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# **4-H Foods Judging Guide**

## **Adapted and Revised Edition**

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## How to Be a Good Judge

The judging of a finished product is a learning experience. It can help to develop understanding and encourage members to do better next time. Judging is also a matter of selection and choices are necessary in all projects. Often, within a fairly wide vicinity of what is considered good, various choices are acceptable. The very experience of considering many factors and arriving at a conclusion is often more important than the decision reached.

When standards are given, they are as neat as possible to the combined beliefs of many trained people. Though they must vary enough to make judging possible, standards need not be so rigid as to give members the false impression that there is only one correct way to do something. Though many standards are based on scientific principles, others are merely the result of convention and convenience.

Judging recognizes outstanding features of a particular item. To become a learning experience, it is important that the 4-H'er knows the probable cause of a less desirable product. When the reasons are known, corrections can be made in the form of oral or written comments to the superintendent or the exhibitor at the time of judging.

It is important to familiarize yourself with the desired characteristics of the food to be judged. You should score according to the quality description of the food rather than compare one product with another.

- **Be informed.** Know basic recipes and the various methods used to produce a quality product. For example, a cake may have been made from a standard recipe, or using a healthier adaption. It could have been mixed by any one of several methods. The recipe and the method of mixing can make a difference in the outcome of the product. A well-designed recipe yields a good product if the method is correctly followed.
- **Be objective.** Fair judging rules out personal preference. You may be called upon to evaluate a food you dislike or a food prepared differently from your preferred method.
- **Be positive.** Point out what is good about the food you are judging. Suggest what could be done to improve it – as a learning experience, not as a criticism.
- **Explain.** Be sure to provide an explanation as to why a product was given a certain rating.

## Tips for Food Judges

Determine what equipment and supplies will be on hand when you are judging. The following are helpful, depending on what food items you will be judging. Remember to label your own personal items for easier identification. Some counties will provide many of the above items for you at judging time.

- ✓ Tableware – knife, fork, spoon (carry in plastic bag)
- ✓ Sharp, long-bladed knife in a cardboard sheath
- ✓ Long, serrated knife in a cardboard sheath
- ✓ Paring knife
- ✓ Cake breaker
- ✓ Can opener/lid lifter
- ✓ Lap towel or apron (terry cloth is handy)
- ✓ Paper goods – plates, towels, cups
- ✓ Damp sponge (stored in plastic bag)
- ✓ Lemon or unsweetened lemon juice, apple wedges, and/or coffee (helps out with food tastes)

## **Other tips for a successful judging session include:**

1. Avoid hand lotions or perfumes.
2. Use all senses – seeing, touching, smelling, hearing, and tasting – in foods judging. Taste is the most subjective sense and it can be a deciding factor when all other factors are equal.
3. Be consistent in the methods you use in judging. This insures fairness to all exhibitors.
4. To check the tenderness and texture of a product: -break open muffins, biscuits, rolls, and cookies. Cut loaves of yeast breads and quick breads from one-third to one-half the way in from the end. Cut out a thin slice to view the grain, moisture, blending of ingredients, etc.
5. Cut and remove wedges from cakes. Cut wedges large enough to provide optimum evaluation. Avoid cutting corners of cakes.
6. Open, when necessary, jars of jelly, jam, other preserves, and pickles. Cut jelly with a knife to test consistency. Remove a portion of the product and reseal immediately. Do not open canned fruits, vegetables, or meats.

## Common Terms Used for Judging Food Products

**Appearance** of food determines the acceptance or rejection of the food before it is tasted. First impressions are important! The color, the crust or outer covering, the apparent dryness or moistness of the product, the shape or volume, or the size of the piece affects the general appearance of the food. When a garnish is used, it should enhance the appearance of the food.

**Texture** is the way food feels to the touch and the mouth. The fineness or coarseness of the grain or fiber of a food influences the texture. Grain refers to the cell structure. How big is the cell, how thick are the walls of the cell, how evenly are the cells distributed throughout the mass? Answers to these questions help to describe texture. Fiber is the thread-like structure in the cells of the food. For example, you can readily see the fibers in such foods as meat, asparagus, and celery.

**Crumb** is a very small piece of bread, cake, cookie, or other food. By examining the crumb of a food carefully, you can describe the “feel” of a food.

**Consistency** of a food is important to texture and to appearance. Consistency is the degree of firmness, density, or viscosity (the flow) of the food.

**Tenderness** of food can be measured by the force needed to break, bite, or chew it. Foods that can crumble easily may be too dry or too tender.

**Flavor** of a food is a combination of its taste and aroma. There are four basic taste sensations: sour or acidic, salty, bitter, or sweet. Certain odors are associated with certain tastes. For example, the odor of milk may tell us that it is sweet or sour without ever tasting it. Another flavor classification might be spicy, flowery, fruity, resinous, foul or burnt.

**Temperature** of a food is in general, at the temperature at which the food is normally served.

## Descriptive Terms Used in Judging Food Products

**Appearance:** aspect, or contour. Words that may help you describe the appearance include:

*broken \* lustrous \* cloudy \* muddy \* clear \* opaque \* crumbly \* plump \* curdled \* rough \* dull \* scum \* frothy \* sediment \* shiny.*

**Odor:** volatile substances affecting the sense of smell. Words that may help you describe the odor include: *acid \* fragrant \* strong \* burnt \* delicate*

**Color:** normal for substance, pleasing to eye. Words that may help you describe the color include: *bright \* creamy \* discolored \* dull \* faded \* gray \* greenish \* golden \* brown \* normal \* off-color \* shriveled \* shrunken \* smooth \* sparkling \* stringy \* translucent \* greasy \* acrid \* weak \* pale \* rich \* snowy \* white \* yellow.*

**Consistency:** degree of firmness. Words that may help you describe the consistency include: *density \* viscosity \* fluidity \* plasticity \* resistant to movement \* brittle \* gummy \* soft \* crisp \* liquid \* soggy \* crumbly \* rubbery \* hard \* curdled \* runny \* thin \* firm \* syrupy \* frothy \* solid \* full-bodied \* stiff.*

**Flavor:** quality which affects the relish, zest, or savor, and is a combination of the taste, odor, and texture experience. Words that may help you describe the flavor include: *astringent \* flat \* stale \* bland \* mellow \* starch \* blended \* pungent \* stimulating \* brisk \* raw \* strong \* burned \* rich \* tasteless \* delicate \* scorched.*

**Grain:** structural quality of the food product, such as crystals in candies and ice creams, size of pores in cake and bread, and thickness of cell walls in breads or cakes. Words that may help you describe the grain of a product include: *even \* thin cell walls \* uniform \* coarse \* grainy \* porous.*

**Moistness:** degree of moisture. In fruit and meats, this is referred to as juiciness. Words that may help you describe the degree of moisture in the product include: *amorphous \* fine \* granular \* coarse \* foamy \* heavy \* crystalline \* grainy \* porous.*

**Lightness:** well leavened, not dense, having low specific gravity. Words that may help you describe the lightness of the food product include: *fluffy \* light in weight for size \* porous \* dry \* watery \* moist.*

**Shape:** proportionate dimensions. Words that may help you describe the shape include: *broken \* irregular \* even \* oval \* flat \* round.*

**Size:** Words that may help you describe the size include: *irregular \* small \* medium \* large \* uniform.*

**Taste:** sensations produced by substances listed. Words that may help you describe the shape include: *bitter \* salty \* sour \* sweet.*

**Tenderness:** ease with which can be cut, broken, pulled apart, or chewed. Words that may help you describe the tenderness include *tender \* tough.*

**Texture:** feel of substance between fingers or mouth. The differences are caused by grain, tenderness, moisture, content, etc. Words that may help you describe the texture include: *brittle \* chewy \* fibrous \* firm \* grainy \* granular \* limp \* lumpy \* mealy \* mushy \* oily \* pasty \* rubbery \* slimy \* smooth \* soggy \* sugary \* stringy.*

# Cookies

Cookies come in many shapes and sizes. There are six main types of cookies: rolled, dropped, refrigerator, pressed, bar, and no-bake cookies.

- **Rolled** cookies are made from a stiff dough that is rolled on a lightly floured board to the desired thickness and cut out into shapes.
- **Dropped** cookies are made from a soft dough that is dropped onto a cookie sheet. They may or may not be flattened.
- **Refrigerator** cookies are made from a dough high in fat that is chilled. Cookies are then shaped into balls or sliced into a roll before baking.
- **Pressed** cookies are made from a rich, stiff dough that is pushed through a cookie press.
- **Bar** cookies may be more like a cake or may be chewy and are made from a stiff batter that is baked in a shallow pan and cut into squares or bars when cool.
- **No-bake cookies** are made from ready-to-eat cereals, chow mein noodles, oatmeal, nuts, raisins, or coconut and held together with a cooked syrup. Their quality can become affected by heat and may melt or become sticky or oily, depending on the weather.

What to Look For	What Happened	Because Of
<b>SHAPE</b>		
Uniform	Run together	Batter spaced too closely together on baking sheet before baking.
	Irregular shape, peaks, or cracks	<b>Drop Cookies:</b> Improper dropping of dough Dough too thick or too thin <b>Rolled or Refrigerator Cookies:</b> Dough not chilled Thin sharp knife not used for slicing Cutter not used for slicing
<b>VOLUME</b>		
Medium, about 2 ½ - 3" in diameter	Flat	Expired baking powder
	Uneven in size	Varying amounts of dough used
	Excessive spreading	Dough too warm Cookie sheets not cooled between use Incorrect oven temperature Liquid not measured accurately Flour not measured accurately Incorrect form of fat used, such as melted, whipped, or oil form
<b>COLOR</b>		
Evenly browned	Too dark	Baked too long or oven too hot Baking sheet or pan with dark, non-stick coating or glass pan was used without lowering oven temp 25°
	Pale on top, burned on bottom	Oven rack not in middle of oven <b>For Bar Cookies</b> – the pan may be too deep for the amount of batter in it. The pan should not be more than 2/3'rds full.
	Dark crusty edges Loose flour on top	Overbaking Poor mixing techniques

<b>CRUST</b>		
Dry in appearance	Shiny or sticky	Too much sugar Didn't bake long enough
<b>TEXTURE</b>		
<b>Rolled or refrigerator</b> Crisp and tender	Soft	Cut too thick
<b>Drop</b> Moist, soft, and tender	Tough	Too much flour Dough overhanded
<b>Bar</b> Moist and tender	Sticky	Too much sugar
	Dry	Too much shortening, fat, or flour
	Crumbly	Too much flour
	Hard	Oven too hot or baked too long Flour too high in protein
<b>FLAVOR</b>		
Delicate, sweet Well blended Characteristic of ingredients	Rancid	Rancid fat or stale ingredients
	Bitter	Too much baking soda or baking powder or other leavening agent Too much or too little flavoring
	Doughy, raw flavor	Under baked Dough too stiff





# Cakes

Cakes can be divided into two categories: **shortened** and **unshortened**.

- **Shortened cakes**, also called butter cakes, are leavened by baking powder and/or soda and acid, in combination with steam and air. They may contain a large amount of solid or liquid shortening and are baked in almost any size or shape. Liquids, flavorings, spices, and other ingredients help produce a wide variety of cakes. These are heavier cakes than unshortened cakes, yet have a moist tender crumb and a fine, even grain.
- **Unshortened cakes** are also known as foam, chiffon, sponge, or angel food cakes. They contain little or no added fat. They usually contain a large proportion of eggs or egg whites and are leavened by steam and air and are baked in ungreased tube pans.

