VIRUS MODEL LAB:

ICOSAHEDRAL VIRUS

PURPOSE: To understand virus structure by building 3-Dimensional models of common viruses.

MATERIALS: paper  scissors  thread for hanging
Glue or tape  metric ruler

PROCEDURE:

The paper model:
Cut out the flattened virus model (of 2PLV, attached) and fold along all the links in the cutout. You may use either version for the model to create your model. Tape a loop of thread on the inside with the loop extending to the outside. Start making the closed model by taping together the extended shaded flaps under the adjacent edge as shown below:

Remember to write your name and period in one of the triangles on the outside of the model.

Continue taping the edges till you can close the icosahedral virus.
Organizing Data

1. How many sides or “faces” does an icosahedral virus have? ________________________________

2. How many edges does the icosahedral virus have? ________________________________

3. How many vertices (corners) does the icosahedral virus have? ________________________________

4. What is the length of one edge of your virus in centimeters? ________________________________

5. Measure the length of your model in centimeters ________________________________

6. What part of the virus is demonstrated by this model? ________________________________

7. What are the functions of this part? (2 points)
   
   __________________________________________________________________________________

8. What would be found inside of this model in a real virus? What could you add to represent this?
   
   __________________________________________________________________________________

9. Use your Virus and bacteria reading packet or the internet and name two viruses which have this shape. Give the name of the specific organisms they infect and the diseases (if any) they cause. (4 points)
   
   __________________________________________________________________________________

10. How do Viruses replicate? Explain the steps. (3 points)
    
    __________________________________________________________________________________

Bonus:

11. Convert the length of one edge into nanometers using the formula 1cm = 1x10^7nm. ________________
    You MUST show your work in order to receive credit!

12. Viruses range in length from about 20 nm to 250 nm. If a cold virus is 75 nm long, how many times the size of a cold virus is the virus model which you constructed? You MUST show your work!
Polio Virus (2plv)

Structural factors that control conformational transitions and serotype specificity in type 3 poliovirus. EMBO J. 1989 May;8(5):1567-79.