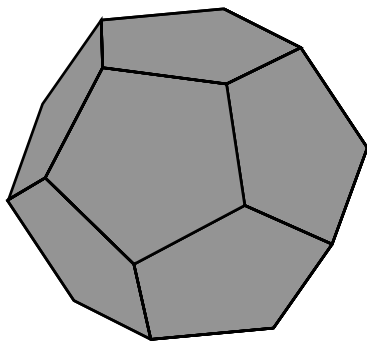


Buckyball Handout

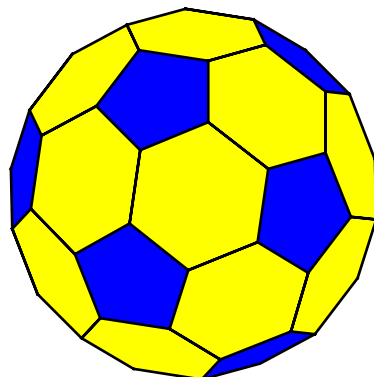
Buckyballs are polyhedra with the following two properties:

- (a) each vertex has degree 3, and
- (b) they have **only** pentagon and hexagon faces.

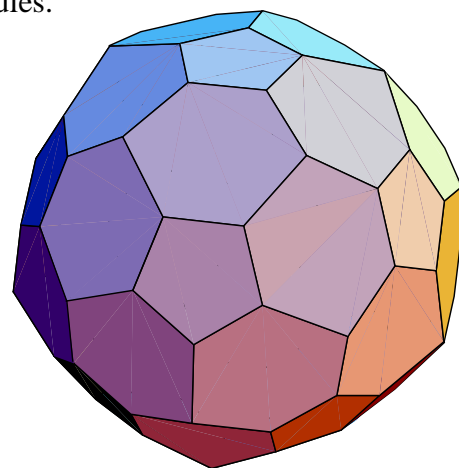
Buckyballs are named after Buckminster Fuller, and they are basically the same as the **geodesic dome** structures that he invented. They are also of interest to chemists because they represent the structure of certain carbon molecules.



Dodecahedron
no hexagons



Soccer Ball
(aka truncated icosahedron)
12 pentagons, 20 hexagons



another Buckyball
(is this different from the
soccer ball?)

Exercises:

- (1) Find a formula relating the number of vertices V to the number of edges E in a Buckyball.

- (2) Let F_5 = the number of pentagons in a given Buckyball, and F_6 = the number of hexagons. Find a formulas relating
 - (a) F_5 , F_6 , and F .

 - (b) F_5 , F_6 , and E .

- (3) Use your results from parts (1) and (2) to come up with a formula that **only** has the variables F_5 and F_6 in it. What does this tell you about the number of pentagons and hexagons in a Buckyball?