USDA RECIPE STANDARDIZATION GUIDE

FOR SCHOOL NUTRITION PROGRAMS

CICN CULINARY INSTITUTE OF CHILD NUTRITION

Institute of Child Nutrition
The University of Mississippi,
School of Applied Sciences
www.theicn.org

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Sheldon Gordon

Heidi Bishop

Bethany Showell

Xaviera Davis

Kristen Rowe

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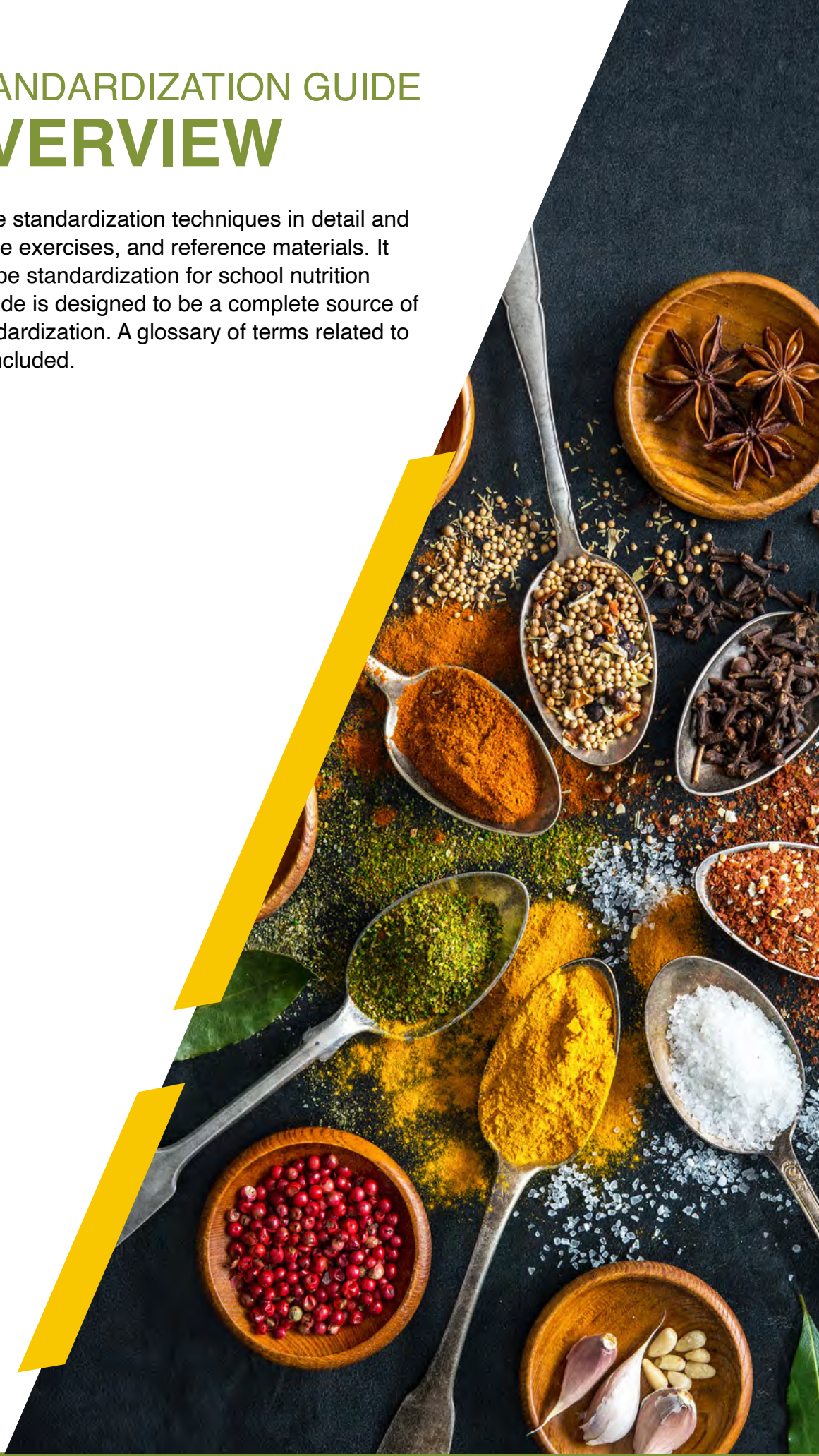
RECIPE STANDARDIZATION GUIDE

OVERVIEW

The guide describes recipe standardization techniques in detail and includes examples, practice exercises, and reference materials. It is a “how-to” guide on recipe standardization for school nutrition recipe developers. The guide is designed to be a complete source of information on recipe standardization. A glossary of terms related to recipe standardization is included.



RECIPE STANDARDIZATION
PROCESS

Definition

The U.S. Department of Agriculture (USDA) defines a standardized recipe as one that has been tried, adapted, and retried at least three times and has been found to produce the same good results and yield every time when the exact procedures are used with the same type of equipment and the same quantity and quality of ingredients.

The terms "quantity recipes" and "standardized recipes" often are used interchangeably; however, they are not the same. Many recipes are written to produce large quantities of food, but the recipe may or may not be standardized. Any recipe that produces 25 servings or more is termed a quantity recipe. However, quantity recipes are not standardized until they have been prepared at least 3 times with consistent results.

RECIPE STANDARDIZATION PROCESS

THREE-PHASE APPROACH

The recipe standardization process has three phases.

1

Recipe Verification Phase

Recipe verification consists of identifying the recipe, sourcing ingredients, writing and reviewing the recipe in detail, preparing it in a small-batch quantity, verifying its yield, and recording changes.

2

Product Evaluation Phase

Product evaluation focuses on determining the acceptability of the product produced from the recipe. The product evaluation phase is conducted in two parts:

- Informal Evaluation — The recipe development team conducts a taste test
- Formal Evaluation — A taste test is conducted with program stakeholders

3

Quantity Adjustment Phase

The quantity adjustment phase is used to change the recipe yield, and ingredient amounts to the desired number of servings for use in the program.

A recipe may go through these phases several times before becoming standardized at the necessary quantity for an operation. School food service production teams should work together on the recipe standardization process. