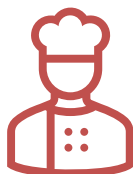




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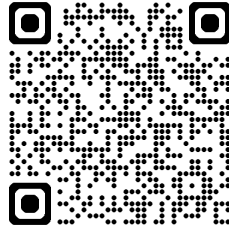
Pastry Boot Camp

WELCOME!



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COURSE INFORMATION

Welcome to the Culinary Institute of America and Pastry Boot Camp! Success in pastry making depends on the understanding and mastery of techniques. After this five-day basic training course, you'll be able to create the amazing pastries and desserts that you find at your local pâtisseries. You will learn the fundamentals of pastry and the techniques used in creating basic preparations such as laminated dough, pastry cream, pâte à choux, mousses, sponge cakes, and buttercream. Be prepared for an intense, yet fun-filled adventure!

DAY ONE:

PASTRY SHOP TOOLS AND EQUIPMENT, MISE EN PLACE, FUNCTION OF INGREDIENTS, CUSTARDS

LEARNING OBJECTIVES

By the end of this day, you should be able to...

- identify equipment in the bakeshop.
- define mise en place.
- identify the primary functions of basic ingredients.
- define custard.
- differentiate between the methods of cooking a custard.

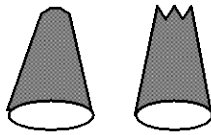
LEARNING ACTIVITIES

- Lecture and Discussion
- Demonstrations
- Hands-On Production
- Product Evaluation

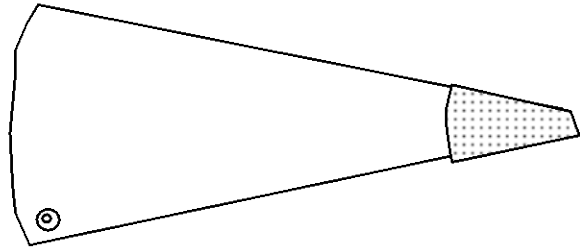
TOOLS AND EQUIPMENT

The quality of the equipment you use for baking has a distinct effect on your end results. Always use the right tool for the job.

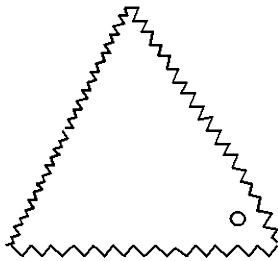
BAKER'S HAND TOOLS



Pastry Tips: available in a variety of sizes and styles for decorating



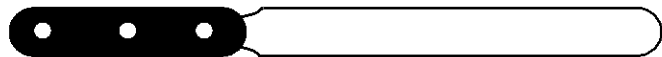
Pastry Bag: available in sizes from 7" to 28" used for application of icings and whipped creams



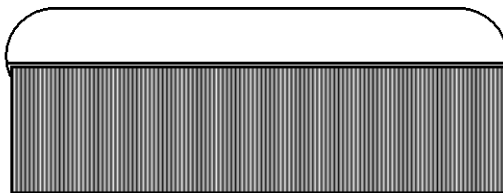
Decorating Comb: for texturing the sides of iced cakes.



Offset Baking Spatula: for spreading batters and creams over larger areas



Baking Spatula: for spreading batters and creams

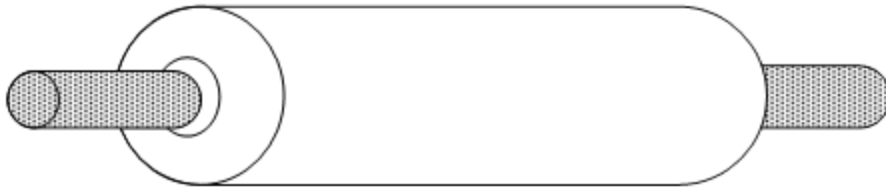


Bench Brush: for removing flour from bench or dough



Brush: for application of glazes

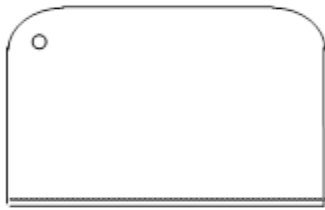
BAKER'S HAND TOOLS



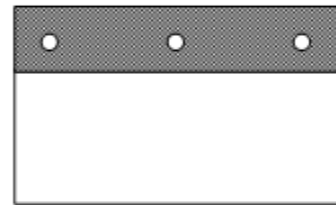
Large Rolling Pin: with ball bearings, for general all purpose rolling of doughs



Pie Pin: used for rolling out smaller amounts of dough



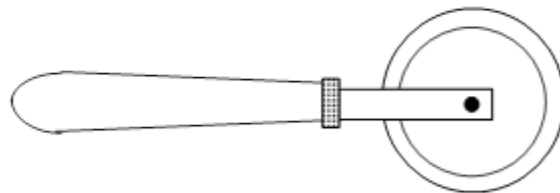
Rubber Scraper: for scraping doughs and batters from mixing bowls



Dough Cutter/Bench Scraper: for cutting doughs and also for scraping wooden benches



Round Cutters: available in sets of graduated sizes and also in fluted styles, for cutting doughs and other pastry products

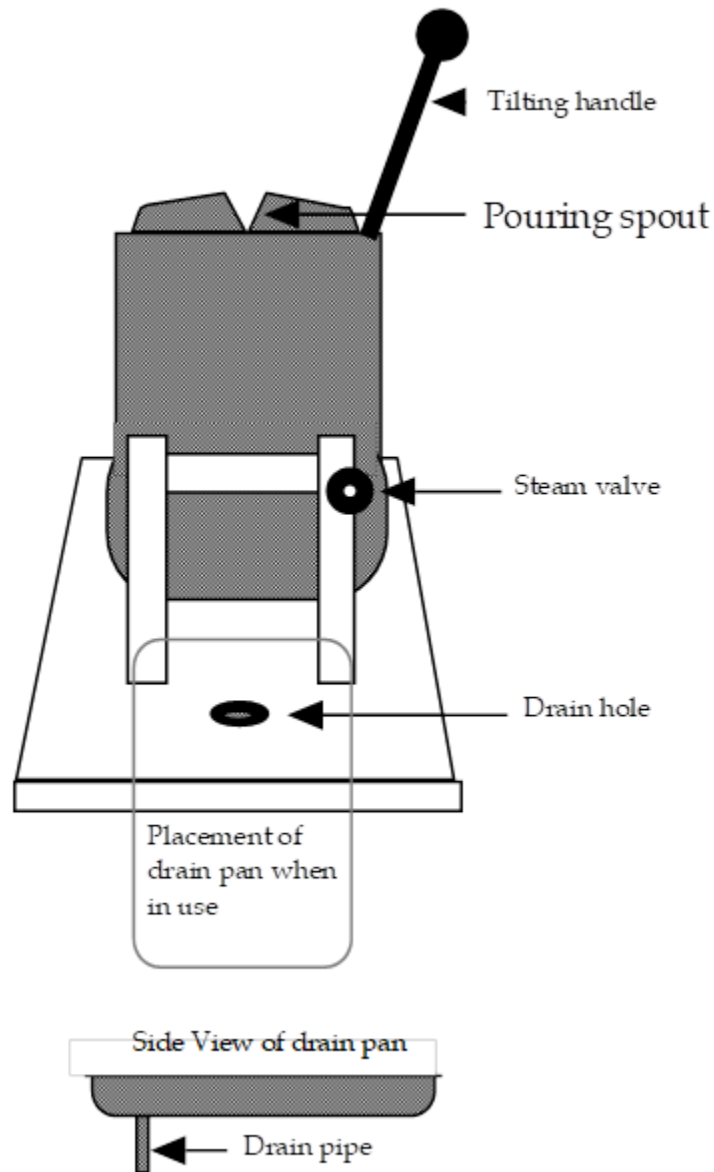


Pastry Wheel: for cutting dough after it has been rolled out



Serrated Slicer: for slicing cakes and breads

TABLETOP STEAM KETTLE

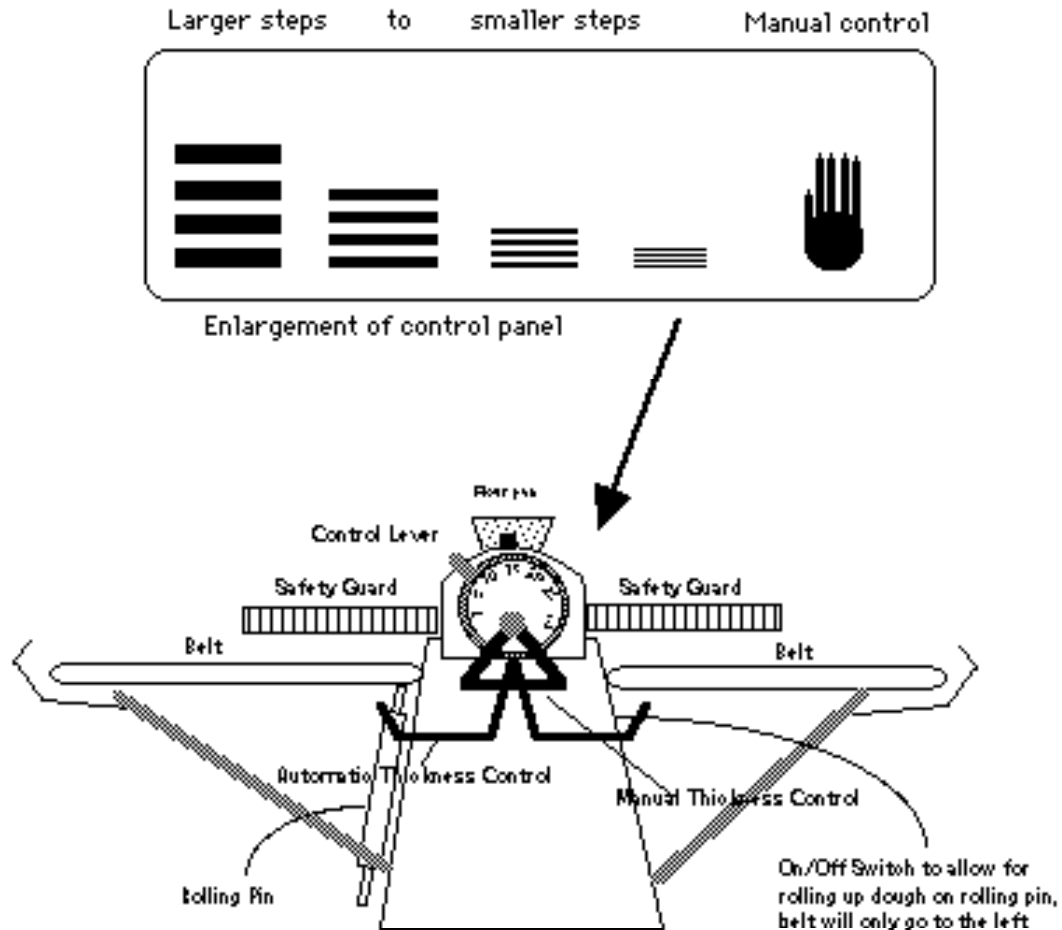


HOW TO USE A TABLETOP STEAM KETTLE

1. Place the product in the kettle. Open the steam valve.
2. Stir the product occasionally to evenly distribute the heat.
3. When the product is done, close the steam valve.
4. Place the drain pan in front of the steam kettle as illustrated by the dotted lines. Rest the pan that you intend to put your ingredients in on top of the drain pan.
5. Remove the product. Clean the kettle and pan with soapy water.

DOUGH SHEETER

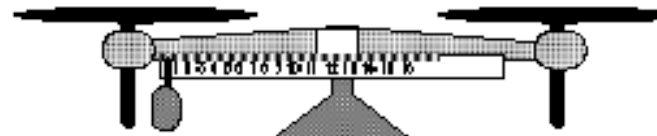
Safety Precaution !!



HOW TO USE THE DOUGH SHEETER

- 1) Setting up the machine: fill the flour pan, set the thickness to 30, and open the catch pans.
- 2) Select the enlargement step: the larger the step, the faster the machine will decrease in thickness.
- 3) Push safety guards down to position. Push inwards to secure.
- 4) Procedure for rolling dough:
 - (a) Place the dough on the right belt.
 - (b) Push the handle down and the belt will move dough to the left through the rollers on the left belt.
 - (c) Pull the handle level to stop the belt.

SCALES



1.

Scale Scoop

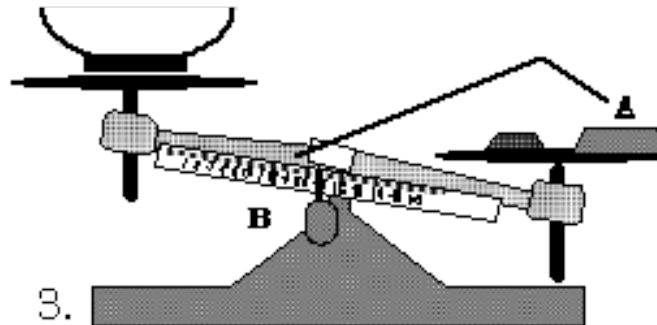
Counter Weight
(Same weight as scoop)



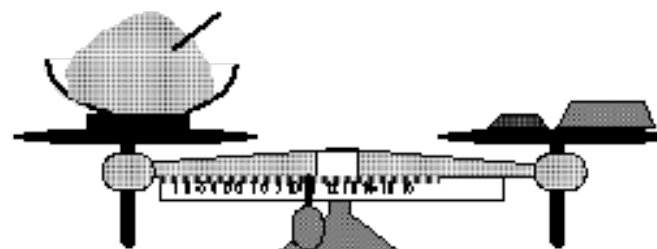
2.

Desired Ingredient
Weight – A + B

Add Ingredient Until
Scale Balances



3.



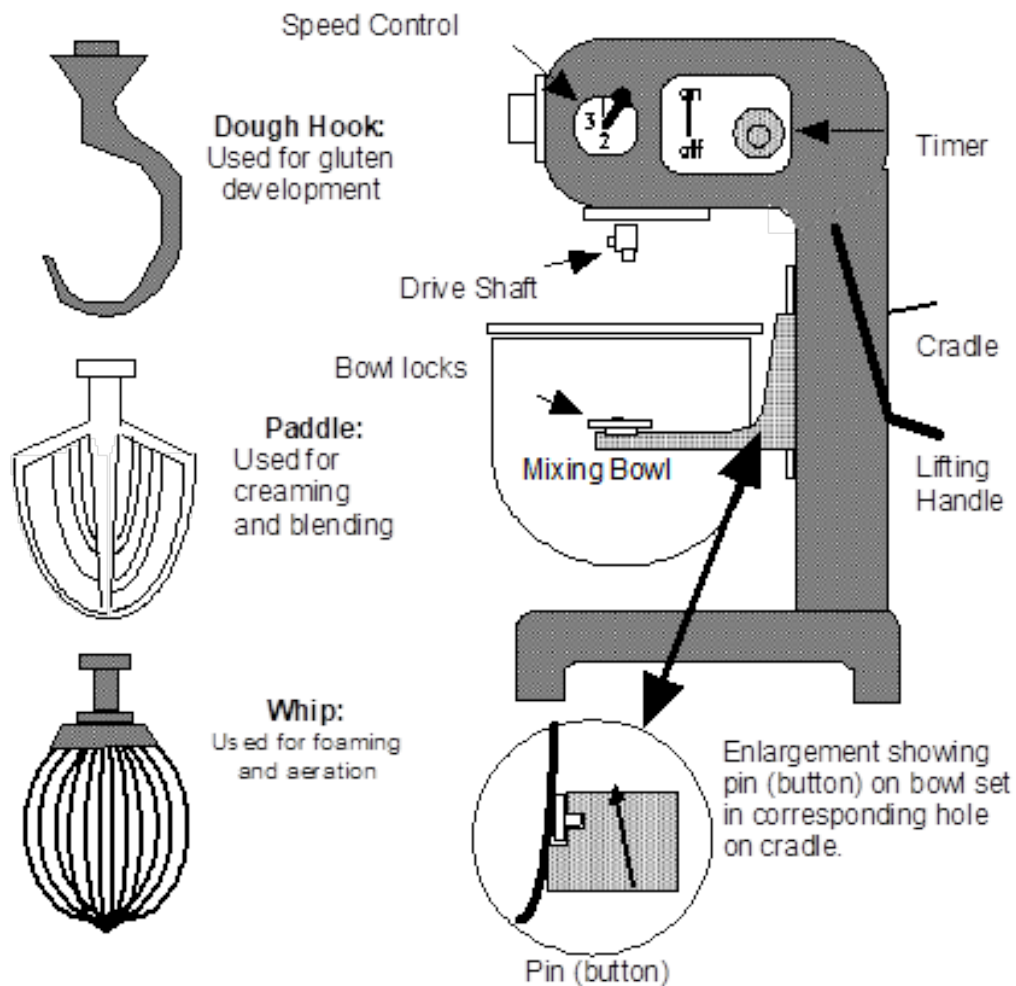
4.

Scales can accurately measure both dry and liquid ingredients. Due to their high level of accuracy, baking and pastry chefs prefer using scales to cup or volume measurers, which is why recipes (or formulas) are typically listed in weight measurements. When you weigh ingredients, be sure to take the measure of the ingredient only, and not its container. Set an empty container on the scale, then set the scale to zero before adding the ingredient to be weighed.

HOW TO USE A BAKER'S BALANCE

1. Place the scale on a level table or work surface free of any obstructions.
2. Place a scoop or container on the left platform - this is very important. If placed on the right platform, the ounce measure cannot be used. Balance the scoop or container with a counterweight placed on the right platform.
3. Set the scale for weighing by placing the correct number of pounds on the right platform and ounces on the ounce bar.
4. Add your desired ingredients until the scale balances.
5. When using the ounce bar to counterweight your container, add the total amount needed to the ounces already used. For example, if 3 ounces is used to balance the container and 8 ounces of an ingredient is needed, set the ounce bar at 11 ounces. When all 15 ounces on the ounce bar are used, add a 1 lb. weight to the right platform and return the ounce measure to zero, so it may be used again.

TABLE MIXER



HOW TO USE A TABLE MIXER

1. Check to see that the mixer is sitting firmly on a table, the power cord is plugged in, the timer set to zero, and the speed control is set to # 1.
2. Choose the proper size bowl and mixing attachment for the job to be done (check the numbers on each piece, i.e.: 20-quart bowl, 20-quart whip).
3. Lower the cradle to the lowest position with the lifting handle. Attach the bowl, being sure that the pin (button) on the bowl is secured in the corresponding hole on the cradle and that the locks are secured on each side of the bowl.
4. Connect the attachments to the drive shaft and turn to lock in place.

5. Place the ingredients to be mixed in the bowl. Check that the machine is free of all obstructions.
6. Select the speed, set the timer, and turn on the power.
7. Turn off the machine before changing speeds.
8. When done, turn off the power, lower the cradle, remove the bowl and attachments, and return the speed to #1. Set the timer back to zero.

MISE EN PLACE

Workspace organization is an essential skill for all persons who wish to maximize their efficiency in the kitchen. *Mise en Place*, a French term commonly used to express workspace organization, takes careful planning and anticipation of the entire task that the cook wishes to complete. Consider the following questions when setting up a workstation:

- What recipes and ingredients will be needed to complete the task?
- What precautions must I take to maintain good sanitation and nutritional conditions for the foodstuff?
- What equipment will be needed to complete the task (consider equipment needs throughout the entire process, including the final container which will hold the product)?
- What time should the product be completed, and how does this impact the sequence in which I will approach the task?
- When working in teams, how will the tasks be divided among the team members?

ORGANIZATION AND WORKFLOW

- Set up efficient workstations.
 - Set the table and cutting board at the correct height.
 - Use bain-maries with hot water for tools.
 - Set the cutting board on a sheet pan for messy jobs.

- Use raised cutting boards to facilitate a drop delivery system for end products and refuse.
- Have a written daily plan. Start with the **end** in mind.

Sample Daily Work Plan

Time	Tasks	Persons
9:00 a.m.		
9:15 a.m.		
9:30 a.m.		
9:45 a.m.		
10:00 a.m.		
10:15 a.m.		
10:30 a.m.		
10:45 a.m.		
11:00	Service Period	
12:00 p.m.		
12:15 p.m.		
12:30 p.m.		
12:45 p.m.		
1:00 p.m.	Clean Up	
Notes:		

- Use standardized recipes.
- Consolidate tasks. Have one person cut all the onions, garlic, etc.
- Use timers, if necessary.
- Use stem thermometers to ensure that products are maintained at appropriate temperatures.
- Be sure to use the right equipment for the right job!

BENEFITS OF MISE EN PLACE

- Increased speed and efficiency
- Professional appearance of workstation

RECIPE MISE EN PLACE

1. Study the recipe carefully.
2. Understand all the terms and definitions. Ask questions if you're not sure!
3. Check the yield, temperature, and cooking time.
4. Assemble, in order of use, all the ingredients needed before preparation time.
5. Complete necessary "pre" steps such as: greasing or lining pans, sifting ingredients, and preheating the oven.
6. Measure or weigh each ingredient as specified in the recipe.
7. Follow the steps in the recipe exactly and never leave out a step.
8. Time the cooking period for all cooked foods accurately.

FUNCTION OF INGREDIENTS

Like any type of food, the characteristics of a baked good or pastry item is determined by its ingredients. Each ingredient contributes to the flavor and texture of the product.

FIVE MAJOR COMPONENTS

There are five major components found in baking. It is unusual for baked goods to contain every component, but it is possible. The five components are:

- Flour
- Liquid
- Fat/Oil
- Egg
- Sugar

FLOUR

Flour is probably the most important ingredient used in the production of baked goods. Few items can be produced without this ingredient. Flour is derived from a

number of grain and vegetable sources, but it is the flour milled from wheat that is most commonly used. Flour can vary considerably, yielding correspondingly different results in the finished product.

PRIMARY FUNCTIONS OF FLOUR IN BAKING

- **Backbone and structure:** Flour is used in greater quantities than any other ingredient, forming the bulk of most bakeshop formulas.
- **Characteristic texture and appearance:** Derived by the different strengths and varieties of flour available.
- **Binding and absorbing agent:** Flour doesn't dissolve when it comes in contact with a liquid; it absorbs it.
- **Flavor:** Derived from the different types of flour.
- **Nutritional value:** Contains proteins, carbohydrates, vitamins, minerals, and fats.

WHEAT FLOUR

Bread can be made from different grains, such as rye, barley, and buckwheat, but only wheat flour contains the protein that can be converted into gluten. Strong or hard flour makes better bread. White soft flour has a high-starch, low-gluten content and is better suited for baking cake. Hard wheat flour has a higher protein content and feels more granular; in contrast, soft flour can feel like talcum powder. Hard flour makes bread with better rise and more open texture. Flour is the main ingredient of a loaf and determines its flavor and texture. Brown flour makes heavier bread than white flour. Whole-wheat flour makes denser bread than white flour, because it contains not only endosperm, but the bran and wheat germ as well. In general, hard wheat flour is used for breads and other yeast-raised products, where higher gluten content is necessary to hold the carbon dioxide that leavens the item. Bakers prefer to blend their own flours to meet their specific needs, or else use the hard or soft flour that is best suited to a particular formula.

WHEAT FLOUR - HARD AND SOFT

The hardness is determined by the ratio of gluten to starch.

- **Hard:** Spring wheat or winter wheat contains 11-15% protein
- **Soft:** Spring wheat contains 6-10% protein

HARD FLOURS: HIGHER GLUTEN CONTENT, LOWER STARCH CONTENT

- **Straight** (high gluten flour): The hardest of all flours, used for hard rolls.
- **Patent** (bread flour): Used for breads and soft rolls.
- **First clear:** High in gluten, darker in color, used as a wheat component in rye breads.
- **Bran flour:** The bran separated from the above flours during milling, used to make flour for muffins and specialty breads.
- **Whole wheat** (graham): The entire wheat kernel, higher in fat and other nutrients than other flours, used for breads, rolls and muffins.

SOFT FLOURS: HIGHER STARCH CONTENT, LOWER GLUTEN CONTENT

- **Cake flour:** Used for cakes and cookies
- **Pastry flour:** Used for pie doughs

SPECIALTY FLOURS

Rye, pumpernickel, barley, buckwheat, potato, rice, corn, and soy flours all contribute distinctive tastes and textures as well as nutrition and variety but are low in gluten content and generally have a percentage of wheat flour added to achieve proper leavening.

ALL-PURPOSE FLOUR

A blend of approximately 50% hard and 50% soft wheat flour, used in a wide variety of baked goods.

GLUTEN

Two proteins in wheat flour form gluten:

- Gliadin
- Glutenin

When the two proteins are mixed with a liquid, they undergo a molecular change to create a new protein, gluten. Mixing and kneading causes the gluten to form elastic strands that allow doughs and batters to stretch and hold the expanding gases that are produced during leavening; this creates breads that are light and airy. Only wheat contains enough gliadin and glutenin to produce the quantities of gluten necessary for this to occur.

LIQUIDS

When the protein of flour is mixed with water, gluten is formed; this feels sticky and rubbery and is an elastic framework of protein molecules. In bread making, the gluten stretches and traps, within the dough, the carbon dioxide released by the yeast. When the loaf is baked, the gluten coagulates and sets into the airy, spongy form of the bread. Water makes a plain, crusty loaf. The addition of milk not only flavors the bread but also gives the crust a softer, more golden texture. Bread made with milk has enriched food value and keeps longer than plain bread. For certain breads, this softer texture may be desirable.

WATER EXISTS IN THREE DISTINCT FORMS

Solid: as in ice

Liquid: its most common form

Gas: when heated above 212°F

The liquid and gaseous states are most useful to the baker.

WATER AS A LIQUID

- Solvent for the water-soluble ingredients (salt, sugar)
- Helps even distribution of other ingredients (yeast, spices)
- Changes proteins in flour to gluten

WATER AS A GAS

- Changes to steam upon reaching 212°F in the oven (steam expands and helps leaven the product).
- Generally, in breadmaking the greater the water content, the more open the grain and the softer the crumb.
- In bread making, water often serves as the primary liquefier. In recipes for other baked goods, milk is usually used.

MILK AND MILK PRODUCTS IN BAKING

Milk is 88% water, 3 ½% fat, 8 ½% milk solids. One-gallon whole milk weighs about 8 ½ lb., contains ⅞ water and ⅛ milk solids. Milk helps in the development of gluten because it is a liquid. It has the following primary functions:

- **Increases keeping qualities.**
- **Develops Crust and Color:** Sugar (lactose) in milk caramelizes and creates a rich color on the product's surface; it can also aid in development of a firm crust as well.
- **Develops Grain and Texture:** Lactic acid in milk has a tightening effect on gluten, increasing stability. The result is an item with fine grain and texture.
- **Improves Appearance:** The opaque whiteness of the milk itself is imparted to the interior of breads and cakes; this together with the effects of the first two functions creates a more attractive product.
- **Adds Food Value:** Whole milk contains approximately:
 - 3.7% Milk sugar
 - 2.9% Butterfat
 - 2.9% Protein
 - 6% Minerals

- **Improves Eating Quality:** Richer, better flavor than water.

Pasteurization is the process of heating the milk to 161°F for 15 seconds then cooling rapidly. This kills harmful bacteria. Milk products with a higher % of fat are heated to either 150°F for 30 minutes or 166°F for 30 seconds for ultra-pasteurization. Date stamp is 10 days after the date of pasteurization.

Homogenization is the process of forcing the milk through tiny holes to break up the fat particles, so they remain evenly dispersed throughout the milk.

TYPES OF MILK

- **Skim Milk** - (or nonfat) -all or most of the fat removed. ½ % or less fat.
- **Low-fat** - 0.5% - 3%
- **Buttermilk** - The liquid remaining after cream is churned to make butter.
- **Cultured Buttermilk** - skim milk to which a bacteria culture has been added which converts the milk sugar to lactic acid.
- **Evaporated Milk** - whole or skim milk heated to remove 60% of the water, then sterilized & canned.
- **Condensed Milk** - the same as evaporated with the addition of 45-50% sugar. 30% water, 40% sugar, remaining milk solids (8% fat, 7 ¾% protein, 10 ½% milk sugar), 1 ¾% mineral.
- **Dried Milk** - milk that is rapidly evaporated by heat. It shouldn't contain more than 5% moisture.
- **Cream**
 - Whipping cream: 30 - 36% butterfat
 - Heavy cream: 36 - 40% fat
 - Light cream: 18 - 30% fat
 - Half and Half: 10 ½ - 12% fat

- Ultra-pasteurized: lasts longer but doesn't whip as well. It may contain vegetable gums to compensate.

Sour Cream - 16 - 22% fat. Made by adding bacteria to pasteurized cream to produce lactic acid, then left for a couple of days.

FATS/OILS IN BAKING

Fat/Oil is not an essential ingredient but may be added for flavor, and to enrich the bread. Fat softens the gluten and makes closer-textured, moister loaves. Bread enriched with fat keeps better.

CLASSIFICATIONS OF SHORTENING AGENTS

- **Animal fats** (Butter and Lard)
- **Vegetable oils** (after various degrees of processing)
- **Hydrogenated form** (solid shortenings)
- **Natural** (oil)

FUNCTIONS OF SHORTENING

- **Alters Eating Qualities:** Results in products that are more tender and less chewy than lean dough products; in addition, some fats or oils add flavor.
- **Alters Appearance:** Shortening agents do not dissolve in doughs but become evenly dispersed and incorporate air, resulting in soft crumb in breads, making the products visually distinct compared to lean dough products.
- **Improves Keeping Quality:** Shortening acts as an emulsifier and makes it possible to incorporate greater quantities of liquids; this prevents rapid drying out of products.
- **Adds Food Value:** Fats constitute a concentrated source of energy for the body.

EGGS IN BAKING

Eggs add flavor and color to bread and contribute to the leavening process. A glaze of egg bakes golden like a layer of varnish and gives a more tender crust.

PRIMARY FUNCTIONS OF EGGS IN BREAD BAKING

- **Color:** This is the primary function of the yolk and plays a major role in the eye appeal of such items as custards, yellow sponge cakes and egg breads.
- **Texture and Grain:** The coagulating, foaming and emulsifying properties of eggs all help to incorporate and distribute air into mixtures and hold it there during baking, as well as promote an even grain and fine texture in the finished product.
- **Structure:** The proteins in eggs reinforce the gluten in flour to help maintain the stability and structure of the product during baking.
- **Flavor:** This is mostly the function of the yolk as egg whites have relatively little flavor. The fat and other nutrients in the yolk contribute aroma as well as taste, resulting in products with enhanced appeal.
- **Nutritional Value:** Eggs contain 75% moisture. The remaining 25% of the egg contains protein, fat, sugar, potassium, sodium, calcium, and iron.

SUGARS IN BAKING

While sugar sweetens bread, it also makes the texture tender by softening the gluten. Sugar also gives the loaf a browner crust. A little sugar added to bread dough accelerates the yeast's action, but high concentrations of sugar can kill the yeast. It should be kept in mind that both wild and commercial yeasts obtain needed sugars by converting the starch in the grain into simple sugars, and it is not necessary to add granulated sugar to bread doughs in order to obtain a good finished product.

MAIN FUNCTIONS OF SUGARS IN BAKING

- **Adds Sweetness**

- **Affects Grain and Texture:** Sugar has a denaturing effect on the gluten in flour, acting together with the delay in gelatinization; this produces a softer crumb and finer grain in breads. For certain breads this may be desirable.
- **Retains Moisture and Prolongs Freshness:** Sugar absorbs moisture from other ingredients as well as from the atmosphere; this keeps a finished product moist and delays drying out.
- **Imparts Crust Color:** Sugar caramelizes and helps form a browner, firmer crust during baking.
- **Contributes Food Value:** Sugar in moderate amounts can supply some of the carbohydrate requirements of a normal diet.
- **Aids in Fermentation of Yeast:** A small amount of sugar supplies a source of food for yeast.

CUSTARDS

Custards generally contain eggs, liquid, sugar, and other flavorings and sometimes a starch. Custards can be cooked on the stovetop or baked/poached.

COOKED CUSTARDS

Nappé - for custards without the presence of a starch

Boiled - for custards containing starch

EXAMPLES OF COOKED CUSTARDS

- Vanilla Sauce
- Ice Cream
- Gelato
- Sabayon
- Rice Pudding
- Pastry Cream
- Cream Puddings

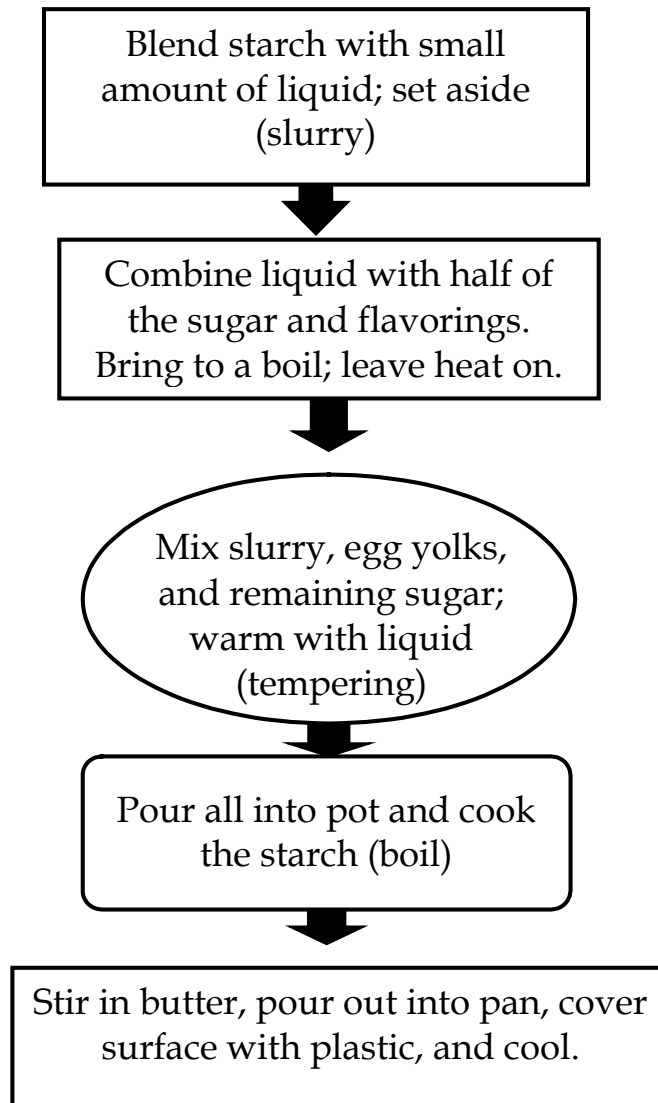
BAKED/POACHED CUSTARDS

Baked/Poached custards steam in an oven. Baked custards may or may not contain a starch.

EXAMPLES OF BAKED/POACHED CUSTARDS

- Cheesecake
- Crème Brûlée
- Crème Caramel
- Clafoutis
- Bread Pudding
- Petit Pôt de Crème

Custard: Boiled Method



CUSTARD: NAPPÉ METHOD

Mise en place:
Ice bath, fine chinois, ladle,
wooden spoon, bain marie

Combine liquid with half of
the sugar and flavorings.
Bring to a boil, then, turn off
heat.

Warm egg yolks and
other half of sugar
with liquid
(tempering)

Pour all into pot and cook
until coats the back of a
spoon (nappé)

Strain immediately into a bain marie
in an ice bath

CUSTARD: BAKED/POACHED METHOD

Warm liquid, flavorings,
and half sugar

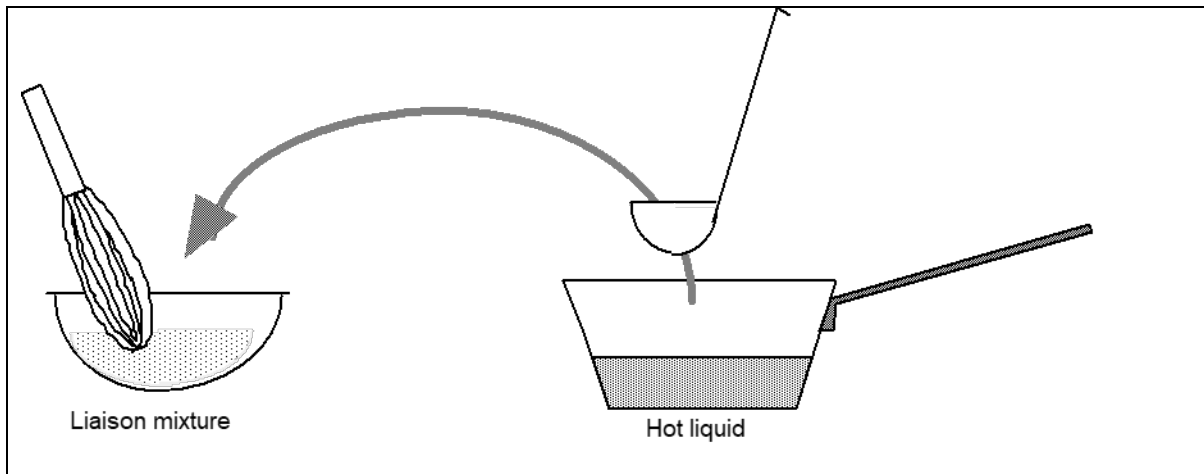
Mix eggs and half sugar.

Warm eggs with
liquid (tempering)

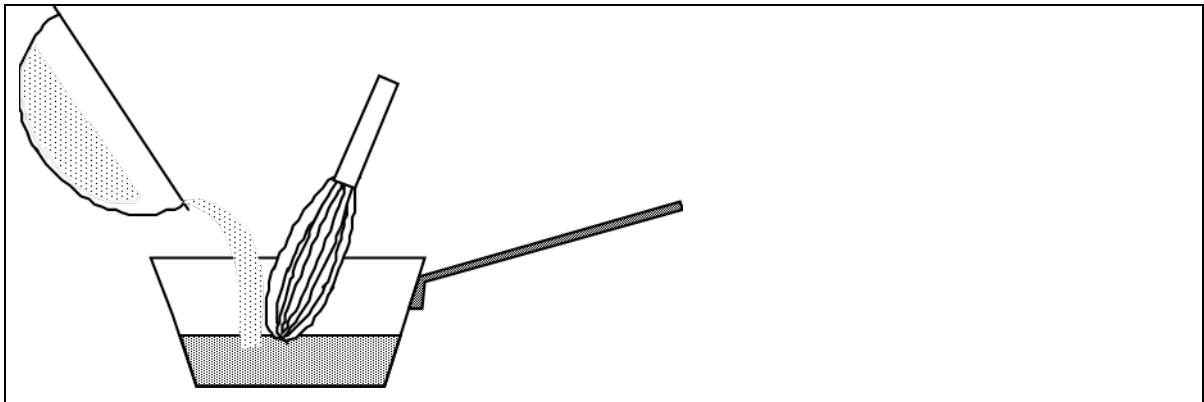
Add all liquid to eggs and
strain (do not return to heat)

Pour into molds and bake in a low
oven 325° F, preferably in a water
bath, until set.

TEMPERING METHOD FOR CUSTARDS



Step One: add some of the hot liquid to the liaison, whisking or stirring constantly to prevent scrambling or curdling.



Step Two: Add the liaison back to the hot liquid, whisking or stirring constantly to prevent scrambling or curdling. Cook until you reach the desired temperature and consistency. Remove from heat and cool.

VANILLA SAUCE

Vanilla sauce is also known as Crème Anglaise, Sauce Anglaise, or Custard Sauce. Vanilla sauce is a fundamental preparation in the bakeshop. Aside from its use as a dessert sauce, crème Anglaise can be used as the basis for other dessert items

including Bavarian cream, parfait, or even baked custards. Vanilla sauce can be made using either milk, heavy cream, or a combination of the two. Either egg yolks or whole eggs may be used to thicken the sauce. The sauce is commonly made using milk and egg yolks. The most important step in making a vanilla sauce is to cook it to the proper consistency; the sauce must be cooked until it coats the back of a spoon, or nappé consistency. A vanilla sauce that is undercooked will be too thin to effectively use as a sauce and may present a hazard of foodborne illness. An overcooked sauce will curdle as the eggs coagulate leaving a sauce that is not smooth.

Straining the sauce immediately after removing it from the heat not only removes any overcooked egg, but it also stops the cooking process preventing any carryover cooking. It is crucial to have the strainer, bain-marie, and ice bath ready before you begin to cook the sauce, so that it can be strained as soon as it reaches nappé consistency. As with any dairy product, it is important to cool the sauce as quickly as possible, preferably in an ice bath, and refrigerate it after it is cooled. Vanilla sauce is a highly perishable food item, and scrupulous sanitation procedures must be maintained.

PASTRY CREAM

The preparation of pastry cream is a fundamental skill in any pastry shop. It is used as a filling either by itself or mixed with another ingredient such as whipped cream. Pastry cream is very similar in ingredients to vanilla sauce, but it has a starch added to it. The purpose of the starch is to further thicken the mixture so that it has a pudding-like consistency rather than the sauce consistency that vanilla sauce has. The addition of starch makes it necessary to bring the pastry cream to a full boil once all the ingredients are combined, unlike vanilla sauce, which must never be

boiled, or it will curdle. The most common starch to use in making pastry cream is cornstarch, although flour, arrowroot, or tapioca may also be used.

Pastry cream is also a highly perishable product and must be cooled quickly and stored properly to prevent spoilage. To cool pastry cream, pour the cooked cream into a hotel pan, cover the surface with plastic wrap, and cool on an ice bath to below 45°F before refrigerating.

DAY ONE

TEAM PRODUCTION ASSIGNMENTS

CHEF DEMONSTRATIONS

Pastry Cream

Pâte à Choux

Crème Brûlée

ALL TEAMS

Pastry Cream

Pâte à Choux

Crème Brûlée

PASTRY CREAM

Yield: 1 ¾ quarts (approx. 3 ½ lb.)

Ingredients	Amounts
Sugar, granulated (Divided)	8 wt. oz.
Cornstarch	3 wt. oz.
Milk, whole (Divided)	1 qt.
Egg, whole	6 ea.
Salt, kosher	1/8 tsp.
Butter, unsalted	3 wt. oz.
Vanilla, extract	1 tsp.

Method

1. In a medium mixing bowl, place ½ of the sugar and the cornstarch. Mix to combine. Add about 10% of the milk and mix until dissolved.
2. Add the eggs. Mix to blend.
3. In a saucepan, place the salt, the remaining milk, and remaining sugar. Bring to a boil.
4. Add a portion of the boiling milk mixture to the egg mixture and whisk well to blend. This process, known as tempering, will help slowly increase the temperature of the egg mixture so that the eggs do not coagulate and curdle when added to the boiling mixture.
5. Return the entire tempered egg mixture to the pan and bring the mixture to a boil, whisking constantly. Cook for 1 minute.
6. Remove the pan from the heat, then whisk in the butter and flavorings.
7. Place in a hotel pan over an ice bath to cool.
8. Cover surface with plastic wrap. Label and refrigerate.

Note: Half of a vanilla bean can be substituted for the vanilla extract. Pastry cream should be used within three days if stored properly.

PÂTE À CHOUX

Yield: 3 ¼ pounds

Ingredients	Amounts
Water	8 fl. oz.
Milk, whole	8 fl. oz.
Butter, unsalted, cubed	8 wt. oz.
Salt, kosher	¼ wt. oz.
Flour, bread	8 wt. oz.
Egg, whole	16 wt. oz.

Method

1. Combine the water, milk, butter, and salt in a saucepan and bring to a rolling boil.
2. Remove from heat and add the flour all at once. Stir constantly until the mixture forms a ball, pulls away from the sides of the pan, and leaves a film on the bottom of the pan, about 30 to 45 seconds.
3. Transfer mixture to a mixing bowl and mix on 2nd speed for 2 minutes to allow mixture to cool slightly before adding the eggs.
4. Slowly add eggs in 3 or 4 additions, mixing well between each addition to form a medium stiff paste.
5. Fill a pastry bag and pipe into desired shapes using a #6 straight tip onto a parchment-lined sheet pan.
6. Bake at 380°F to 400°F until the structure has been formed with a little color.
7. Reduce temperature to 250°F and bake until the moisture has evaporated from the interior and the exterior is golden brown.

Note: As with many basic formulas, the types of ingredients (butter vs. shortening, etc.) can be varied depending on its intended use. Be aware that these changes will provide different results, such as the quicker browning caused when milk is used rather than water.

Variation: For French crullers, use 2 ounces fewer eggs to produce a thicker batter.

CRÈME BRÛLÉE

Yield: nine 4-ounce ramekins

Ingredients	Amounts
Cream, heavy	22 fl. oz.
Sugar, granulated (Divided)	4 wt. oz.
Vanilla, bean	½ ea.
Salt, kosher	⅛ tsp.
Egg, yolk	6 ea.
Sugar, granulated	5 wt. oz.

Method

1. In a saucepan, combine the cream, 2 ounces of the sugar, vanilla bean, and salt. Bring to a simmer over medium heat, stirring gently with a wooden spoon.
2. In a large mixing bowl, blend the egg yolks with the remaining 2 ounces of sugar. Temper the mixture by gradually adding about ⅓ of the hot cream. Stir constantly with a wire whip, then add the remaining hot cream. Strain and ladle into ramekins, filling them three-quarters full.
3. Place the ramekins into a baking pan and add enough water to come halfway up the sides of the ramekins. Bake in the water bath at 325°F until custards are just set, about 20 to 25 minutes.
4. Remove the custards from the water bath and wipe the ramekins dry. Refrigerate until fully chilled.
5. To finish the crème brûlée, evenly coat each custard surface with a thin layer of brûlée sugar. Use a propane torch or place under a broiler/salamander to melt and caramelize the sugar.

DAY TWO:

FOAMING AND CREAMING MIXING METHODS

LEARNING OBJECTIVES

By the end of this day, you should be able to ...

- list the steps of the foaming method.
- differentiate between the types of foaming methods.
- explain the purpose of warming the eggs and sugar.
- list the steps of the creaming method.
- prepare sponge cake.

LEARNING ACTIVITIES

- Lecture and Discussion
- Demonstrations
- Hands-On Production
- Product Evaluation

MIXING METHODS

FOAMING METHOD

The objective of the foaming method is to create a batter containing a maximum amount of air. The more air that a batter can be made to hold, the greater its volume and the lighter the finished product. Recipes with a balance of ingredients particularly high in egg and low in flour achieve the greatest volume and the lightest product. The foaming method of mixing is based on the foaming property of eggs, which have the capacity to absorb more air than any of the other basic baking ingredients. This accounts for their presence in such large proportion in batter recipes prepared by this method. The egg foam holding all this air is extremely fragile and may be easily destroyed (a thick dense mixture would collapse its structure and knock the air out of it). This is the reason that flour accounts for so little of the recipe's total composition.

Since flour is the ingredient most responsible for a baked product's structure, one would assume that a cake made with so little flour would collapse, but in foaming recipes, the structural function of the flour is performed by the other stabilizing ingredient, eggs. The result of the foaming method in items such as sponge cake is that it is not only light and airy, but also resilient enough to be rolled into roulades or sliced into layers to form the body of various cakes.

COLD FOAMING METHOD

1. Place eggs and sugar in a mixer bowl, whip at high speed until maximum volume is reached.
2. Turn mixer to medium speed for 2 minutes.
3. Sift all dry ingredients.
4. Fold the sifted dry ingredients into the egg mixture.

5. Temper melted butter into a small portion of the batter.
6. Slowly fold tempered batter into sponge base.

WARM FOAMING METHOD

1. Combine eggs and sugar in a mixer bowl, place over a double boiler, and lightly whip eggs until mixture has reached 110°F.
2. Whip the egg mixture at high speed until it begins to recede.
3. Reduce speed of mixer to low, whip for an additional 2 minutes (Note: the mix can be left at this stage for considerably longer if necessary.)
4. Sift all dry ingredients.
5. Fold sifted dry ingredients into the egg mixture.
6. Temper in melted butter.
7. Portion into cake pans.

SEPARATION FOAMING METHOD

1. Separate eggs, put yolks in one mixer bowl and whites in another.
2. Put $\frac{1}{3}$ of the sugar with the yolks and whip until doubled in size.
3. Whip the whites to soft peaks, then slowly add the remaining $\frac{2}{3}$ of the sugar.
4. Sift the dry ingredients.
5. Add seasonings to the yolks.
6. Fold the egg yolk foam and the egg white foam together.
7. Fold in the dry ingredients.
8. Fold in oil/fat via a liaison (if included in formula).
9. Bake.

Note: This method will give the most volume to a recipe. If you are making a roulade or a product that must be rolled, leave the butter out, as the butter will become firm under refrigeration and cause the cake to break when rolled.

CHART OF FOAMING MIXING METHODS
Cold, Warm and Separated

Ingredient	Cold Method	Warm Method	Separated Method
Sugar Eggs (and flavoring)	Whip together for 20-30 minutes.	Combine and warm to 110°. Whip together until it reaches maximum volume.	Separate egg whites and yolks. Whip each with ½ sugar. Fold egg whites into egg yolk mixture.
Flour (or other dry ingredients)*	Sift and fold in by hand.	Sift and fold in by hand.	Sift and fold in by hand.
Butter	Fold tempered fat in by hand.	Fold tempered fat in by hand.	Fold tempered fat in by hand.
	Fill into prepared cake pans and bake immediately.	Fill into prepared cake pans and bake immediately.	Fill into prepared cake pans and bake immediately.

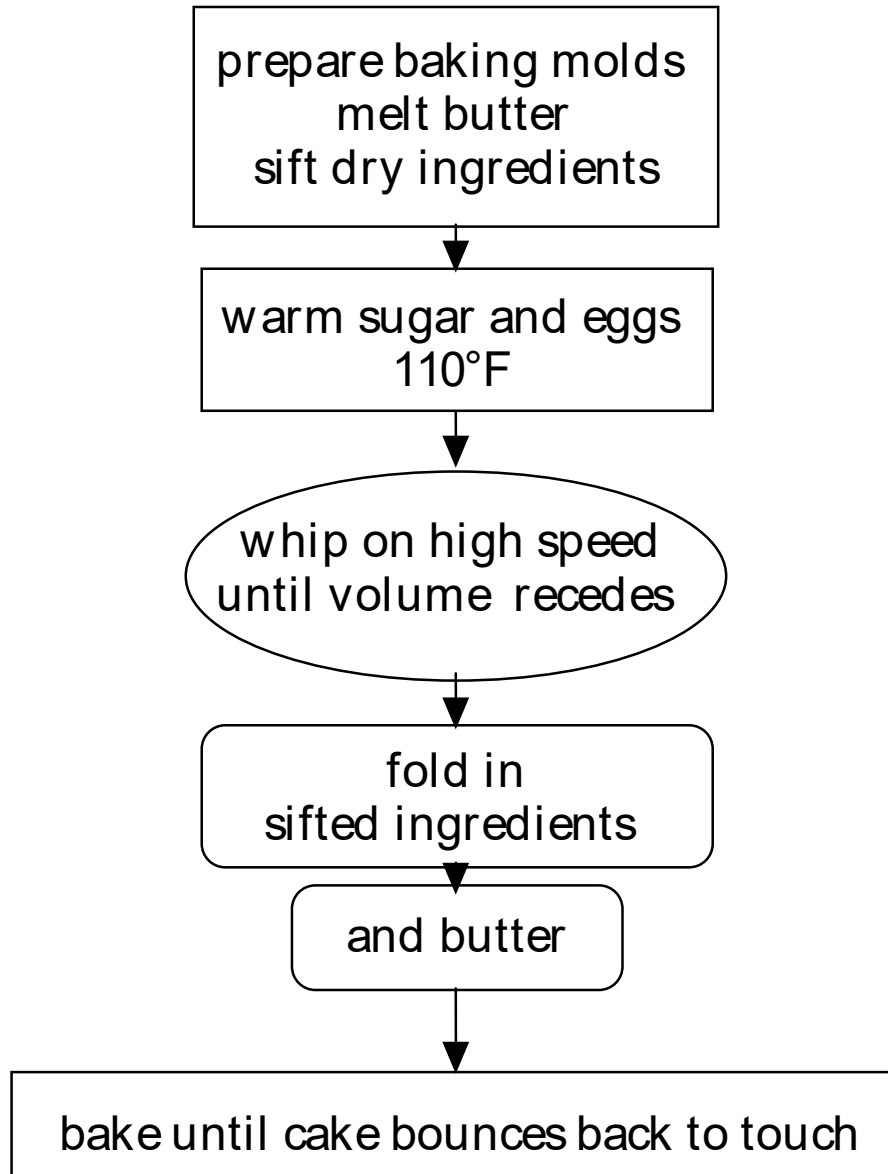
*Flour may be substituted with a mixture of cornstarch and flour.

EXPLANATION OF STEPS FOR FOAMING MIXING METHOD

Ingredient	Action	Reason
Sugar Eggs	Whip	To incorporate air into the mixture to create foam-like structure.
Flour (Starch) (Baking powder) (other dry ingredients)	Sift... and fold in	In order to aerate, remove lumps and evenly distribute ingredients. To allow dry ingredients to be mixed in without knocking the air from the foam or incorporating lumps into the mixture.
Butter	Melt, temper, and fold in.	To incorporate butter without knocking air from the foam.

FOAMING METHOD

SPONGE CAKE



CREAMING METHOD

The creaming method is used primarily for cookie doughs and pound cakes and in recipes where the flour is equal to or greater than the sugar content.

OTHER CHARACTERISTICS OF THE CREAMING MIXING METHOD

- Air is introduced during the creaming or first step of this method. Sugar's crystalline structure introduces thousands of small air cells into the fat during creaming where they are held throughout mixing and during baking. As the batter is heated, these air cells expand to leaven the item.
- The increased ratio of stabilizers requires the additional mechanical leavening of the incorporated air as well as the chemical leavening produced by baking powder or baking soda.
- A greater ratio of stabilizers can also result in batters that are thick enough to require being piped out from a pastry bag, such as cookies.

MIXING PROCEDURE

1. Cream fat and sugar together.
2. Add flavorings, mix well.
3. Gradually add eggs.
4. Add liquid (if adding a large amount of liquid, alternate with additions of flour).
5. Add dry ingredients.
6. Mix until smooth (do not overmix).
7. Bake.

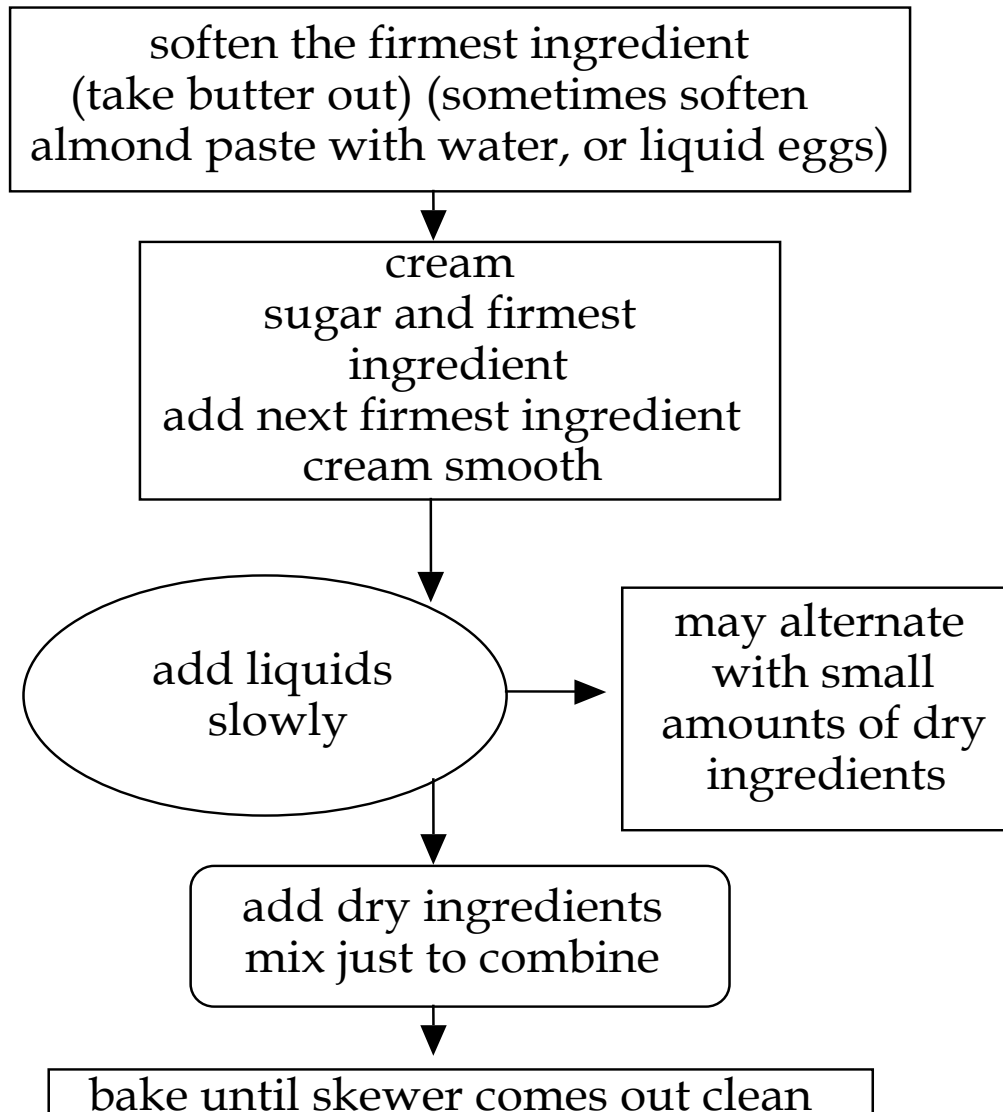
CHART OF CREAMING MIXING METHOD

Ingredient	Action	Reason
Sugar Butter	Combine and cream until smooth and light.	To incorporate air into the fat and sugar mixture
Eggs	Gradually add and scrape as necessary.	To allow the eggs to mix in and emulsify with the fat and the sugar.
Flour (or other dry ingredients)	Sift together. Add on low speed. Mix until combined. Do not overmix.	To incorporate the dry ingredients smoothly and thoroughly without overmixing.

COMBINATION CREAMING METHOD

This method is commonly used to produce Sacher cake. It is a creamed-type cake batter, which employs the foaming mixing method in addition to the creaming method to lighten the texture of the finished cake. This is done in the form of a meringue (egg whites and sugar) which is folded into the creamed fat, sugar, and egg mixture. The sifted dry ingredients are folded in last using the proper folding technique, as when folding flour into a sponge cake batter. The batter can be baked in cake pans for the classical Sacher torte or in sheet pans for individual pastry applications, like a Sacher slice.

CREAMING METHOD CAKES, DOUGH, BATTERS



DAY TWO

TEAM PRODUCTION ASSIGNMENTS

CHEF DEMONSTRATIONS

Discuss Procedure and Demo Vanilla Chiffon Cake

Fill and Finish Pâte à Choux

Finish Crème Brûlée

ALL TEAMS

Vanilla Chiffon Sponge (4 cakes)

Fill and Finish Pâte à Choux

Finish Crème Brûlée

VANILLA CHIFFON SPONGE

Yield: four 8-inch cakes

Ingredients	Amounts
Egg, yolk	11 ea.
Oil, vegetable	1 ½ oz.
Vanilla, extract	1 tsp.
Flour, cake	1 lb. 1 oz.
Sugar, granulated	14 ½ oz.
Baking powder	¾ oz.
Salt, kosher	½ tsp.
Water, warm	8 oz.
Egg, whites	11 ea.
Sugar, granulated	4 oz.
Cream of tartar	½ tsp.

Method

1. In a 5-quart mixing bowl, combine the egg yolks, oil and vanilla.
2. Sift all dry ingredients into the bowl.
3. Add ½ of the water and mix to a paste using a paddle attachment.
4. Add the remaining water slowly in three stages to the dry ingredients to thin out the paste. Scrape the sides of the bowl and the paddle after each addition.
5. Beat on medium speed for two minutes.
6. In a separate 5-quart bowl, make a medium peak common meringue with the egg whites, sugar, and cream of tartar.
7. Carefully fold the mixtures together using the 1/3 - 2/3 technique.

Scaling Instructions

1. Fill each pan to slightly above halfway.

Baking Instructions

1. For cakes: Bake at 350°F for 20 to 30 minutes or until cake springs back. Do Not Over Bake.
2. For sheets: Bake at 425°F for 10 to 12 minutes until cake springs back. Do Not Over Bake.

Note: Mix the cream of tartar with the sugar to make the meringue.

DIPLOMAT CREAM

Yield: 2 ½ pounds

Ingredients	Amounts
Cream, heavy	1 cup
Gelatin, powder	1 ½ tsp.
Water, cold	2 fl. oz.
Pastry cream	1 lb.

Method

1. In a cold mixing bowl, whip the heavy cream until it holds medium peaks. Reserve.
2. In a bowl, sprinkle the gelatin over the cold water, stirring to break up any lumps. Allow the gelatin to soften in the water. This process is known as blooming.
3. Heat the softened gelatin over simmering water or briefly in the microwave until the granules have melted and the mixture is clear.
4. In a large mixing bowl, whisk the pastry cream until smooth and it warms to room temperature.
5. Drizzle the gelatin solution into the pastry cream and whisk vigorously until evenly blended.
6. Vigorously whisk $\frac{1}{3}$ of the whipped cream into the pastry cream mixture.
7. Fold in the remaining $\frac{2}{3}$ whipped cream just until evenly blended.
8. Use immediately.

Variation: Other flavors could be achieved by adding liqueurs or spices. Some flavors may also be incorporated into the pastry cream itself by steeping the milk with them.

GLAZING GANACHE

Yield: 2 lb. 2 ½ oz.

Ingredients	Amounts
Chocolate, bittersweet (Guittard chocolate coins), finely chopped	1 ½ lb.
Cream ,heavy	1 lb.
Corn syrup	2 oz.

Method

1. Place the chocolate in a stainless-steel bowl.
2. Combine the heavy cream and corn syrup in a saucepan. Bring to a boil.
3. Pour the boiling heavy cream mixture over the chocolate.
4. Gently stir the mixture until all the chocolate has melted and the mixture is completely smooth.
5. Strain and cool. Store in the refrigerator.
6. To use the glazing ganache, melt in a stainless-steel bowl over a hot water bath until it is easily pourable.

Note: Adjust the amount of chocolate to achieve the desired consistency. Sugar and cocoa contents of chocolate may vary from brand name to brand name. Glucose can be substituted for the corn syrup.

DAY THREE:

PUFF PASTRY, MERINGUES, AND BUTTERCREAM

LEARNING OBJECTIVES

By the end of this day, you should be able to...

- describe the different folds used to laminate puff pastry.
- apply the different folds to laminate puff pastry dough.
- list the different types of meringues and their applications.
- learn techniques to separate, moisten, and fill a cake.
- learn techniques and methods to apply a crumbcoat.
- identify the types of buttercream for filling or icing cakes and pastries.

LEARNING ACTIVITIES

- Lecture and Discussion
- Demonstrations
- Hands-On Production
- Product Evaluation

LAMINATED DOUGHS

Laminated doughs include croissant, puff pastry and Danish dough. Through a series of sheetings/rollings, folds and turns, numerous layers of dough and fat are created that help to leaven the dough and contribute to the crisp, tender, and light qualities characteristic of laminated dough. The fat separates the layers of dough and traps steam released during baking. The number of fat layers is critical to the success of laminated doughs. With too few layers the steam will escape, and the pastry will not rise. Too many layers can also be a problem because the layers of fat and dough merge together resulting in a loss of separation between dough and fat. Thus, the dough will not lift. The fat that separates the layers of dough must be handled carefully prior to and during lamination. When working with the roll-in fat, try to adhere to the following principles:

- Keep the fat at or below 65°F/18°C.
- Mix the fat with some flour to create a workable or “plastic” roll-in fat.
- Make sure that the dough is kept cool before and after the fat is folded in.

The process to make these layers of fat and dough, lamination, can be broken down into two main stages:

1. Incorporating the fat
2. Sheeting/rolling and folding to create layers

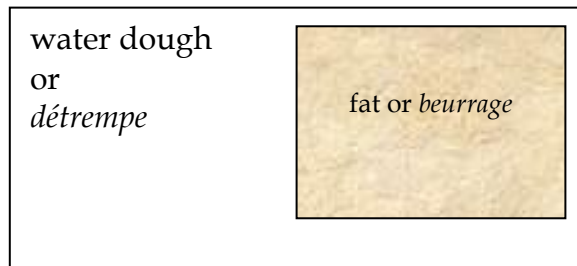
INCORPORATING THE FAT OR “LOCKING IN”

The fat, also known as *beurrage*, roll-in fat, or fat dough, can be added by several methods – the all-in method, the two-fold, or the three-fold or envelope method. This stage is also known as “locking in” the fat. The choice of method depends on the type of laminated dough (puff pastry, croissant or Danish). The all-in method mixes the fat directly into the flour. The other three methods use two separate “doughs” – the water dough and the fat dough (butter) – and then combine the two doughs through a series of folds.

ALL-IN OR "SCOTCH" METHOD

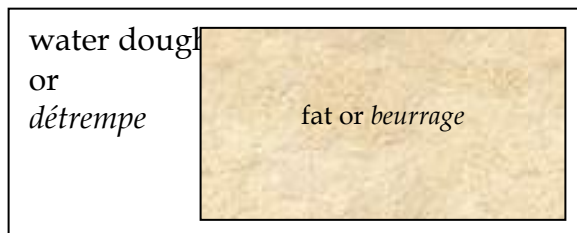
The all-in method is like making pie dough because the fat is "cut" into the flour mixture. However, the pieces of fat should remain relatively large and **randomly** distributed throughout the dough. If the dough is mixed too long resulting in small pieces of fat **uniformly** distributed throughout the dough, the fat layers will not form properly, and the dough will not achieve maximum lift during baking. This method is commonly used for incorporating the fat into puff pastry.

TWO-FOLD LOCK IN METHOD



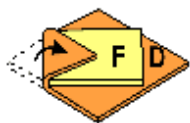
In the two-fold lock in method, the fat is incorporated into the dough by using a two-fold (see **Types of Folds**). The fat covers half of the dough. A continuous layer of fat is produced.

THREE-FOLD LOCK IN METHOD



In the three-fold method, the fat is incorporated into the dough by using a three-fold (see **Types of Folds, Laminated Dough Method**). The fat covers two-thirds of the dough. As in the two-fold lock in method, a continuous layer of fat is produced.

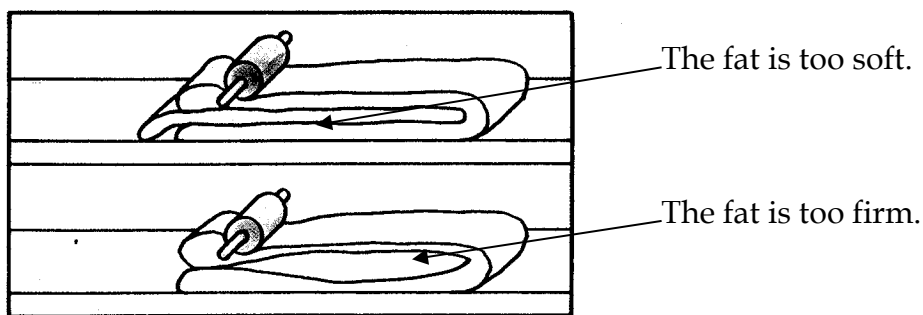
ENVELOPE LOCK IN METHOD



In the envelope lock in method, the dough is rolled into a square. The fat (**F**) is formed into a smaller square. The dough (**D**) acts as an envelope and wraps around the fat "letter" creating a **continuous** layer of fat.

SHEETING/ROLLING AND FOLDING

Sheeting and folding (see **Types of Folds**) reduces the thickness of the dough and distributes the fat layers evenly throughout the dough. Again, the thickness and the temperature of the layers of fat are crucial to the dough's success or failure. If the fat layers are too thin, they tear during folding, make the dough stick together and prevent the formation of layers of dough. If the layers of fat are too thick, they will melt out of the dough during proofing and baking.

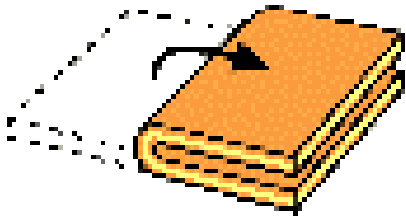


After each session of sheeting and folding, the dough must rest to relax the gluten strands. Before the next session of sheeting and folding, you must turn the dough 90° to work the gluten strands in a different direction. This process of sheeting, folding, and turning continues until the desired number of layers of dough and fat are reached. The finished quality of the layers depends on:

- the quality and temperature of the dough.
- the quality and temperature of the roll-in fat.
- the ratio of roll-in fat to layers of dough – high proportions of roll-in fat require more folds during the lamination process.
- the degree of uniformity and continuity of layers.

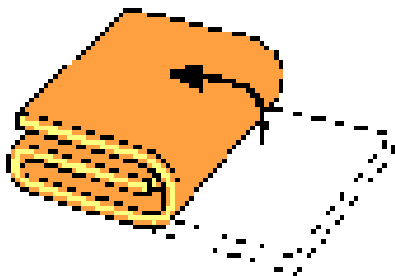
TYPES OF FOLDS

Laminated dough can be folded in three different ways – two-fold, three-fold, and book-fold. Each method creates a different number of layers. The number and type of folds used during the lamination process influences the amount of fat layers.



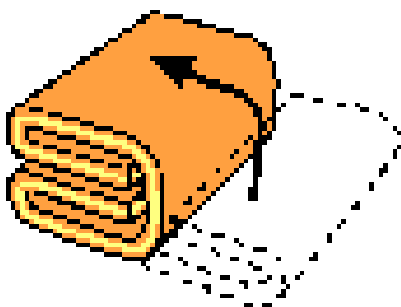
Two-Fold or Single-Fold

Visually divide the sheet of dough in half. Fold the sheet of pastry onto itself to form two layers. This type of fold doubles the number of layers in the pastry.



Three-Fold or Half-Fold

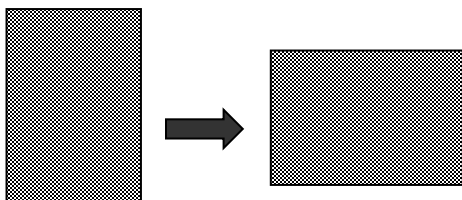
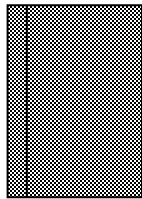
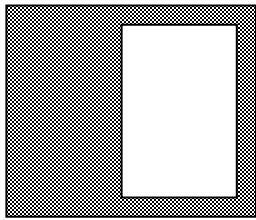
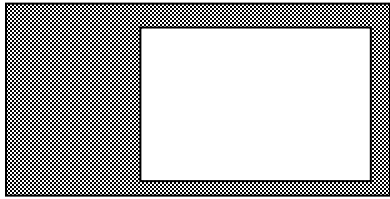
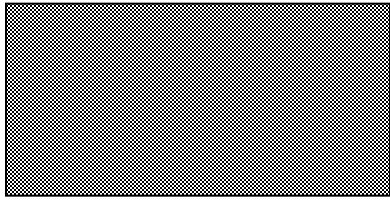
Visually divide the sheet into thirds. Fold one-third of the pastry sheet onto the middle third of the pastry. Fold the remaining unfolded one-third of dough onto the middle third. This type of fold forms three layers and triples the number of layers in the pastry.



Book-Fold or Four-Fold

Visually divide the sheet of pastry into quarters. Fold the outer quarters into the middle so that their edges meet. Then fold the sheet as if closing a book. This type of fold quadruples the number of layers in the pastry.

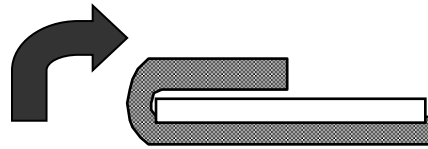
LAMINATED DOUGH METHOD



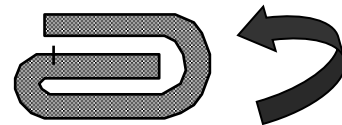
Roll dough into a 2 x 3 rectangle.



Place butter on top covering $\frac{2}{3}$ of the dough.



Fold over uncovered end to center.

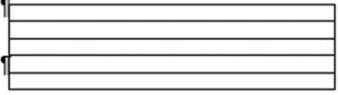
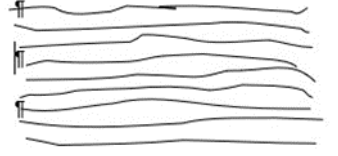


Fold over remaining side (seal edges).

After resting the dough, turn 90°, re-roll and proceed with remaining folds.

BAKING LAMINATED DOUGHS

Baking a product made from laminated dough is the moment of truth because it allows the baker to see the success or failure of the lamination process. During baking, the layers of fat insulate the layers of dough. Around 140°F/60°C, the starches gelatinize and form a network of support. At 160°F/71°C, the gluten strands begin to coagulate and adhere to the gelatinized starches. When the temperature reaches 212°F/100°C, the water in the dough changes to steam expanding the gas bubbles in the dough. The gas bubbles move to the layers of fat, expand, and push the layers of dough apart. After the steam evaporates, the temperature of the pastry rises above 212°F/100°C, sugars caramelize, and browning occurs.

	<p>Dough Before Baking Fat rolled between layers of dough</p>
	<p>Dough After Baking Moisture in fat layers turns to steam and raises the layers of dough.</p>

PUFF PASTRY DOUGH

Puff pastry is a lean dough to which additional butter is rolled in. Puff pastry dough contains no sugar or leavening agent but will rise to 8 times its original size. This is due to the process of rolling alternate layers (well over 1,000 layers) of fat and dough. A unit 1/4 of an inch high will sometimes rise more than two inches with hundreds of fine, tender, crisp flakes. Some bakers believe that the addition of cream of tartar (acid) helps the dough rise. It may make the dough shorter and easier to roll, but properly made puff pastry dough will rise without cream of tartar to help it.

Puff pastry will freeze well for up to 6 weeks. To facilitate the ease of use of the frozen product it is best to follow this simple procedure:

1. Sheet or roll the dough out to a thickness of approximately ¼ in/½-cm.
2. Cut the dough into manageably sized sheets - sheet pan (16 in x 48 in/40.5 cm x 121.9 cm) or half sheet pan (16 in x 24 in/40.5 cm x 70 cm) sized pieces are usually best.
3. Layer the sheets on a pan, placing a sheet of appropriately sized parchment paper in between each sheet.
4. Wrap the pan and stack of dough sheets tightly in plastic wrap and place in the freezer.

This same process will work for refrigerated storage, but the pastry dough may be stored for a maximum time of only four days.

When cutting puff pastry, the scraps may be saved for reuse. These scraps should be used with the same recommendations as for blitz puff pastry (not for an item that requires a high and even rise). To use the discarded portions of any laminated dough these scraps must be kept flat; layer them on top of one another to make a somewhat uniform block and then re-roll, cut and use as desired. If the dough scraps are pressed into a ball the lamination of the fat and dough will be destroyed and when re-rolled and baked it will no longer have the characteristic rise and flaky texture.

