

Scientific Method Lab

In this lab, you will be doing an investigation using the scientific method.

As you know, the scientific method consists of six steps: purpose, hypothesis, materials, procedure, results, and conclusion. Each of these steps should be followed when pursuing a good scientific investigation.

Your goal in this lab is to make as tall a tower as you can using only toothpicks and gumdrops. You'll do two experiments: In the first experiment you'll use a "standard" round toothpick and small gumdrops. In the second experiment, you'll make a hypothesis about what might allow you to make a taller tower, and you'll test this hypothesis in the laboratory.

Experiment #1: Making a tower from "standard" materials

Using round toothpicks and small round gumdrops, your group should make as tall a gumdrop tower as possible. As the tower grows taller, make sure that you frequently measure the height of your building – gumdrop structures tend to collapse unpredictably as their height increases.

Post-construction:

- 1) How tall was your tower? (Don't forget units!) _____
- 2) Briefly describe what your tower looked like, and sketch a diagram below:

Experiment #2: Building the better tower

Now that you've built one tower, you should be experts in the art of gumdrop construction. Using these newly developed skills, make one change that will allow your tower to be taller than the first. Remember to change only one thing, or you won't know which change you've made resulted in the height increase.

Some ideas: You may use any of the construction materials your teacher has provided for you, or you may merely change the design of the structure to make it more stable. In any case, you should follow the six steps of the scientific method below, making sure to carefully document your activities.

Purpose:

Hypothesis:

Materials:

Procedure:

Results:

Conclusion:

Post-construction:

- 1) How tall was your tower? _____
- 2) Was your tower taller or shorter than the first? If it was taller, then explain why you believe the second tower was taller than the first. If it was shorter, explain why you believe your hypothesis was wrong.
- 3) Some people in your class will doubtlessly find that their second tower was shorter than the first. Does this make their experiment totally worthless? Explain.
- 4) From your experience, does the scientific method make the process of experimentation easier or harder than random guessing? Explain.
- 5) If you had to build yet another tower, what would you change to make it taller than the first two towers you built? Explain.

7) Think back to some time in your life when you had a problem that needed to be solved. Using the six steps of the scientific method, describe what you did to solve the problem.

a) Purpose:

b) Hypothesis:

c) Materials:

d) Procedure:

e) Results:

f) Conclusion: