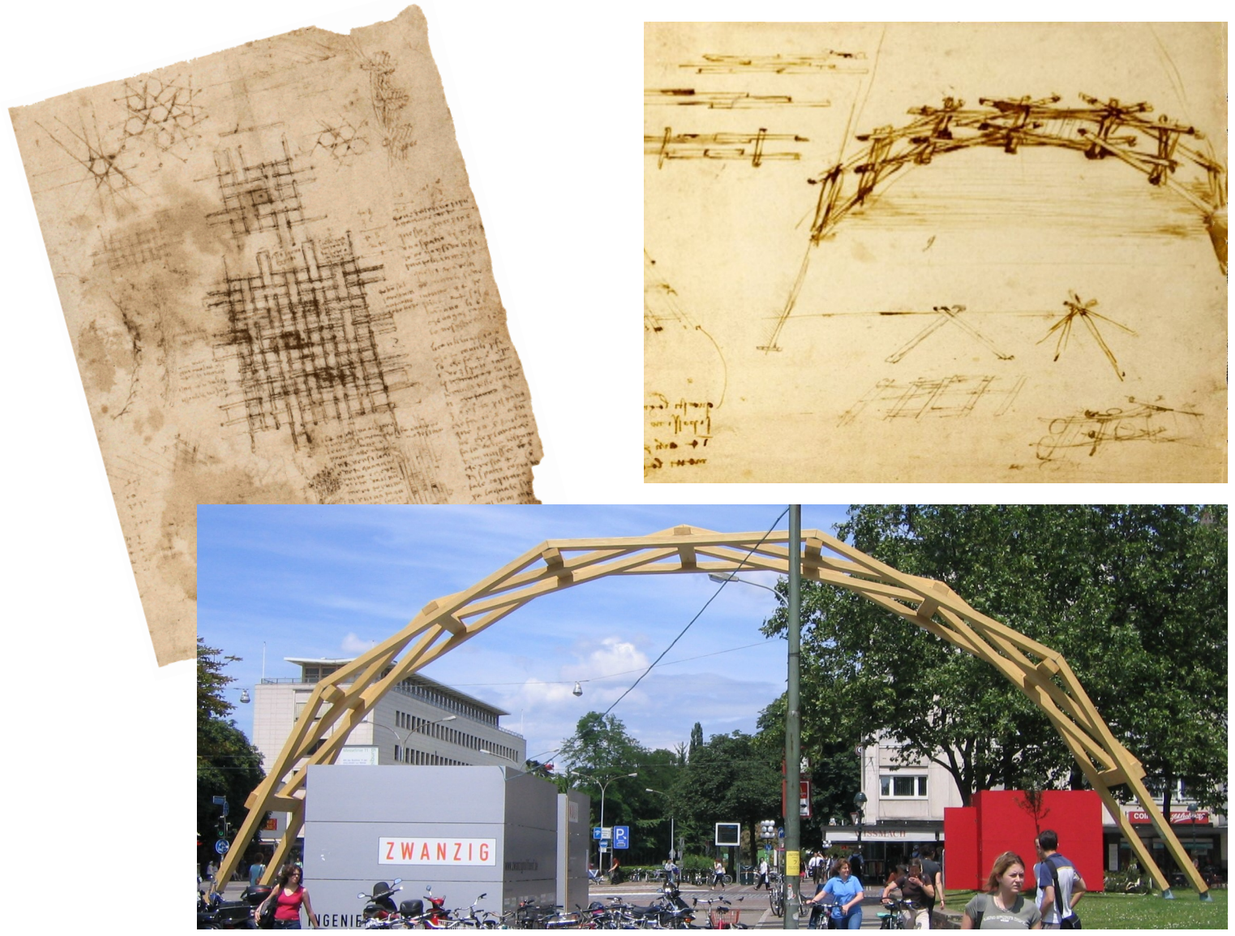
Da Vinci Bridges and Domes



Equipment

For this activity all you need are a large number of small, equally-sized rods. Matchsticks, pencils, or sections of dowel work well. To help the rods stay together, bluetack, small elastic bands, or small grooves in the rods can help.

Activity

Leonardo Da Vinci designed the two structures you see here. They do not require any sort of string or glue to hold them together, which makes them **self-supporting structures**. These are very clever designs that are simple to build and can be scaled up to large sizes. They are surprisingly strong too!

Using the rods, see if you can build these structures. While they can be built with nothing but the rods, a tiny dot of blue tack at each of the joins can help to stop the rods rolling.

The bridge is more simple to build but the dome can be expanded into a larger and more complex structures. See if you can identify the pattern, or rule, that both these structures follow.

This pattern can be used to produce many more similar structures. If you are building larger structures, the small elastic bands are useful. These can be wrapped around the joins to hold them in place.

While you are building, think about the forces exerted on the structure. The route these forces are transferred is the key to understanding how the structures are built.

If you get stuck, Cheat Sheet explains how the structures are made.

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