BLITZ PUFF PASTRY

Blitz puff requires less labor than traditional puff pastry. Its flavor should be just as good as traditional puff pastry, and a well-made blitz dough should not have any significant textural differences compared to traditional puff pastry. The only time when blitz puff should not be used is for items that require the greatest and most even rise such as vol-au-vents.

When rolling out a blitz dough it is more important to maintain the ½ in (1.3 cm) thickness of the dough than to maintain the described dimensions. This is because it

is very important that the dough be thin enough to facilitate proper and sufficient flattening of the butter to achieve the “puff” effect.

INVERSE PUFF PASTRY

In this method of preparation, the fat is on the outside and the dough on the inside.

The roll-in fat is combined with up to one-third of the flour for the basic dough to

make handling easier so it can be used as

the outside layer. The inverse method of

preparation has several advantages. The

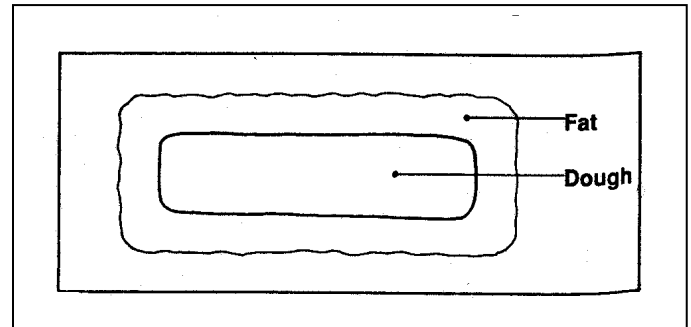
baker does not have to worry about skin

forming on the surface of the dough.

Also, this method does not require long

resting times during the lamination process. Finally, the final products made from

this dough tend to more tender because of the outer layer of fat.



PRECAUTIONS WITH PUFF PASTRY DOUGH

- Care must be taken that every particle of the butter is evenly distributed through the dough. All ends and corners should be folded squarely.
- Rest 20 - 30 minutes between folding and rolling.
- Do not allow dough to become warm during preparation.
- Rest 20 - 30 minutes before baking to prevent shrinking.
- Do not egg wash cut edges of puff pastry or they will stick together and not rise.
- Bake until dry and crisp.
- Do not freeze baked puff pastry products. Pastries with high fat contents turn brittle and dry out during freezing.

MERINGUES

Meringue can be loosely defined as a mixture of beaten egg whites and granulated sugar. While the name is French, the origin is not documented, although history tells us that meringue may have been named for either the Swiss town of *Meringen* or the German city of *Mehrinnyghen*. In the early sixteenth century, European cooks

discovered that beating egg whites with a whisk made of birch twigs made the eggs foam. The chefs added cream to the foamed eggs to make a dish called Snow. By the 17th century, chefs made the first meringue and called it Sugar Puff. At first chefs made only smaller-sized meringues called *meringuettes* or *croquignoles* because small meringues bake through the center easier than large meringue. In the 18th century, this problem was solved by the invention of the *vacherin*, a large meringue case made to contain fruit and cream.

Meringue is made of egg whites and sugar whipped together to incorporate air and form soft or stiff peaks. Egg whites whipped without sugar are not meringue; they are simply egg whites whipped to a dry consistency. In the recipes that follow, egg whites are measured by volume rather than by number. This measurement is not only more precise, but it is also easier in professional kitchens where a supply of egg whites is usually on hand. There are 7 to 8 egg whites in 1 cup (240 ml). Using the even number makes it easier to divide when measuring fractions of a cup and is simple to remember along with 4 whole eggs and 12 egg yolks per cup.

HOW EGG WHITES EXPAND

Eggs have excellent foaming ability. When egg yolks, which contain a fatty substance that destroys the albumen's ability to foam, are removed, egg whites alone can increase in volume by up to eight times. This is possible through close teamwork by the two proteins albumen and ovalbumin. When the egg whites are beaten, the albumen protein forms a very stable mass of tiny air bubbles while part of the protein molecules bond together and form a fragile network that holds the moisture in place (an egg white contains about 85 percent water). This alone would suffice if the beaten egg whites were not to be cooked, but because air expands when it is heated, the network of denatured proteins on the surface would be destroyed and

immediately collapse if it were not for the ovalbumin protein. While the ovalbumin does not play such an important role when the egg whites are beaten, it coagulates when heated, forming its own network in the meringue, and making it resistant to collapse as the water evaporates. In other words, the ovalbumin protein is what makes it possible to change a liquid foam into a solid dry mass with heat.

THE EFFECTS OF SUGAR

Meringue would be very bland without the addition of sugar, and sugar also helps to stabilize the foam, especially in the oven. Its addition, however, is something of a mixed blessing since sugar also delays the foaming process and decreases the volume and lightness of the meringue. This is especially noticeable when meringue is whipped by hand. Even when using an electric mixer, the granulated sugar must be introduced gradually, and in most cases never before the whipped egg whites have increased approximately four times in volume. Following these precautions prevents the sugar from inhibiting the albumen to stiffen the foam.

As an example of what it means to add the sugar gradually, when making the recipe for French meringue, which uses 2 pounds of sugar, it should take approximately 3 minutes to add this amount of sugar to the egg whites (a little longer if the egg whites are cold). The amount of sugar used in a meringue will vary in accordance with the desired texture and intended use of the finished product. Soft meringues, which are typically used for toppings on tarts and pies, can be made with equal quantities of sugar and egg white by weight. Hard meringues, which are baked dry, usually have some sugar to egg white ratio of two to one.

THE EFFECTS OF SALT

Just like sugar, salt has a mixed effect. While it acts as a flavor enhancer, it increases the amount of time needed to whip the whites and decreases the foam's stability, although both of these occur only to very small degree.

THE ADDITION OF ACID

Citric acid (lemon juice), tartaric acid solution, and cream of tartar (which is the solid salt of the tartaric acid mixed with cornstarch) do not affect the volume of the meringue. They help to stabilize the foam by decreasing the pH level in the albumen, making the foam less apt to collapse. Only a small amount of any of these acids should be used, as too much, in addition to adversely changing the taste of the meringue, will impede coagulation during baking.

It has been commonly accepted that a copper mixing bowl produces a superior and more rapidly whipped egg white foam. However, current research indicates that the degree to which a copper mixing bowl is preferable to a stainless bowl is questionable. You should certainly avoid plastic or wood because both are very hard to clean of fat. Aluminum is corrosive and tends to impart a grayish color; glass is not really suited for use in the kitchen. Although there is certainly no proof of any disadvantage to using a copper bowl, the addition of any of the acids previously mentioned will generate the same result.

WHIPPING

Meringue whipped to a soft peak will not hold its shape; it will slowly settle, or fall, instead. Meringue properly whipped to a stiff peak will not change shape as you pipe it from a pastry bag or work with it; you should be able to turn the bowl of meringue upside down after it is finished whipping with no problem (or mess). Be observant: there is a fine line between stiff peaks and overwhipped, dry, peaks. Meringue that is

overwhipped and dry is hard to pipe out into precise shapes and is impossible to fold into a batter without getting small lumps of meringue throughout. Meringue whipped to stiff peaks should still appear shiny, not dry or broken.

PRECAUTIONS

For perfect meringue, follow these guidelines:

1. Although it is not critical, try to use egg whites at room temperature.
2. Be sure the egg whites are not so old that they have started to deteriorate. The substance becomes thinner and clearer as the protein starts to diminish.
3. Because fat prevents the albumen in egg whites from expanding, make certain they are clean and free of any egg yolk particles. The mixing bowl and whip or whisk must also be perfectly clean.
4. Make sure there are no foreign particles (such as flour) in the sugar.
5. Using a copper bowl and/or a balloon whisk can be helpful when making meringue, but they are not absolutely necessary.

USES

Meringue is a key ingredient in the pastry kitchen. Baked layers of meringue are used in cakes and pastries, such as the famous Marjolaine; it is piped into ornate shapes for Vacherin and Dacquoise; it is made into cookies, added to buttercream, and used to top desserts such as Baked Alaska and Lemon Meringue Pie. In Europe today, many pastry shops do not make their own meringue. To save time and money they buy it from companies that specialize in baked meringue products. This makes sense, since the meringue formulas are basically generic, and it is what you create with them that makes the difference.

VARIETIES

There are three basic types of meringue: French, Swiss, and Italian. The ingredients for each of the three types are essentially the same, but the methods of preparation

and the end results are different. A fourth type, Japonaise, is a hybrid of French meringue with the addition of almond meal and a small amount of cornstarch.

FRENCH MERINGUE

French meringue is best for baking *au naturel*, for mixing with nuts, and for use as a cake base. If it is made and baked correctly, French meringue is very tender, light, and fragile. It should be piped or spread out immediately after whipping, or the egg whites may start to separate from the sugar. This type of meringue should not be added to fillings that will not be baked, or otherwise eaten raw, unless the meringue is made with pasteurized egg whites to guard against salmonella.

ITALIAN MERINGUE

Italian meringue is a better choice if the meringue must stand for some time. It is denser because the egg whites are partially cooked, and therefore it holds up longer before starting to deflate. Italian meringue is also preferable to use in a dessert when the meringue is eaten raw, or with only partial further cooking as, for example, when it is added to a filling or when only the outside is browned as in Baked Alaska. When Italian meringue is baked all the way through it is harder than French meringue and not very pleasant to eat.

SWISS MERINGUE

Swiss meringue could be described as a mixture between the French and Italian meringues. It can be eaten raw since the egg whites have been pasteurized by being heated to 140°F (60°C) with the sugar. Swiss meringue is quicker and easier to produce than its Italian counterpart, but it is not as stable and should be used fairly soon once it has been prepared. It is typically used in buttercream and fillings, but it can also be piped out into cookies or made into other shapes, then baked or dried in

the same way as French meringue. However, for this use, Swiss meringue should be made with less sugar to ensure a better volume and a stiff peak.

FLAVORING AND COLORING

Nuts, cocoa powder, and other flavorings, as well as coloring can be added to meringue. These are added just before the meringue is finished being whipped to the proper stiffness. Use regular water-soluble food coloring for this, adding just a small amount at a time.

BAKING

Meringue should be baked at a low temperature. For most types of meringue this is between 210 and 220°F (99-104°C). In the case of a meringue containing ground nuts, such as Japonaise, the nuts will absorb some of the moisture in the egg whites and allow the meringue to dry more quickly. You do not bake meringue so much as you dry it out. Meringue should not color as it is baked but should remain white. However, a slight hint of color (off-white) is acceptable.

STORAGE

While meringue batter is never prepared in advance as a *mise en place* item, the more sugar that has been whipped into the whites, the longer the batter will maintain its volume and stiffness without deflating as it is shaped. French and Japonaise meringues should be piped out or spread into the desired shape immediately after whipping, even if the batter cannot be baked right away as it should be. The meringue will have less stability and will deflate to a greater degree as it is agitated (through spreading and/or being placed in a piping bag) after sitting for even as short a time as 10 minutes. Italian and (to a lesser degree) Swiss meringues will hold their shapes for a much longer time. The Italian variety has greater stability because it is partially cooked during preparation. If made properly, it

will keep for several hours. However, if too much sugar ends up sticking to the side of the bowl or the whip, the keeping time will decrease accordingly. All cooked (dried) meringue is susceptible to becoming soft from absorbing moisture in the air and should always be stored airtight in a warm, dry place. Plain baked meringue will keep fresh this way for many weeks. Japonaise, or other meringues that contain nuts, can become rancid if stored too long.

Source: The Professional Pastry Chef, B. Friberg

BUTTERCREAM

Buttercream is a necessary basic preparation in the pastry shop. Although buttercream has a negative image with some consumers, when it is made using fresh sweet butter, natural flavorings, and other top-quality ingredients, it is excellent as either a filling or icing for cakes and pastries.

Italian buttercream is made using meringue, sweet butter, and flavorings. It is referred to as Italian buttercream regardless of whether it is made using an Italian meringue or not. If buttercream is made using meringue of any type, it is an Italian buttercream. Italian buttercream is relatively white in color and has a light mouth feel. It is ideal for wedding cakes iced with buttercream, or pastries where a white appearance is desired.

Swiss buttercream is made using fondant or cooked sugar, butter, and flavorings. Swiss buttercream is simpler to make than Italian buttercream. It also has a relatively white appearance but has a somewhat less light mouthfeel than the Italian does because it does not contain meringue.

German buttercream combines pastry cream with sweet butter and flavorings. German buttercream has a smooth melt in the mouth texture that is desirable. The major disadvantages to this style of buttercream are that it has a short shelf-life and therefore

cannot be made in large quantities and stored, and that it is not white, which makes it unsuitable for some purposes such as wedding cakes.

French buttercream is made with either whole eggs or egg yolks, cooked sugar, flavorings, and sweet butter. It is similar in characteristics to Italian buttercream, but the addition of yolks makes it richer and gives it a yellow color. Whatever style of buttercream you make it is important to remember that it is very rich, and should not be used in excess, and to always use the best ingredients available to make and flavor it.

DAY THREE

TEAM PRODUCTION ASSIGNMENTS

CHEF DEMONSTRATIONS

Puff Pastry Dough
Italian Buttercream
Ice and Decorate a Cake

ALL TEAMS

Prepare Italian Buttercream
Puff Pastry Dough
Practice Piping Buttercream

PUFF PASTRY

Yield: 3 pounds

Ingredients	Amounts
Flour, bread	18 wt. oz.
Flour, pastry	4 wt. oz.
Salt, kosher	0.5 wt. oz.
Butter, unsalted, softened (85°F)	4 wt. oz.
Water, ice cold	10 fl. oz.
Butter, unsalted, cold	1 lb. 2 oz.
Flour, bread	as needed

Method

1. For the dough, place the water on the bottom of a 5-quart bowl with a dough hook. Place the bread and pastry flour and salt on the water and add the softened butter. Mix on low speed until a dough begins to form.
2. Stop the mixer and turn the dough over. Continue mixing until a homogenous dough. Do not overmix.
3. Shape the dough into a 12" x 8" rectangle. Chill for 20 minutes.
4. For the butter block, dust the bench with a little bread flour. Place the butter on the bench and dust with flour. Pound the butter with a dowel rod until homogenous and pliable. Shape the butter block to 1/2 the size of the dough block and 1/2-inch thick.
5. For the lock-in, remove the dough from the cooler and place on a floured bench. Remove flour from the top surface.
6. Using a dowel rod, make a thin area at the center of the rectangle. Place the butter block onto one side of the dough. Fold the dough over the butter, encasing the butter in dough. Carefully pinch the overlapping dough to seal the butter in.
7. Using the dowel rod, press the dough into the butter as per the demo.
8. Perform a 4 fold: Roll the dough three times as long as it is wide (for this piece of dough it will be 8 x 24 inches and no less than 1/2 an inch thick.) Chill and rest the dough for 20 to 25 minutes.
9. Perform a 3 fold: Roll the dough 1 1/2 times as long as it is wide (for this piece of dough it will be 12 x 18 inches and no less than 1/2 an inch thick.) Chill and rest the dough for 20 to 25 minutes.
10. Perform a 4 Fold: Roll the dough three times as long as it is wide. Chill and rest the dough for 20 to 25 minutes.
11. Perform a 3 Fold: Roll the dough 1 1/2 times as long as it is wide Store overnight in a cooler.

Note: Before performing all folds, the dough must be orientated with the binding on the left

ITALIAN BUTTERCREAM

Yield: 3 pounds

Ingredients	Amounts
Sugar, granulated	1 lb.
Water	as needed
Egg, white	½ lb.
Butter, unsalted, softened, cut into bits	1 ½ lb.
Flavoring (Recipe follows) (Optional)	as needed

Method

1. For the Italian Meringue, place the sugar in a heavy saucepan and add enough water to achieve the consistency of wet sand. Cook over medium heat, without stirring, until the mixture reaches 235°F, carefully brushing the sides of the pan with a wet brush as necessary. Cooking sugar in this manner with the addition of water is known as the wet method.
2. Once the sugar reaches 235°F, place the egg whites in the bowl of an electric mixer fitted with a whisk attachment. Whip until the egg whites form soft peaks.
3. Continue to cook the sugar until the temperature reaches 240°F (the soft ball stage).
4. In a slow, steady stream, add the cooked sugar to the egg whites and whip on low speed.
5. Increase the speed to high and continue to whip until the mixture has cooled to room temperature. (If you were to stop at this point, you would have prepared Italian meringue.)
6. To complete the buttercream, add the soft butter, a few pieces at a time, until all the butter is incorporated. Continue to whip until buttercream is smooth and light.
7. Flavor as desired (refer to the following page for variations).

BUTTERCREAM VARIATIONS

Yield: 1 pound

CHOCOLATE BUTTERCREAM

1 lb. buttercream, unflavored
2 ½ oz. semi-sweet chocolate, melted

HAZELNUT BUTTERCREAM

1 lb. buttercream, unflavored
2 oz. praline paste
⅔ oz. brandy
¼ tsp. vanilla extract

COFFEE BUTTERCREAM

1 lb. buttercream, unflavored
½ oz. coffee paste
¾ tsp. brandy
¼ tsp. vanilla extract

Method

1. Combine buttercream with the additional ingredients.
2. Mix until well incorporated.

DAY FOUR:

ASSEMBLING AND DECORATING CAKES

LEARNING OBJECTIVES

By the end of this day, you should be able to...

- ice and decorate a cake.
- properly use a spatula for icing.
- execute a variety of techniques to decorate a cake using buttercream.
- list different fillings and icings and their uses.

LEARNING ACTIVITIES

- Lecture and Discussion
- Demonstrations
- Hands-On Production
- Product Evaluation

TYPES OF PIPING TIPS



Round Piping Tips

great for outlining details, creating dots, lines, and filling in shapes



Open Star Piping Tips

creates stars, shells, flowers, and rosettes



Closed Star Piping Tips

ideal for frosting cupcakes, creating stars, flowers, and fleur-de-lis



Leaf Piping Tips

great for creating leaves and complementing flowers



Petal Piping Tips

excellent for creating cake borders, curves, and large frosted flowers



Ruffle Piping Tips

creates intricate borders, ruffles, scallops, bows, and ribbons



Drop Flower Piping Tips

great for making quick, one-squeeze flowers



Grass Piping Tips

creates grass and can be used for unique designs



Basketweave Piping Tips

makes smooth or serrated basketweave design



Multi-Opening Piping Tips

can be used to create string, hair, or special effects



Swirl Piping Tips

great for filling, outlining, and border



DIFFERENT TYPES OF BUTTERCREAMS

Buttercream is a versatile and popular frosting used in cake decorating. Here are the different types of buttercreams, each with unique characteristics and uses:

AMERICAN BUTTERCREAM

- Ingredients: Butter, powdered sugar, milk or cream, and flavorings.
- Characteristics: Sweet, creamy, and easy to make. Can be made with either unsalted or salted butter.
- Uses: Ideal for cupcakes, simple cake decorations, and as a filling. It crusts well, making it good for basic piping and simple decorations.
- Pros: Quick and easy to make, stable at room temperature.
- Cons: Very sweet and can be gritty if powdered sugar isn't sifted properly.

