

Geodesic Clubhouse



Geodesic domes are made of interlocking geometric shapes--often triangles. Because loads are spread over many triangles, these domes are especially strong. Often made of aluminum bars and plexiglass, they're also light compared to ordinary domes.

Geodesic domes were popularized by an American inventor named Buckminster Fuller (1895-1983). Look for the distinctive Bucky-ball shape in museums, greenhouses, alternative housing, and science centres. Vancouver's Science World is a 47-metre tall geodesic dome made of 766 triangles.

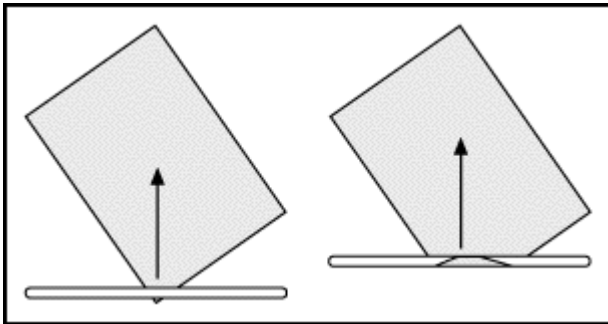
Materials

- newspaper
- doweling or broom handle
- tape
- marker pen
- stapler (and staples)
- measuring tape

Like a real engineer, you will probably need to rely on teamwork to get this project finished. Why? Because the dome tends to flop over unless it's supported, and stapling is a bit tricky unless you get help holding all the newspaper tubes together.

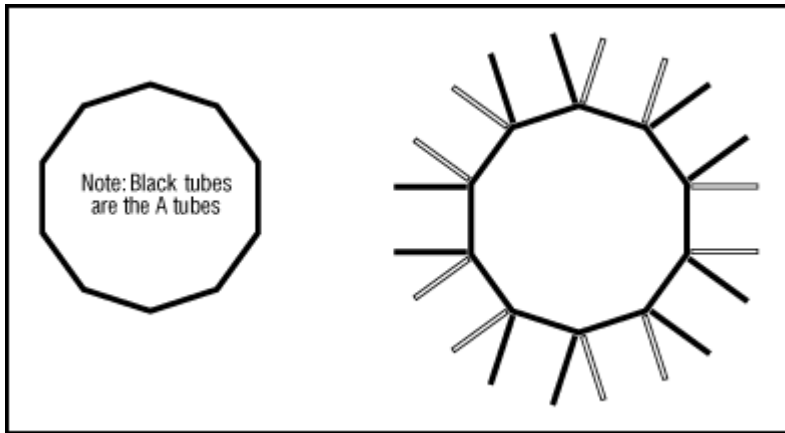
Using a piece of doweling makes stronger tubes that are harder to staple. Using a broom handle makes slightly weaker tubes that are easier to staple.

Instructions

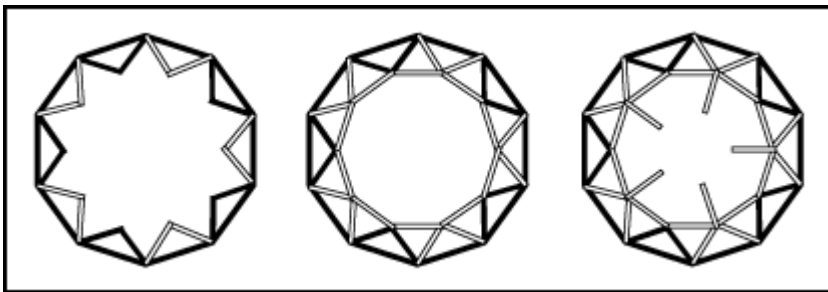


1. Open up a sheet of newspaper. Roll the newspaper around the doweling diagonally from one corner to the other.
2. Cut a piece of tape and stick it to something (preferably not your head) for a minute. Hold the newspaper tube in one hand and gently pull out the dowel with your other hand. If you rolled the newspaper really tightly, you may need to wiggle and twist the dowel a bit. Use the piece of tape to keep the newspaper tube together.

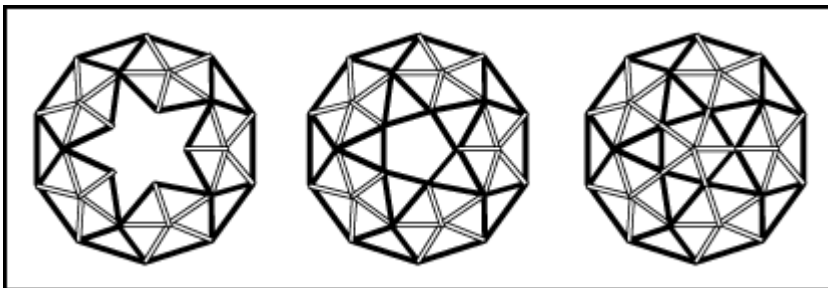
3. Cut the tube to length. [Note: The ends of the tube are not very stiff. To make a stronger tube, make the tube the correct length by cutting some off both ends.] You need a total of 35 newspaper tubes measuring 60 cm and 30 tubes measuring 56 cm. So get busy rolling, measuring, and cutting. Keep the two lengths separated.
4. Use the marker pen to put a mark on the longer newspaper tubes. Now you'll be able to tell the two lengths apart easily. From now on, we will call the marked tubes As, the unmarked tubes Bs.



5. Arrange 10 As in a circle.
6. Overlap the ends of two tubes by 2 cm and staple together. Repeat this to form the base of the dome.
7. Lay alternating pairs of As and Bs radiating out from the central circle.



8. Pick up two of the As and form a triangle with them and one of the As from the circle. Staple the joints firmly.
9. Do the same thing with the rest of the tube pairs. You should end up with a circle of triangles poking into the air. Tall triangles should alternate with short triangles.
10. Connect the triangles by stapling a row of Bs across the top.
11. Every point where four Bs come together, staple on another B pointing straight up.



12. Brace the Bs by using two As, one attached to each adjacent joint.
13. Connect the tubes by stapling a row of As across the top.
14. Finish the dome by adding the last five Bs. These tubes come from the five joints and meet in the middle.