Bread Principles and Practice

Below you'll find a list of ingredients and equipment needed for your class. To ensure efficiency during class, please have all ingredients on hand before class begins. Any prep work to be done before class is highlighted in yellow.

All recipes used in class will be attached in your confirmation email. Please scroll past the equipment list for the recipes.

If you have any questions or concerns email us, bakingeducation@kingarthurbaking.com. All Zoom links are sent out on the day of class. If you have not received the link 1 hour before your class begins, please contact us at the email above.

CLASS OVERVIEW

Day 1: Recipes: Basic Bread, Whole Wheat Sandwich Bread

Day 2: Recipes: Tender Sweet Dough, Chocolate Babka, Cinnamon Rolls

Day 3: Recipes: French Bread, Pita Bread

INGREDIENTS *(total amount needed for the class)*

- ☐ *King Arthur Unbleached All-Purpose Flour: 2390g (5 ¼ pounds), plus more for dusting work surface*
- ☐ *King Arthur Whole Wheat Flour: 560g (4 ¾ cups)*
- ☐ *Salt: 9 ¼ teaspoons*
- ☐ *Eggs: 2 large*
- ☐ *Unsalted butter: 186g (14 tablespoons) total, 45g (3 tablespoons) at room temperature for day 1*
- ☐ *Whole milk: 585g (2 ½ cups)*
- ☐ *Heavy cream: 79g (⅓ cup)*
- ☐ *Instant or active dry yeast: 29g (9 ¼ teaspoons)*
- ☐ *Granulated sugar: 180g (1 cup)*
- ☐ *Brown sugar: 100g (½ cup)*
- ☐ *Confectioners' sugar: 265g (2 ⅓ cups)*
- ☐ *Semisweet chocolate: 98g (½ cup)*
- ☐ *Cocoa powder: 23g (2 tablespoons + 1 teaspoon)*
- ☐ *Vanilla extract: 15g (1 tablespoon)*
- ☐ *Ground cinnamon: 2 teaspoons*
- ☐ *Honey: 20g (1 tablespoon)*

EQUIPMENT

- ☐ *Scale (preferred) or measuring cup set*
- ☐ *Measuring spoons*
- ☐ *Mixing bowls*
- ☐ *Bench knife and bowl scraper*
- ☐ *8 ½" x 4 ½" loaf pan*
- ☐ *9" x 9" baking pan*
- ☐ *Plastic wrap*
- ☐ *Non-stick spray (or oil)*
- ☐ *Sharp knife or baker's lame*
- ☐ *Rolling pin*
- ☐ *Ruler (optional)*
- ☐ *Baking sheet with parchment paper or silicone baking mat*
- ☐ *Thermometer*
- ☐ *Whisk*

Steam is critical for achieving expansive, open-crumb loaves with a golden, crisp crust. There are a several good options for how to do this in your home oven. We will be covering two options in class.

For boules (round loaves) we recommend a heavy cast iron Dutch oven, covered baker, or combo cooker.

A second option is using a baking stone or steel. In addition, a cast iron skillet is useful for steaming the bread while baking.

PLEASE NOTE: Adding water to a cast iron skillet or metal pan in a blazing hot oven can cause warping and rusting. It's wise to designate a cast iron skillet specifically for baking bread, accepting the possibility of warping or rust. Look for affordable cast iron skillets at garage sales or thrift shops, where you might discover ones in less-than-perfect condition. Avoid using glass, ceramic, or glazed Dutch ovens for this purpose.

Basic Bread

YIELD: 2 LOAVES

INGREDIENTS

- ☐ *720g (6 cups) King Arthur Unbleached All-Purpose Flour*
- ☐ *12g (1 tablespoon) sugar*
- ☐ *7g (2 ¼ teaspoons) yeast*
- ☐ *14g (2 ½ teaspoons) salt*
- ☐ *28g (2 tablespoons) unsalted butter, at room temperature*
- ☐ *227g (scant cup) milk*
- ☐ *297g (1 ¼ cup) water*

DIRECTIONS

1. Combine the flour, sugar, yeast, and salt. Cut the butter into small pieces, then stir it into the dry ingredients.
2. Pour the milk and water into the flour mixture, then stir to blend into a cohesive mass.
3. Lightly flour your work surface, then turn the dough out of the bowl.
4. Knead the dough by folding the far edge of the dough in half toward you. Press the dough with the palms of your hands and push lightly, down and away. Rotate the dough 90°.
5. Continue this process (fold, push, turn) until the dough is smooth and springy, about 5 minutes. Handle the dough very gently at first, then as the dough increases in strength, increase the pressure. If the dough sticks, scrape your work surface clean with your bench knife, then sprinkle the kneading surface lightly with flour.
6. Allow the dough to rise in a covered bowl until it has doubled in bulk, about 1 hour.
7. After the dough has risen, turn it out onto a lightly floured surface and pat it down gently to degas it. Divide the dough in half, then form into desired shapes.
8. Cover the loaves with plastic wrap and allow to rise until puffy and not quite doubled in volume, about 45 to 90 minutes depending on the temperature of the environment.
9. Bake the loaves in a preheated 375°F oven for 30 to 36 minutes, or until the crust is golden brown and the loaf sounds hollow when tapped.

Whole Wheat Sandwich Bread

YIELD: 1 LOAF

INGREDIENTS

- ☐ *60g (½ cup) King Arthur Unbleached All-Purpose Flour*
- ☐ *360g (3 cups) King Arthur Premium Whole Wheat Flour*
- ☐ *8g (1 ¼ teaspoons) salt*
- ☐ *4g (1 ¼ teaspoons) yeast*
- ☐ *119g (½ cup) whole milk*
- ☐ *227g (scant cup) water*
- ☐ *20g (1 tablespoon) honey*
- ☐ *17g (1 tablespoon) unsalted butter, at room temperature*

DIRECTIONS

1. Place all the dry ingredients in a large bowl and stir to combine well. Cut the butter into small pieces, then stir it into the dry ingredients.
2. Stir in the water, milk, and honey, mixing until a wet dough forms.
3. Cover the dough and set it aside to rest about 15 minutes. Lightly flour your work surface, then turn the dough out of the bowl. Knead the dough by folding the far edge of the dough in half toward you. Press the dough with the palms of your hands and push lightly, down and away. Rotate the dough 90°.
4. Continue this process (fold, push, turn) until the dough is smooth and springy, about 5 minutes. Handle the dough very gently at first, then as the dough increases in strength, increase the pressure. If the dough sticks, scrape your work surface clean with your bench knife, then sprinkle the kneading surface lightly with flour.
5. Allow the dough to rise in a covered bowl for about 1 hour.
6. Turn the dough out onto a lightly floured surface. Shape the dough into a tight log. Place the log into a greased 8 ½" x 4 ½" loaf pan, cover, and allow to rise for about one hour until it has increased in volume and feels soft and airy.
7. Bake the loaf in a preheated 375°F oven for about 35 minutes. When the loaf is done, the crust will be golden brown on the top and sides. The baked loaf will sound hollow when tapped, and the sides will feel firm right after removing from the oven.
8. Remove bread from the loaf pan and cool on a wire rack. The crust will soften some as it cools.

Tender Sweet Bread

YIELD: 2 LOAVES

INGREDIENTS

- ☐ *720g (6 cups) King Arthur Unbleached All-Purpose Flour*
- ☐ *100g (½ cup) sugar*
- ☐ *9g (1 tablespoon) yeast*
- ☐ *14g (2 ¼ teaspoons) salt*
- ☐ *56g (¼ cup) unsalted butter, at room temperature*
- ☐ *2 large eggs, at room temperature*
- ☐ *237g (1 cup) whole milk*
- ☐ *132g (½ cup) water*
- ☐ *10g (2 teaspoons) vanilla extract*

DIRECTIONS

1. Combine the flour, sugar, yeast, and salt.
2. Cut the butter into the flour mixture, then add the eggs, water, milk, and vanilla, stirring to combine.
3. Lightly flour your work surface, then turn the dough out of the bowl.
4. Knead the dough by folding the far edge of the dough in half toward you. Press the dough with the palms of your hands and push lightly, down and away. Rotate the dough 90°.
5. Continue this process (fold, push, turn) until the dough is smooth and springy, about 5 minutes. Handle the dough very gently at first, then as the dough increases in strength, increase the pressure. If the dough sticks, scrape your work surface clean with your bench knife, then sprinkle the kneading surface lightly with flour.
6. When the dough is springy and begins to smooth out, place it back in the bowl, cover, and set in a warm place for about 60 to 90 minutes, or until nearly doubled.
7. Turn the risen dough out onto a lightly floured surface. Divide the dough in half, pre-shape, then cover with plastic wrap and let rest 15 to 30 minutes. Form into desired shapes, such chocolate babka, cinnamon rolls or a braided loaf. Bake as directed.

Chocolate Babka

YIELD: 1 LOAF

INGREDIENTS

DOUGH

☐ *½ recipe Tender Sweet Bread, ready for shaping*

FILLING

☐ *98g (½ cup) semisweet chocolate*

☐ *38g (⅓ cup) confectioners' sugar*

☐ *23g (2 tablespoons+ 1 teaspoon) cocoa powder*

☐ *1½ tablespoons sugar*

☐ *85g (⅜ cup) unsalted butter, melted*

SIMPLE SYRUP

☐ *50g (¼ cup) sugar*

☐ *50g (¼ cup) water*

DIRECTIONS

1. Grease an 8 ½" x 4 ½" or 9" x 5" loaf pan.
2. Melt the semisweet chocolate over a double boiler or in the microwave. Add the confectioners' sugar, cocoa powder, sugar, and melted butter and mix until smooth and spreadable.
3. Roll the dough out into a 15" x 11" rectangle.
4. Spread the filling over the dough, leaving a 1" border on all sides.
5. Starting at a long side, roll up jelly-roll style. Pinch the seam closed.
6. Starting 1" from one end, slice down and completely through the rolled dough lengthwise.Turn the two resulting strands so that the filling faces up and cross them over each other two to three times. Pinch and tuck the ends under. Carefully lift the loaf into the loaf pan. Cover with plastic wrap and let rise in a warm place until doubled in bulk.
7. Preheat oven to 350°F. Bake the loaf for 30-40 minutes until it is a deep golden brown and the center of the loaf is between 190°F -205°F.
8. While the loaf bakes, combine the 50g of sugar and 50g of water in a saucepan and bring to a boil. Boil the syrup for one minute then take the pan off the heat and set aside.
9. Remove baked loaf from the loaf pans and immediately brush with simple syrup. Cool on a wire rack.

Cinnamon Rolls

YIELD: 9 ROLLS

INGREDIENTS

DOUGH

☐ *½ recipe Tender Sweet Bread, ready for shaping*

FILLING

☐ *100g (½ cup) brown sugar*

☐ *2 teaspoons ground cinnamon*

ICING

☐ *79g (⅓ cup) heavy cream*

☐ *227g (2 cups) confectioners' sugar*

☐ *1 teaspoon vanilla extract*

DIRECTIONS

DOUGH

1. Roll the dough out on a floured surface into a rectangle about 12" x 14".

FILLING

1. Mix the brown sugar and cinnamon together. Lightly brush the dough with water, then sprinkle the filling evenly over the dough. Leave a small border at the top or bottom edge free of filling.
2. Roll up the dough towards the edge that is free of filling.
3. Using a bench knife, dental floss, or a serrated knife, cut the dough into 9 even pieces. Place the rolls evenly in a greased 9" pan.
4. Let the rolls rise until puffy, about 60-90 minutes.
5. Bake in a preheated 350°F oven for about 20-25 minutes, or until rolls are golden brown. Allow to cool briefly before icing. If the rolls are too hot, the icing will just melt off.

ICING

1. To make the icing: Combine all of the icing ingredients and whisk until smooth. The icing should have a thick and spreadable consistency.
2. Spread the icing over the warm rolls.
3. Store covered at room temperature. Freeze for longer storage.

French Bread Dough

YIELD: 2 LOAVES

INGREDIENTS

POOLISH

- ☐ *240g (2 cups) King Arthur Unbleached All-Purpose Flour*
- ☐ *237g (1 cup) cool water*
- ☐ *Pinch (a scant ⅛ teaspoon) yeast*

FINAL DOUGH

- ☐ *450g (3 ¾ cups) King Arthur Unbleached All-Purpose Flour*
- ☐ *237g (1 cup) water*
- ☐ *5g (1 ½ teaspoons) yeast*
- ☐ *13g (2 ¼ teaspoons) salt*

DIRECTIONS

POOLISH

1. The night before you're ready to bake, combine the flour, water and a pinch of yeast in a medium bowl and mix until well-blended. Cover the bowl with plastic wrap and let the poolish ferment for 12-15 hours at room temperature. When it's ripe (ready to use), the poolish should be very bubbly and fragrant.

FINAL DOUGH

1. When the poolish is ripe, add the flour, water, yeast and salt, stirring to combine. The dough should be sticky, so you may need to add a bit more water.Turn the dough onto a smooth, unfloured surface to knead using the slap and fold method. Though the dough is sticky, resist the temptation to add more flour. After a short time, the dough will smooth out considerably and feel less sticky to your hands. You may also knead the dough in a stand mixer on medium-low speed for 3 to 4 minutes. When the dough is smooth and elastic, return it to the bowl and cover with plastic wrap. The dough temperature should be 75°F to 78°F.
2. Let the dough rise for 90 minutes, folding once after 45 minutes.
3. Divide the dough in half and gently pre-form into rounds. Let the rounds rest for 20 minutes, then shape them into round loaves (boules). Place the shaped boules in bannetons, or on parchment paper. Allow to proof, covered, until risen and pillowy, about 30 to 60 minutes.
4. Preheat the oven with a baking stone to 500°F. Score the loaves, then slide them onto the hot baking stone. Steam the oven as directed. After 5 minutes, lower the temperature to 425°F for the remainder of the bake, about 30 to 35 minutes total.

Pita Bread

YIELD: 8 PITA

INGREDIENTS

- ☐ *200g (1 ⅔ cup) King Arthur Unbleached All-Purpose Flour*
- ☐ *200g (1 ¾ cup) King Arthur Premium Whole Wheat Flour*
- ☐ *1 ¼ teaspoons yeast*
- ☐ *1 teaspoon salt*
- ☐ *295g (1 ¼ cups) water*

DIRECTIONS

1. In a medium bowl, combine flours, yeast, and salt.
2. Add water to the dry ingredients and mix until the dough comes together into a shaggy mass. Add more water, if necessary.
3. Lightly flour your work surface, then turn the dough out of the bowl.
4. Knead the dough by folding the far edge of the dough in half toward you. Press the dough with the palms of your hands and push lightly, down and away. Rotate the dough 90°.
5. Continue this process (fold, push, turn) until the dough is smooth and springy, about 5 minutes. Handle the dough very gently at first, then as the dough increases in strength, increase the pressure. If the dough sticks, scrape your work surface clean with your bench knife, then sprinkle the kneading surface lightly with flour.
6. Place the dough in a bowl and cover with plastic wrap. Allow to rise about 1 hour, or until doubled in bulk.
7. Remove the dough from the bowl and place it on a lightly floured surface.
8. Divide the dough into 8 pieces, then shape each piece into a ball by lightly rolling it under your hand. Allow the pre-shaped dough to relax, covered, on a lightly floured surface for about 30 minutes.
9. Meanwhile, preheat the oven with a baking stone to 500°F.
10. Using a rolling pin, roll each ball into a circle about ⅛"-thick (6" to 7" in diameter).
11. Use a peel to load each pita as soon as it's shaped. This is a continuous process, so that as one pita is baked, the next is shaped and readied for loading. Each should take about 3 minutes to bake.
12. As the pitas are unloaded, cover them with a towel so that they remain soft and pliable.
13. Let pita cool for a few minutes before serving.

Controlling Dough Temperature

Understanding the importance of dough temperature and knowing how to control it is important to good bread baking. Yeast are living organisms and thrive in dough given the right conditions. They like a steady, warm environment with plenty of food. The flour provides food, but it's up to the baker to produce a dough that is hospitable to good fermentation. A dough at 60° will ferment much slower than an 80° dough. To accurately follow recipe timelines, we need to mix dough that will be warm enough to make the yeast comfortable and active. At home, this usually means making dough that is around 78° after mixing is complete. The easiest way to control the temperature is to use the right temperature water for our mix.

To calculate Desired Dough Temperature, we use an easy formula. Professional bakers, who work on tight timelines, use this formula to control their doughs and stay on schedule, and it can be a valuable tool for baking at home.To calculate water temperature for our mix, we need to know a few things: The temperature of the air, the temperature of the flour, the temperature of our preferment (if there is one), and the amount of heat (we will call this "friction") we're going to generate during the mix (this applies only if mixing in a stand mixer. When mixing dough by hand, our number for friction is 0). A digital probe thermometer is needed.

STEP 1: Multiply the dough temperature we want (78°) by the number of variables we have (air, flour, preferment, friction).

- 78 X 4 = 312

STEP 2: Use thermometer to take the temperatures of the variables.

- Air:70
- Flour: 67
- Preferment: 69
- Friction: 0

STEP 3: Subtract the value of each variable from the value in step 1.

- 312 -70 -67 - 69 - 0 = 106

That is the whole Desired Dough Temperature calculation. If we pull 106° water from our tap, we will produce a dough near 78°, and can more reliably follow our recipe timeline.

NOTE: When mixing without a preferment, we will only have three variables. That means, multiply 78 x 3. Also, when using a mixer, the value for friction will generally be about 26. One test batch is all you need to determine the exact friction of your mixer.

All Steamed Up!

When it comes to baking beautiful, artisan-style breads at home there are a few things we need to set up to produce the best results. We need a good, hot, well-preheated oven, a baking stone/steel or some other hearth, and a means of introducing steam into the oven.

Preheating your oven with the baking stone in for the better part of an hour ensures that once the bread is in the oven, it will rise quickly and fully. The baking stone will retain plenty of heat for quick transfer to the dough. When using a baking steel, the preheating time may be slightly reduced. The rapid increase in dough temperature is a critical part of pushing the bread up during the first few minutes of the bake. Ovens that haven't been substantially preheated or lack a baking stone, or some other hearth, will result in flatter bread.

The second thing we need to make the best possible bread is steam. Flushing the oven with steam right after the bread is loaded keeps the bread moist and results in better volume, color, and crumb structure.

There are several ways to do this effectively. An old, dedicated, cast-iron pan placed in the bottom of the oven during preheating is an effective tool for steam. Immediately after loading the bread, slide the cast iron pan out of the oven far enough to carefully pour about one cup of boiling water into the preheated pan. Make sure to stay out of the way of the quickly rising steam. Close the oven, and let the bread bake in the freshly steamed oven until it's time to check for doneness. When pouring the water into the pan, it's a good idea to place a cookie sheet or other covering over the window of your open oven door. This ensures that no boiling water bouncing out of the pan damages your oven window.

Alternately, a cast-iron or ceramic Dutch oven may be preheated for the better part of an hour. Round loaves can be placed in the preheated pan, covered with the lid, and placed back in the hot oven. This method uses naturally generated steam from the baking bread by trapping it in the closed Dutch oven. No additional water or steam is required. When using this method, carefully remove the Dutch oven lid about 15 minutes into the bake. This will release excess steam and expose the loaf to the oven so it can take on color for the remainder of the bake.

If neither of these methods is available, a metal bowl may be placed over round loaves for about 15 minutes. This will also retain steam naturally emitted from the baking bread but may be less effective than either of the methods outlined above.