

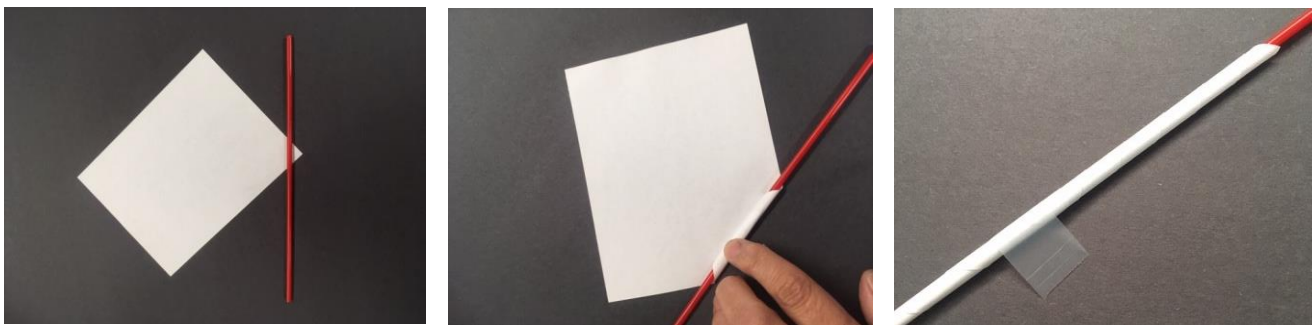


Geodesic Dome

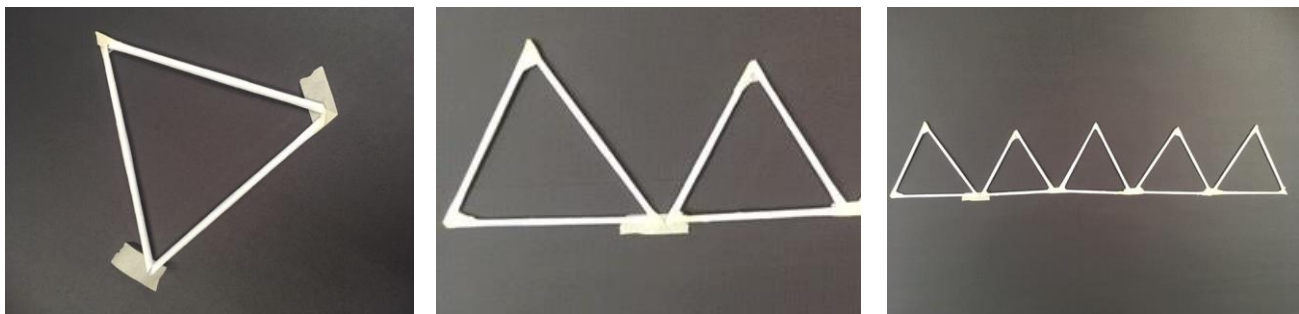
Geodesic domes are created from a combination of triangles, hexagons, and pentagons. When 6 equilateral triangles come together at a single point, they form a 2-dimensional hexagon. The removal of one side of this hexagon causes the shape to warp and become 3-dimensional. This “geodesic dome” is extremely useful when designing structures. Can you think of any famous structures that are geodesic domes? Look at a photo of one and see if you can find the pentagons!

You can make a simple geodesic dome using paper straws and some masking tape. Adding 5 more straws turns the dome into a sphere. We recommend you re-use some of the paper in your recycle bin to make the straws. A sphere about the size of a basketball can be made using 8.5”x11” paper cut into quarters (5.5”x4.25”). You will need 30 of these rectangles for a sphere or 25 for a dome. You will also need clear tape, masking tape and a thin stirring straw or wooden skewer. (If using larger paper, you will need a larger dowel to create your straws.)

STEP 1: Starting at one corner of the paper, roll it tightly around the stirrer (or skewer), forming a tube. Tape the last corner down using a small piece of clear tape. Make 30 of these tubes (straws).



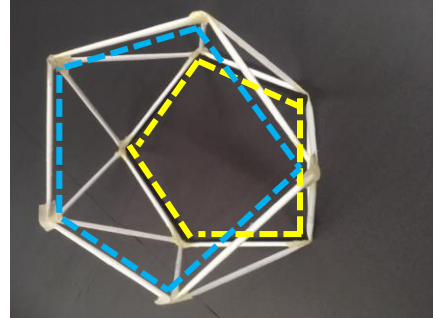
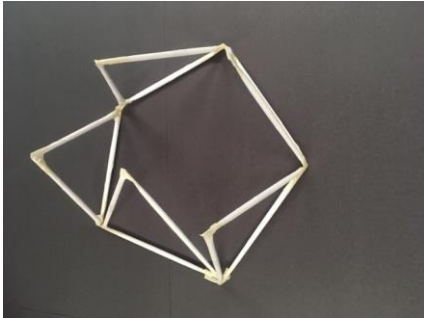
STEP 2: Using 15 of the straws, create 5 equilateral triangles by taping the corners together with masking tape. (We recommend masking tape because it is flexible and easy to tear, but you can experiment with other types of tape.) Attach these triangles together at the bottom, forming a row.



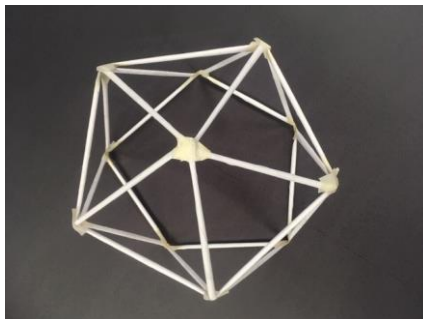


WHERE THE MOST AMAZING THINGS ON EARTH LEAVE EARTH. LOOK UP.

STEP 3: Time to get 3-dimensional! Stand the row up on the edge that joins them, and wrap them into a pentagon shape – join the first triangle to the last triangle with a piece of masking tape. It should now look like a crown. Add 5 more straws to the top of the crown to join the loose points together. You will see a pentagon at the top and bottom.



STEP 4: Create a “starfish” by taping 5 straws together at a single point. Repeat. You now have two starfish shapes. Tape one of them to the top of the pentagon by joining one leg to each point of the crown. You now have a geodesic dome! Turn it into a sphere by taping the second starfish to the bottom of the dome.



Congratulations! You have made a geodesic sphere. You can turn it into a solid (called an “icosahedron”) by gluing colored paper triangles over each of the 20 sides, or you can leave it open and play catch by tossing and catching it with a dowel. (If you do this, make sure you have parental permission and wear the proper safety equipment.)

What would happen if you used more triangles? Bigger or smaller triangles? What if you joined them together in different patterns? Try different things and see what shapes you can create – maybe you’ll even build yourself a habitat!