What to Look For	What Happened	Because Of
<b>SHAPE</b>		
Level, slightly rounded top Symmetrical	Higher on one side	Uneven heat Oven rack not level Paper liner wrinkled Batter not evenly distributed in pan Batter not cut through with knife to release air pockets
Free from cracks or peaks	Runs over top of pan	Too much batter for pan Oven not hot enough Too much leavening
	Humps or cracks on top	Oven too hot at first Pan too high in oven Too much flour
	Flat (cake doesn't rise)	Not enough leavening, or not fresh Pan too large Oven too hot Too much liquid or fat
<b>VOLUME</b>		
Light in weight for size	Undersize	Not enough leavening Too much liquid or fat Wrong oven temperature Improper mixing
	Falls	Too much shortening, sugar, or baking powder "Peeking" at the item while baking Oven temp too low Too much batter in pan Under baking Cake was moved while baking
	Low volume	Not enough leavening Too much batter in pan Incorrect oven temperature or time Too much liquid or shortening Over mixed Pan greased too heavily Incorrect cooling
	Peaked top	Batter too stiff Too much flour Too hot an oven at the beginning of the baking period

<b>COLOR</b>		
Uniform	Uneven browning	Uneven oven heat Insufficient leavening Under mixed
Light brown	Dark spots or streaks	Too much leavening Insufficient creaming, mixing, or sifting
	Too light or too dark	Incorrect oven temperature and/or baking time Incorrect placement of pan in oven Pan too large (too light) Too much sugar (too dark)
<b>CRUST</b>		
Smooth and uniform	Hard	Wrong oven temperature or baking time
	Sticky or shiny	Not baked long enough
	Tough	Too much sugar Not enough shortening or sugar Too much flour
	Sticks to pan	Over mixing Left in pan too long Didn't grease pan enough
	Moist	Insufficient or improper cooling Wrong oven temp or baking time Humid storage conditions
	Cracked	Too hot an oven at the beginning of the baking period Batter too stiff Pan too narrow or too deep
<b>TEXTURE</b>		
Tender, moist crumb Light and fluffy Feels velvety to tongue Fine, round evenly distributed cells	Tough cake	Not enough shortening, sugar, or baking powder
	Too light, crumbly, or dry	Over baked Under mixed Not enough fat, sugar, or liquid Too much leavening Oven too hot Too much flour Overbeating egg whites Substitution of cocoa for chocolate without increasing fat
	Soggy gelatinous layer or heavy streak	Shortening too soft Under mixed Under baked Too much liquid Damp flour Wrapped before cooled Too much liquid with a high water content ( i. e. fruit, pumpkin, or applesauce)
	Heavy, compact	Overbeating or under creaming Incorrect oven temperature Pan too small Poor quality shortening Not enough leavening

Coarse grain	Insufficient creaming Use of bread flour Too much liquid, sugar, or shortening Oven too slow Oil used instead of shortening
Falls apart when removed from pan	Too much fat, sugar, or leavening Insufficient baking Cake removed too soon from pan
Tunnels	Too many eggs or too little sugar Poorly mixed Butter overbeaten Failure to expel air when placed in pan (not cut with knife)
Sticky and shrunken crust	Too much sugar Damp flour Insufficiently baked Incorrectly frozen and thawed

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### FLAVOR

Delicate, sweet Well blended Characteristic of ingredients	Bitter	Too much baking soda or baking powder or other leavening agent
	Rancid or stale	Too much or too little flavoring Rancid fat or stale ingredients (old or rancid nuts, strong or rancid vegetable oil, poor quality eggs)
	Uneven flavor	Under mixed
	Strong	Too much of an ingredient

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## QUICK BREAD LOAVES and COFFEE CAKES

### Quick Bread Loaves

These are commonly made of fruit and/or nut mixtures. They are fast and easy to make. The ingredients, method of mixing, and baking technique are similar to making muffins. Some are also made more like a cake. Recipes typically will have interesting variations with the addition of nuts, fruits, cereals, and other types of flour. Quick breads are not always in loaf pans! For example, corn bread is baked in a shallow pan and spoon breads are made in casserole dishes or layer cake pans. Some are may be baked in covered cans or special molds.

Why do many quick bread get a crack in the top? Some recipes may have a crack while others do not. Baked products should not be scored down because of a crack. However, some people do prefer an uncracked crust. The crack develops because there is a large mass of batter in the loaf pan that heats slowly. Smoother crusts develop when there is a longer time for the leavening agent to react. This results in an increase in volume before the crust sets, resulting in a smooth crust. If the baking is rapid, a crust with a cracked top and a more solid crumb will develop.

Using long, narrow pans will also result in a crease or crack on top. Consistency of the batter will influence the depth of the crack. Batter touches the edge of the pan first. As the batter warms to baking temperature, it thins and allows a film of fat and sugar to run towards the center of the crust. This shiny line or sticky crack then forms down the center of the loaf. A crack may also form when the underlayer or unbaked batter “erupts” when the leavening agent reacts.

Ways to prevent a cracked crust include:

1. Preheating the oven to 350° and bake the bread as soon as it is mixed.
2. Preheat the oven to 375 - 400°. Cover quick bread and allow it to stand at room temperature 20 – 30 minutes before baking.
3. Tent a piece of heavy foil over the top of the loaf pan filled with batter. Allow the foil to remain until the batter rises and begins to brown. Remove the foil without touching the soft crust. This keeps the top moist and prevents a crack from forming.

### Coffee Cake

This is a sweet, leavened quick bread like cake often made with or topped with nuts, raisins, fruits, cinnamon, and glazed with melted sugar, frosting, or streusel. Coffee cakes may also be classified as coffee breads, coffee rolls/buns, and Danish pastry coffee cakes.

There are two ways to categorize coffee cakes according to the leavening agent. Coffee cakes may be leavened with baking powder or yeast. The cakes made with baking powder involve a creaming process or muffin/quick bread method (stirring ingredients together separately and then combining quickly etc.) The yeast raised cakes are prepared with a fermentation process and involve several mixing methods, depending on the recipe. Some recipes for yeast based coffee cakes are the same sweet bread recipe used for rolls.

Some coffee cakes have a layer of filling that may contain fruit, jam or preserves, nuts, spices, or chocolate. Other cakes just have these ingredients mixed right into the batter. If a coffee cake's batter contains sour cream instead of milk, the cake will have a richer texture and taste. Coffee cakes commonly have a streusel crumbly topping made of butter, sugar, flour, and spices. Sometimes nuts and oats are also added. The streusel is sprinkled on the top of cakes, muffins, sweet breads, or crisps before baking. When baked the streusel mixture becomes nice and crisp and adds both taste and texture to the baked good.

Coffee cakes may be baked in any size or shape of pan. Many are in Bundt, tube, fluted or loaf pans which can produce several slices of cake. Others may be baked in oblong, square, round, or loaf pans or muffin tins.

<b>What to Look For</b>	<b>What Happened</b>	<b>Because Of</b>
<b>SHAPE</b>		
Slightly rounded top	Peaked	Batter too stiff Batter mixed too much Pan too small
	Cracked	Oven too hot
	Too smooth crust	Batter over mixed
	Low volume	Pan too large Not baked immediately after mixed
	Center crack wet	Not baked long enough Oven too hot
	Dipped center (fallen)	Oven not hot enough Not baked long enough
<b>COLOR</b>		
Evenly colored, medium to dark brown	Pale	Not enough fat or sugar Wrong proportion of ingredients Bananas not ripe enough
	Dark	Oven too hot
	Uneven coloring	Pan not in middle of oven Too many pans in the oven Uneven heat in the oven
<b>TEXTURE</b>		
Tender, moist crumb	Tough	Too little fat Too much mixing Too stiff batter
Round, even cells	Tunnels and holes Coarse, porous Dry, crumbly	Batter over mixed Batter too stiff Too much flour
Center crack dry	Soggy	Baked bread wrapped before completely cooling Not baked long enough Too much fruit
<b>FLAVOR</b>		
Rich, appealing flavor	Off flavor	Stale ingredients Too much leavening
	Flat, bland flavor (for Banana Bread)	Bananas not ripe enough Not enough salt
<b>TOPPING</b>		
Evenly spread	Too thick	Used more than necessary
	Strong flavored	Too much cinnamon

## PIES

Only non-perishable pies are allowed to be judged or exhibited. This includes fruit or pecan pies. Custard or meringue pies are not accepted. Fruit filling pies usually consist of fruit, fruit juice, sugar, and a thickener such as cornstarch and/or tapioca. When baked, a typical homemade double-crust pie should have a blistery, pebbled surface that promises flakiness. It should be baked to a golden brown perfection, with a slightly, darker brown around its edges. It should be rolled fairly thin (1/8-inch) so that the entire crust will be crisp and fragile and easily cut with a fork, flaky and tender but at the same time not too crumbly.

<b>What to Look For</b>	<b>What Happened</b>	<b>Because Of</b>
<i>Outside Characteristics</i>		
<b>CRUST</b>		
Evenly browned appearance, light and flaky texture	Too light OR too dark	Incorrect oven temperature Incorrect baking time Rolled out too thick or too thin
	Shrinks in pan	Dough handled too much Dough stretched too tight in pan Dough stored too long in refrigerator Not pricked enough Used non stick pie pan and did not secure sides
<b>FILLING</b>		
Bubbling through top of crust	Does not fill crust	Not enough filling used Shrinkage of raw fruit not considered
	Filling spills out on crust	Oven temperature too low Insufficient sugar and/or fruit Insufficient thickening Too much sugar Upper crust shrinkage – not sealed properly
<i>Inside Characteristics</i>		
<b>CRUST</b>		
Flaky and tender, evenly baked	Tough	Dough too warm when rolled out Too much water Over mixed Too much handling Too much flour used when rolling Not enough fat
	Crumbly	Improper cutting of fat Not enough water Too much fat Self rising flour was used
	Soggy	Under mixed Used a shiny pie pan Baked pie on pan on cookie sheet
<b>FILLING</b>		
Tender pieces of fruit, adequately baked and of equal size and shape	Undercooked	Under baked Oven temp set too low
	Dry	Not enough liquid
	Layer of thickening	Too much thickening Under baked
	Gummy	Too much thickening

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## FLAVOR

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Fresh flavor, with no off flavor from fat in crust, and a good proportion of ingredients – not too sweet or spicy

Poor flavor

Ingredients not fresh – rancid oil, old nuts, poor quality

Strong flavor

Too much cinnamon or spice

Too sweet

Too little fruit and fruit juices in proportion to sugar

Doughy

Dough rolled out too thick  
Incorrect proportion of ingredients

Excess of any flavor

Under mixed

Raw, starchy flavor

Undercooked filling (thickening agent)

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## YEAST BREADS

There is little difference in the variety of ingredients used in yeast breads. The physical characteristics of these products are very similar. Yeast breads contain little fat or eggs, compared to a sweet dough recipe. Sweet rolls and coffee cakes are made from a rich, soft dough that contains more eggs, fat, and sugar than the dough used for loaves of bread.

The process of making specialty yeast products and a loaf of bread are similar. Adequate development of gluten either by kneading or beating is important for a successful product.

When a no-knead or batter bread is made, the thin batter is mixed quickly and thoroughly without kneading. The batter is left in the mixing bowl for rising or placed directly in the baking pans. Batter breads have a more open grain, lacy appearance, and an uneven surface.

The perfect yeast bread is varied. It can be coarse, heavy, crusty, chewy and flavorful, while others are light, tender and delicate in taste. Flavors in yeast breads can range from sweet to savory to mildly sour. Bread dough can be baked in loaf pans, as free-form loaves on cookie sheets or as individual-sized buns, twists, or rolls.

What to Look For	What Happened	Because Of
<b>SHAPE</b>		
Well proportioned	Odd shape	Improper molding Raised too long or too short Pan too large or too short
Evenly rounded	Cracks and bulges	Rapid cooling in draft Dough too stiff Incorrect oven temperature
Slight break and shred on edge of pan	Higher on one side	Pans too close together Uneven heat
<b>VOLUME</b>		
Light for size	Heavy, coarse grain	Poor yeast or yeast killed Ingredients not well mixed Low grade or not enough flour Dough too stiff Not raised enough Too large much low-gluten flours Salt omitted Rising time too long Under kneaded Oven too cool
	Too large	Raised too long Too slow oven
	Too small	Liquid in recipe too cool Too much salt Dough too stiff Not enough yeast Rising time too short Oven temperature too hot
	Falls in oven	Rising time too long Collapsed, because over-proofing weakened the gluten



<b>FLAVOR</b>		
Blended flavor	Flat	Too little salt
	Yeasty	Too warm rising period Poor yeast or flour or too much yeast Too little sugar Baked too slowly or incompletely
	Musty	Moldy flour or ingredients Incomplete baking
	Sour	Not enough salt Rising time too long Too much eggs, milk, or sugar in proportion to yeast
	Rancid	Rancid fat
<b>COLOR</b>		
Inside appearance: creamy white with silky sheen (or appropriate coloring for grain used)	Dark	Too cool oven Improper rising Stale yeast
	Dark streaks	Dough not covered when rising – surface of dough became dry before shaping Oven temperature too cool Bowl greased too heavily Rising time too long Improper or poorly mixing Too much flour or yeast added
	Poor color	Dough not covered during rising Rising time too long Too much flour during kneading and shaping Uneven mixing or baking
<b>CRUST</b>		
Outside appearance: crisp and tender, even golden brown	Tough and hard	Baked too slow Drying of top Uneven heat or over baked Dough not kneaded enough Too much flour during mixing and kneading
	Pale	Too slow oven Too much salt Too little sugar Dough became dry during rising Rising time too short Under baked
	Too brown on top	Oven too hot or baked too long Incorrect location in oven Rising time too short
	Not brown on sides	Pans too shiny – heat reflected away from sides Poor pan placement – overcrowding Uneven heat in oven
	Uneven, bulgy	Uneven shaping Pan not in middle of oven Insufficiently proofed
	Raw, starchy flavor	Undercooked filling (thickening agent)

# YEAST ROLLS

What to Look For	What Happened	Because Of
<b>SHAPE</b>		
Uniform size Attractive shape	Uneven shape	Improper shaping Uneven time in oven Rising time too long or too short
<b>VOLUME</b>		
Light in size	Heavy	Low grade flour Poor yeast Under kneaded Too cool while rising
	Poor volume	Under proofed
<b>FLAVOR</b>		
Blended flavor Slightly sweet and nutty Richer than bread	Flat	Too little salt
	Yeasty	Raised too long Too warm while rising Poor yeast or flour
	Sour	Raised too long Too slow baking Too warm while baking
<b>COLOR</b>		
Uniform Golden brown	Streaks	Poor mixing
	Drying of dough at top	Adding flour at last stage
	Dark crumb	Too cool oven Stale yeast
	Pale	Too slow oven Too little sugar Too much salt
<b>CRUST</b>		
Tender, crisp Smooth crust	Tough	Under proofed – not raised enough Low grade flour Too much salt
	Cracks and bulges	Over handling of dough Not raised properly in oven Cooled to quickly
<b>TEXTURE</b>		
Tender, elastic crumb	Thick	Too slow baking
Slightly moist	Crumbly	Soft wheat flour Too little kneading
Fine cells, soft and velvety	Compact at bottom	Not raised enough Under baked
	Sticky	Steamed by cooling in pan
	Coarse	Poor yeast Low grade flour Raised too much

# PASTRIES

The key to successful pastries lies in how the dough was mixed and rolled. Ingredients must be handled delicately, and not mixed too much or too little if a high quality product is desired. Pastries have rough blistered surfaces with no large air bubbles. They are golden brown in color, with the centers just a little lighter. They are not shrunken and have attractive, sharp shapes with uniform thickness. Pastries are known by their delicate layers, especially evident when the pastry is broken. They are crisp and flaky and cut easily with a fork but hold their shape when lifted without falling apart. Examples include tarts, streusels, phyllo doughs, croissants, and Danishes.

<b>What to Look For</b>	<b>What Happened</b>	<b>Because Of</b>
<b>SHAPE</b>		
Uniform size Attractive shape	Uneven shape	Improper shaping Uneven time in oven Rising time too long or too short
<b>VOLUME</b>		
Light in size	Heavy	Low grade flour or poor yeast Under kneaded Too cool while rising
	Poor volume	Under proofed
<b>FLAVOR</b>		
Blended flavor Slightly sweet and nutty Richer than bread	Flat	Too little salt
	Yeasty	Raised too long and too warm while rising Poor yeast or flour
	Sour	Raised too long Too slow baking or too warm while baking
<b>COLOR</b>		
Uniform Golden brown	Streaks Drying of dough at top Dark crumb	Poor mixing Adding flour at last stage Too cool oven Stale yeast
	Pale	Too little sugar or too much salt
<b>TEXTURE</b>		
Tender, elastic crumb	Crumbly	Soft wheat flour Too little kneading
Slightly moist Fine cells, soft and velvety	Compact at bottom Sticky	Not raised enough or under baked Steamed by cooling in pan
<b>CRUST</b>		
Tender, crisp Smooth crust	Tough	Too slow oven Under proofed – not raised enough Low grade flour Too much salt
	Cracks and bulges	Over handling of dough Not raised properly in oven Cooled to quickly
	Thick	Too slow baking
	Coarse	Poor yeast or low grade flour Raised too much

## CROISSANTS AND DANISHES

Croissant, Danish and puff pastry are all made from laminated (layered) dough. That is encasing butter in dough, and taking it through a series of folds, rolling and turns to produce layers of butter in between sheets of dough. The leavening in laminated dough is derived mainly from the steam generated by the moisture in the butter during baking. The laminated fat acts as a barrier to trap the water vapor and carbon dioxide formed during baking. As the steam expands in the oven it lifts and separates the individual layers. Danishes can also be made with a yeast type dough, with a more bread-like texture.

<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>SOLUTION</b>
Butter/margarine breaks through the dough	Butter/margarine too cold Dough too soft Harsh sheeting reduction	Condition butter to 57-60 °F Reduce water in the dough Gradually reduce sheeting
Butter/margarine oozes out from the dough	Butter/margarine too warm Dough too warm Dough too tight	Condition butter to 57-60 °F Chill dough Increase water in the dough
Butter melts	Insufficiently laminated Room too warm	Work in a cooler room, or cooler time of day Apply more folds, minimum of 3 half folds
Pastry sticks	Insufficient dusting Room temperature too warm	Use more dusting flour Work in a cooler room, or at a cooler time of day Reduce dough temperature
Flattened, wrinkled after baking	Baking sheet or pan knocked in the oven, or before entering the oven Baked in too hot an oven for too short a time	Shorten rising time Be careful when placing in the oven Adjust baking temperature
Small in volume, heavy and dense in texture	Under proofed (rise) Lack of humidity Oven too cold	Proof longer Increase humidity in proofer Increase oven temperature
Loss of sweetness, open texture and lack of crust color	Proofed too long Excessive retarding time	Reduce proofing time Reduce retarding time
Loss of flakiness and a bread like texture	Room too hot, causing butter to melt Oven too cool Over proofed	Work in a cooler room, or at a cooler time of day Increase oven temp Reduce proof time
Pale, moist and heavy after baking Tough baked product	Under baked in oven  Baking temperature too low Too little layering butter Too little dough butter	Increase baking temperature  Increase roll-in butter Increase dough butter Increase baking temperature
Blisters on baked product and product flow excessive	Excessive humidity	Reduce humidity or bake on a cool, dry day

## PUFF PASTRIES

Making puff pastry works best in cool, dry kitchen because if the fat becomes too warm, it melts and breaks through the dough layers. Puff pastry relies solely on steam and requires a higher percentage of butter and a more elaborate folding process than yeast pastries. The thin, crisp, flaky layers are formed when the dough and butter are rolled together, then folded in thirds like a letter and rolled again in a process called a turn; classic puff pastry is "turned" six times, which creates over 1,000 layers of dough. Well-made puff pastry rises to 5 times its original volume during baking. As it bakes, the water in the dough converts to steam, filling the places previously occupied by the butter, which has already melted and been absorbed by the dough. Preparing the dough may be made from scratch or pre-made. Quick puff pastry is made by tossing large cubes of butter with flour before the water is added to form the dough. The dough is then rolled and folded like puff pastry. Although it does not rise so high as classic puff dough, the quick pastry has the same delicate, flaky texture and can be used for any desserts where the pastry doesn't have to rise as tall.

What to Look For	What Happened	Because Of
<b>SHAPE</b>		
Uniform size Attractive shape Holds shape when cut Distinctive layers.	Irregular shape  Uneven lift  Shrinkage	Improper rolling  Faulty spotting of roll-in fat Dough not relaxed enough Uneven heat in oven  Dough not relaxed enough after rolling and makeup
<b>COLOR</b>		
White, with a light golden brown crust	Pale color	Under baked
<b>TEXTURE</b>		
Firm, pliable, reasonably soft Crispy and crunchy, but light in texture	Fat running out  Oily looking	Too much fat used Not enough turns Oven too cool  Underbaked

## PHYLLO DOUGHS

Phyllo dough may be pre-made or from scratch, which is extremely difficult to make. They are packed with fillings made from fruit and or spices. Phyllo dough sheets stretch and stay together because of the gluten formed in the dough from wheat flour and moisture. Because there is oil in the recipe, it's not as effective as a classical shortener, such as butter or shortening, so long strands of gluten are formed in the dough. These strands are then stretched thinner and thinner until the sheets are as thin as tissue paper.

### PROBLEMS WORKING WITH PHYLLO DOUGHS

Frozen phyllo dough must be thawed at least 24 hours before using. For best results, the dough should be removed still in its package, from the freezer and place directly in the refrigerator for 24 hours; unopened, or the sheets won't thaw properly. Do not thaw at room temperature because the sheets tend to stick together. If thawed too quickly or if the sheets are cold when unfolded, they will crack. Phyllo sheets are paper-thin and tear easily. Phyllo dough should not be punctured when stretched. If the phyllo dough is not defrosted properly, the pastry sheets can stick together from too much moisture. Pastries can dry out rapidly and crack because it is so thin and has almost no fat. Phyllo dough is always layered with butter or oil brushed in between that result in a puffed-up height and are crisp, light and flavorful.

Fillings must be prepared and completely cooled before beginning to use the phyllo sheets. It should also be chilled and not excessively moist or it can get soggy. A filling that is even slightly warm will wilt the pastry and make breaking and tearing more likely to happen.

# MUFFINS

Muffins may be plain, sweet, made with cereal, fruit or nuts and differ in appearance, texture, and flavor. Different muffins have different standards – a bran muffin is of heavier texture than a plain muffin, but will have similar characteristics. Muffins are smaller versions of quick-breads and are easy to make.

There are two types of muffins: bread-like and cake-like, each mixed using a different method and containing different proportions of fat and sugar to flour. Less sugar and fat makes a bread-like muffin with a more coarse interior crumb than a cake-like muffin. The fat used is usually in liquid form, either an oil or melted butter. Stirring must be kept to a minimum so the gluten is not overdeveloped. The interior crumb has small, and more irregular air holes. A higher sugar and butter content makes a cake-like muffin. The butter (room-temperature) and sugar are creamed together and need more stirring to develop the desired structure. The interior crumb should have smaller air holes and tender, more like a cake.

What to Look For	What Happened	Because Of
<b>SHAPE</b>		
Round, pebbled top	Knobs or peaks on top	Too much stirring Too stiff mixture Uneven oven temperature
<b>CRUST</b>		
Tender	Tough	Too much flour Too little fat or sugar Over mixed
Slightly rough, pebbly surface	Shiny surface	Too much mixing Egg and milk insufficiently mixed
	Hard crust	Too long baking Too high temperature Too close to heating element in oven
	Rough surface with sharp edges	Under mixed Too much flour
<b>FLAVOR</b>		
Pleasing	Streaks of ingredients	Under stirring
	Off flavor	Too much baking powder Rancid fat
	Bitter, dry	Under stirred
	Flat	Too little salt
<b>COLOR</b>		
Golden brown	Unevenly browned	Too hot oven
		Pans filled too full
		Wrong proportions
		Too much baking soda or sugar
		Too little salt
Creamy white inside, or paler in color than crust	Pale	Too much batter in muffin cup Over mixed Too cool oven
	Dark sides	Sides of muffin tin greased
	Too brown Gray interior	Too much sugar Wrong time and temperature
	Yellow spots	Too much leavening Ingredients insufficiently blended

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**SIZE**

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Large in proportion to weight

Compact

Wrong time and temperature  
Improperly mixed  
Insufficient leavening  
Too much flour or liquid

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**TEXTURE**

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Moist and tender  
Rather coarse, but free from tunnels

Harsh, dry crumb

Over baking  
Too stiff batter  
Too much flour

Tunnels

Over stirring – too much air  
Too much liquid  
Inaccurately measured  
Too little fat or sugar

Heavy and irregular

Insufficient leavening  
Too much egg

Tough

Not enough shortening

Crumbly, dense

Under stirring – not enough air

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## BISCUITS AND SCONES

There are two types of biscuits – rolled and dropped. Both are leavened by baking powder and contain similar ingredients but differ in proportion of liquid and method of preparation. Rolled biscuits are more identical and dropped biscuits are more irregular in shape. Scones are similar to biscuits. They have a soft and sticky dough that has the ratio of one part liquid to three parts wheat flour. They need to be baked in a moderate to hot oven so the dough sets quickly thereby producing a light scone with a light to golden brown floury top and bottom with white sides. The texture of the interior of the scone should be light and soft, and white in color. Scones have some height from rising in the oven, though not as much as a biscuit, are lightly browned on the outside and cooked all the way through on the inside. When opened, they should be slightly crumbly, tender and almost cake-like or flaky depending on how they are made.

