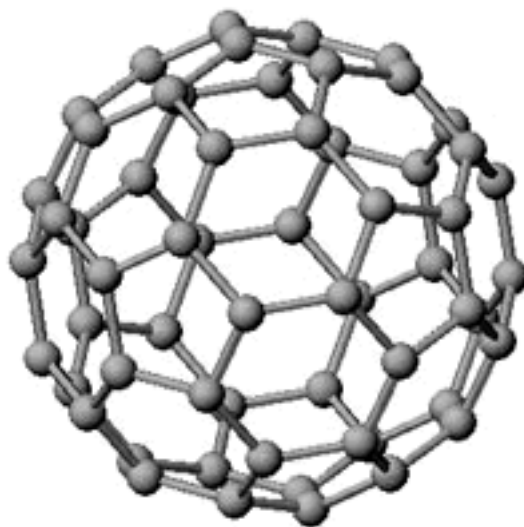




## Build a Buckyball

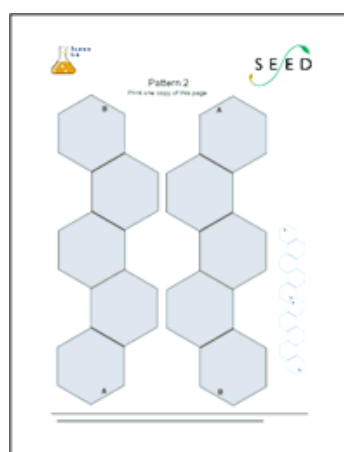
The Discovery of Fullerenes describes a range of newly found forms of carbon including  $C_{60}$ , a roundish molecule made of 60 carbon atoms. It was named a Fullerene or Buckyball, after Buckminster Fuller, who invented the geodesic dome, which has a similar structure.

The atoms of a  $C_{60}$  molecule are arranged in a shape that is the same as a football, or American soccer ball. The formal name for this shape is truncated icosahedron. It has 32 faces, of which 20 are regular hexagons and 12 are regular pentagons. These faces come together at 60 points, or vertices. In a Fullerene, there is a carbon atom at each of these vertices. The truncated icosahedron is one of 13 Archimedean solids. You can make a paper model of a truncated icosahedron. It will consist of 20 paper hexagons joined so as to leave 12 pentagon shaped spaces.



### You will need:

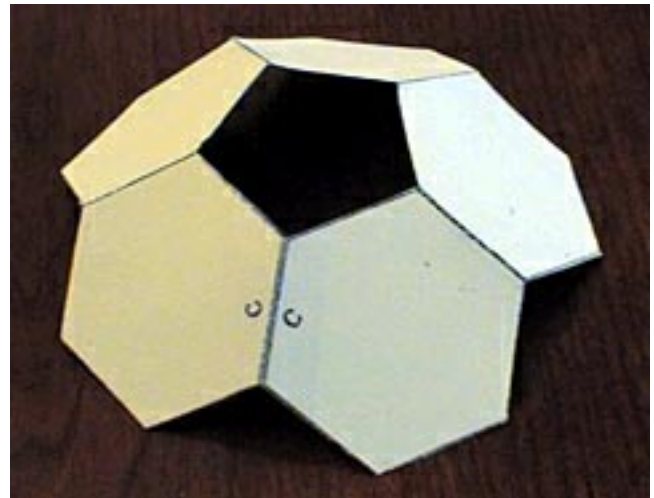
- two copies of Pattern 1 printed on stiff paper
- one copy of Pattern 2 printed on stiff paper
- a pair of scissors
- cellophane tape



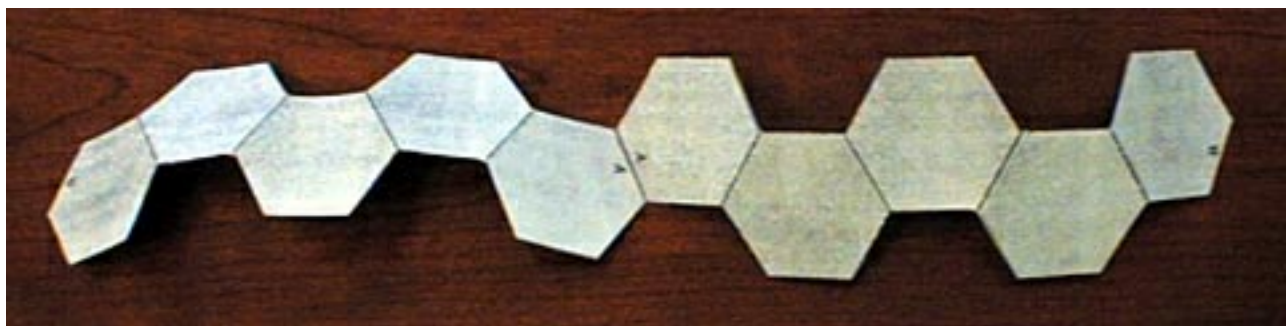


## What to do:

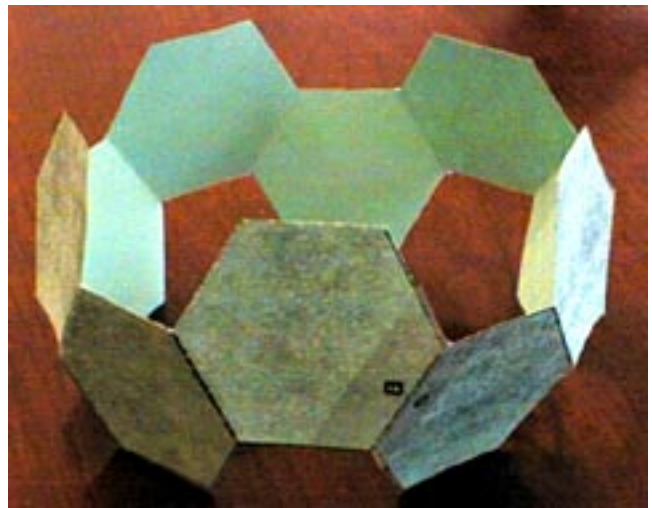
1. Carefully cut out one copy of Pattern 1.
2. Using cellophane tape, attach the two edges marked with the letter "C" together. Notice that there are now five hexagons surrounding a pentagon-shaped space.
3. Do the same thing with the second copy of Pattern 1



4. Cut out Pattern 2. You should have two pieces, each made of 5 hexagons.
5. Using cellophane tape, attach the edge marked "A" on one strip to the edge marked "A" on the other strip.



6. Using cellophane tape, attach the edge marked "B" on one strip to the edge marked "B" on the other strip.



7. Attach one of the pieces you made from pattern 1 to the piece you just completed from Pattern 2 by taping the free edges of the hexagons together as shown. 8. Turn your construction over and tape the other Pattern 1 piece in place the same way and...

...you're done!

