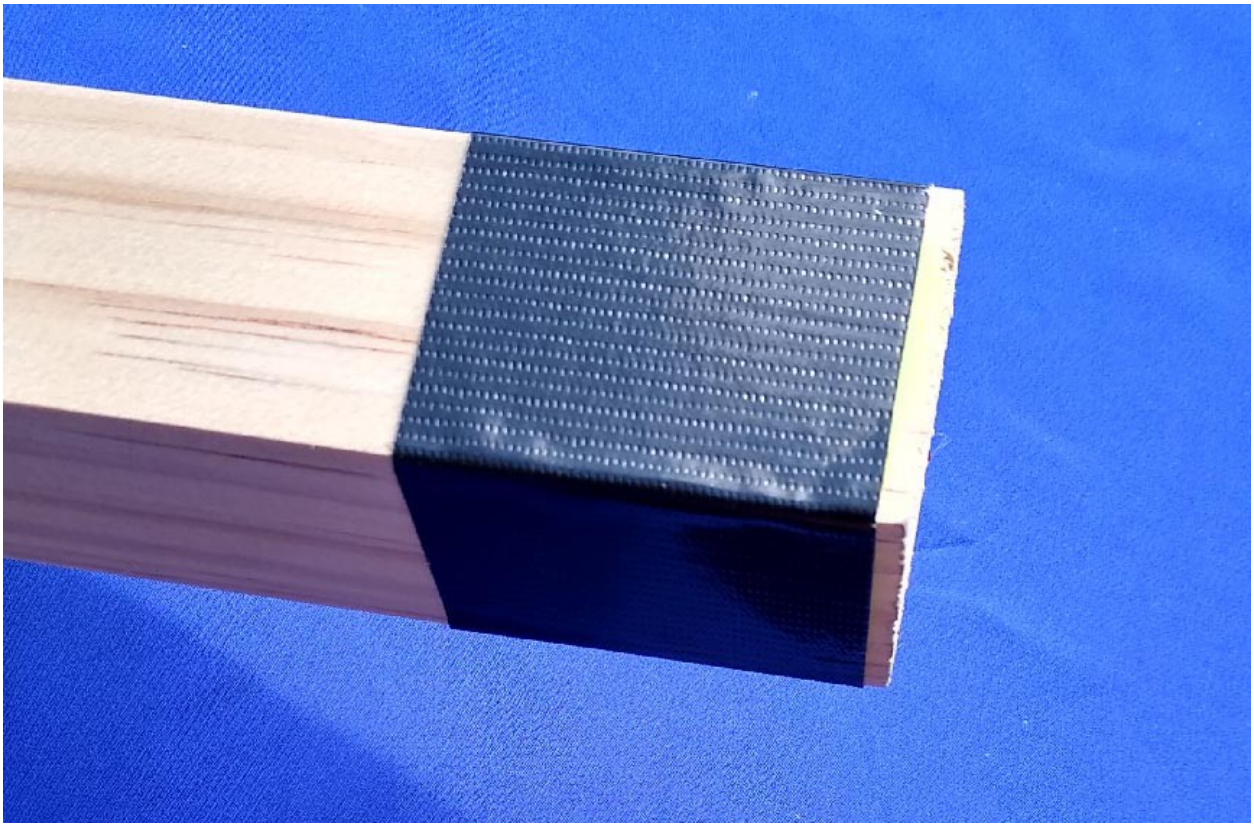
Assembly Instructions for the 2x2 Equilateral Apex Connector

Please note: This connector piece is made from 100% all-natural plant-based PLA plastic. While it can handle being outside in the weather just fine, it could potentially warp in extremely hot weather if left out in the direct sun for prolonged periods of time. Partial shade should be fine.

You will need four 2x2s of any length you desire, as long as they are all the same. Try to get them as straight as possible by looking down their lengths or by placing them on a flat floor. 2x2s are actually 1.5” x 1.5” in thickness after milling and drying. If you are on the metric system, they should be about 38mm x 38mm. Ask at your lumber store what their true size is, because just like in the United States, it might be different from what they are labeled as.

After you have your 2x2s and cut to the right length (if needed), if you want to quickly set up your pyramid, just make sure they insert into the holes with a little bit of friction. If they are loose, they probably won’t be at the right angles. You can stiffen them up by adding one or more layers of duct tape.