SWISS MERINGUE BUTTERCREAM (SMBC)

- Ingredients: Egg whites, granulated sugar, butter, and flavorings.
- Characteristics: Silky, smooth, and less sweet than American buttercream. The egg whites and sugar are heated together and then whipped to form a meringue before adding the butter.
- Uses: Excellent for smooth cake finishes, piping intricate designs, and as a filling.
- Pros: Smooth texture, less sweet, holds up well in moderate temperatures.
- Cons: More time-consuming to make, can be tricky to get the meringue right.

ITALIAN MERINGUE BUTTERCREAM (IMBC)

- Ingredients: Egg whites, granulated sugar, water, butter, and flavorings.
- Characteristics: Similar to Swiss Meringue Buttercream but slightly more stable. The sugar is cooked to a soft-ball stage and then

poured into whipped egg whites to form the meringue before adding the butter.

- Uses: Ideal for smooth finishes, intricate piping, and fillings. More stable than SMBC, making it better for warmer conditions.
- Pros: Smooth and stable, less sweet, holds up well in warmer temperatures.
- Cons: More complex to make, requires precise temperature control for the sugar syrup.

FRENCH BUTTERCREAM

- Ingredients: Egg yolks, granulated sugar, butter, and flavorings.
- Characteristics: Rich and custard-like due to the use of egg yolks. The sugar is cooked to a soft-ball stage and then poured into whipped egg yolks before adding the butter.
- Uses: Great for rich fillings and smooth finishes. Pairs well with robust flavors like chocolate and coffee.
- Pros: Rich and silky texture, luxurious flavor.
- Cons: Less stable at room temperature, can be too rich for some tastes, more complex to make.

Other Uncommon Buttercreams: German + Russian

Individual Tips

Round Tips

This simple tip can do so much! Use smaller round tips for vines, worms, dots, letters and writing. Round tips can be used to form endless stringwork, balls, beads, borders and accents.



For creating
flour typing

Petal Tips

These are a must-have for making realistic flower petals. Also, use them to add ornate ruffles or elegant drapes, swags, and boues.



For swag

Drop Flower Tips

Make pretty swirls or drop flowers with a turn of the wrist.



Specialty Tips

Distinctive tips are offered in an array of styles for specialty decorating needs.



For filling
cakes and
filling
flowers

Basketweave Tips

Choose from smooth or ridged designs to achieve the perfect basketweave pattern.



For cake

Leaf Tips

Idea for creating realistic leaves, these tips can also be used to form shell-shaped borders, and to add some extra petals.



Make sure
to use
flowers

Open Star Tips

Use these versatile tips for filling borders and forming a variety of flowers. They are especially good for creating borders, such as swags, ruffles and roses.



For borders

Tip Sets



Writing Tip Set



Border Tip Set



Ruffle Tip Set



Drop Flower Tip Set



Round and Star
Tip Set



Petal, Leaf and Flower
Tip Set



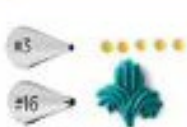
Extra Large Tip Set



Round and Star
Tip Set



Specialty Tip Set



Round and Star
Tip Set



Round and Star
Tip Set



Round and Star
Tip Set



Basketweave and
Multi-Opening Tip Set



Petal, Leaf and Flower
Tip Set

Left-Handed Tip Sets

Reverse the same beautiful flowers as right-handed decorator! This is standard decorating tips and routers.



Drop Flower
Includes left tip #106
and #107 for making
small wired flowers.



Petal
Includes left tip #59
for roses, left tip
#63 for Victoria roses
and left tip #130 for
large Wilson Roses.



4-Piece Flower Set
Includes left tip #106 for small flowers,
left tip #99 for roses,
left tip #97 for Victoria roses
and left tip #107 for large Wilson Roses.



TYPES OF FOOD COLORING

Types of Coloring	Pros	Cons	Best For
Gel Coloring	Highly concentrated, produces vibrant colors without thinning the buttercream.	Can be messy to handle.	Most buttercream types, including American, Swiss + Italian Meringue.
Liquid Food Coloring	Easy to find and use.	Can thin the buttercream, requiring adjustments to consistency.	Light pastel colors, but not recommended for vibrant or deep colors.
Powdered Coloring	Highly concentrated, doesn't affect consistency.	Can be harder to find and mix evenly.	All buttercream types, especially for achieving very specific shades
Natural Coloring	Made from natural ingredients, no artificial additives.	May require more product to achieve vibrant colors, can affect flavor	Light to medium shades, for those seeking natural alternatives.

TIPS FOR COLORING BUTTERCREAM

1. Start Small

- Add color gradually. It's easier to add more color than to fix overly colored buttercream.

2. Mix Well

- Ensure that the color is fully incorporated to avoid streaks. Use a spatula.

3. Color Development

- Colors can deepen over time. Allow the colored buttercream to sit for a few hours or overnight for the best results.

4. Consistency Adjustments

- If using liquid food coloring and the buttercream becomes too thin, add more powdered sugar to thicken it.

5. Achieving Dark Colors

- For deep colors like black, red, or dark blue, start with a base color (e.g., dark chocolate buttercream for black) to use less coloring and achieve the desired shade more easily.

6. Avoid Bitter Taste

- Some colors, like red and black, can leave a bitter taste if used in large amounts. Use brands known for not affecting flavor, or opt for no-taste versions of these colors.

7. Color Combinations

- Mix primary colors to achieve secondary colors. For example, mix blue and yellow to get green, red and yellow for orange.

8. Test Colors

- Test your colors on a small piece of buttercream to see how they look when piped or spread.

PIPING TECHNIQUES

Piping techniques are essential for decorating cakes, cupcakes, and other desserts. Here are some basic piping techniques:

EQUIPMENT NEEDED

- Piping Bags: Disposable or reusable.
- Piping Tips: A variety of shapes and sizes, including round, star, petal, and leaf tips.
- Couplers: Optional, but useful for changing tips without changing the bag.
- Buttercream: Smooth and at the right consistency.

PREPARING THE PIPING BAG

1. Fit the Bag with a Tip: If using a coupler, place the base inside the bag, cut the tip, and screw on the outer ring with the piping tip.
2. Fill the Bag: Spoon buttercream into the bag, filling it about halfway. Twist the top of the bag to prevent the buttercream from spilling out.
3. Squeeze: Hold the bag at the top with one hand and guide it with the other hand. Apply even pressure to squeeze out the buttercream.

BASIC PIPING TECHNIQUES

WRITING AND OUTLINING

Tip: Small round tip

Technique: Hold the bag at a 45-degree angle. Touch the tip to the surface to start, lift slightly, and guide the buttercream to write or outline. Maintain even pressure.



DOTS

Tip: Round tip

Technique: Hold the bag perpendicular to the surface. Squeeze to form a dot, then stop squeezing and lift straight up for a rounded dot. For flat dots, press slightly before lifting.

STARS

Tip: Open star tip

Technique: Hold the bag perpendicular to the surface. Squeeze to form a star, then stop squeezing and lift straight up.



ROSETTES

Tip: Open or closed star tip

Technique: Start from the center and pipe in a circular motion outward. Stop squeezing and lift off when the rosette is the desired size.



SHELLS

Tip: Open star tip

Technique: Hold the bag at a 45-degree angle. Squeeze out a shell shape, dragging the tip slightly to taper off. Repeat, slightly overlapping each shell.



RUFFLES

Tip: Petal tip

Technique: Hold the bag at a 45-degree angle with the narrow end of the tip facing up. Move the bag back and forth while squeezing to create ruffles.

LEAVES

Tip: Leaf tip

Technique: Hold the bag at a 45-degree angle. Squeeze and pull away to form a leaf shape, relaxing pressure as you pull to create a pointed end.



BASKETWEAVE

Tip: Basketweave tip

Technique: Pipe vertical lines across the surface. Then pipe horizontal lines over the vertical lines, alternating to create a woven pattern.

TIPS FOR SUCCESS

- **Practice:** Use parchment paper or a practice board to refine your technique before decorating your cake.
- **Consistency:** Ensure your buttercream is the right consistency—not too stiff or too runny. Adjust by adding more powdered sugar to thicken or a few drops of milk to thin.
- **Control:** Use even pressure when squeezing the piping bag for consistent results.
- **Cleanup:** Keep a damp cloth handy to wipe the tips between different piping techniques.

PRACTICE DESIGNS

By mastering these basic piping techniques, you can create a wide range of decorations to enhance your cakes and desserts:

- **Border:** Practice piping different borders like shells, rope, and bead borders.
- **Flowers:** Start with simple flowers like drop flowers and progress to more complex designs like roses.
- **Text:** Practice writing different letters and numbers to personalize your cakes.

DAY FOUR

TEAM PRODUCTION ASSIGNMENTS

CHEF DEMONSTRATIONS

Palmier
Apple Tart
A Pithivier
Vol-au-Vent Shells

ALL TEAMS

Puff Pastry Items such as Palmier, Apple Tart, etc.

EACH PERSON

Assemble and Decorate Sponge Cake

PALMIERS

Yield: 24 palmiers

Ingredients

Amounts

Sugar, granulated

10 ½ wt. oz.

Puff pastry

20 wt. oz.

Method

1. Sprinkle 4 oz. of sugar in an even layer on a work surface and place the dough on top of the sugar. Sprinkle the top of the dough with another 4 oz. of sugar. Roll the dough into a 16" x 20"-inch rectangle ⅛-inch thick. Sprinkle additional sugar on the work surface and the dough as needed to keep it from sticking.
2. Sprinkle 2 oz. of sugar on top of the dough after it has been rolled out. Turn the dough so that the longest edge faces toward you.
3. Roll the 2 longest edges toward each other to meet in the middle, leaving a ½-inch gap. Sprinkle the remaining sugar on top of the length of the dough. Fold one piece of the dough on top of the other piece of dough as if you were closing a book.
4. Cover the dough and refrigerate until firm, about 1 hour.
5. Slice the dough crosswise into ½-inch-thick pieces. Arrange the slices in even rows 1 inch apart on parchment-lined baking sheets.
6. Bake at 400°F until the bottoms are golden brown, about 10 minutes. Turn the palmiers over and continue to bake until the other side is golden brown, about 5 to 7 minutes.
7. Allow the palmiers to cool slightly before removing from the baking pans.
8. Store in airtight containers.

ALSATIAN APPLE TART

Yield: Two 12-inch tarts

Ingredients	Amounts
Puff pastry	20 wt. oz.
Egg, whole	1 ea.
Egg, yolk	1 ea.
Water	1 fl. oz.
Salt, kosher	1/8 tsp.
Apple, Golden Delicious, peeled, cored, sliced	9 ea.
Butter, unsalted, melted	as needed
Cinnamon, ground	as needed
Sugar, granulated	as needed
Apricot, jam	3 wt. oz.
Water	3 fl. oz.

Method

1. Roll the dough to the size of a 12" cake circle. Relax the dough often. Make sure it stays round in shape.
2. For the egg wash, beat together the egg, egg yolk, water, and salt. Strain through a fine mesh sieve into a clean bowl. Brush a 1/4-inch rim on the dough.
3. Place overlapping apples in rings, alternating the directions of the rings on the dough.
4. Brush with melted butter, and sprinkle with the cinnamon and sugar.
5. Bake in a 375°F oven.
6. If additional color is needed on the apples, place in a 450°F oven for a few minutes. Place an overturned sheet pan in the oven first to prevent further color on the bottom of the tart.
7. Combine the apricot jam and water in a bowl to make a glaze. Brush the finished tart with the glaze.

DAY FIVE:

CHOCOLATE, MOUSSE PREPARATION, QUICK AND ELEGANT DESSERTS, PLATING DESSERTS

LEARNING OBJECTIVES

By the end of this day you should be able to...

- identify the different types of chocolate products.
- understanding aeration and setting of mousse.
- list the different methods to temper chocolate.
- define the qualities of a well-balanced plated dessert.

LEARNING ACTIVITIES

- Lecture and Discussion
- Demonstrations
- Hands-On Production
- Product Evaluation

MOUSSE

Mousse is a French term meaning “foam.” Mousses are aerated fillings that are frequently used in the production of cakes, pastries, and desserts. They are made light by the addition of whipped eggs or egg whites and whipped cream. Mousses may be made either with or without the addition of gelatin to stabilize them. However, if a mousse is to be molded or sliced, the addition of a stabilizer such as gelatin is mandatory. The exception to this rule is chocolate mousse, which is stabilized by the cocoa butter in the chocolate.

Mousses may be made by several methods. Two of the more common methods are the sabayon method and the cooked sugar or *pâte à bombe* method.

SABAYON METHOD

In the **sabayon method** the sugar is combined with the egg yolks and liquid flavoring. The mixture is then whipped over a hot water bath to incorporate air and cook the yolks. It is important to cook the yolks to a sufficient temperature to stabilize them so that they hold the air that is incorporated during whipping, as well as to pasteurize them. The yolks are then transferred to a mixer and whipped until they have cooled to room temperature. The gelatin (if used), additional flavorings, and under-whipped cream are then folded into the mixture.

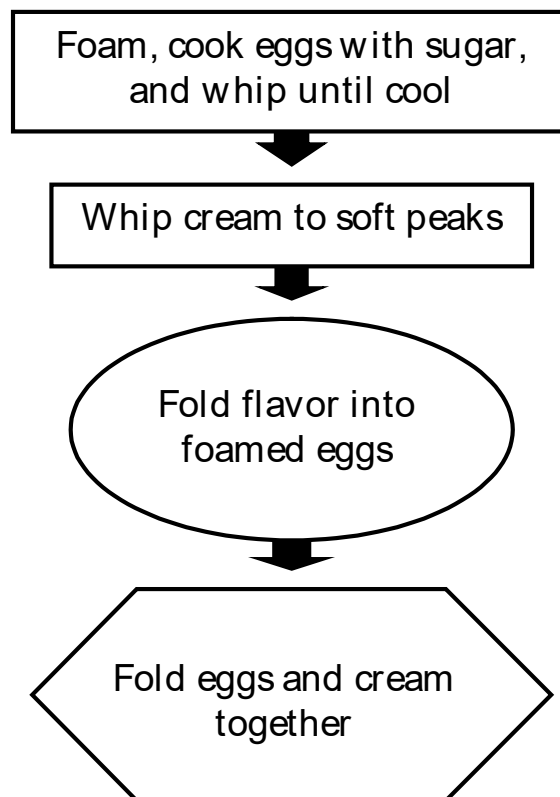
COOKED SUGAR METHOD

In the **cooked sugar method**, whip the yolks on a mixing machine until very light. While the yolks are whipping, the sugar is mixed with water and cooked to the soft ball stage (118° C or 240° F). The hot sugar syrup is then streamed into the yolks while whipping and the mixture is whipped until cooled.

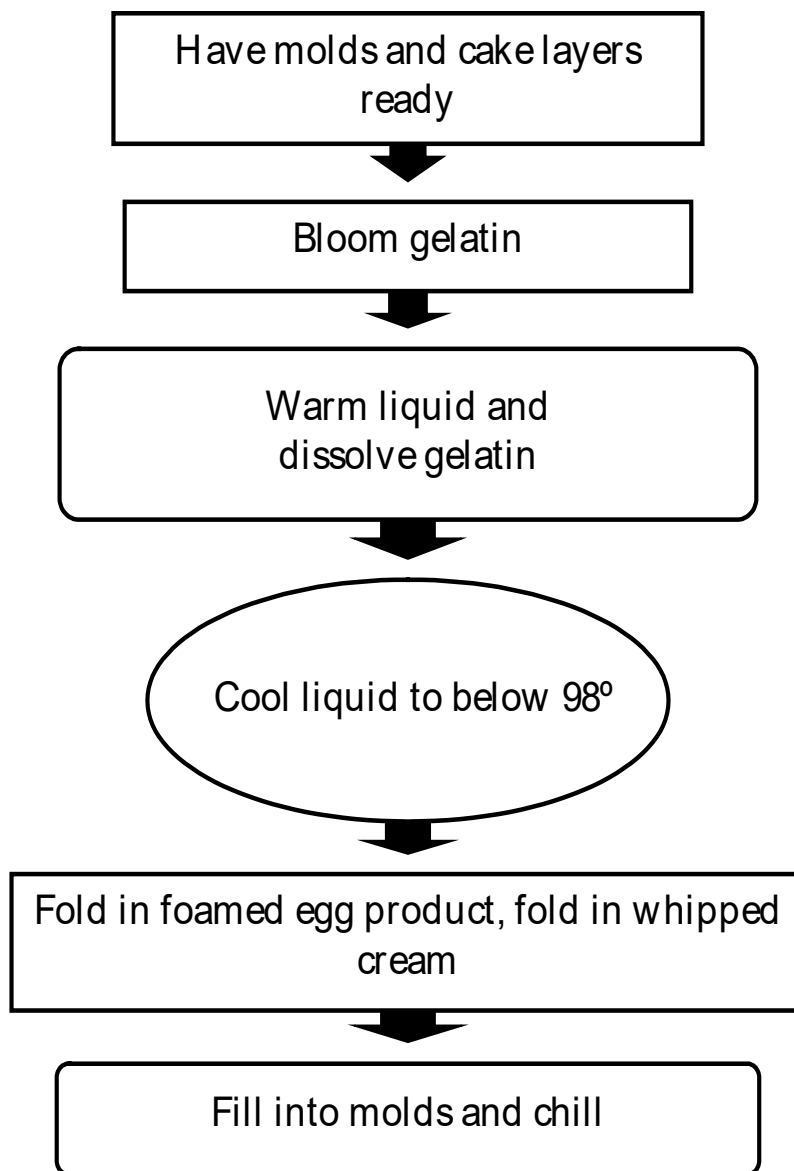
Once the yolks are cool, the flavorings, gelatin, and under-whipped cream are folded into the mousse. Below are some key points regarding the production of mousses:

- Eggs must be pasteurized either in the production of the mousse or when purchased to reduce the risk of food-borne illness.
- When adding gelatin, liaison the bloomed and dissolved gelatin into the egg mixture to ensure that it is incorporated completely.
- The last ingredient to be incorporated into a mousse is always the under-whipped cream so that it does not get over-worked in the process.
- When using gelatin in a mousse, have all molds, cake layers, etc. ready before mixing the mousse so that the gelatin does not set before you are ready to use the mousse.

