

## CA1 4.4: A Small 1-F Dome Activity



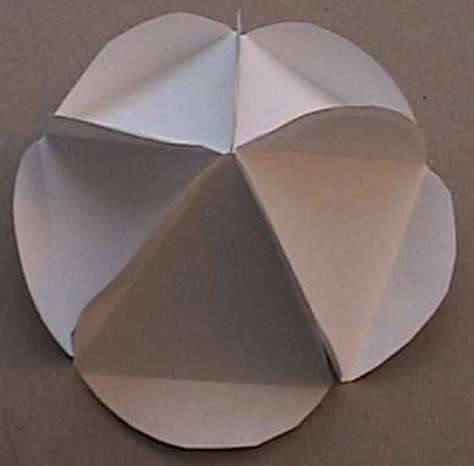
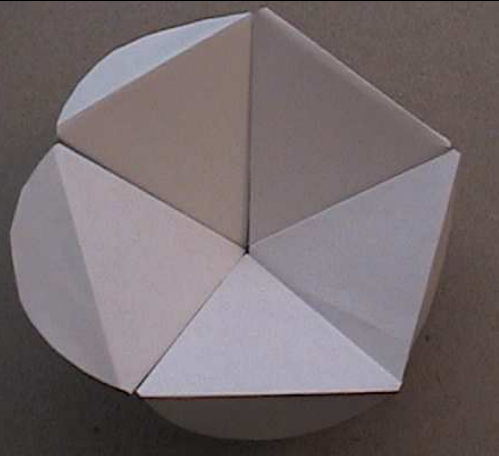

**Purpose:** Build a simple desktop dome or sphere using circles formed into triangles.

**Materials:** compass, scissors, glue, thick paper, ruler, pencil or marker, glue

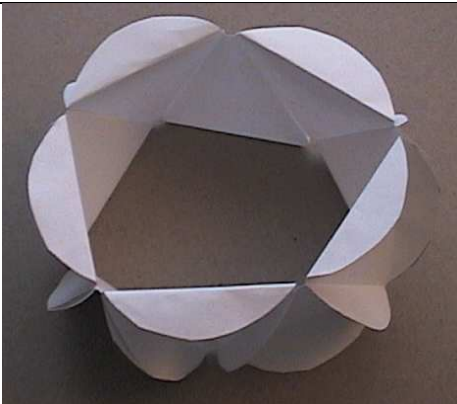
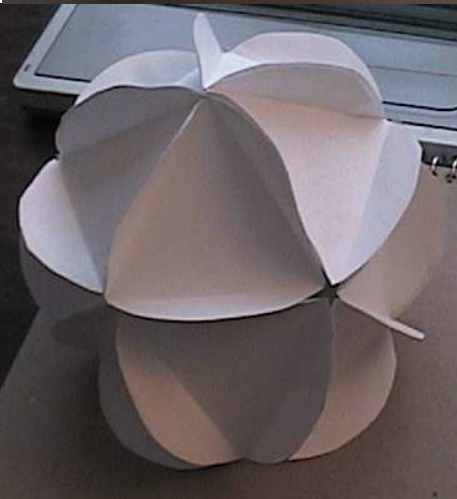
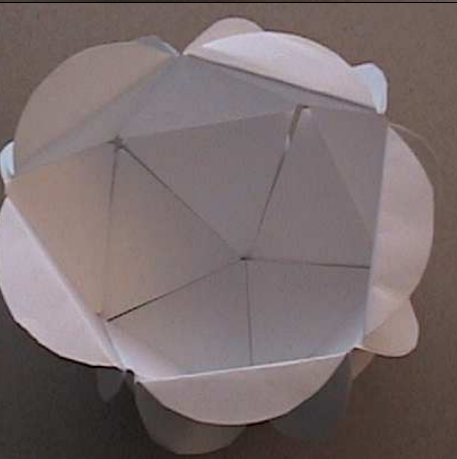
In technical terms, this is a one-frequency geodesic dome, or a dodecahedron (if fully assembled). One-frequency (1-f) refers to the fact only one type of triangle is needed.

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| <p>1. Draw 15 identical circles. You can make the circles out of paper, construction paper, or cardboard. You can draw the circles by using a compass, or tracing a can, or whatever method suits you. Cut each out carefully. If you want to make a dodecahedron make 20 circles.</p> |  |
| <p>2. Fold each circle into the shape of an equilateral triangle as shown in Figure 2. Fold by trial and error to make an equilateral triangle that appears to be the same length on all three sides. It doesn't have to be perfect.</p>   |  |
| <p>3. Arrange five triangles into a pattern as shown below.</p>  |  |

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| <p>4. Unfold the adjacent flaps and glue them together. When the glue is dry enough to take the stress, glue the final two flaps together by lifting the center of the construction together to form a little cap. Then the two remaining flaps can be brought together to be permanently attached.</p> <p>This is what the finished cap should look like.</p> |    |
| <p>5. If you want a dodecahedron (complete "sphere") make another cap with five more triangles.</p>  |   |
| <p>6. Arrange the remaining 10 triangles into an alternating pattern like this, gluing adjacent flaps.</p>   |  |

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| <p>7. Form this strip of 10 triangles into a ring, with flaps out to match the caps you made earlier.</p>   |    |
| <p>8. You will notice that on the top of the ring has 5 flaps, and so does the bottom of the cap. Match them up and glue them together and you have a little 1-f planetarium dome model made of one type of triangle!</p>   |   |
| <p>9. Turn over the dome to see the inside surface.</p>   |  |
| <p>If you want a dodecahedron, attach the second cap to the bottom to close the interior. (Don't do this if you are doing CA1 4.5 Lines in the Sky.) Design adapted from a diagram at <a href="http://www.desertdomes.com">www.desertdomes.com</a>. Used with permission.</p> |  |