Inflatable Planetarium Building Instructions

By Adam Thomas Goss

FORMULAS NEEDED FOR CALCULATING DOME DIMENSIONS

$A = \pi r^2$

$y = \sqrt{r^2 - x^2}$

$$\int_{x1}^{x2} \sqrt{r - x^2}dx \qquad ... = ... \qquad y = \frac{1}{2}\sqrt{r - x^2} * x + \frac{r}{2}sin^{-1}\left(\frac{x}{\sqrt{r}}\right) \Bigg|_{x1}^{x2}$$

MATERIALS NEEDED FOR BUILDING THE PLANETARIUM

- White Tablecloth Plastic
- White Tape (Masking Works Well)
- Scissors/ Razor Knife
- Tape Measure
- Calculator
- Pencil/ Paper
- Marker

BUILDING INSTRUCTIONS

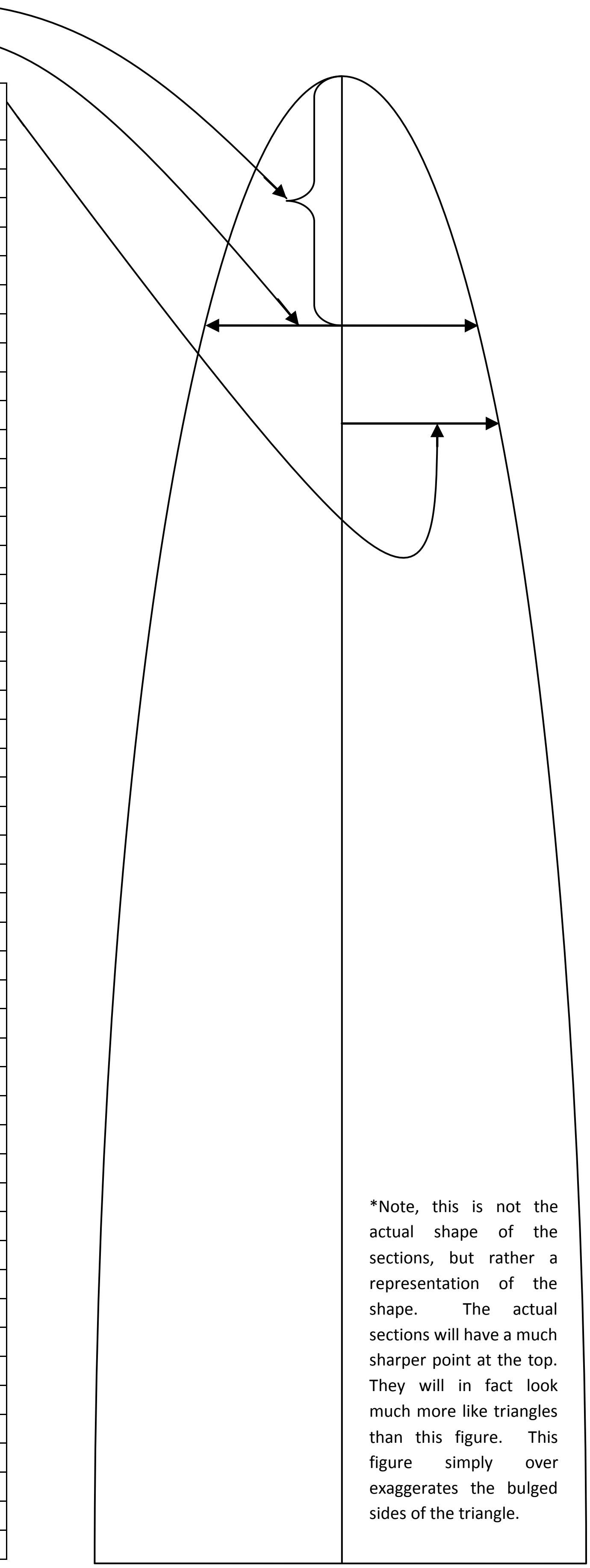
The instructions for this dome are modeled for a 5 meter diameter fulldome. For instructions on calculating dimensions for a different dome, contact Adam Goss at adamthomasgoss@gmail.com.