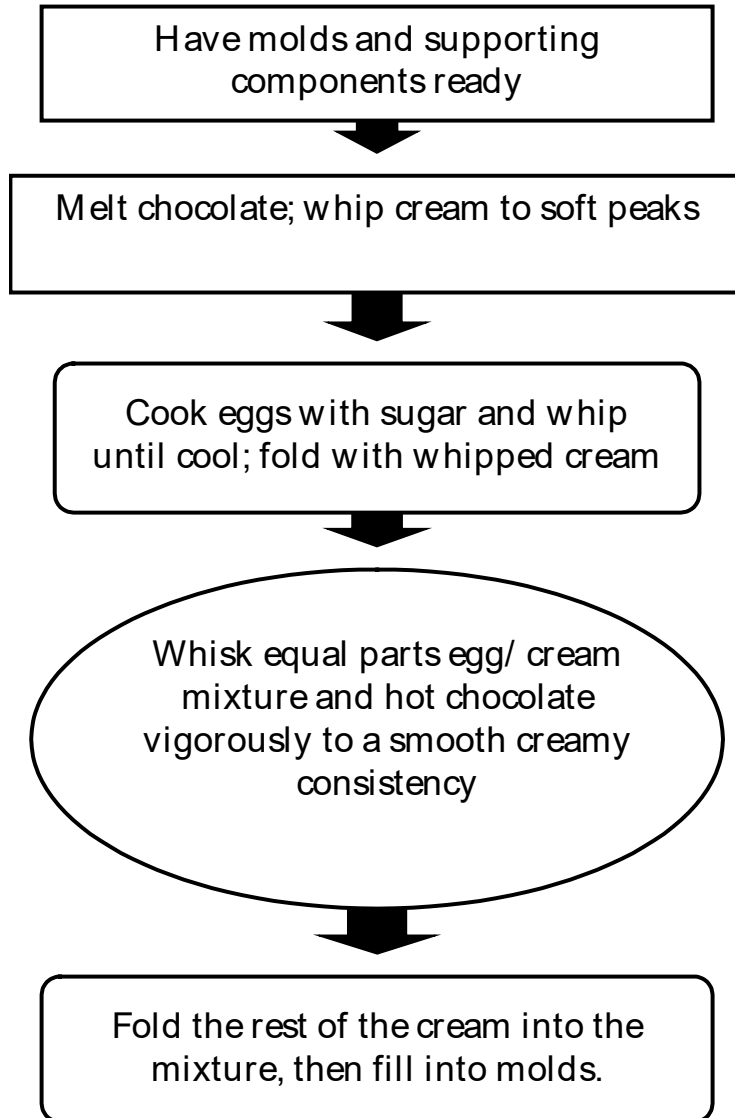
MOUSSE: BASIC METHOD



MOUSSE: GELATIN METHOD



MOUSSE: CHOCOLATE METHOD



GELATIN

Gelatin consists of proteins derived from the collagen and hides of animals. When properly used, gelatin delicately binds liquids or foams to provide structure and stability. If used in too large a quantity gelatin makes mousses tough and elastic. It is critical then to use just the minimum amount of gelatin required to bind the product without toughening it.

Gelatin is available in two forms; granulated and sheets. Although some chefs have a marked preference for one or the other, they are chemically identical, and when used in corresponding amounts they yield identical results. Each sheet of gelatin is equivalent to 2 grams of granulated gelatin, so for each ounce of granulated gelatin called for in a recipe you can substitute 14 sheets.

Regardless of the form of gelatin you are using, the same two steps are required to use it - blooming and dissolving. **Blooming** is the process of allowing the gelatin to soak up cold water. When using granulated gelatin, you bloom each ounce of product in 8 ounces of cold water, or a ratio of 8:1. It is possible to bloom gelatin in liquid other than water, but it blooms and dissolves best in water. Any small flavor difference can be compensated for elsewhere in the recipe. The procedure to bloom granulated gelatin is to measure out the required amount of cold water, sprinkle the gelatin on the surface of the water, and let sit undisturbed for approximately 10 minutes. At the end of that time, the gelatin will have soaked up the water, leaving no excess water or gelatin. The consistency should resemble applesauce. Blooming sheet gelatin is similar, except that there is no scaling involved. The desired number of sheets are simply immersed in a large container of cold water and allowed to sit

for several minutes. At the end of that time the sheets will no longer be brittle but will be very soft.

Dissolving is the process of heating the bloomed gelatin until it is transparent and liquid. Dissolve bloomed, granulated gelatin by placing the bowl over a hot water bath until the product is entirely liquid. Dissolve bloomed sheet gelatin by removing the sheets from the cold water and blotting them with a towel to remove the excess moisture. Place the sheets in a bowl over a hot water bath until dissolved. Care should be taken when dissolving gelatin not to overheat it. The strength of gelatin that is brought to a boil will be reduced. After dissolving the gelatin is ready to be used in the recipe.

When incorporating gelatin into a liquid or mousse it is a good idea to liaison the mixtures together, that is to add a small amount of the liquid to the bloomed and dissolved gelatin and mix well, then to add that mixture to the remaining liquid. This will help to ensure that the gelatin is evenly dispersed throughout the mix and doesn't set up or lump while you are adding it. Some key points about using gelatin are listed below.

- Gelatin is an animal product, and therefore is not suitable for vegetarians.
- Whenever using gelatin, it must be bloomed and dissolved.
- Always have the molds you will use ready before making a mousse containing gelatin, as it sets quickly, and cannot be re-melted.
- Use the minimum amount of gelatin possible to achieve the best texture.
- Products using gelatin should be made several hours in advance of use to allow the gelatin to completely set.

- Many fruits, particularly tropical fruits contain enzymes that prevent gelatin from setting. These enzymes can be de-activated by boiling the fruit puree before adding the gelatin.
- Products bound with gelatin freeze well without adversely affecting the texture of the product.

CHOCOLATE

HISTORY

Chocolate is a direct derivative from the cacao bean that was first brought to Spain by Christopher Columbus in the late 1400's. Early experiments with chocolate usually combined it with various spices, spirits, and other flavorings. This mixture was usually served as a drink. It was not until the late 17th century that chocolate, as we know it today, was produced.

GROWING OF THE COCOA BEAN

Cocoa beans are grown in tropical regions approximately 20° North and South of the equator. The beans thrive in areas with a temperate climate (around 80°F (25°C)), high soil, moderate humidity, and an elevation of 600 meters above sea level. These areas include Central America, Northern South America, East and West Africa, Indonesia, and New Guinea.

As with most fruit trees that are grown in tropical regions, the cocoa tree bears blossoms, buds, and fruits. It follows the same growing cycle as most fruit trees in the area. The cocoa fruit is oblong and cucumber shaped and hangs directly from the trunk of the tree. Each cocoa fruit contains up to 50 cocoa beans which are enclosed by a sugary, soft pulp.

HARVEST

Cocoa fruits are harvested twice a year. The fruit is carefully cut from the tree with a sickle-shaped knife. It is then greened, and the pulp and kernels are scraped out.

FERMENTATION

After the cocoa beans are harvested, they are then dried and fermented. The fermentation process accomplishes two things:

1. It breaks up the bitter substances present in the bean, which allows the flavor and deep rich color of the cocoa to develop.
2. It kills the ability for the cocoa bean to germinate. Once sufficiently dried, the beans are stored in sacks and are ready for exportation.

STORAGE

Cocoa beans are usually stored in large silos until they are needed.

CLEANING OF THE BEANS

Once the beans have left storage, they must be carefully cleaned to remove any foreign materials such as stones, glass, wood, etc. Sometimes, special metal detectors and magnets are also used. The cleaned beans are ready to be either roasted and cracked or cracked and roasted.

ROASTING

The roasting of the beans takes place at about 248°F (120°C). During this time, the moisture content is reduced to about 2%. At the same time, starches are converted to dextrin which begins to intensify the flavor.

CRACKING

When the beans are first roasted, the shells are then broken open to separate the kernels from the germ and the shell fragments.

GRINDING

The roasted split kernels of the bean are pulverized. The heat and friction that are generated through this process melt the cocoa fat (cocoa butter) and this results in the cocoa mass. It is from this mass that various cocoa and chocolate products are produced.

CHOCOLATE PRODUCTS

COUVERTURE

This consists of cocoa mass, sugar, and cocoa butter. It can be made with varying ratios and percentages of these three ingredients, though it is usually composed of 30%-40% cocoa butter. The more cocoa butter a couverture contains, the thinner its viscosity and the greater the cost. The ingredients are worked together in a mixing machine to create a smooth homogeneous mass that is ready to be milled. This milling or "conching" disperses the solid components among the fat crystals and eventually gives the couverture its characteristic smoothness and delicate melting ability. This conching process usually takes up to 72 hours of continuous kneading and rolling before the couverture achieves the desired finish. Couverture must be tempered when using to obtain the best results. It has many uses, such as production in pralines, fillings, creams and tortes, and garnishing, decorating, and molding.

CHOCOLATE LIQUOR

This finely ground, unsweetened, conched cocoa mass is also referred to as unsweetened chocolate. This is used to flavor and color various types of confections, creams, fillings, etc.

COCOA POWDER

Finely ground pressed cake, which is the result of all the cocoa butter being pressed out of the cocoa mass. This can be purchased sweetened or unsweetened. It is utilized for garnishing and in cake and baking production.

COCOA BUTTER

This is derived from the resulting fat which is extruded from the pressed block cocoa. Cocoa butter is used to adjust the consistency of couverture, various confection fillings, coating marzipan, etc.

MILK CHOCOLATE

This is composed of cocoa mass, cocoa butter, sugar, and at least 14% of added milk solids. The uses are the same as for couverture.

WHITE CHOCOLATE

This consists of cocoa butter, sugar, and milk solids, but contains no cocoa powder. The uses are the same as couverture and milk chocolate.

COATING CHOCOLATE

Sometimes referred to as "compound chocolate" or "chocolate glaze," it is similar to couverture except that the cocoa butter has been removed and is replaced with another type of fat (usually vegetable oil). It is simpler to use than couverture as it does not require tempering. The uses are the same as for couverture, but it should be noted that the coating chocolate is not as flavorful.

STORAGE AND HANDLING OF CHOCOLATE PRODUCTS

Chocolate or couverture should be stored in a cool, dry, dark place, free of any strong odors. When well wrapped and stored under optimal conditions [(65°F to

68°F) (18°C to 20°C) and at 55-60% humidity], it has an average shelf life of 6 to 8 months.

HANDLING MELTED CHOCOLATE

To achieve an end product with a high-gloss finish and an appetizing appeal, it is necessary to adhere to the following basic rules:

- Chocolate or couverture should always be cut into small pieces before it is melted so that a larger surface area is exposed to the heat source. This helps speed and facilitate the melting process. A firm serrated knife should be used for this purpose.
- Before beginning to melt the chocolate, make sure that the stainless-steel bowl being used is very clean and dry. A water bath works best to melt the chocolate. Choose a bowl that will form a tight seal on the double boiler. The water temperature should be about 120°F to 130°F (48°C to 55°C). No moisture of any kind (steam, water, condensation) should ever come in contact with chocolate, since it would cause the chocolate to thicken and render it useless for tempering. Chocolate should not be left unattended while on the heat source. It should be stirred gently as it begins to melt. Vigorous mixing or stirring should be avoided since it generates undesirable air pockets in the chocolate. Continue to gently stir or "massage" the chocolate until it all has melted, then remove it from the heat source.

TEMPERING CHOCOLATE

The main reason chocolate is tempered is so that it retains the smooth beautiful gloss, crisp "snap" feel, and creamy texture to which we are so accustomed. The cocoa butter is totally melted once the couverture is heated above 91°F (32°C). In this form, the cocoa butter fat crystals have the properties of setting upon cooling into either stable or unstable crystal shapes. For couverture to maintain the fine gloss

and familiar "snap", stable crystals must form. This is done by a gradual reduction in temperature which will induce the formation of the stable β ("Beta") crystals to form, and also, through constant steady agitation. By doing this, not only will the stable beta crystals begin to develop forming a homogeneous mixture of fat, cocoa mass, and sugar, but also the liquid mixture will develop a homogeneous temperature as well. Further cooling promotes the formation of even more stable crystals until the couverture eventually sets completely.

BLOCK METHOD

In the block method of chocolate tempering, the warm melted chocolate is seeded and cooled by adding a single block of chocolate, then stirring. The block of chocolate not only brings the temperature of the melted chocolate down but provides the seed crystals necessary to temper the chocolate.

RAPÉ METHOD

Finely rapéd or chopped (rapé) chocolate is added to the warm melted liquid couverture when it reaches about 100°F (37°C). The Rapé has stable crystals which act as seeds to help the formation of the stable beta crystals. This can also be done by adding a solid block of couverture instead of finely grated pieces. The whole mass is then cooled to the best working temperature and maintained.

Be sure to keep the Rapé well covered after use. Since the finely chopped chocolate has more surface area exposed, it tends to be more moisture sensitive. Excessive moisture could adversely affect the crystallization process.

TABLE METHOD

Approximately $\frac{1}{3}$ of the melted couverture (100°F to 104°F) (37°C to 40°C) is poured on a marble table and spread back and forth with a spatula and scraper until it

begins to set. As it sets, Beta crystals begin to form, beginning the crystallization process. This resulting mass, or "mush" as it is referred to, is then added back to the other $\frac{2}{3}$ melted couverture and is gently stirred to seed the warm couverture with the stable beta crystals. The whole is then gradually brought down to the best working temperature.

TEMPERING MACHINE

The couverture is heated in a tempering machine until it reaches about 104°F (40°C). It is then brought down to around 80°F (27°C) to begin the formation of the beta crystals, and then gradually brought up to the best working temperature (see below).

BEST WORKING TEMPERATURES

Dark Couverture: 86°- 89°F (32°C)

Milk Couverture: 87°- 89°F (31°C)

White Couverture: 85°- 88°F (30°C -31°C)

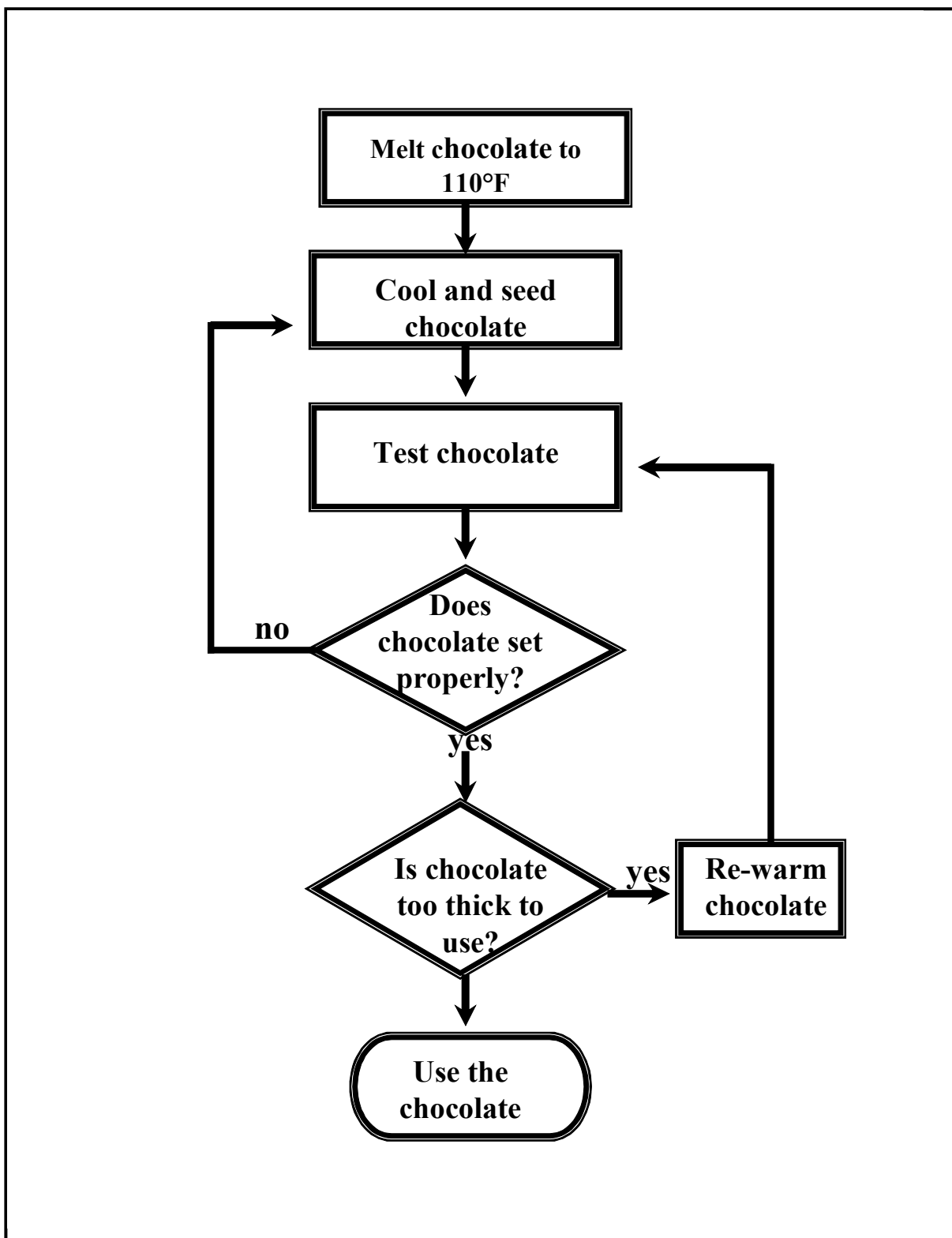
The above temperatures are ranges. Each chocolate manufacturer has their specific recommended best working temperatures for the couvertures they produce.

OTHER FACTORS AFFECTING COUVERTURE

The temperature of the workplace as well as the temperature of the items to be coated plays an important role when trying to ensure that the tempered chocolate retains its smooth glossy appearance when set. When coating or dipping items in couverture, it is important that crystallization takes place within a specific period of time. To achieve this, it is necessary to maintain a certain difference between room temperature and couverture. Ideally, this temperature difference is about 18°F to 20°F (10°C). If the couverture temperature is 89°F (32°), the room temperature should be between 68°F and 72°F (20°-23°C). Also, the centers or interiors of the item to be coated should be the same temperature as the room. If the centers are too warm,

this may prevent or delay proper crystallization of the couverture. On the other hand, centers that are too cold cause the couverture to be "shocked", and the result is a rather dull unattractive finish.

CHOCOLATE TEMPERING FLOWCHART



PLATING DESSERTS

A large part of the dessert's appeal is in the artful arrangement of colors, shapes, textures, and temperatures on a plate.

1. **Chilling or heating plates**

Refrigerate dishes for cold or frozen desserts for 20 minutes or so. Warm or hot desserts stay at their ideal temperature longer if your warm plates in a low (200°F) oven for 10 minutes before plating. You can also rinse or soak plates in very hot water; dry them completely before using them.

