



Developed with Sharon Davis, FCS Teacher, HomeBaking.org

Dough sculpting 101

Volume 33 | Gr. 6–8

Soft pretzels: Bread with a twist



Standards

NASAFACS

2.1 Demonstrate management of individual and family resources such as food, clothing, shelter, health care, recreation, transportation, time, and human capital.

2.1.3 Analyze decisions about providing safe and nutritious food for individuals and families.

8.2 Demonstrate food safety and sanitation procedures.

8.4.7 Apply principles of measurement, portion control, conversions, food cost analysis and control, menu terminology, and menu pricing to menu planning.

8.5.10 Prepare breads, baked goods and desserts using safe handling and professional preparation techniques.

8.5.14 Demonstrate cooking methods that increase nutritional value, lower calorie and fat content, and utilize herbs and spices to enhance flavor.

14.3.1 Apply current dietary guidelines in planning to meet nutrition and wellness needs.

Materials list (need for each lab or team)

- Soft pretzel commercial package labels with price, net weight, nutrition facts, and ingredients
- Escali® Vera Precision Digital Scale ([WA33623](#))
- Vollrath® stainless steel mixing bowl, 5-qt. ([WA05878](#))
- Hi-temp mixing spoons ([WA29931](#))
- Stainless steel measuring cup and spoon set ([WA21270](#))
- Yeast, flours, sugar, salt, water, and cooking oil
- Large egg
- Fork and bowl to beat egg
- Good Grips® pastry brush ([WA18627](#))
- Pretzel sprinkles (coarse salt, seeds, cinnamon sugar)
- Kitchen scissors
- Large utility poly cutting board ([WA21471](#))
- DoughMakers® Bakeware cookie sheet ([WA21514](#))
- Unbleached baking paper ([WA32553](#))
- Oven
- Nonstick cooling rack set ([WA28456](#))
- Food wrap or bags
- Soft pretzel recipe handout (p. 3)
- Tips for shaping success handout (p. 4)
- Optional: skillet, water, baking soda
- *Home Baking Association How to Make Soft Pretzels: Dough Sculpting 101* DVD ([WA32838](#))
- *A Baker's Dozen Labs* manual ([WA27798](#))

Objectives

Students will...

- Review the history and current consumer market for soft pretzels
- Read soft pretzel recipe directions, organize tools and ingredients (mis en place), accurately measure and produce soft pretzels
- Calculate and compare unit costs of similar commercially sold and lab-prepared soft pretzels using retail package labels, package net and unit weight, the recipe net baked weight and ingredient costs
- Locate and contrast Nutrition Facts labels on commercially and lab-prepared soft pretzels, adjusting to equalize portion net weights to fairly compare sodium, whole grain, fat, and calories
- Determine if lab-prepared soft pretzels meet Smart Snack guidelines for sale in school hours

Essential questions

- Is it worth the investment of time and ingredients to produce soft pretzels at home or for food sales?
- Can soft pretzels be produced to meet the Smart Snack guidelines for in-school food sales?

Career Clusters (& Pathways)

- Hospitality and Tourism
- Food Production and Services

FCCLA Connections

- STAR Event — Food Innovations
- Student Body
- Power of ONE/Leadership Service in Action

Introduction

- Soft pretzels are a great way to assist students in applying history, ingredient and nutrition sciences, and consumer math to a popularly sold bread product. With innovations, students can market their products for both in- and out-of-school sales.
- Soft pretzels can be baked in as short a time as 45 minutes, or divided into two or three labs. (See Bakers Tips side bar or Time Saving Techniques provided — p. 134, Lab 12 *Dough Sculpting 101* DVD or *A Baker's Dozen* Labs manual).

Soft pretzel history

610 AD: Early 7th century southern France Monks (Romans) credited with first pretzel shape. Used leftover dough; called shape “pretiolas.” Monks gave pretzels to reward children for learning their prayers.

1510: Pretzel bakers saved Vienna; first heard Turks invading.