What to Look For	What Happened	Because Of
<b>SHAPE</b>		
Smooth, level top Straight sides	Uneven shape Uneven sides	Improper cutting, or cutter twisted during shaping Dough not uniform in thickness Uneven heat Improper mixing or careless handling
<b>FLAVOR</b>		
Delicate	Bitterness or soapy flavor  Bland, off flavor	Too much baking soda or powder  Ingredients not blended thoroughly Stale ingredients or overworked the dough
<b>COLOR</b>		
Creamy white	Yellow specks  Uneven brown	Uneven distribution of soda or baking powder Baking soda not dissolved or neutralized  Flour on surface
Uniform, without streaks	Pale crust  Dark bottom crust	Too slow oven Too stiff dough or excess flour used  Baked on darkened pan
<b>VOLUME</b>		
About twice unbaked size	Flat and heavy  Coarse, uneven  Low volume	Incorrect proportions - too much shortening or not enough leavening Under baked Too much flour or liquid Improperly mixed  Improper mixing Too much leavening Ingredient inaccurately measured  Improper manipulation Not enough leavening or leavening expired or not fresh Ingredients inaccurately measured Wrong time and temperature
<b>TEXTURE</b>		
Moist and tender Flaky, slightly crumbly, pulls apart in thin layers Fine, even holes	Tough  Coarse, porous, harsh dry crumbs  Crumbly, oily	Lack of fat  Improper mixing and too stiff dough Over baked Too much fat or not enough shortening Shortening under or over mixed with flour  Too much fat



## BREAD MACHINE BAKED GOODS

Issues that are of importance when using a bread machine include having ingredients at room temperature, room drafts, and humidity of the room. Bread flour is an important ingredient, as bread machine loaves need the greater protein and gluten strength to produce a loaf with good volume and a fine texture. Extra gluten must be added to recipes using whole wheat flour.

What to Look For	What Happened	Because Of
<b>SHAPE</b>		
Well proportioned Evenly rounded	Falls during baking	Loaf too big for bread machine Humidity too high Proportion of ingredients wrong Temperature of liquids too high
<b>CRUST</b>		
Crisp and tender, evenly raised	Cratered sunken top	Too much yeast or liquid Not enough flour Temperature of liquid too high High humidity or temperature in room Proofing too fast
	Mushroom top – rises then falls during baking time	Too much yeast Too much sugar Needs shorter cycle
	Too thick	Need lighter setting Left in pan too long
	Gnarly appearance	Too little liquid Too much flour
<b>COLOR</b>		
Even golden brown	Pale	Not enough sugar Baking temperature not high enough Crust set at too light of a color
<b>VOLUME</b>		
Light for size	Loaf does not rise	Flour too low in protein content Needed extra gluten Too much salt – no more than ¼ t. per cup of flour Not enough sugar or old yeast Heavy or coarse ingredients Liquid too cold Ingredients not measured correctly
	Uneven top	Too much salt, sugar, or yeast
	Rises too high	Recipe too large for bread machine
<b>TEXTURE</b>		
Tender, elastic, slightly moist	Too moist	Set in pan too long No cool down cycle
	Dry and stiff	Too little yeast Not enough liquid Not enough flour
	Wet and sticky	Too much liquid Too little liquid
	Crumbly	Too little liquid or fat

# MICROWAVED BAKED PRODUCTS

Baked foods cooked in the microwave do not have the same appearance as those cooked in a traditional oven. Texture is finer and volume is greater due to an exaggerated expansion of air cells and a lack of a crust to slow down the rising. Surface areas of microwaved baked products are moist and soft. They are frequently more tender but the flavor should be the same.

Microwave baked products are pale in color. Some newer microwaves have technology that helps prevent this. Baked products are pale because in a conventionally baked product, the prolonged dry heat acts on the surface of the food to decrease moisture, carbonize fats, and caramelize the sugar in the recipe. This leads to a crisp, crusty texture and dark color. Choosing recipes with a topping or a streusel for a microwave product is an easy way to improve the pale appearance of the baked product. It is easy to overcook foods in a microwave, resulting in a hard, dry product. Special attention is needed to baking time.

Baked Item	Characteristic	Problems and Causes
<b>CAKES</b>		
<b>Appearance</b>	Higher and lighter than conventionally baked product Symmetrical Slightly uneven with rounded top Surface is pale, unless ingredients include spices, chocolate, molasses, brown sugar, or other naturally colored ingredients or a topping	<b>Uneven surface</b> – Baked as a sheet cake or pan filled too full. Make sure cake is rotated during baking to assure uniform cooking.
<b>Texture</b>	Light for weight Velvety crumb Even grain Very tender Soft outer surface	<b>Bottom under baked</b> – cooled on a wire rack instead of a flat, solid heat resistant surface where retained heat can complete cooking. <b>Tough</b> - Batter too lean, not enough fat or sugar. <b>Large air pockets</b> - Batter not “cut through” with a knife or tapped to release air and produce an evenly filled pan.

## RECOMMENDATIONS

<b>Recipes</b>	Select rich formulas with whole eggs. Good results are achieved with yellow, spice, or chocolate cakes or those containing oil. Not recommended for angel or sponge cakes.
<b>Size and shape</b>	Layer cakes bake more evenly than sheet cakes. Round and ring pans give a more uniform baked product since there are no corners to overcook and energy can penetrate from all sides.
<b>Pan preparation</b>	Fill pans half full since there is greater batter expansion in microwave baking. Lightly grease pans but do not flour them. Do not use vegetable cooking spray as it tends to form a gummy layer. Line dish with a single layer of wax paper cut to fit the bottom of the pan if cake is to be turned out.
<b>Baking</b>	Microwave one layer at a time. Rotate pan halfway through baking cycle, or more depending on the amount of batter. Microwave slowly so cake rises less rapidly and bake more evenly. When done, the cake will spring back and cake will pull away from the edges of the pan. Any moisture on cake will evaporate on cooling. Cool cakes on a flat, solid heat resistant surface instead of a wire rack to continue the baking process. Do not over bake!

## PASTRIES

<b>Appearance</b>	Light creamy color unless flavored or brushed with food coloring or egg yolk. Well shaped, attractive edges They are opaque and dry with a blistered top.	<b>Shrunken</b> – shell not pricked with fork prior to baking. Overstretching when placed in pan.
<b>Textures</b>	Crisp and flaky	<b>Soggy crust</b> – Filling contains too much liquid. Unthickened filling not precooked. Filling seeped through crust prior to thickening because the prick holes were not sealed before the filling was added

## RECOMMENDATIONS

<b>Recipe</b>	Pies that have separately cooked crust and filling are best suited for microwaving. Double crusted pies should not be microwaved, bottom crust does not bake properly. Fruit pies can be prepared open face and topped with streusel crumbs or prebaked pastry cut-outs.
<b>Size and shape</b>	A high fluted pastry edge helps retain bubbly fillings.
<b>Pan preparation</b>	Pastry should be crisp and flaky before filling is added. Precook fillings that contain a lot of liquid.
<b>Baking</b>	Place wax paper in the bottom of the oven to help with possible spills. Lift glass plates to check for doneness. Bottom should appear opaque and dry, the top dry and blistered, Fruit pies are done when filling is hot and has started to cook in center. Cooking continues while pie cools.

## COOKIES

<b>Appearance</b>	Bar cookies are even in height and do not have a thin, crisp top crust. Cookies are well shaped and may be larger because of more spreading during baking.	<b>Interior brown spots</b> may develop in small cookies because cooking begins below the surface, and causes some areas to over bake.
<b>Texture</b>	Rich and moist. Refrigerator cookies may not be crisp.	<b>Overcooked</b> - too much fat quickly melts over the batter. This absorbs the microwaves and causes the areas to overcook.

## RECOMMENDATIONS

<b>Recipe</b>	Moist bar cookies and brownies microwave well because fat and sugar attract microwaves. If there is too much fat in the recipe, they may overbake. Large batches do not do well in the microwave. Drop cookies may be more efficiently baked in a conventional oven. Oatmeal, peanut butter and sugar cookies and cookies that do not brown normally do well in microwaves. Cookies with colorful ingredients or toppings are appealing do well. Stiff cookie dough retains the best shape.
<b>Size and shape</b>	Bar cookies microwave more evenly. Drop cookies need to be arranged in circle for uniform baking.
<b>Pan preparation</b>	Grease the bottom of the pan lightly but don't grease the sides when baking bar cookies. If approved by the manufacturer, shield corners of bars with foil triangles to prevent overbaked, dried edges.
<b>Baking</b>	Elevate baking sheet on inverted saucer to promote more uniform cooking. Dense, heavy foods like brownies or bars may take longer to bake than light, porous cake-like bars. Cool bars on heat proof surface instead of a wire rack to continue the baking process. Brownies and other dense items may require up to 30 minutes of standing time.

## QUICK BREADS

<b>Appearance</b>	Even contour and pale in color unless dark ingredients or toppings are used. Higher volume than conventionally baked since there is no crust to inhibit rising. Raisins, fruit and nuts should be evenly distributed.	<b>Overcooked edges</b> are caused by cooking at too high power. Heavy batters need to be microwaved slowly to promote optimum rise and slow cook. Fry lines show when the sides of the pan are greased.
<b>Texture</b>	Fine, even grain with no tunnels and a soft crumb and crust.	<b>Soggy bottoms</b> happen when the bread is under baked, when the pan isn't elevated during baking, or when the product is not given standing time after baking to continue the baking process. Heaviness occurs when there is too much fruit or oil.

## RECOMMENDATIONS

<b>Recipe</b>	Use recipes with natural color or creative toppings.
<b>Size and shape</b>	Round pans or ring molds work well for quick coffeecakes. Arrange muffins in a circle if specially designed muffin ring is unavailable. Select pans with straight sides for uniform baking.
<b>Pan preparation</b>	Line loaf pans with wax paper to help with removal from pan. Don't grease the sides of the pan. Use double cupcake lines to absorb extra moisture. Fill muffin cups 1/3 full and other pans 1/3 to 1/2 full to allow for great batter expansion. If approved by the manufacturer, shield the edges of the loaf with foil strips to avoid overcooked edges.

<b>Baking</b>	Coffee cakes with heavy toppings or topping in bottom of pan should be set on inverted dish or saucer to ensure thorough baking. Rotate muffins and quick breads midway through baking cycle for faster, more uniform cooking. Remove foil strips during the last few minutes of baking. When done, no unbaked batter should be present at the center of the dish. The top surface may appear moist, but will evaporate upon cooling. Cool muffins on wire rack. Let loaf breads and coffee cakes stand 5 – 10 minutes on heat resistant surfaces before removing from pan, and cool on wire rack.
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**YEAST BREAD PRODUCTS**

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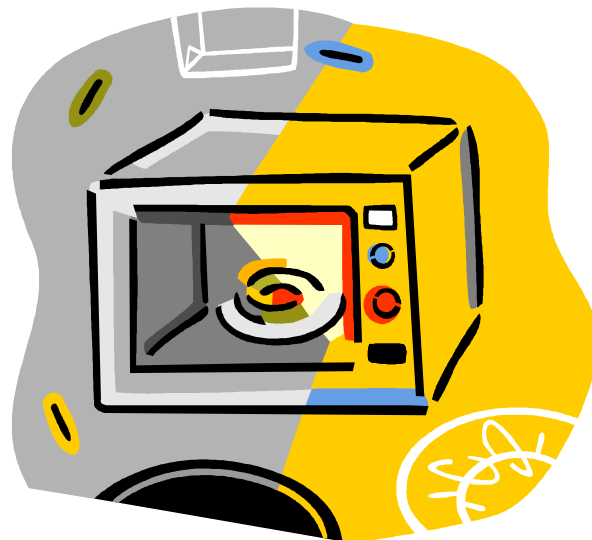
<b>Appearance</b>	Pale, unless prebaked to desired degree of brownness in conventional oven or topped with colorful ingredients. Dry, gently rounded surface and evenly shaped. Higher volume than conventionally baked bread since there is no firm crust to inhibit rising.	<b>Collapsed, uneven surface</b> occurs when the pan is too small. Large air pockets form, causing bread to fall.  <b>Yellow or brown spots</b> occur when microwaves penetrate one area.
<b>Texture</b>	Soft, dry crust, not crisp. Uniform cell structure.	<b>Soggy bottom crusts</b> happen when the bread dish is not elevated during baking. Tough, dry crusts happen when the bread is overbaked or baked at too high a power.