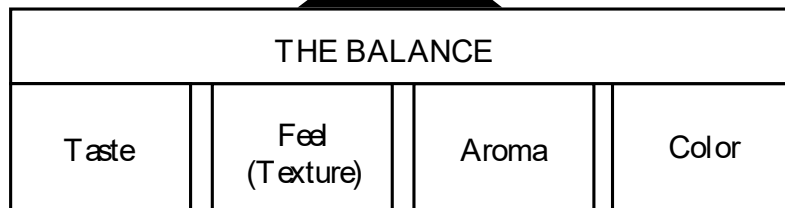
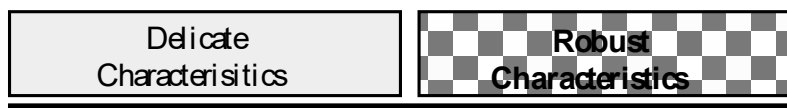
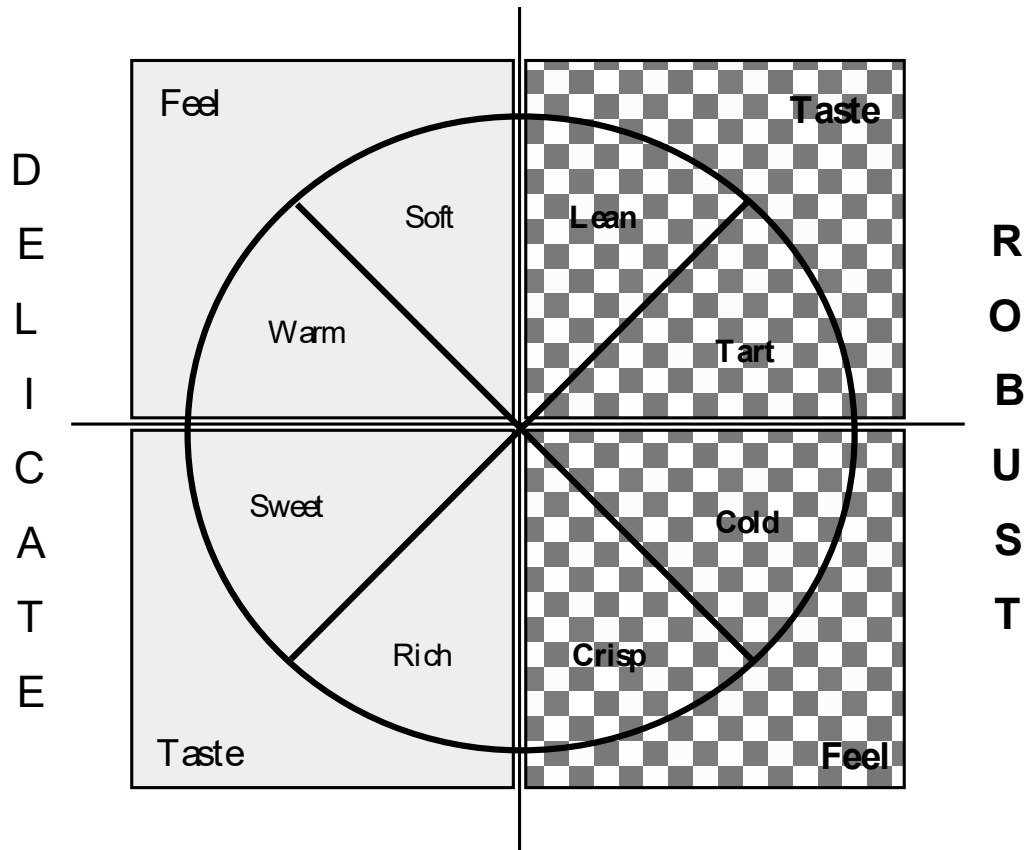
2. **Adding a sauce**

The color of a sauce and its placement on the plate can change the look of a dessert. You can make a pool of sauce, setting a slice of cake, torte, tart, or pie on top. Alternately, drizzle the sauce over the top of the dessert. If you have two sauces with flavors and colors that work well together, such as a custard sauce and a raspberry coulis, use a spoon to deposit a few droplets of one sauce over the surface of the other. Dragging a toothpick or skewer through drops creates heart or paisley shapes.

3. **Adding a garnish**

A scattering or dusting of finely chopped nuts, confectioner's sugar, cocoa powder, or chocolate shavings is a lovely finishing touch. You can use a stencil to create a pattern or simply sift or sprinkle these garnishes over the dessert or the entire plate. A sprig of a fresh herb or an edible flower is an appealing element as long as the flavor complements the dish.

MODERN DESSERT COMPOSITIONS



DAY FIVE

TEAM PRODUCTION ASSIGNMENTS

CHEF'S DEMOS

Chocolate and Fruit Mousse

Chocolate Tempering

Sauces (Optional)

ALL TEAMS

Rochers

Mendiant

TAKE HOME RECIPES

Anglaise Sauce

Caramel Sauce

Chocolate Sauce

Raspberry Sauce

Orange Sauce

ROCHERS

Yield: 25 pieces

Ingredients	Amounts
Nuts, unsalted	4 wt. oz.
Liquor	1 tsp.
Sugar, granulated	1 Tbsp.
Fruit, dried, chopped	3 wt. oz.
Chocolate, melted, tempered,	4 wt. oz.

Method

1. Preheat oven to 350°F. Line 2 sheet pans with parchment paper.
2. Moisten the chopped nuts with the liquor and toss with the sugar. Spread on a sheet pan.
3. Bake until lightly toasted. Stir occasionally during toasting to ensure even browning. Remove from the oven. Cool to room temperature.
4. Stir together the nuts and fruit.
5. Warm a small bowl or a cup to 85°F. In the warmed bowl combine one quarter of the nut-fruit mixture with one quarter of the chocolate. Mix to entirely cover the nuts and fruit.
6. Working quickly before the chocolate sets, use a spoon to deposit tablespoon-size mounds of the chocolate-coated mixture on a sheet pan.
7. Repeat in one-quarter increments with the remaining nut-fruit mixture and chocolate. Allow the rochers to cool and set completely.

Note: Melted compound coating can be substituted for the melted chocolate.

MENDIANT

Yield: 25 pieces

Ingredients

Amounts

Chocolate, milk, tempered,
Nuts, chopped

4 wt. oz.
1 wt. oz.

Method

1. Line a sheet pan with parchment paper.
2. Using a teaspoon, drop the tempered chocolate in half dollar-size pieces onto the sheet pan.
3. Place the nuts on the pools of chocolate before they begin to set.
4. Allow the mendiants to set fully before releasing from the paper.

Variations: Dark or white chocolate or melted compound coating can be substituted for the milk chocolate. Dried or candied fruit can be substituted for the nuts.

CHOCOLATE MOUSSE

Yield: Three 8-inch cakes

Ingredients	Amounts
Cream, heavy	1 qt.
Chocolate, chopped	15 wt. oz.
Egg, whole	6 wt. oz.
Egg, yolk	3 wt. oz.
Sugar, granulated	6 wt. oz.
Gelatin, leaf	5 ea.
Liquor	1 fl. oz.

Method

1. In a cold mixing bowl, whip the heavy cream using the whisk attachment until it forms soft peaks. Refrigerate until needed.
2. Place the chocolate in a stainless-steel mixing bowl and place over a pot of simmering water. Heat, stirring frequently, until the chocolate has fully melted. Be careful not to allow any water to come in contact with the chocolate as it will cause the chocolate to seize up. Reserve and keep warm. Chocolate should be 120°F.
3. In the bowl of an electric mixer make the sabayon- combine the eggs, egg yolks, sugar, and liquor and set over a pot of simmering water. Whisking constantly, heat the mixture until it reaches 160°F. Remove from the heat and whip using the whisk attachment until the mixture is cool.
4. Mix in the melted chocolate quickly!
5. Carefully fold in the whipped cream all at once.
6. Immediately portion the mousse into the desired molds or containers.

FRUIT MOUSSE

Yield: 1 pound (enough for 5 individual injection molds)

Ingredients	Amounts
Cream, heavy, whipped soft	8 ½ fl. oz.
Gelatin, leaf	6 ea.
Water, cold	as needed
Fruit purée	14 ½ wt. oz.
Egg, white	3 wt. oz.
Sugar, granulated	5 ½ wt. oz.

Method

1. In a cold mixing bowl, whip the heavy cream until it holds soft peaks. Reserve.
2. To bloom the gelatin, sprinkle the gelatin over the cold water in a bowl and stir to break up any lumps. Allow the gelatin to soften in the water.
3. Squeeze the gelatin to drain excess liquid. Warm half of the fruit purée. Add the gelatin; mix until melted and dissolved. Add the remaining purée and whisk well to blend. Reserve.
4. For the Swiss meringue, combine the egg whites and sugar in the bowl of an electric mixer and stir until thoroughly combined. Place the bowl over a pot of barely simmering water and slowly stir the mixture until it reaches 115°F. Transfer the mixture to the electric mixer and whip with the whip attachment on high speed until the meringue obtains the desired consistency.
5. Cool the fruit purée to 60°F, then add ⅓ of the purée to the meringue and mix well to combine. Fold the remaining ⅔ of purée into the meringue, then fold the whipped cream in last.
6. Immediately pipe or ladle into molds or decorative containers.

ANGLAISE SAUCE

Yield: 1 ½ quarts

Ingredients	Amounts
Milk, whole	1 qt.
Vanilla, bean	½ ea.
Sugar, granulated (Divided)	8 wt. oz.
Egg, yolk	15 ea.

Method

1. In a saucepan, combine the milk, vanilla bean, and 4 oz. sugar. Bring to a boil.
2. Prepare a liaison (thickening agent for the sauce) by combining the egg yolks with the remaining 4 oz. sugar in a mixing bowl.
3. Temper the liaison by adding a portion of the boiling milk.
4. Combine the liaison with the remaining milk.
5. Cook slowly, until the mixture reaches 180°F and becomes nappé (the sauce will coat the back of the spoon), stirring constantly.
6. Remove immediately from stove, strain sauce through a chinois (fine-meshed sieve) into a clean container, and cool quickly in an ice bath.

Note: Sauce can be made over a water bath for more control of the heat source. Vanilla extract may be substituted for vanilla bean in the amount of 1 Tbsp. per vanilla bean. Milk may be replaced with 1 pint milk and 1 pint cream. If preparing with both milk and cream, use only 12 egg yolks.

CARAMEL SAUCE

Yield: 24 fluid ounces

Ingredients	Amounts
Cream, heavy	1 pt.
Sugar, granulated	9 wt. oz.
Glucose syrup	6 ½ fl. oz.
Butter, unsalted, cubed, softened	1 ½ wt. oz.

Method

1. In a saucepan, place the cream. Bring to a boil over medium heat. Turn down the heat to low, keep warm.
2. Prepare an ice bath.
3. Combine the sugar and glucose syrup in a saucepan and slowly cook over moderate heat, stirring constantly until all the sugar has dissolved. Stop stirring and continue to cook until the mixture becomes golden caramel in color.
4. Remove the caramelized sugar mixture from the heat and immediately set over the ice bath to stop the cooking process.
5. Remove from the ice bath and stir in the butter.
6. Carefully stir in the heated cream, a little at a time, continuously mixing until fully blended.
7. Serve immediately or cover, label, and refrigerate for up to 2 weeks.

Note: The addition of glucose syrup helps prevent the sugar from crystallizing. If glucose syrup is not available, you may substitute an equal amount of corn syrup.

CHOCOLATE SAUCE

Yield: 1 quart

Ingredients	Amounts
Sugar, granulated	10 wt. oz.
Water	16 fl. oz.
Corn syrup, light	4 ½ fl. oz.
Cocoa powder, sifted	4 wt. oz.
Chocolate, bittersweet, melted	1 lb.

Method

1. In a heavy-bottomed saucepan, combine the sugar, water, and corn syrup. Bring to a boil over medium-high heat. Remove from the heat.
2. Place the cocoa powder in a separate mixing bowl and add enough of the hot sugar to make a paste, stirring until smooth. Gradually add the remaining syrup and mix until fully incorporated.
3. Add the melted chocolate. Blend until fully incorporated.
4. Strain the sauce through a fine-mesh sieve.
5. Serve warm or chilled.

RASPBERRY SAUCE

Yield: 1 pint

Ingredients	Amounts
Raspberry, purée, 10% sugar	8 wt. oz.
Water	4 fl. oz.
Sugar, granulated	4 wt. oz.
Tapioca starch	¼ wt. oz.
Water, cold	½ fl. oz.

Method

1. In a saucepan combine the purée, water, and sugar. Bring to a boil over medium heat. Cook until the sugar has dissolved.
2. Adjust the sweetness as necessary with additional sugar. Continue to heat until any additional added sugar has dissolved.
3. Combine the tapioca starch and cold water in a small mixing bowl to form a slurry (thickening agent).
4. Whisking constantly, stream the slurry into the simmering liquid and return the mixture to a boil.
5. Strain the sauce through a chinois and chill.

ORANGE SAUCE

Yield: 1 pint

Ingredients	Amounts
Apricot, marmalade	8 wt. oz.
Sugar, granulated	3 wt. oz.
Orange, zest	2 ea.
Orange, juice, fresh	4 fl. oz.
 Grand Marnier	 1 fl. oz.

Method

1. In a saucepan, combine the apricot marmalade, sugar, zest, and juice. Bring the mixture to a simmer and cook for 2 minutes.
2. Remove from the heat and strain into a small bowl.
3. Add the Grand Marnier to taste. Cool.
4. Serve immediately or cover, label, and refrigerate until needed.

Note: Apricot liquor can be substituted for the Grand Marnier.

TIPS

The following pastry-making tips will help you avoid difficulties, overcome frustrations, and facilitate the development of new skills.

WHIPPING CREAM

Some heavy cream has as high as 40% butterfat content. It is easy to whip this cream too long, as the fat will separate from the liquid. If this happens, sometimes folding in a little liquid cream to soften the mixture can save the product. Otherwise, it could be whipped more, separating it from the liquid completely and used to make clarified butter.

ROLLING DOUGHS (LINZER, TART, PIE, ETC.)

Be sure the dough is chilled; if the butter in the dough becomes too warm and soft, it is difficult to roll. Carefully work the chilled dough into a malleable consistency. Roll on a clean surface that has been dusted with bread flour (lower in starch content than all purpose or cake flour, it will not readily absorb into the raw dough). Be careful not to dust too heavily. While rolling, repeatedly lift the dough and turn to be sure it is not sealing to the table.

PIPING

When using a paper cone, be sure it is rolled properly and has a straight even tip, or the product may not pipe out evenly and curl up the side of the bag. Piping gel should be piped while holding the tip of the bag at least 1 inch above the surface. All piping can be difficult and takes practice. Never overfill your bag. Think of the tip as the tip of a pencil. When piping eclairs or cream puffs, count the seconds it takes to keep them all the same size.

DECORATING

Decorations should look attractive and delicate, denoting elegance in desserts. Thin chocolate decorations are not only beautiful to look at but easier and more delightful to eat. Colors should not be over brilliant as to separate them from relating to food. Finally, it should be kept simple and clean, over-decorating becomes sloppy and confusing to look at, and to eat.

FOAMING EGGS

Eggs foam best when room temperature or warmer; the warmth also helps the sugar to dissolve. All equipment should be free of grease and oils. Unless the recipe signifies, the eggs are whipped until they recede (beginning to lose volume). If eggs are underwhipped for sponge cake, the cake may fall in the oven.

MERINGUE

For common and Italian meringue, be sure to start the whites foaming before adding any sugar. All equipment should be clean of grease and oils. For Swiss meringue do not whip the whites and sugar constantly while overheat or the sugar will not dissolve and may retain its graininess. Do not stop whipping until ready to use, "use it or lose it".

BLOOM AND DISSOLVE GELATIN

Blooming is to rehydrate or soak the gelatin; it absorbs the moisture and softens. *Dissolve* means to warm the gelatin; it dissolves into the liquid it was bloomed in, or (as in leaf gelatin) excess water can be squeezed out and the gelatin dissolved into the warm mixture used in the preparation. If gelatin is not dissolved, it can leave small grains or lumps in the finished product.

ICING CAKES

Be sure your workstation is clean and organized. Stand comfortably, being aware of good body posture. Follow your chef instructor's guidance. Some chefs use a cake wheel to hold the cake, and some use their hands. Never use an offset palate knife as it is difficult to judge. Use the correct size knife for the cake, never too large or too small. Coat the cake systematically starting with the sides, then the top, then bring the sides up smooth and smooth off the top. Don't use too little icing; more icing is easier to take down to a perfect cake. If using whipped cream, try not to overwork and turn it to butter. Watch the angle of your knife to be sure it is creating a flat surface or right angle side. Wipe the knife clean after each time on the cake. Be conscious of your sleeves, jacket, and people around you as they can easily swipe into the cake.

COOKING CUSTARD TO NAPPÉ

When cooking a custard to nappé, always stir constantly to be sure the eggs do not scramble and have a chinois and ice bath ready to strain and cool the sauce immediately. After straining, stir the sauce to release the heat and begin the cooling process.

TEMPERING CHOCOLATE

Melt a larger amount of chocolate than is needed, a larger amount will hold a constant temperature longer and not cool off too fast. Plus, the leftover can always be saved for melting again another day. Melt chopped chocolate carefully and completely; this could be done at the beginning of any day that chocolate work will be done as it could cool close to temper while you are doing other work. Do not overheat or the sugars in the chocolate will crystallize and become grainy (in a bowl over steaming water is the most popular method but a microwave works also). Stir to be sure all pieces have melted. Cool the chocolate as your instructor has

demonstrated. When the chocolate is cooled to the temper range, attempt to hold it there by not placing the bowl directly on a cold surface like marble. Instead, place it on wood, a folded towel, or another pot of lukewarm water for insulation. Watch the sides of the bowl; as the chocolate starts to set, warm slightly to melt and stir in. Use one side of the bowl to take chocolate out; this leaves the other sides to rest your spoon or spatula without getting dirty.

TEMPERING EGGS TEMPERING THE LIAISON

The process of warming eggs to then be mixed into a hot liquid. Reserve half of the sugar to mix the eggs, the higher sugar content protects the eggs from scrambling. Mix the sugar into the eggs just before tempering; if it sits with the eggs without movement, it will burn into the eggs (create lumps). Add hot liquid steadily while whisking until the eggs feel warm. Do not whisk rapidly like making an emulsion as in hollandaise; this will only cool the eggs, not warm them up. Pour into the hot liquid while whisking to become well combined.

SCALING INGREDIENTS

When scaling ingredients, it always pays to double-check the weight. Be sure that the ingredient bin and counterbalance is at a proper tare. Set the weight you need by using the ounce meter and individual weights. Add ingredients to the bin to return the scale to balance.

CUTTING PETIT FOURS

Cutting miniature cakes by eye to an exact size is nearly impossible without first marking them with a ruler. If cutting shapes on an angle like diamonds, cut one and then continue to use this one as a guide for the rest. Be sure diamonds are not too long from tip to tip, a petit four should be one or two bites.

GLAZING

Glazing is placing a thin coating onto pastries to give them visual appeal, added flavor, and moisture retention. There are many types of glazes including fondant, ganache, jam-based glazes, and gelatin-based glazes. The glaze should be fluid and free of lumps. All require different temperatures. Generally, fondant is approximately 105°F. Chocolate ganache is warm. Apricot glaze is warm. Gelatin-based glaze must be liquid but not hot if being poured over a mousse, which it could melt. All glazes should be in a very thin, smooth layer.

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