Cookie Lab Results Chart

**Record results:** Place an X where you would best describe the cookie.

<table>
<thead>
<tr>
<th></th>
<th>Chewiest</th>
<th>Chewy</th>
<th>Soft/Puffy</th>
<th>Soft</th>
<th>Thin/Crisp</th>
<th>Crispest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team 1</td>
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<td>Control cookie</td>
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<td>Team 2:</td>
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<td>Shortening</td>
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<td>Team 3:</td>
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<tr>
<td>Cake flour</td>
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<td>Team 4:</td>
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<tr>
<td>Oil for part of butter</td>
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<td>Team 5:</td>
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<tr>
<td>Less egg/milk</td>
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<td>Team 6:</td>
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<tr>
<td>Melted butter</td>
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<td>Team 7:</td>
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<tr>
<td>Bread flour/ egg yolk + milk</td>
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</tbody>
</table>

Compare the results to your hypothesis ideas with the actual results in a verbal or written discussion.

First Experience: Low-Fat Spice Snack Cake

**In this lab students will:**

1. Confirm knowledge on the function of sugars in baking.
2. Apply the use of two sugars, granulated and dark corn syrup, to produce a cake suitable for breakfast, coffee or tea, or snacking.
3. Create a more tender product by blending wheat flour and corn starch to reduce the gluten strength in the flour.
4. Learn and apply the Food and Drug Administration’s definition of low-fat and reduced-fat used for product labeling.
5. Create a drizzle and apply it as a simple glaze effect that has fewer calories than a fully frosted cake.

**For Teacher:**

Before you begin, hand out the following terms to students and have them hold a Sweet Tea Party (See Appendix/Tea Party) OR describe and use each term in a descriptive sentence, story or paragraph.

- **Crystals**
- **Tenderizes**
- **Low-fat**
- **Flavor**
- **Yeast food**
- **Caramelization**
- **Powdered sugar**
- **Attract moisture**
- **Aeration**
- **Stabilizer**
- **Drizzle**
- **Spread**
- **Creaming**
- **Maillard reactions**
- **Dark corn syrup**

**Supplies Needed:** For each recipe prepared or each team provide:

**For Comparison:** One package Spice Snack Cake mix (9X9-in) with price

Nutrition Facts Label from ready-to-spread frosting

Today’s “low-fat” is called Smart Snack baking! Go-to recipes for in-school culinary Bake Sales, Homebaking.org/PDF/smart_snacks_bakersdozen.pdf
Low-Fat Spice Snack Cake

Yield: 16, 1.6oz/45g servings  Preparation Time: 10 minutes  Baking Time: 25-30 minutes

Pan: 9-inch square baking pan

**Low-Fat Spice Snack Cake**

Yield: 16, 1.6oz/45g servings    Preparation Time: 10 minutes       Baking Time: 25-30 minutes

Pan: 9-inch square baking pan

**Value-added Option:** Toss 1 cup (5.25 oz) loosely packed moistened raisins with the flour mixture just before adding to the buttermilk mixture. (Moisten raisins by covering raisins with cold water for 5 minutes, draining, and sealing in plastic bag or container until use. Refrigerate raisins after moistening.)

**Directions:**

1. Preheat oven to 350º F. Grease one 9-inch square baking pan.
2. In a small bowl, combine flour, corn starch, baking powder, baking soda, salt, cinnamon, ginger and nutmeg in a small bowl; set aside.
3. In a large bowl, whisk the butter, sugar, buttermilk, eggs, corn syrup and vanilla.
4. Gradually stir in flour mixture (and raisins, if adding) until smooth.
5. Pour into the greased 9-inch square baking pan. Bake 25 to 30 minutes or until toothpick inserted in center comes out clean. Cool in pan on wire rack.
6. Sprinkle with powdered sugar, if desired, or drizzle.

Source: Recipes courtesy Karo Syrup, karosyrup.com
Critical Thinking:

1. Did the granulated sugar aerate the batter in this recipe? (A: No; the butter was melted, not creamed.)
2. What function does the dark corn syrup have? (A: Added caramel color and flavor; moistness.)
3. Why is powdered sugar used instead of granulated sugar in the drizzle? (A: for smooth—not gritty—texture; so it will flow.)
4. If “reduced fat” means the product contains “50% or less of the usual amount of fat” in this type of cake, how much fat might a normal spice cake contain? (A: 6 to 8 tablespoons/3-4 oz)
5. The drizzle recipe for one, 9-inch cake has 15 calories per slice of cake. Compare to using 1/16 of a container of frosting.
6. Sample and use A Matter of Taste forms to critique snack cake. Discuss if changes are needed, what?
7. When would you eat a piece of this cake? (A: It is similar to a muffin, so could be enjoyed with milk and fruit for a grab-n-go breakfast; with a milk, tea or coffee break, or as a light dessert.)

Intermediate Experience:

Quilt Cake

American folk art includes many shapes and colors to create quilt patterns. Quilts were a way to make “something out of nothing” using leftover scraps of fabric to create a beautiful pattern.

In this lab students will:

1. Explore the connections between creating your own Quilt Cake, the making of quilts in early American history and current resource-conserving consumer practices like DIY baking and buying locally.
2. Apply the functions of sugar in creaming, aeration, tenderizing and decoration.
3. Employ knowledge of the color wheel and design principals in designing a Quilt Cake, use “scraps” of fruit, chips, colored sugars, candies.
4. Calculate costs and compare the value of preparing their own decorated cake with purchasing a RTE (ready-to-eat) product from a local store.
5. Organize a meeting with, or have a speaker from a local Quilt Shop or Guild, historical museum or artist to learn more about quilt design, history; while you enjoy the quilt cakes they designed.

Before you start: Consider these visual options:

- View the DIY Baking Channel how-to video, the Nine Patch Quilt Cake at HomeBaking.org.
- Review how to cream butter and sugar until light and fluffy, dominosugar.com/baking-tips-how-tos/creaming-butter-and-sugar
- Early childhood literacy and art: Assign students to prepare short children’s book reviews to share with the class to learn more about quilts. Titles to consider:
  - “The Patchwork Quilt” by Valerie Flournoy.
  - “The Quilt Story” by Tony Johnston and illustrated by Tomie dePaola
  - “Sam Johnson and the Blue Ribbon Quilt” by Lisa Campbell Ernst
  - “Sweet Clara and the Freedom Quilt” by Deborah Hopkinson
  - “The Boy and the Quilt” by Shirley Kurtz
  - “Eight Hands Around – A Patchwork Alphabet” by Ann Whitford Paul
  - “Tar Beach” by Faith Ringgold
  - “The Keeping Quilt” by Patricia Polacco (a wedding Huppah quilt)
  - “The Quiltmaker's Gift” by Jeff Brumbeau and Gail de Marcken

- Visit Quilts and Children’s Literature. Carol Hurst’s Children Literature site, 11/2017, carolhurst.com/subjects/quilts.html

- Search on-line for craft stores or community centers for a speaker about quilting, cake decoration or history of quilts in your community. Book a time to have them speak and share your quilt cakes.

Video, How to cream butter and sugar, chsugar.com/Creaming_Butter_and_Sugar