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**RECOMMENDATIONS**

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<b>Recipe</b>	Moist, rich coffee cakes microwave well because of high sugar and/or fat content. Select recipes with ingredients that contribute color, such as rye or whole wheat flour, molasses, or dark spices. Yeast products can be brushed with milk or melted butter and topped with cheese, poppy seeds, nuts, brown sugar, cinnamon streusel, or cracker crumbs before baking.  (Please note, no cheese toppings for baked microwave products entered at county and state fairs, as the cheese is a potentially hazardous food). Glaze or garnish after baking for color; apply toppings generously since surface area expands about three times during rising and baking.
<b>Size and shape</b>	Yeast dough can be shaped into loaves or rolls and baked in microwave safe ring molds, round or Bundt pans, pie plates, or standard loaf pans.
<b>Pan preparation</b>	Grease pans lightly and sprinkle with crushed bread or cracker crumbs, wheat germ, herbs, or seeds. These extra ingredients add color and texture and absorb excess moisture that forms between the bread and dish during baking.
<b>Baking</b>	To prevent condensation and soggy bottom surface, set baking dish on inverted saucer to elevate above the oven floor. Bake one loaf at a time. Rotate pan every 2 – 3 minutes. When done, bread should feel firm and well set, yet spring back when touched.



# GLUTEN FREE BAKED PRODUCTS

Baking without gluten (as found primarily in wheat flour) can be challenging because gluten contributes important properties to various types of baked products like cookies, cakes, pastries and breads. Gluten development is not as important for cookies as it is for cakes, so gluten-free flours can be substituted with similar results. Cakes and other types of batter-based products, like pancakes, need gluten for its gas-retaining ability that produces a light and airy interior structure and a tender crumb.

Recipes calling for 2 cups of flour or less are more successful with gluten-free flour products. Those that use cake flour are easier to adapt as well, because that type of flour contains lower amounts of gluten. White rice flour and starches can be stored in the pantry but because of a higher fat and protein content, whole grain flours and meals should be purchased in smaller quantities and stored in refrigerator or freezer to prevent rancidity. Some types of flours are flour blends. Flours with stronger flavors would make up no more than 25 – 30 percent of the total blend and should be balanced with neutral flours and starches. It is not advised to use stronger flavored flours, such as bean flours, in delicate recipes. A higher percentage of these flours may be used in baked goods that include nuts, chocolate, or a high level of spice. Flour blends for quick breads often contain ½ teaspoon xanthum gum per cup of flour while yeast breads require ¾ teaspoon per cup.

Wheat/gluten-free flour dough will be stickier, heavier and softer than regular wheat flour dough because there is little to no elasticity to the dough without the gluten. For these reasons, using a batter beater, not a dough hook, and a heavy-duty stand-up mixer to beat extra air into the dough and help blend it thoroughly.

Gluten-free baking can be unpredictable. Use the following suggestions to help evaluate products made from gluten-free flour.

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## Baking Tips

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### TO INCREASE MOISTURE

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- Add gelatin, extra egg, or oil to recipe
- Honey or rice malt syrup can help retain moisture
- Brown sugar works better than white
- Dough enhancers improve tenderness and staling resistance

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### TO ENHANCE FLAVOR

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- Add chocolate chips, nuts, or dried fruits
- Double the amount of spices

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### TO ENHANCE STRUCTURE

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- Use a combination of gluten-free flours and mix together thoroughly before adding other ingredients
- Add dry milk solids or cottage cheese into recipe
- Use evaporated milk in place of regular milk
- To reduce grainy texture, mix rice flour or corn meal with liquid, bring to a boil and cool before adding to recipe.
- Add extra egg or egg white if product is too crumbly.
- Do not over beat; kneading time is shorted since there is no gluten to develop.
- When using a bread machine, only use one kneading cycle.

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### LEAVENING

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- Starch flours need more leavening than wheat flours.
  - Rule-of-thumb: start with 2 teaspoons baking powder per cup of gluten-free flour and adjust downward as needed for altitude.
  - If baking soda and buttermilk are used to leaven, add 1 1/8 teaspoon cream of tartr for each ½ teaspoon of baking soda used to neutralize acid.
  - For better rise, dissolve leavening in liquid before adding to other ingredients or add a little baking powder.
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### TEXTURES/LIGHTNESS

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- Sift flours and starches prior to measuring, then combine and sift again (together) after measuring to improve the texture of the product.
- Hold gluten-free dough to at least ½ hour (up to overnight) in the refrigerator to soften and improve the final texture of the product.
- In products made with rice flour or corn meal, mix with the liquid called for in the recipe, then bring to a boil and cool before adding to recipe can help reduce the grainy texture.

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### BAKING PANS/UTENSILS

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- Bake in smaller than usual portions at a lower temperature of a longer time (small loaf pans instead of standard size; use mini-muffins or English muffin tins instead of large muffin tins).
- Use dull or dark pans for better browning.
- Keep a separate sifter to use with gluten-free flour to prevent cross-contact with gluten.

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### FRESHNESS

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- Gluten-free baked goods can lose moisture and quality quickly, so wrap them tightly and store in the refrigerator or freezer in an airtight container to prevent dryness and staling.
  - Refrigerate all flours for freshness and quality but bring to room temperature before measuring.
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# FOOD PRESERVATION

Safety is the primary consideration when judging food preservation exhibits. Please remember that unsafe methods should not be rewarded and the exhibitors should not leave the event thinking that their unsafe methods are approved and can be shared with others.

There are characteristics to look for in preserved foods that can help evaluate its safety, even if it does not look obviously spoiled. Each jar of canned food, for example, must be labeled with the processing time and method used (i.e., boiling water or pressure canning at how many pounds pressure). Only proper clean canning jars are allowed, with lids that are free from signs of rust. Make sure to remove the screw band of the jar to check for proper sealing during the processing. Jams, jellies, marmalades, and preserves sealed with paraffin **will not** be judged. These items need to be heat sealed.

Canned products must be canned in clear, standard (half-pint, pint or quart) jars in good condition with new, two-piece canning lids (flat band and lid). **Exhibits should be disqualified that are not labeled with an appropriate process, have not used USDA or Extension-endorsed canning methods and processing times, or that show common signs of spoilage, such as cloudy liquids, bubbling, and unsealed lids.**

Water boils at 212° F at sea level. As the altitude increases, water boils at lower temperatures. **Lower boiling temperatures are less effective for killing bacteria.** To insure safely canned foods at altitudes about sea level, lengthen the processing time for boiling water canning methods. For the pressure canner methods, increase the pressure to assure a safely canned product.

## ALTITUDE CHART for Boiling Water Processing

If you are preserving at an altitude higher than 1,000 feet above sea level, adjust the boiling water processing times as indicated	Altitude Feet	Increase Processing Time
	1,001 – 3,000	5 minutes
	3,001 – 6,000	10 minutes
	6,001 – 8,000	15 minutes
	8,001 – 10, 000	20 minutes

## ALTITUDE CHART for Pressure Canning

If you are preserving at an altitude higher than 1,000 feet above sea level, adjust pressure pounds as indicated	Altitude Feet	Weighted Gauge	Dial Gauge
	0 – 1,000	10	11
	1,001 – 2,000	15	11
	2,001 – 4,000	15	12
	4,001 – 6,000	15	13
	6,001 – 8,000	15	14
	8,001 – 10,000	15	15

## FRUIT LEATHER

Fruit leather should be similar to the fresh product in color. Spices may cause a darker color or spots. Rolls and stripes should be uniform in size and thickness and the leather should be pliable, but not brittle or sticky. The flavor of the fruit leather should be characteristic of the fruit, with a little more sweet or tartness due to the removal of water during the drying process.

<b>What Happened</b>	<b>Because Of</b>	<b>Recommendation</b>
Puree is too thin	Very juicy fruits	Combine with thicker fruit purees.
	Too much water added during blending.	Slowly cook the puree over low heat.
Puree is too thick	Type of fruit - apple or pumpkin. Using leftover pulp from making juices or jellies: apple, apricot, cherry, grape or plum.	Add fruit juice or water to thin to pouring consistency.
Insects are attracted to net during drying	Insects find fruit leather delicious.	Cover with cheesecloth or nylon net during drying, using blocks
		Be sure covering is secure and not blow into the sticky leather.
Leather sticks to drying surface	Drying surface is not suitable for drying leather. Wax paper or foil do not work	Lightly coat surface with vegetable oil or non-stick vegetable spray
	Puree is too thin.	Pour puree 1/4 inch thick.
	Fruits low in natural pectin stick more than fruits higher in pectin - blackberry, cranberry, loganberry, and raspberry.	Combine low pectin fruits with fruits with pectin, such as apple.
Leather is brittle around the edges and still sticky in the middle	Puree was thicker in the middle.	Tilt drying surfaces before drying to distribute puree evenly or pour puree a little thicker around the edges.
	Uneven air flow in oven or dehydrator.	Rotate shelves more often. Sun dry if weather permits.
Leather becomes brittle during drying or storage	Type of fruit – pear, pineapple, or rhubarb.	Combine with other fruits.
	Insufficient air circulation as in air drying.	Rotate trays or sun dry.
	Too high heat, leather dried too quickly.	Check temperatures – should not exceed 140° F. Watch carefully near the end of drying.
Leather is grainy.	Peelings were left on fruit when pureed – especially pear.	Peel fruit for leather, combine pear with other fruit such as apples.
Leather turns dark	Enzymatic browning occurs in some fruits, such as apples, apricots, peaches, and pears.	Heat puree to almost boiling to retard browning
	Improperly wrapped for storage – light, air, and moisture will darken fruit leather.	Wrap securely in plastic wrap, then store in moisture proof containers in a dark place.
	Storage location is too warm and darkens fruit leather.	Store in cool place or in freezer.
Leather turns moldy during storage	Leather is too moist when wrapped.	Be sure leather has no moist or sticky areas.
	Improperly packaged and moisture is absorbed by the leather.	Wrap securely in plastic wrap, then store in moisture proof contain.



## DRYING FRUITS AND VEGETABLES

Drying is a process of food preservation involving the removal of moisture from foods in order to stop microbial growth and prevent spoilage. The appropriate amount of moisture removed during drying depends on the product, but it must be enough to prevent spoilage and maintain safety of the product. Packaging for dried foods is important. Moisture should not be reabsorbed during storage.

Since fruits have a high acid content that aids in preservation, less moisture needs to be removed to preserve the products compared to vegetables and meats. Fruits are usually dried until they are leathery, yet pliable. Vegetables are lower in acidity and need more water removed to safely preserve the product. Vegetables are adequately dried when they are brittle or crisp.

**FRUITS:** Adding Ascorbic Acid or Vitamin C may help retain color

Apricots	Cherries	Figs
Huckleberries	Peaches	Pears
Apples	Cranberries	Bananas
Persimmons		

**Do Not Dry Well**

Plums	Melons	Dewberries
Blackberries	Oranges	Grapes

**VEGETABLES:** Most vegetables should be blanched before drying

Beans	Okra	Turnips
Beets	Onion	Rutabagas
Corn	Carrots	Sweet Potatoes
Cabbage	Mushrooms	Most herbs

**Do Not Dry Well**

Peas(mature)	Squash	Greens
Peppers (green & red)	Soybeans	Broccoli
Pumpkins	Celery	Peas (fresh shelled)
		Potatoes

## DESIRABLE CHARACTERISTICS FOR DRIED FOODS

Color	Characteristic of product and uniform throughout container. No excessive coloration. Light-colored fruits and vegetables will brown when exposed to air. Pretreatments can minimize this browning during drying and storage but should not be required. Discoloration can also result from drying at too high temperatures or for too long, and pieces will almost appear toasted or burned.
Size and Shape	Pieces in exhibit are uniform in size and shape. No ragged edges.
Texture	Pieces are uniform dry throughout.
Container	No foreign matter or visible moisture, properly labeled, and an appropriate size for the amount of food being exhibited (too much empty space represents poor storage practice for moisture control). If in a jar: No cracks, chips, or rust on jar. Band or lid free of rust and dents or other damage; clean and easily removed.

