GEO-PANES

What kind of Geo-pane can be made with a 3-D shape?

1. Build these shapes with toothpicks and raisins. Fill in the chart below:

Shapes	△	☐	△	⬚	◇	△
# of Points-Vertices (raisins)						
# of Line Segments-Edges (toothpicks)						
# of Faces						

2. Hang each shape from a thread and dip completely into a water and soap mixture. Lift it out and observe.

* What do you think will happen?

Water & Soap
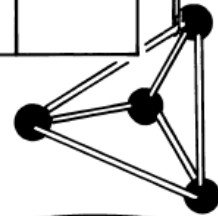
* Describe what happened: *(back/next page)*

* Describe what happened:

Geopanes Activity

Answer in any order you choose – you may use the internet

1. Decide on a definition for **surface area** that uses your own words.

2. How does the concept of **surface area** relate to the pattern the Geopanes formed?

3. Decide on a definition for **surface tension** that uses your own words.

4. How does the concept of **surface tension** relate to the pattern the Geopanes formed?

5. Why does soap film form a sphere (i.e., a bubble) when water is blown into it? How is this related to the behavior of your Geopanes?

6. Would pure water work for the Geopanes? Why do we use soap and hot water when we want to get things really clean?

7. Can you determine a general formula relating vertices, faces, and edges of your three-dimensional solids?

8. Do you think all three-dimensional solids will have this relationship? Why?

9. Recall that a ***regular polygon*** has equal sides angles. How might you define a ***regular polyhedron*** (i.e., a three-dimensional solid)? Did you make any regular polyhedra?

10. Which solid that you built is the most stable? Which is the least stable? Why?

11. Build another solid with toothpicks and raisins with an eye towards making a stable design. Sketch your design. Predict how the geopane will look before dipping it in the water.