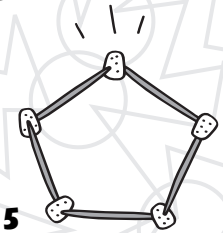
Gumdrop Dome

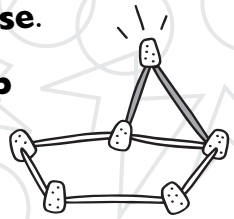
ZOOM into Engineering

What You Need

- 25 toothpicks
- 11 gumdrops

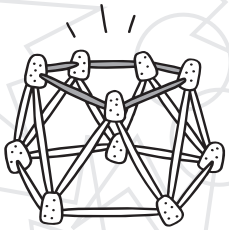


1 Use gumdrops to **connect 5 toothpicks** in a ring. This is your **base**.



2 Use **2 toothpicks** and **1 gumdrop** to make a **triangle** on one side of the base.

3 **Repeat** all the way around the base until you have **5 triangles.**



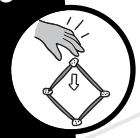
4 Use toothpicks to **connect** the gumdrops at the **tops** of the triangles. Now **how many triangles** do you have?

5 **Push** 1 toothpick into each of the **top gumdrops.**

6 Use one last gumdrop to **connect** these toothpicks at the **top.**

Engineering Scoop

Engineers often use **triangles** when they design buildings. Did you notice that your dome is made up of lots of triangles? That's because triangles are **stable shapes**. That means they **don't bend, twist, or collapse easily** when you push on them. A square is not as stable as a triangle. Test it. Make a **square** and a **triangle** out of toothpicks and gumdrops. **Press** down on **one corner** of each shape. How do the two shapes **compare**? Does one bend, twist, or collapse more easily than the other?



ZOOM on

Now it's time for you to **experiment**. What happens if you make a **base** with six sides instead of five sides? Or, what happens if you build **squares** rather than triangles on top of the base? Choose one thing to change (that's the **variable**), and **predict** what you think will happen. Then **test it** and **send** your results to ZOOM at **pbskids.org/zoom/sendit**

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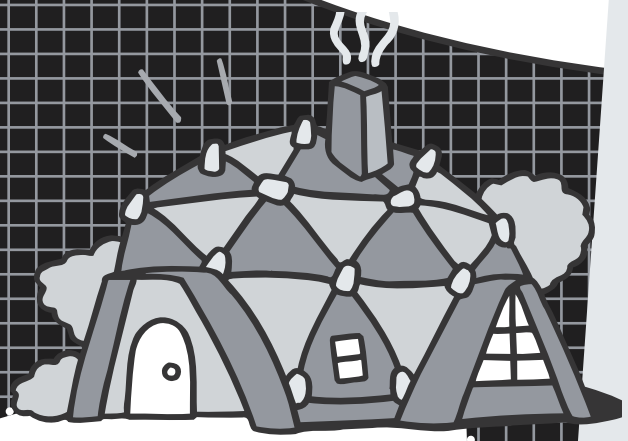
Engineer's Notebook

My Prediction



Engineers Wanted!

Domes have been around for almost 2,000 years, but there are still new ways to build them. In the 1950s, an engineer named Buckminster Fuller thought of a new dome design. He used triangular sides. This kind of dome is called a geodesic dome. A **geodesic dome** is strong because of all the triangles. It also uses fewer materials than other structures that have the same amount of space inside. Buckminster Fuller looked at a dome and saw a way to make it better. Future engineers like **you** could think of new ways to design old structures.

What Happened

Send It to ZOOM™!

Tell us about your results at

pbskids.org/zoom/sendit