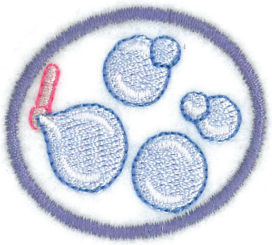

_____
Pathfinder's Name

Bubbles

Instructor Required

❑ **1.** Define the following terms:

a. Soap bubble

_____

_____

b. Hydrophilic

_____

_____

c. Hydrophobic

_____

_____

d. Surface tension

_____

_____

e. Minimum energy

_____

_____

f. Minimum surface

_____

_____

❑ **2.** How do the following weather factors affect the life of a bubble and how?

a. Humidity

_____

_____

b. Temperature

_____

_____

c. Wind

_____

_____

d. Precipitation

_____

_____

❑ **3.** Make a model or drawing of a soap molecule. Show why the molecule is either hydrophilic or hydrophobic.

Date completed _____

❑ **4.** List safety rules about bubble blowing

_____

_____

_____

_____

_____

❑ **5.** Surface Tension

a. Explain what causes surface tension.

_____

_____

b. Conduct an experiment to determine if soapy water has higher or lower surface tension.

Date completed _____

❑ **6.** Wands:

a. Explain what types of material work best for the loop of large bubble wands.

_____

_____

_____

_____

_____

b. Construct a wand to make large bubbles.

Date completed _____

❑ **7.** Components:

a. What water quality works best for bubbles? What impurities negatively affect bubble quality?

_____

_____

b. What soaps are best for bubble solution?

_____

_____

c. What is the purpose of glycerin or corn syrup in a solution?

_____

_____

d. Learn a formula for a bubble solution and mix a batch of bubble solution.

Date completed _____

e. Evaluate your bubble solution and make a better recipe if necessary

Date completed _____

❑ **8.** Experiments:

a. Show what happens when bubbles meet bubbles? How does this illustrate minimal energy and minimal surface?

Date completed _____

b. What causes colors in a bubble? Demonstrate constructive and destructive interference.

Date completed _____

c. What shape are bubbles and why? Do an experiment to illustrate the answer.

Date completed _____