

# Designing experiments based on multiple variables.

## Scientific Cake!

(or: There's Gold in Yellow Cakes)

You are a famous (and rich!) chef at an incredibly fancy (and expensive) gourmet restaurant. You have been asked to make a light and fluffy yellow cake for a birthday party for a very old (and filthy rich) customer's party. You used the recipe shown below that gives you a yellow cake, but it is not light enough for her dentures to get through at her age.

You have one week to create this cake. You have all the money of the restaurant at your disposal! After checking with Alton Brown and Paula Dean you have a list of things that are known to make some cakes lighter and fluffier.

You have decided to use the scientific method to test for the best possibility (you knew that was coming, didn't you).

### Information on fluffy cake making

Doing any one of these has been known to make some cakes lighter and fluffier but some change the flavor of the cake.

- Add Baking Powder
- Use more liquid
- Beat the egg whites before use
- Use less oil
- Use a different kind of oil
- Make a thicker cake
- Add Baking Soda

### Yummy Cake Recipe

- 1 box yellow cake mix
- 10 oz. Lemon-lime soda
- 1 box pineapple pudding mix
- $\frac{3}{4}$  cup cooking oil
- 4 eggs

Explain what you would do at each step of the scientific method. You may use the back of this paper if you need to.

Choose any three of the things on the list to test, you will need to see all of the possible combinations to see what will make the fluffiest cake.

1. State the Problem
2. Hypothesis
3. Experiment - On the back of this page describe how you will conduct the experiment.
  - a. What are the Manipulated variables?
  - b. What are the Controlled variables?
4. Data
  - a. What data will you gather?
  - b. How will you analyze your results?