

Fire-EdUp Prototype - Geodesic Dome



Build a Cardboard Geodesic Dome



Step 1: Choose Dome Size

There are two main decisions you need to make about your dome:

(1) What 'level' of dome complexity and (2) how big you want it.

(1) The idea behind a geodesic dome is to take a perfect (half) sphere and tessellate, or give 3at faces to it. The more faces, the more it smooth it is like the sphere. There are many levels of tessellation, but for the sake of my sanity, I chose "2V" (as defined by [Desert Domes](#) website), which has 40 faces. If you want to choose higher levels, be my guest, you can see the details in link.

(2) Now, you need to decide how big you want your dome to be. This will be entirely up to you, based on the amount of cardboard you have and what you intend to use your dome for. Here are some handy dome dimension calculators for a "2V" dome, which has 10 AAA triangles and 30 ABB triangles:

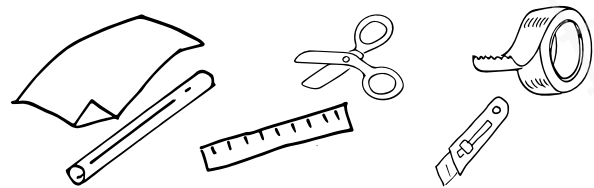
[Calculate dimensions based on dome radius](#)

[Calculate dimensions based on strut/triangle](#)

It is recommend that you use the radius method to get a rough triangle size, then use the triangle size calculator if you want to use rounder numbers.

Materials & Equipment

- Cardboard
- A few sheets of paper
- Stanley knife or box cutter Pencil
- Fine-tip ball-point pen
- Rule
- Stapler/staples or brads



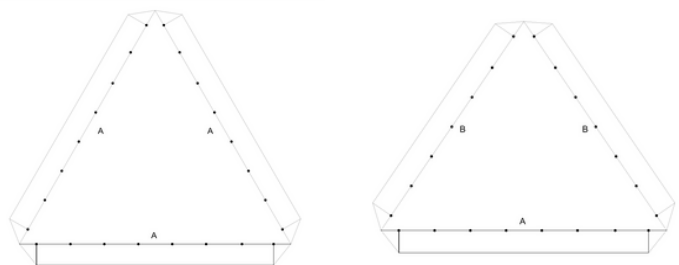
Step 2: Create Triangle Templates

A "2V" dome has two types of triangles: AAA and ABB, where A and B represent different lengths. To cut these out of cardboard, you will need to create templates out of paper.

If you want to make your own templates, find the details at <https://www.instructables.com/Cardboard-Geodesic-Dome/>

If you want to make templates the same size as in the picture above, use the PDF files below for the AAA and ABB triangles. When you print them, be sure your printer options are set to "Actual Size" and not "Scale to Fit Page".

[AAA triangle Template](#) [ABB triangle Template](#)



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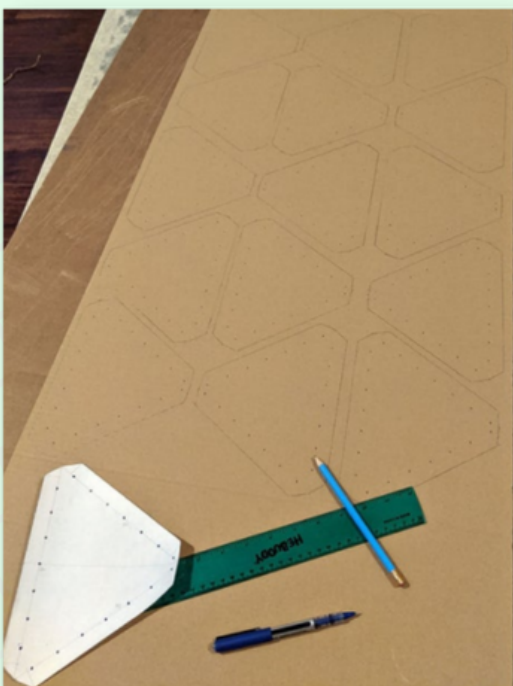
Step 3: Trace the Triangles

Use your templates to trace the necessary triangles onto your cardboard. Some things to note:

- Put the glossy side of the cardboard down, trace on the dull side.
- Alternate your triangles up/down to save space

The best way to trace the triangles was to:

1. Firmly hold the paper down the whole time to avoid slipping.
2. Draw a dot at each corner (helps to realign triangle if it slips).
3. Manually trace the angled corner sections with pencil.
4. Use the ruler to help trace the long edges (dull pencil helps).
5. Use the ball-point pen or other sharp object to poke holes into the cardboard (through the dots in the template) along the fold edge.



Step 4: Cut Out the Triangles

This is the most effective way to cut out the triangles:

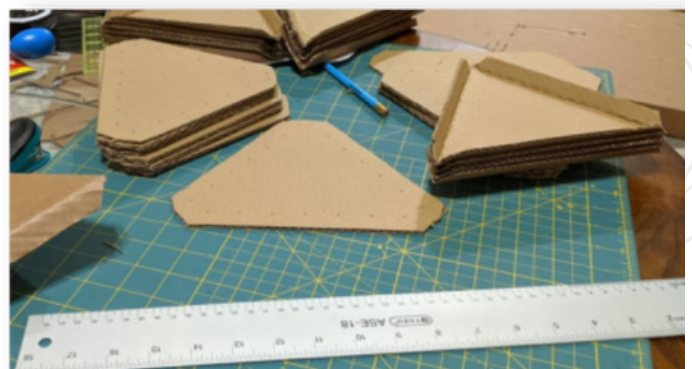
- Don't use scissors, it will bend the cardboard too much.
- Use a Stanley knife or box cutter to score/cut the top layer of cardboard. Lift the cardboard up and push the knife all the way through to cut the other layer(s)

Safety First: Get a parent or teacher to assist in this step



STEP 5: Fold the Flaps

Use a hard rule to fold each flap up along the perforated line.



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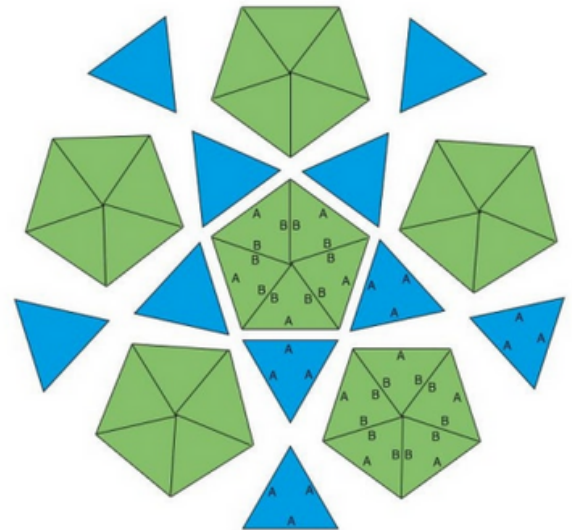
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Step 6: Assemble the Dome

Assemble the dome according the diagram, keeping the seams on the inside.

Use staples, 3 in each edge, but it is difficult to get the staples through. You may need to use a larger stapler for some edges.

You could use brads to similar effect, or come up with your own solution. If you want to leave a door, leave of one of the lower AAA triangles.



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Activity:

Try building different size domes and connecting them together to make your very own bushfire shelter.

Bushfire Projects from Instructables:

Check out these innovative bushfire related prototypes available from www.instructables.com



1. [Portable Bush Fire Fighting System](#)
2. [Bushfire Preparation - Simple Gutter Filler](#)
3. [Bushfire Wildlife Water Station](#)