## Judging Criteria for Dried Fruits

Color	Similar to fresh product and uniform throughout container. No excessive discoloration. Do not penalize for fruit that has darkened because sulfur was not used. Take note of whether the discoloration is excessive as a result of poor drying techniques. No signs of mold.
Size and Shape	Uniform and neatly cut. Suitable in size for later use.
Texture	Leathery and pliable. If the piece of fruit is folded over itself, it springs back. Not sticky or brittle. Free from cores and objectionable seeds or peel.
Container	No foreign matter or visible moisture. Properly labeled. Appropriate size for amount of food being exhibited (too much empty space represents poor storage practice for moisture control). If in a jar: No cracks, chips, or rust on jar. Band or lid free of rust and dents or other damage; clean and easily removed.
Flavor	Should be similar to natural fruit. May be more tart or sweet after water removal. Free from scorched or burned taste. After soaking and cooking, should taste like fresh product.

## Judging Criteria for Dried Vegetables and Herbs

Color	Similar to fresh product and uniform throughout container. No excessive discoloration. No signs of mold.
Size and Shape	Uniform and neatly cut. Vegetables neatly cut and suitable in size for later use.
Texture	Vegetables should be brittle and crisp; dry enough to rattle. Herbs should pulverize or become like dust when rubbed between fingers.
Container	No foreign matter or visible moisture, properly labeled, and an appropriate size for the amount of food being exhibited (too much empty space represents poor storage practice for moisture control). If in a jar: No cracks, chips, or rust on jar. Band or lid free of rust and dents or other damage; clean and easily removed.
Flavor	Pleasant odor. Vegetables would not be tasted without rehydrating. (After soaking, should taste like fresh product).

## FRUIT SPREADS

There are many different types of fruit spreads. There is a fine line that distinguishes the jams from the jellies and the spreads from the butters.

### Types of Fruit Spreads

<b>Jellies</b>	Clear, sparkling spreads made from strained fruit juice. They are tender, yet firm enough to hold their shape when turned out of a jar.
<b>Jams</b>	Purees made from crushed or chopped fruit; they are thick, but not as firm as jelly.
<b>Marmalades</b>	Soft jellies, generally containing suspended slivers of one or many kinds of citrus peels or fruits.
<b>Preserves</b>	Made with larger pieces of fruit pieces or small whole fruits, suspended in clear, slightly jellied syrup.
<b>Conserves</b>	Much like jam, but they are made with fresh fruits and dried fruit (such as raisins) or nuts or both.
<b>Butters</b>	Fruit pulp and sugar, thickened to a good spreading consistency by long, slow cooking.

Headspace for jams, jellies, and other sweet preserves and butters should be  $\frac{1}{4}$  inch. Canned jams, jellies, and preserves should meet all the general characteristics for container, pack, appearance, of contents, and attractiveness. The variety of fruits that are made into sweet spreads and preserves include many textures, shapes, and colors, but it is still possible to describe desirable characteristics for each class of food.

## JELLIES

Jars of jelly should be held up to a good light source to check for clarity and color. The consistency of the jelly can be judged without opening the jar. Turn the jar on its side and give it a single, sharp shake. Then rotate the jar slowly at an angle or on its side. The jelly should pull away from the jar cleanly without breaking and without leaving any residue on the side of the jar. The shape of the jelly should be retained and the entire mass of jelly should be able to be rolled around inside the jar in one mass. If a single, sharp shake does not loosen the jelly, try tapping the bottom edge of the jar against the heel of the hand. Judging criteria for jellies include a ¼” headspace and no paraffin seals allowed. Jelly should be free from foam and air bubbles. Jelly should be firm enough to hold shape but should quiver. The jelly should stay together when jar is rotated and should not appear sticky, gummy, or syrupy. Jelly should be properly labeled and in clean, standard half-pint or pint jars only, with no evidence of cracks, chips, or rust on jar, with a new, clean lid.

What to Look For	What Happened	Because Of
<b>Appearance</b>		
Natural color of fruit	Darkened	Juice cooked too long Juice cooked too slowly Cooked too much at one time
	Fermented	Too little sugar Too little cooking Glasses not sterilized
	Moldy	Stored in warm, damp place. Not properly processed in boiling water bath
	Faded	Too warm storage
<b>Clearness</b>		
Clear, sparkling Transparent, translucent	Cloudy	Fruit too green. Fruit cooked too long before straining Juice squeezed from bag. Jelly poured slowly or from too great a distance. Jelly cooled before pouring.
<b>Consistency</b>		
Firm enough to hold shape; yet tender and quivery	Soft jelly	Incorrect proportions of fruit and sugar Not enough acid Cooked too much at one time. Too little cooking.
	Syrupy	Too little acid, pectin, sugar
	Stiff	Too much pectin Too much sugar
	Gummy	Cooked too long Cooked too much at one time
	Weeping, watery	Too much acid Storage too warm
<b>Flavor</b>		
Pleasing Characteristic of fruit	Unsatisfactory	Poor selection of fruit Incorrect proportions
	Little flavor	Overcooking Poor flavor in fruit Stored too long Stored in warm place

## JAMS and CONSERVES

Jams are made from chopped, crushed, or ground fruit. Shape of the fruit pieces is not retained during preparation. Jam is a shapeless mass outside of the jar, with a uniform, soft consistency thick enough to spread. Conserve is a combination of fruits, usually citrus fruits and nuts, and sometimes raisins or coconut, with a consistency like jam.

The jam or conserve should not be muddy looking or separated into layers. The color should be natural and free from discoloration, especially burning or scorching in preparation. The consistency should be smooth, thick, and uniform throughout.

## PRESERVES and MARMALADES

Traditional fruit preserves consist of small, whole fruits and uniformly sized pieces of larger fruits in a very thick sugar syrup and slightly jellied juice. Very thin slices of lemon or lemon juice may have been added. Marmalades consist of pieces of fruit cut in small pieces or slices and usually include citrus. A mixture of fruits may be used. The pieces of fruit or citrus peel are suspended in a clear, translucent jelly.

The preserve or marmalade should not be muddy looking or separated into layers. The color should be natural and free from discoloration, especially burning or scorching in preparation. The consistency should be smooth, thick, and uniform throughout.

What to Look For	What Happened	Because Of
<b>Appearance</b>		
Uniform pieces or smooth texture	Fruits or nuts rising to the top	Insufficient cooking
Clear/semi transparent fruit or liquid	Cloudy	Jar not shaken gently when cooling Fruit not fully ripe
<b>Color</b>		
Characteristic of fruit	Dark	Overcooked Excess of spices Fruit not fully ripe
	Faded	Exposure to light Too long storage
<b>Container and Pack</b>		
Free from bubbles Clean, standard jars Neatly labeled with name of product and exhibitor	Foamy	Poured from too great a distance Fermented



## CANNED FRUIT AND VEGETABLES

The processing method and the choice of foods canned is one of the first things to consider. Low- acid foods must be pressure canned. These foods include meats, poultry, seafood, vegetables, and some combination foods such as soup mixes, spaghetti sauce with meat, and salsa. Acid and appropriately acidified foods (expected pH less than 4.6) such as pickles may be processed in a boiling water canner. However, many fruits also have alternative methods using the pressure canner. Jams, jellies, and fruit preserves should be processed in a boiling water canner.

**Paraffin should not be used to seal canned goods.** Open kettle canning (putting hot food in a jar, putting a lid on it and giving it no further processing) is not acceptable for any “canned” product. Soup mixes and other foods with thickeners (like flour or starch), cream or milk, pasta/noodles, or rice are not permitted.

What to Look For	What Happened	Because Of
<b>Appearance</b>		
Uniform in size, carefully prepared	Foreign matter present Assorted sizes	Not carefully selected or cut.
Prime stage of maturity	Soft	Overheating
Shape well preserved	Bruised	Not carefully selected
Natural color	Discolored or darkened	Exposed to air before canning Over processed
No indication of spoilage	Faded	Exposed to light
	Intense color	Too much artificial color
	Pink or blue color	Natural chemical change
	Brown beans or corn	Overcooked
	Brown fruit	Too mature
<b>Liquid</b>		
Clear, bright	Cloudiness	Fruit too green
Covers food in jar	Sediment in jar	Fruit overly ripe Minerals in water Starch from mature vegetables Bacterial spoilage Fruit not fully ripe
	Lack of liquid	Pack too long Too high temperature Food not heated before packing Air bubbles not removed from jar Starchy food absorbed liquid
<b>Pack</b>		
Full but not crowded Proper head space	Pack too loose	Insufficient food Jar packed too full
	Lost liquid	Fruit too ripe
Firm, well ripened fruit	Floating fruit	Syrup too heavy
Fresh, tender	Soft, mushy	Fruit, packed raw

Attractive, but not fancy		Overripe food Overworked
Canned by recommended methods	Flat tasting	Open kettle canning or incorrect water-bath canning method
<b>Container</b>		
Clean, standard jar	Glass not clear	Hard water Improper processing
Well sealed	Loose lid	Non standard jar
Free from chips, cracks, or rust	Rusty bands	Bands not removed, washed, and dried Natural compounds in food – effecting the quality of the canned goods
Properly labeled with name of exhibitor, name of product and method of processing.	Black spots on underside of lid – spoilage not evident.	

## JUDGING CRITERIA FOR INDIVIDUAL FRUITS

Apples	No seeds, core, or peel. Canned as slices or sauce. Only hot pack is recommended. Raw packs trap an excessive amount of air, fruit floats, and browning is common over time from both these problems.
Apple Juice	Clear and bright. Characteristic of fresh juice; not overly browned from high heat. No cloudiness. No sediment, pulp, or crystals. No foreign matter.
Apricots	May be peeled or the skin left on. Canned as halves or slices. Skin with dark spots should be removed. Fruit should be firm without signs of mushiness.
Berries	Uniform color to all berries. No stems. Pack should be full with good solids-to-liquids ratio. Liquid should be bright and clear although it may be colored by the fruit pigments. No sediment or signs of fermentation bubbling. No floating of fruit above liquid.
Cherries	Pack should be full with good solids-to-liquid ratio. Liquid should be bright and clear although it may be colored by fruit pigments. No floating of fruit about liquid. If pitted, cuts or holes are neat and not destructive of the fruit's shape. No stem-end discoloration or discoloration where cut or pitted. If canned unpitted, skins have been pricked to prevent splitting.
Figs	Canned without peeling and with small stem attached. Firm and uncracked. No signs of mushiness. Color depends on variety, but should be characteristic of optimum ripeness for variety. Only hot pack is recommended. Lemon juice (1 tablespoon per pint) or citric acid (1/4 teaspoon per pint) should have been added for safety.
Fruit Purees	Good flowing and uniform consistency; not thickened like a butter and not too thin. No evidence of scorching (black flecks, unusual darkening, and bad odor, if opened). Only hot pack is recommended. Fig and tomato purees should not be canned by fruit juice canning methods.
Grape Juice	Clear and bright. Characteristic of fresh juice; no cloudiness. No sediment, pulp, or crystals. No foreign matter. Grape juice is usually filtered after extraction to prevent development of crystals.
Grapefruit and Orange Sections	Firm sections with most of white tissue removed. Sections may be packed in citrus juice as well as syrup or water. Citrus juice will yield a cloudier liquid. The flavor of orange sections is best if the sections are canned with equal parts of grapefruit. Grapefruit may be canned without oranges.
Grapes	Pack should be full with good solids to liquid ration. Liquids should be bright and clear. Fruit is tight skinned. No floating fruit or fruit above liquid. No stem-end discoloration.
Peaches and Nectarines	Canned as halves or slices. Peaches are peeled; nectarines are not. Pits of both are removed. Fruit should be firm without any signs of mushiness or over-ripeness. No discoloration on cut edges. Color should be even and characteristic of cooked ripe fruit. No floating of fruit about liquid. Raw packs trap an excessive amount of air, fruit floats, and browning is common over time from both of these problems.
Pears	Canned peeled and without cores. May be halves or quarters. Fruit white and firm, but tender with cooked appearance. No signs of mushiness. Liquid is clear and free of sediment. No floating fruit. Only hot pack is recommended.
Plums	Fruit is usually not peeled. Canned whole or halved. Fruit skin on whole plums has been pricked on two sides to avoid uneven splitting. Freestone varieties may be halved; pits should be removed when plums are halved. No floating fruit. No cloudiness in liquid or sediment.
Rhubarb	Brightly colored. Even consistency. Only hot pack is recommended (stewed rhubarb). No leaves. No signs of scorching (burning) during preparation.