1614: Wood cut shows pretzel held by couple as a marriage knot uniting two families; wishing on pretzels became a common wedding ritual; pretzels symbolize long life and a blessing.

New Year's Day Tradition: Black Forest children wore pretzels on ribbon loops around necks.

1652: Colonists arrested for selling pretzels to Native Americans.

1861: Julius Sturgis Pretzel House, Lititz, PA, first sells pretzels — and is still baking!

Source: *Pretzels by the Dozen* by Angela Elwell Hunt.

Activity 1: Cultural history (5–10 minutes)

Explore what a soft pretzel is and its cultural history. Who do you think made the first pretzel? (See Soft pretzel history.) Why do you think they are shaped the way they are?

Activity 2: Consumer science (10–15 minutes)

Use ingredient and Nutrition Facts labels for soft pretzel products (or ESHA Food Processor software information) and discuss consumer interest in soft pretzels, their ingredients, nutritional value, and their costs. Who enjoys soft pretzels? Why? Where do you usually buy them? (Answers vary — store, mall, fairs, games, street vendor, airport, etc.) What do they cost to buy?

Activity 3: Consumer math (15 minutes)

How much do you think they would cost if we make them ourselves? List each ingredient cost; total only the amount used in a recipe; divide by number of pretzels a recipe produces. (About 15¢ each.) How much will you charge for each pretzel in a food sale or cafeteria?

Activity 4: Nutrition science (20 minutes)

Compare ingredients in commercial recipe and soft pretzel recipe included. In what food group are they? (Grain.) What nutrients do they provide? (Carbohydrates, fiber; and B-vitamins, iron, folic acid, plant protein, sodium, potassium, if whole grain.) Why are they a good food choice and when are they not a good choice? (People need 50–60% of their calories from carbohydrates for brain and muscle fuel; super-sized pretzels may be too caloric; may have a super load of sodium; daily limit 2,300 mg — see sodium <http://homebaking.org/glossary/#s>). Are they whole grain? If not, how could this be done? (Substitute 51% or more whole wheat or whole grain flours.) Was sodium under 230 mg per serving (Smart Snack guide)? If not, how could you reduce the sodium? (Top with a favorite seed or cinnamon and sugar instead of coarse salt.)

Activity 5: Culinary baking (90 minutes)

Plan how to bake soft pretzels. Create whole grain, unique pretzel flavors and shapes. Read recipe top to bottom. Discuss sequence of preparations. Divide tasks, assemble ingredients and tools. Prepare dough; bake as directed. Cool; evaluate products.

Activity 6: Local service learning (1 day)

Plan to express thanks with a pretzel delivery to school or community mentors. Conduct a pretzel bake sale in or out of school to raise funds for your favorite cause.

- Bake for Funds guide: https://www.homebaking.org/wp-content/uploads/2019/07/2014_bakeforfunds.pdf
- Gluten-Free Pretzels: *A Baker's Dozen Labs Manual* (WA27798)



Teacher Tips

- Divide into two or three-day labs: Prepare a cool dough (80° F water) and refrigerate dough in large sealable containers, allowing room and deflating and rounding dough when it doubles in size.
- More time-saving techniques are provided in *Dough Sculpting 101* DVD (WA32838) or in *A Baker's Dozen Labs* manual (WA27798).
- One-day baking: Speed up the dough using fast-rising yeast methods requiring very warm water and very short fermentations. Do consumer activities on separate days.

Technology connections:

- Use USDA's Smart Snack school guidelines and Smart Snack calculator
- Determine if, or how, pretzels can meet in-school bake sales guidelines.
- Also see Bake for Funds: https://www.homebaking.org/wp-content/uploads/2019/07/2014_bakeforfunds.pdf

Soft Pretzels

Yield: 12 (2 oz/55 g) pretzels

Ingredients

	Measurement	Weight
Fast-rising yeast	1 pkg./2 ¼ teaspoons	0.25 oz/7g
Warm water (120-125° F.)	1 cup	8 oz/225g
Vegetable oil	2 tablespoons	0.875/25g
Sugar	1 tablespoon	0.5 oz/12g
Whole wheat flour	1 ¾ cups	7 oz/200g
All-purpose flour, divided	1 to 1 ½ cups	4.25 oz/119g
Salt	1 teaspoon	6g

Water bath: 6 cups boiling water, ¼ cup baking soda

Egg wash: 1 large egg + 1 tablespoon cold water, beaten

Coarse or Kosher salt, sesame, poppy or sunflower seeds

Directions:

1. Wash hands and surface to knead and shape dough.
2. In a large mixing bowl, measure and combine whole wheat flour, yeast, sugar and salt; mix well. Add warm water and oil to the mixture. Mix until moistened, then beat 3 minutes, by hand or with mixer (medium speed).
3. Stir in, ¼ cup at a time, all-purpose flour until dough forms a rough ball. Knead in the bowl or on a clean, lightly floured surface until smooth and elastic. (All the flour may not be needed.)
4. Turn the bowl over the dough and let it rest 10 to 30 minutes (Or, place dough in greased bowl or plastic bag; cover with lid or close bag. (Dough may be refrigerated overnight, but use 80° F. water)
5. Punch dough down and knead into a smooth ball. Divide in 4. Divide again, each piece into thirds (2 oz). Cover the dough to rest again, 5 minutes.
6. Roll or shape each piece into a "snake" or long thin rope, at least 18-inches long. Let dough rest as needed.
7. Shape into pretzels. Cover with pan-sprayed plastic wrap for 10 minutes on a well-greased or parchment-lined baking sheet. Preheat the oven to 425° F.
8. **Optional: For extra chewiness** After 10 minutes, lower each pretzel into a boiling bath, 10-15 seconds on each side. (Boiling bath = 6 cups boiling water + 6 tablespoons baking soda); remove with a slotted spatula; drain.
9. Place on parchment-lined or greased baking sheet.
10. Brush the beaten egg and water over the pretzels. **Optional:** Sprinkle w/coarse salt or seeds.
11. Bake 12 to 15 minutes at 425° F. until golden. Cool on wire rack.

DIY Test Kitchen Variations: Substitute ¼ cup rye flour, soy flour, cornmeal, flax meal for ¼ cup all-purpose flour.

Nutrition Facts

Serving Size (54g)

Servings Per Container

Amount Per Serving

Calories 130 Calories from Fat 25

% Daily Value*

Total Fat 2.5g 4%

Saturated Fat 0g 0%

Trans Fat 0g

Cholesterol 0mg 0%

Sodium 440mg 18%

Total Carbohydrate 23g 8%

Dietary Fiber 3g 12%

Sugars 1g

Protein 4g

Vitamin A 0% • Vitamin C 2%

Calcium 0% • Iron 6%

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300 mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4



Critical Thinking

Ask participants to consider these consumer questions:

1. Who enjoys soft pretzels? (Answer will vary!)
2. Where do you buy them? (A: frozen and heated, mall, street vendors, airport, fair, school events...)
3. Who do you think made the first pretzels, when and why are they shaped the way they are? (A: See history)
4. What ingredients are in a pretzel? (See recipe/read label)
5. What food group are pretzels in? (Grain) What nutrients do they provide? (Carbohydrate and fiber; B-vitamins, iron, folic acid, plant protein)
6. Why are they a good food choice? (A: People need 50 to 60% of their calories from carbohydrates every day for brain and muscle fuel.)
7. What do they cost from a street vendor or at the mall? (A: \$2.50 to \$ 4.00) Frozen and heated? (A: \$.75) DIY? (A: Do-it-Yourself, about 15 cents each.)
8. What other shapes and flavors, could you create? (A: Alphabet, snowflakes, multi-grain, various seeds instead of salt, cinnamon and sugar...)

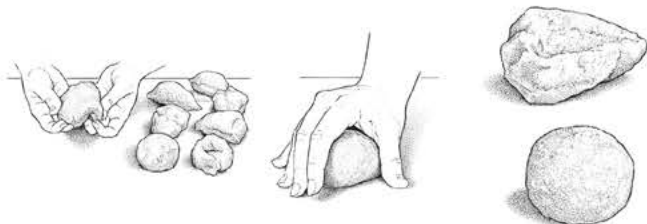
Tips for Shaping Success

Yeast dough for the shaping artist will:

- have a silky texture, be properly developed—elastic and moist but not “tacky” or too sticky
- place in an oiled, sealed food bag or container, deflated, rounded and rested in refrigerator or at room temperature (68° to 72° F.)
- be relaxed, extensible (can be rolled out or extended without springing back)

To achieve shaping success:

- **Develop the gluten** so the dough cleans the sides of the bowl or counter when mixed or kneaded. The dough should be soft but elastic, cleaning the bowl or kneading surface. Target dough temperature after kneading— 78 - 82° F.—so it will not raise too rapidly, UNLESS you are using a fast-rising yeast method.
- **Use proper fermentation** temperature (78-80° F.) to prevent the dough from over-gassing or getting tacky and help develop the gluten strands further—making the dough easier to shape. (Also see refrigerating dough guidelines, p. 134.)
- **Divide dough evenly** (weigh the dough, divide by number of pieces needed) and round dough to rest. This helps make balanced braids, and equal-sized rolls and loaves.
- **Allow yeast dough to rest**—about 10-15 minutes of bench time after deflating dough, dividing, and rounding. This will make the dough much easier to shape. The dough pieces will be more extensible—not inclined to just rebound back when rolled.
- **Keep the dough pieces covered during bench rest and while shaping to prevent crusting.**
- **Do not over-flour or over-grease the shaping surface.** This leaves a coating of flour or grease on the dough surface and the result will not be as nice in appearance or flavor.
- **Proof bread until ¾ or nearly fully proofed** before egg washing and slashing surface of loaf. (See Ripe Test, HomeBaking.org, Baking Glossary).
- **Preheat oven 5 to 10 minutes** before egg washing or slashing. Oven must be heated to the required temperature when product is ready to bake — never placed in oven.



Source: HomeBaking.org

Dough Shaping and Sculpting 101

- **Read Tips for Shaping Success** (text box at side).
- **Wash hands and surfaces well.**
- **Select up to three options** to prepare with each third (1.25 lb) of the Refrigerator Potato Dough.
- **Shaping:** Divide Refrigerator Potato Dough recipe (or favorite dough, making 3 to 3.75 lbs) evenly into dough pieces as directed by the option chosen. Place same-sized products on the same pan, spacing as directed.
- **Everyone will want their own edible art...**Tuck a small piece of paper with the baker's initials under the edge of their dough art before baking OR, bake on parchment paper with name noted by the product.
- **Baking:** Cover each pan of shaped dough **lightly** with sprayed or oiled plastic wrap or clean dampened non-terry towel. Place to proof in warm (95-105° F.), draft-free place until double, about 45 minutes. (See Ripe Test, HomeBaking.org in Baking Glossary). Bake rolls as directed. Lay a piece of aluminum foil lightly (tent) on baking dough if edges become too brown. Internal temperature when done is 190-210° F on food thermometer. Cool product on wire racks.



Alligators, Turtles (and more!) at breadworld.com

Rolls and Critters

Dinner Rolls: Bake rolls at 375° F., 12-15 minutes.

1. Shape one third (one to 1.25 lb/565g) Refrigerator Potato Dough into a log about 3 inches thick. Divide into 12 even (~3 oz/85g) pieces.
2. To shape: Flatten dough piece into a disc; bring edges to center and pinch; turn dough over to "round" (see left, middle image) and place pinched edge down on greased baking pan.
3. Cover, proof until doubled in size and bake as directed.

Illustration Source: King Arthur Flour Whole Grain Baking, The Countryman Press, 2006. kingarthurfLOUR.com