Most tablecloth plastics come in 40 inch rolls, several hundred feet long. Domes based on this plan will start with base lengths of 1 meter (39.37 inches) or less. This will leave a half an inch ore more of extra room on the sides of the base. The planetarium will be constructed from many long bowing triangle sections, connected along the bottom and sides with the points meeting at the top of the dome. On the next page is a plan for the patter used to create a 5 meter diameter fulldome. **Sixteen triangles** will be needed to make a 5 meter diameter dome.

After cutting out the 16 sections required for a 5 Meter dome, carefully tape them together with white masking tape or your choice of white plastic tape.

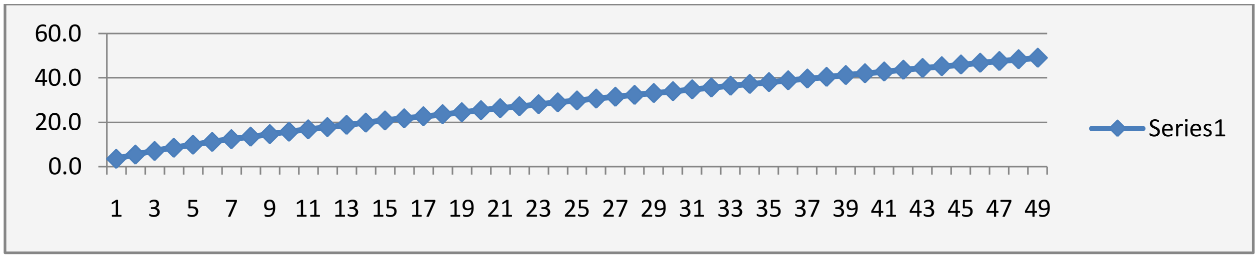
To inflate the dome, a house fan (not even a box fan) will actually provide adequate pressure to inflate the planetarium. Using plastic from the roll, a duct can be created to match the dimensions of your fan. This duct can be tucked under the base of the planetarium and taped to the floor. The planetarium can also be secured to the floor with tape. To enter/exit the fulldome, untape a few sections from the floor and slide under.

Distance from Tip of Triangle	Width at Section	Length from Center to Edge
10	6.9	3.5
20	10.7	5.4
30	13.9	7.0
40	16.9	8.4
50	19.6	9.8
60	22.1	11.1
70	24.6	12.3
80	26.9	13.4
90	29.1	14.6
100	31.3	15.6
110	33.4	16.7
120	35.5	17.7
130	37.5	18.8
140	39.5	19.7
150	41.4	20.7
160	43.4	21.7
170	45.2	22.6
180	47.1	23.5
190	48.9	24.4
200	50.7	25.4
210	52.5	26.2
220	54.3	27.1
230	56.1	28.0
240	57.8	28.9
250	59.5	29.7
260	61.2	30.6
270	62.8	31.4
280	64.5	32.3
290	66.2	33.1
300	67.8	33.9
310	69.5	34.7
320	71.1	35.6
330	72.8	36.4
340	74.4	37.2
350	76.0	38.0
360	77.6	38.8
370	79.2	39.6
380	80.8	40.4
390	82.4	41.2
400	84.0	42.0
410	85.6	42.8
420	87.2	43.6
430	88.7	44.4
440	90.3	45.2
450	91.9	45.9
460	93.5	46.7
470	95.0	47.5
480	96.6	48.3
490	98.0	49.0



* All units are in **CENTIMETERS**

* For any questions regarding this procedure, contact Adam Goss at adamthomasgoss@gmail.com



The y-axis on this graph is scaled to 0.50 = 1 meter

The x-axis on this graph is scaled to 10.0 = 1 meter

The graph is an accurate 1x:1y representation of the cutout shape. (Note the graph is only showing half of the figure)

This picture is of a Starlab™ Planetarium. You can see the 'triangular' sections clearly in this photograph. If the planetarium pieces are constructed with care and taped nicely, they should produce a planetarium even smoother than this production model.