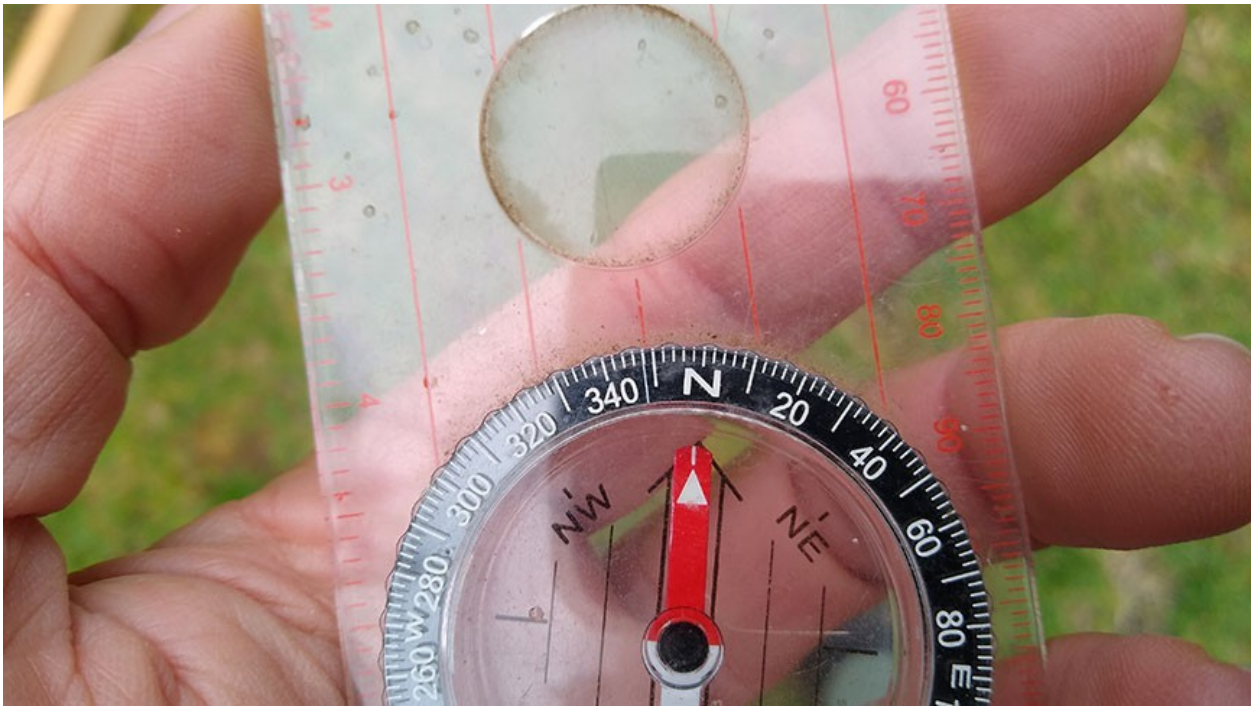


Then you can go to the > on page 7. But if you want your pyramid to be as effective as possible, then you will want to make sure it is level, square, and aligned to either true or magnetic north. The best way to align it is to

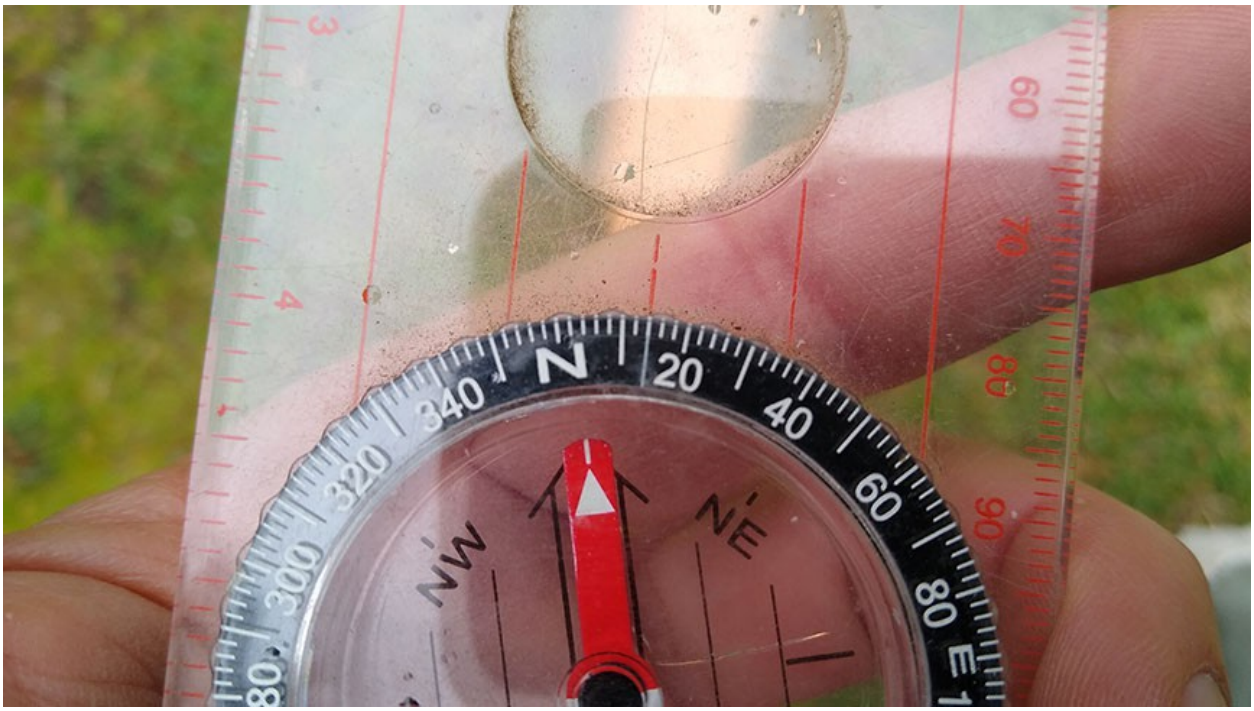
use a 2x4 or a similar piece of wood cut (or marked) to the width of your pyramid, which will be 2+11/16” (68mm) more than the length of your 2x2s. This is to the outside edges of the 2x2s. So if you are using 8-foot (96”) 2x2s, mark or cut your 2x4 to 98+11/16” long. Keep in mind that 2x2s are often a little longer than 8 feet by as much as 1/2 inch. In which case, add that same amount (1/2” in this example) to the width of your pyramid. If some are longer and some are shorter, then it is best to trim them all to the same length, if possible.

