

## ACTIVITY

# Make a Capitol Dome

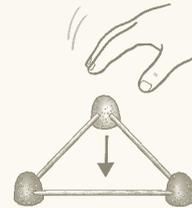
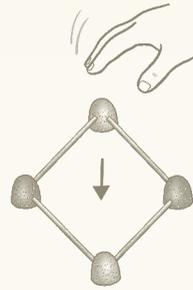
**THE DOME** we now see on the Capitol Building is not the original dome. The current dome was completed shortly after the Civil War ended in 1865. Cast iron was used in its construction because it was less expensive and weighed much less than stone. The dome is painted white to look like white marble. In this activity, you will investigate the wonder of the triangle as a structural element in building a dome. Of course, many other structures, such as bridges and sports arenas, make use of the triangle as well. Triangle construction, as you will discover, adds tremendous strength to the building being erected. That's something the engineers designing the Capitol Building Dome were well aware of.

### Materials

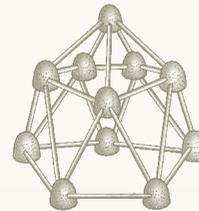
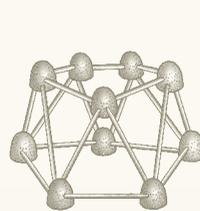
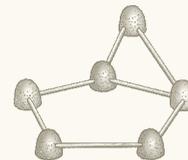
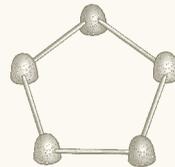
- ★ 32 toothpicks
- ★ 18 gumdrops

1. First construct a square and a triangle using gumdrops and toothpicks. You will need four gumdrops and four toothpicks to make the square. You will need three gumdrops and three toothpicks to make the triangle.

2. You have made the square and the triangle to test how much stronger a triangle is than a square. Press down on one corner of each element to see which one is more stable, less likely to twist or collapse. Note what you have observed.



3. Start your dome construction by using five gumdrops and five toothpicks to form the base. Notice that you have made a pentagon, a five-sided figure.
4. Next, use two toothpicks and one gumdrop to make your first triangle on one side of the base.
5. Repeat all the way around the base until you have five triangles.



6. Connect the five gumdrops at the top with five toothpicks, as you did in making the base. You should now have a total of 10 triangles.

7. Use toothpicks to connect the gumdrops at the tops of the triangles. Push one toothpick into each of the top gumdrops.

8. Use the last gumdrop to connect these toothpicks at the top.

9. Press down lightly, but firmly, on the top gumdrop. See how stable your dome is. Note how many triangles you have in all.

10. Notice that from the base upward, every element is a triangle.

11. Think about the triangle as a construction element. Explain in your own words why the triangle is so much stronger than a square. As you go about your day, look for examples of buildings and structures where triangle construction can be seen.