## JUDGING CRITERIA FOR INDIVIDUAL VEGETABLES

Asparagus	Uniform size and length of stalks (4 – 6 inches) or pieces (usually 1 inch). Tender, tight-tipped spears. Color should be bright. Tough scales should be removed. Free from woody and stringy stalks. Pieces of stalks should not have a mushy texture.
Beans, Butter and Lima	Beans should be green, young, and tender. Even in size and color. Free from immature beans, beans changing from green to light green or white, and starchy, tough beans. Beans should not be overpacked and mashed down. Liquid should not be too cloudy from excessive starchiness. Headspace for pint jars is 1 inch. Headspace for small beans in quart jars is 1 ¼ inches; for large beans in quart jars it is 1 ½ inches.
Beans, Green and Waxed	Fresh color, typical of variety; uniform in size, length, and color. One-inch length of pieces is preferred, but beans may be left whole. Filled but tender pods (seeds should not be prominent in pods. Few, if any, free seeds that may have fallen out of broken-apart pods). Variety may be flat- or round-podded but both should not be included in one jar. Free from browning of cut edges or seeds. Free of rusting or other blemishes and stems.
Beets	Must be canned peeled. Beets less than 2 inches in diameter may be canned whole. Larger beets should be cubed or sliced. Uniform size and shape. Color should be deep, dark, and even. Brownish-red or faded color or white rings are undesirable. Liquid should be sparkling clear, red color with no cloudiness or sediment. Free from stems and roots or any traces of skin. Free from fibrous appearance (beets over 3 inches in diameter are often fibrous).
Carrots	May be canned whole if small; otherwise, slice or dice. Must be peeled or scraped; smooth surface preferred. Diameter of slices less than 1 ¼ inches desired. Size and shape should be uniform throughout the jar. Color may be very pale to deep orange, depending on the variety, but should be uniform. Free from root hairs, traces of peel and stems. Free from fibrous or wide, woody-looking carrot slices. Liquids should be clear, free of sediment and only contain a tint of color from the carrot.
Corn, Cream Style	<b>Can in pints only.</b> Only hot pack canning is recommended. Kernels should be slightly immature, cut from cob at about the center of the kernel. The rest of the texture comes from scraping the cob. Color should be bright yellow and even throughout jar. Consistency should be thick and creamy, but not stiff or gelled from excessive starchiness. Free from signs of burning (scorching) while being cooked.
Corn, Whole Kernel	Slightly immature kernels should have been chosen. Kernels should be cut to about ¾ depth of kernel and retain distinct shape. Color should be bright. Jars should contain a single variety. Good proportion of corn and liquid, with liquid completely covering solids. Liquid may be slightly cloudy from the starch, but there should not be excessive starch or sediment. Free from silk and pieces of cob.  Canning of some sweeter varieties or too immature kernels may cause browning. Exhibitor should not enter jars of varieties that brown or discolor too much when canned.
Greens – Spinach, Mustard, Turnip, etc.	Only hot pack canning is recommended. Leaves should be tender, free from tough stems and large midribs. Free from signs of insect damage, discoloration. Greens should be packed loosely in jar and have a uniform, green color. Liquid should be light green and clear, free from cloudiness or sediment.
Okra	Only hot pack canning is recommended. Pods should be young and tender. Free of diseased and rust-spotted pods. Small pods may be left whole; large ones may be sliced into 1-inch pieces. Color depends on the variety. Liquid clear and free of starchy sediment.
Peas – Blackeye, Crowder, or Field	Only hot pack is recommended. Young and tender peas of uniform size and roundness. Color should be bright and characteristic of product, uniform throughout the jar. Peas should be adequately hydrated, Free from split, broken, or mushy peas. Liquid fairly clear, only a slightly starchy appearance is allowable. No excess starch or starchy sediment. Only one variety should be in jar.
Peas – Green or English	Young and tender peas of uniform size and roundness; slightly immature peas may be used. Color should be bright and evenly green with no white or yellow peas. Liquid is fairly clear, only a slight starchy appearance is allowable. Free from excess starch or starchy sediment.

Potatoes, White	Only hot pack canning is recommended. Potatoes must be peeled. Small potatoes, 1 to 2 inches in diameter may be packed whole, larger sizes should be cubed. Pieces throughout the jar should be uniform size. Color should be white. Texture should be firm and smooth and free from mushiness. Any eyes should be shallow and have no color. Liquid should be fairly clear, and in potatoes, a slightly starchy appearance is allowable. Liquid should be free from excess starch or starchy sediment.
Pumpkin and Winter Squash	Only hot pack canning is recommended. Pieces should be peeled and cut into 1-inch cubes, <b>not mashed or pureed</b> . Color should be uniform yellow to orange color, depending on the variety. Free from stringy texture or overly soft pieces. Liquid should be clear and free of starchy sediment. <b>There are no endorsed canning methods for mashed or pureed pumpkin and winter squash. This is too dense to assure that the proper temperature is reached during the canning process. It is better to freeze pureed pumpkins.</b>
Soup Mix	Only hot pack canning is recommended. The jar may consist of a mixture of vegetables, adequately hydrated dried beans and peas, meat, poultry, or seafood. Mix should be even throughout jar with consistent sizing of individual ingredients. Color mix should be attractive and colors should be natural and typical of individual products. Jars should be filled with half solids and half liquid. Free from cloudiness or starchiness. May not be thickened or contain rice, noodles, cream, or milk.
Sweet Potatoes	Only hot pack canning is recommended. Skins of sweet potatoes must be removed. Small potatoes may be canned whole. If larger, potatoes should be cut into pieces, <b>but never mashed or pureed</b> . Pieces should be uniform in size and shape. Color may vary from yellow to orange depending on the variety, but should be uniform. Liquid clear and free of starchy sediment, there may be a tint of color from the potatoes. Pack is free from pieces of skin, root hairs, or dark and discolored spots. <b>There are no endorsed canning methods for mashed or pureed sweet potatoes. This is too dense to assure that the proper temperature is reached during the canning process.</b>

## CANNED MEATS

Headspace for meats and seafood should be 1 inch. Low-acid foods must be pressure canned. These foods include meats, poultry, seafood, vegetables, and some combination foods such as soup mixes, spaghetti sauce with meat, and salsa. Acid and appropriately acidified foods (expected pH less than 4.6) such as pickles may be processed in a boiling water canner. However, many fruits also have alternative methods using the pressure canner. Jams, jellies, and fruit preserves should be processed in a boiling water canner. Paraffin should not be used to seal canned goods. Open kettle canning (putting hot food in a jar, putting a lid on in and giving it no further processing) is not acceptable for any “canned” product. Soup mixes and other foods with thickeners (like flour or starch), cream or milk, pasta/noodles, or rice are not permitted.

Good quality meat should be used. When judging canned meat, check the depth of the layer of fat on the top of the jar contents. A small amount is expected but no more than ¼ of the liquid in the jar should be fat. Meat should have been well trimmed of excess fat, so too large a layer at the top means that not enough fat was trimmed off the meat before canning. This can interfere with seal formation and the melted fat can climb the sides of the jar during processing. If the fat comes in contact with the lid, it may interfere with a good seal formation. It is not acceptable to pack meat in solid fat.

What to Look For	What Happened	Because Of
<b>Appearance</b>		
Firm and moist	Soft	Improper processing
Normal color		
Free from gristle and fat	More than 1 inch of fat on top	Meat not well trimmed
Cut across the grain in uniform and attractive pieces.	Assorted sizes and shape	Not carefully selected
<b>Liquid</b>		
Jells when cool	In liquid form	Too warm storage
Preferably covers meat	Liquid lost	Jars too full Fluctuating temperature
Clear	With sediment	Meat canned raw pack will have more sediment
Packed within ½ inch of top	Jar not filled	Meat packed raw
	Too tight	Inadequate heat penetration can cause spoilage
<b>Container</b>		
Clean, standard jar	Rusty	Not properly washed and stored
Lids and rings clean		
Properly labeled with name of exhibitor, name of product, and method of preservation.		

## JUDGING CRITERIA FOR INDIVIDUAL MEATS, POULTRY, FISH, and GAME

Poultry and Rabbit	May be canned with or without bones and with or without skin. Pieces should be neatly cut at joints where possible, not ragged or crushed. Free from sharp bone edges. Skin is clean and free from feathers/pin feathers or fur. Poultry giblets should be canned separately and not mixed in jars with meat. Liquid in hot packs should be cooking broth; raw packs have no added liquid.
Bear, Beef, Lamb, Pork, and Venison	Meat may be canned in strips, cubes, or chunks. Large bones must be removed; removal of all bones is preferred. Meat broth, water, and tomato juice are acceptable canning liquids. Fat in meat packed in tomato juice would be tomato-red in color. Other fat should be free from discoloration. Pieces should be firm, free from gristle and excess fat. Meat cut across the grain into uniform, serving-sized pieces are preferred. Meat should be moist with the shape well-preserved. Liquid may be jellied and/or may not completely cover the meat, especially in raw packs where the liquid may only half cover the meat.
Ground Meat and Sausage	Only hot pack canning is recommended. Ground meat should be browned before canning. It may be in patties, small balls, or crumbles. Sausage may also be in cased links.
Finfish and Shellfish	Finfish is usually split lengthwise and fillets cut to fit jar height; pieces are packed vertically. Bones removed from large fish; backbone may be left in small fish. Fish and smoked fish do not have added liquid, except tuna that may be packed in water or oil. Clams may be covered with clam juice or water. Seafood cannot be canned in jars larger than pints.

## PICKLED AND FERMENTED FOODS

Headspace for pickled foods should be ½ inch. All pickled and fermented foods should be in standard home canning jars and processed in a boiling water canner. There are many varieties of pickled and fermented foods, which are classified by ingredients and method of preparation. Pickles need to be uniform in size and shape, but not chopped too fine, with no ragged edges. There should be a good proportion of solids to liquids, with the liquid covering the product and no floating pieces. Fancy packs are discouraged. Vertical or horizontal layering can be considered impractical and can interfere with the intended heat penetration during the canning process, leaving the product under processed. Pieces should appear plump and not shriveled. There should be no artificial coloring except for specialty cucumber or apple ring products. The liquid may be clear or colored from spices but should be free of sediment or cloudiness. There should be no foreign matter of stems, leaves, strings, or husks.

Fermented dill pickles and sauerkraut go through a curing process for several weeks until they are pickled. The color and flavor of the product changes and acidity develops. Fresh pack, or quick process pickles do not go through the process of fermentation, and may or may not be brined for several hours to overnight. Fresh pack pickles are fruit or vegetables covered with a pickling liquid that is usually vinegar-based. Fruit pickles are made from whole or sliced fruits and the vinegar is usually part of a spicy sugar syrup. Relishes are made from chopped fruits and vegetables cooked in a spicy vinegar solution.

Food safety concerns for pickled or fermented foods occur if the acidity level is not high enough for them to be treated as acid foods processed at boiling water temperatures. Acid in a pickled or fermented food is intended to prevent the growth of *Clostridium botulinum* which causes botulism.