If you want to align the pyramid to magnetic north, set the bezel ring of the compass to 0°. You can see the thin white line going through the “N” on my compass in the picture below:

If you want to align it to true north, go to www.magnetic-declination.com to find your declination. If it is, for example, +12°E, then rotate the bezel 12° *to the right, or clockwise.* In the picture on the next page, you can see that after rotating the bezel to the right, the little white line of my compass is 12° *to the left* of the N, at 348°. (The bezel is in 2° increments, so six ticks to the left of “N”.)



As another example, if it is -14°W, then rotate the bezel 14° *to the left, or counterclockwise:*

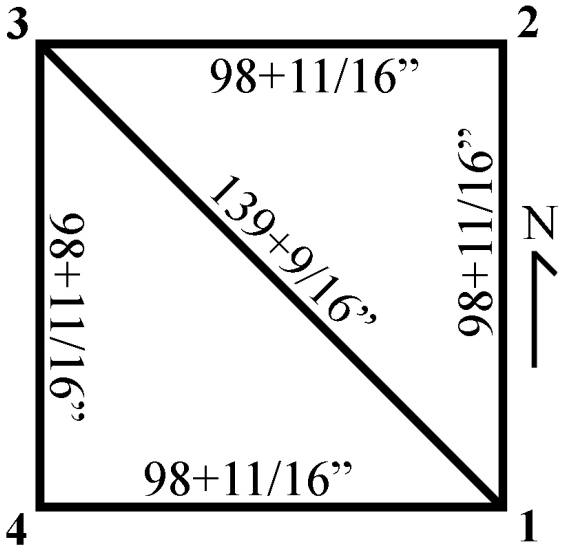


Next, pushing the baseplate of the compass against against your 2x4, align it so that the red magnetic needle matches the arrow on the baseplate. Make sure there is no metal within 6 feet of the compass, including phones, watches, jewelry, glasses, keys, etc. In the example on the next page, the compass is set to -14°W:

For more specific instructions on how to align your pyramid, go to www.PrecisionPyramids.com and click the “Alignment” link at the top. Also, here is a link to a decent, inexpensive compass if you should need one: https://amzn.to/3E6qxc6

With your 2x4 aligned to true or magnetic north, you now have the location for the first two corners of your pyramid. If it is inside, mark them with masking tape. If it is outside, use nails (which you might find are better pushed all of the way into the ground so as to not get in the way of the pieces while setting up your pyramid):

After your first two corners are marked, to find Corner #3, you will need to measure off of Corner #1 the diagonal length with a tape measure, which is 1.414 times the width of your pyramid. If you are using 8-foot 2x2s, that would be 139+9/16” (3545mm). Then match it up with the side length (98+11/16” or 2507mm for 8-foot 2x2s) off of Corner #2 using your 2x4 or a second tape measure.

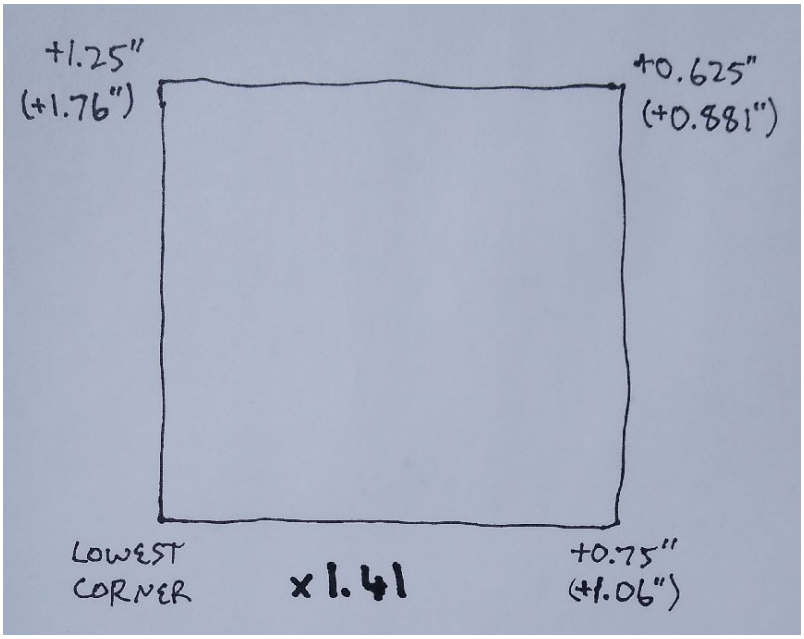


For Corner #4, measure your pyramid’s width (98+11/16” for 8-foot 2x2s) off of the two nearest corners (#1 and #3). Then measure the opposite diagonal to see how close it is to the first diagonal. If it is within 1/4” (6mm), that is well done.

For those who are setting up their pyramid inside on a floor that could get scratched, consider placing a little bit of padding at the four corners (like cardboard, cloth, etc.), shaving or sanding the bottom corners of each 2x2, or if you have a miter saw, cutting the bottom corner so it will sit flatly on the floor. 2x2s are almost never straight, and when you set up your pyramid, you will want each 2x2 oriented so that any bow will be going up in the middle. That way, gravity will help to counteract it. You will want to shave or sand off the same amount for each 2x2, and on the corner that will make the 2x2 bow up in the middle once it is set up. If you want to use a miter saw to make it sit flat on the floor, set the blade so the miter is approximately 35.26° off of zero and the tilt is 30° off of zero. I realize some miter saws tilt only to one side. It should work on either side—just make sure you cut the right corner off to accommodate any bow and that you cut the same amount off of each 2x2.

For those who are setting up their pyramid outside, it should be on as level of an area as possible. If you want to make sure it is completely level, place a level on top of your 2x4, and measure how much higher the other three corners are from the *lowest* corner:

Then draw a diagram to show how much higher each of these three corners are. Because the 2x2s will be at an angle, multiply each length on your diagram by 1.41. So if one corner was 0.75" higher than the lowest corner, then the new number would be 1.05" (about 1+1/16"):



With these new numbers, mark a little line with a Sharpie on the bottom ends on three of the 2x2s the appropriate distances and place them near the nails for each of these three corners. Be sure to mark them on the *inside* face of the 2x2 after figuring out which way each 2x2 should be oriented so they will each bow up in the middle (if there is any) once set up.

Next, dig three tiny holes with a sharp object like a screwdriver and insert each 2x2 into the holes at an angle as you dig them to let you know when they are deep enough. When you set up your pyramid, you will be inserting the bottom ends of the 2x2s into the tiny holes so that each line is at the level of the ground on the *inside* of the pyramid:

>Next, insert two of your 2x2s into the apex connector piece, with the bottom ends in line with two of your corners and any bow is up in the middle. Also, if the 2x2s are loose in the holes, add a layer or two of tape to tighten them up:

In the next step, you will raise up the apex and insert the remaining two 2x2s. You should ideally have an assistant to hold the apex up in the air as you insert the 2x2s at the right angle. If you don’t have an assistant, it can still be done, but after raising up the apex piece and inserting the third 2x2, you will need to have the fourth 2x2 leaning against your shoulder. Then immediately insert the fourth 2x2. As you insert each 2x2, whether with or without an assistant, make sure the bottom ends match up with each remaining corner; otherwise, the 2x2s won't want to go into the holes. Never try to force the 2x2s in; adjust the angle instead.

After all four 2x2s are in, check to make sure the four bottom ends are at the right locations and that all four 2x2s are fully inserted into the apex piece. If it is outside, remove the four nails, as the metal could interfere with the energy. You can replace each nail with a toothpick or part of a wooden skewer so you will know if the pyramid gets knocked out of position.

May you have magical adventures. If you should have any experiences or experiments you would like to share, please join our community forum at www.PrecisionPyramids.com/forum

And please be sure to recycle any packaging. If it came in plastic bubble wrap, including the envelope, they can be recycled with plastic bags at local grocery stores like Walmart and Safeway.