What to Look For	What Happened	Because Of
<b>Appearance</b>		
Uniform in size and shape Evenly chopped vegetables and relish  Plump	Assorted sizes	Poor selection Not evenly chopped
	Shriveled	Vinegar or salt solution too strong Overcooking or over processing
	Hollowed	Poorly developed cucumbers Cucumbers too ripe Cucumbers held too long before picking Fermentation too rapid Brine too strong or too weak during fermentation
	Cloudy glass	Hard water
<b>Texture</b>		
Crisp and firm	Soft and slippery <b>DO NOT EAT</b> This may be a sign that microbial activity did not stop, and may affect the food safety of this product!	Not covered with brine during fermentation Insufficient heat treatment Blossom end not cut off Used too little salt or acid Jar not sealed airtight Moldy garlic or spices
<b>Liquid</b>		
Characteristic Natural	Too bright green	Artificial color used
	Dark in color	Too much spice, including iodized salt Overcooking Cider vinegar Brown sugar Water too hard (minerals)
	Black in color	Iron utensils used

## JUDGING CRITERIA FOR PICKLED OR FERMENTED FOODS

Cucumber and Mixed Pickles	Pieces are firm and plump. Cucumber skin has a dark green color. All pieces are transparent or semi-transparent, completely and evenly saturated with brine. Uniform in size. Small to medium size cucumbers can be used whole; large ones sliced into uniform slices, strips, or chunks. Cucumber not too old or seedy. No oil is to be used. Free of defective spots on peels.
Dill Pickles	Pieces are firm, crisp, and plump. Small to medium size cucumbers can be used whole, larger ones halved or quartered. Dill weed and spices visible. Cloves of garlic should be bright and not discolored. Fermented dills might have a slightly cloudy liquid with a tiny bit of sediment on bottom. Slice (1/16 <sup>th</sup> inch) should be removed from blossom end of cucumber.
Sweet Cucumber Pickles	Pieces are firm, yet tender, plump and well saturated with the syrup. Neatly cut edges that hold their shape. Small cucumbers (gherkins) may be left whole. Other sweet pickles may be slices, spears, or chunks. Liquid may be thin to a thick syrup. Any visible spices in pleasant proportion.
Other Pickles (Not Cucumbers)	Vegetables are bright with color characteristics of the product. Pieces are uniform in size. Pieces are not torn, broken, or with ragged edges. All pieces are saturated with brine. Differently shaped garnishes (onion ring, red pepper strip, etc.) may be used. Any visible spices in pleasant proportions.
Relishes	Small pieces of fruit or vegetable, but large enough to be recognizable. Pieces are uniform in size and shape, cut or chopped neatly. Appear tender but not mushy. Food is semi-transparent in appearance, thoroughly saturated in pickling solution. Clear and bright in color. Visible spices not overwhelming.
Fruit Pickles (Spiced Fruits)	Small fruits may be pickled whole; larger ones are cut into uniformly sized pieces with sharp edges. Fruit is translucent or whole fruit (such as peaches) looks cooked with good penetration of syrup. Texture is firm. Color is uniform, bright, and glossy. Syrup is thinner than in preserves but not watery.
Chow-Chow	This mixture of finely chopped vegetables usually has cabbage as one ingredient. Criteria are similar to those of relish. Color is often bright, yellowish-green due to cabbage.
Chutney	Chutneys are chopped fruit pieces or fruit pulp mixed with raisins and chopped vegetables, such as onions and peppers. Chutneys are cooked with sugar and vinegar until thickened. Texture of vegetable pieces is similar to that of relish, but the liquid is thicker. Color is often dark but depends on ingredients and spices used. Free from any signs of scorching (burned flecks).
Sauerkraut	Color is off-white to light straw. Pieces should be translucent, clear, and bright. Free from pink, brown, or other discoloration. Shredded pieces should be uniform in thickness. Texture should be firm, not mushy. Clear liquid sufficient to cover all solids. No air bubbles or trapped air.

## MAKING MEALTIME MANNERS MATTER!

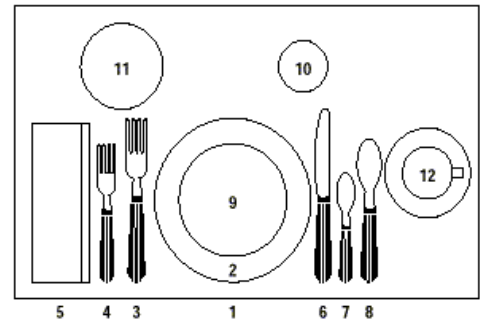
The following guide is a basic set of traditional rules for setting the table. Different cultures follow different rules for table etiquette – ask for clarification, if needed. This traditional example can be used in a formal as well as an informal one. To set the table, the 4-H'er needs a “place setting” for each person. Table setting contests will commonly require at least one table setting on display - check the county for specific details.

A table setting should include the following items:

- Dinnerware (plates, cups, saucers, and bowls)
- Glassware (glasses of all shapes and sizes)
- Flatware (forks, spoons, and knives)
- Napkins
- Centerpiece
- Placemats or tablecloths (optional)

The following rules for setting a table correspond to the numbers seen in the table setting illustration.

1. The flatware, plate, and napkin should be one inch from the edge of the table.
2. The plate is always in the center of the place setting.
3. The dinner fork is placed at the left of the plate.
4. If a salad fork is used, it is placed to the left of the dinner fork.
5. The napkin is placed to the left of the fork, with the fold on the left. It can also go under a fork, or on top of the plate.
6. The knife is placed to the right of the plate with the sharp blade facing in towards the plate.
7. The teaspoon is placed to the right of the knife.
8. If a soup spoon is needed, it is placed to the right of the teaspoon.
9. The soup bowl may be placed to the right of the teaspoon.
10. The drinking glass is placed at the tip of the knife.
11. If a salad plate is is used, place it just above the tip of the fork.
12. The cup or mug is placed to the top right of the spoons.



### Tips for setting a table

- The table should be clean; it can be left bare or a table covering can be used as the background for the food and the items may be placed on top of it. A table covering helps protect the table and muffles the noise of clanking glassware and dishes.
- Placemats or tablecloths can be used for special occasions.
- Dinnerware and flatware should be chosen as appropriate for the occasion and that complement each other. Matching or blended colors or textures in the dishes or contrast something different make a table setting look attractive.
- Table setting items should be appropriate for the meal served. Snacks on paper plates are appropriate while a home-cooked dinner should be served on attractive dishes to help show it off.
- Only the utensils needed are placed on the table.
- The centerpiece should be attractive. Simple ones, such as fresh flowers, a plant, or fruit can be used. If candles are used, they should be of the length so that if they were lit, they would be above eye level.
- The centerpiece should be low enough so that the people at the table can see over it; it should be colorful and blend with the tablecloth and the dishes; and be fresh and clean looking.

## WRITING THE WINNING MENU

An appropriately written menu should follow the Dietary Guidelines for Americans and MyPlate. As a general guideline, a meal should have at least three different food groups to help balance out what the body needs every day to get all the nutrients needed. MyPlate illustrates the five food groups that are the building blocks for a healthy diet using a familiar image—a place setting for a meal. Before you eat, think about what goes on your plate or in your cup or bowl. There are three key messages with MyPlate:



- **Balancing Calories**
  - Enjoy your food, but eat less
  - Avoid oversized portions
- **Foods to Increase**
  - Make half your plate fruits and vegetables
  - Make at least half your grains whole grains
  - Switch to fat-free or low-fat (1%) milk
- **Foods to Reduce**
  - Compare sodium in foods like soup, bread, and frozen meals and choose foods with lower numbers
  - Drink water instead of sugary drinks

### Dairy Group

*Get your calcium-rich foods.* All fluid milk products and many foods made from milk are considered part of this food group. Most Dairy Group choices should be fat-free or low-fat. Foods made from milk that retain their calcium content are part of the group. Foods made from milk that have little to no calcium, such as cream cheese, cream, and butter, are not. Calcium-fortified soymilk (soy beverage) is also part of the Dairy Group. Eat the equivalent of 3 cups of foods from the Dairy Group each day.

### Fruit Group

*Focus on Fruits.* Any fruit or 100% fruit juice counts as part of the Fruit Group. Fruits may be fresh, canned, frozen, or dried, and may be whole, cut-up, or pureed. Eat the equivalent of 1 ½ - 2 cups of fresh, canned or frozen fruits per day.

### Vegetable Group

*Vary your veggies.* Any vegetable or 100% vegetable juice counts as a member of the Vegetable Group. Vegetables may be raw or cooked; fresh, frozen, canned, or dried/dehydrated; and may be whole, cut-up, or mashed. Eat the equivalent of 2 - 3 cups of raw or cooked vegetables per day.

### Grain Group

*Make at least half your grains whole.* Any food made from wheat, rice, oats, cornmeal, barley or another cereal grain is a grain product. Bread, pasta, oatmeal, breakfast cereals, tortillas, and grits are examples of grain products. Eat 5 - 6 ½ ounce-equivalents with 3 ounce-equivalents or more of whole-grain products and the remaining grains should come from enriched or whole-grain products.

### Protein Group

*Go lean with protein.* All foods made from meat, poultry, seafood, beans and peas, eggs, processed soy products, nuts, and seeds are considered part of the Protein Foods Group. Eat 6 ounce-equivalents each day. Choices need to be varied among fish, beans, peas, nuts and seeds, as well as the lean meat and poultry.

**\*Serving sizes based on a 2,000 calorie/day diet plan. See following chart for more specific age-related recommendations.**



## DAIRY

Daily recommendation		
<b>Children</b>	2-3 years old	2 cups*
	4-8 years old	2 1/2 cups*
<b>Girls</b>	9-13 years old	3 cups*
	14-18 years old	3 cups*
<b>Boys</b>	9-13 years old	3 cups*
	14-18 years old	3 cups*

## FRUIT

Daily recommendation*		
<b>Children</b>	2-3 years old	1 cup**
	4-8 years old	1 to 1 1/2 cups**
<b>Girls</b>	9-13 years old	1 1/2 cups**
	14-18 years old	1 1/2 cups**
<b>Boys</b>	9-13 years old	1 1/2 cups**
	14-18 years old	2 cups**

## VEGETABLES

Daily recommendation*		
<b>Children</b>	2-3 years old	1 cup**
	4-8 years old	1 1/2 cups**
<b>Girls</b>	9-13 years old	2 cups**
	14-18 years old	2 1/2 cups**
<b>Boys</b>	9-13 years old	2 1/2 cups**
	14-18 years old	3 cups**

## GRAINS

		Daily recommendation*	Daily minimum amount of whole grains
<b>Children</b>	2-3 years old	3 ounce equivalents	1 1/2 ounce equivalents
	4-8 years old	5 ounce equivalents	2 1/2 ounce equivalents
<b>Girls</b>	9-13 years old	5 ounce equivalents	3 ounce equivalents
	14-18 years old	6 ounce equivalents	3 ounce equivalents
<b>Boys</b>	9-13 years old	6 ounce equivalents	3 ounce equivalents
	14-18 years old	8 ounce equivalents	4 ounce equivalents

## PROTEIN

Daily recommendation*		
<b>Children</b>	2-3 years old	2 ounce equivalents
	4-8 years old	4 ounce equivalents
<b>Girls</b>	9-13 years old	5 ounce equivalents
	14-18 years old	5 ounce equivalents
<b>Boys</b>	9-13 years old	5 ounce equivalents
	14-18 years old	6 1/2 ounce equivalents

\*These amounts are appropriate for individuals who get less than 30 minutes per day of moderate physical activity, beyond normal daily activities. Those who are more physically active may be able to consume more while staying within calorie needs. Source: [www.choosemyplate.gov](http://www.choosemyplate.gov)

## Menu Writing Guidelines

The following guidelines are suggested when writing or planning a menu:

- Descriptive terms should be used that give information about the temperature, texture, color, or other special characteristics of the food or method of preparation.

**Examples:** Chilled Apple Cider, Broiled Sirloin Steak, Cream of Asparagus Soup.

- Menus should be written in symmetrical arrangement on the page, with the foods listed in the order they are served.

**Examples:**

*Broiled Hamburgers*  
*Baked Potato Sour Cream*  
*Broccoli Glazed Carrots*  
*Hot Rolls*  
*Iced Tea*

- Words should be capitalized except articles and prepositions; words such as “or”, “and”, “of”, “with”, etc. should not be capitalized. Example: Cream of Mushroom Soup.

- Foods should be grouped by courses. The item of most importance should be listed first.

**Example:** Broiled Hamburgers.

- Foods served with an accompaniment should have the food listed first.

**Example:**

*Baked Potatoes Sour Cream*  
*OR*  
*Cheddar Cheese Cubes*  
*Rye Chips*

- When the main dish has two or more accompaniments, the main dish should be centered on one line and the accompaniments should be on the same line on either side or written on the line below.

**Example:**

*Rye Crisp Chicken Soup Saltines*  
*OR*  
*Chicken Soup*  
*Rye Crisp Saltines*

- Butter, cream, sugar, or salad dressings are not written on the menu unless they are special in some way.

**Examples:**

*Crusty Rolls*  
*Whipped Butter*  
*OR*  
*Wedge of Thousand Island*  
*Lettuce Dressing*

- The beverage(s) should be listed last.

**Example:** Iced Tea.

- Extra spacing should be allowed between courses. The following is an example of how a three course meal is properly written:

**Examples:**

*French Onion Soup*  
*Whole Wheat Wafers*  
*Celery Sticks Assorted Olives*

*Prime Rib of Roast Beef au Jus*  
*Potato Soufflé*  
*Asparagus with Hollandaise Sauce*  
*Mixed Green Salad*  
*Hot Rolls Whipped Butter*

*Lemon Ice*  
*Coffee Hot Tea*

## REFERENCES

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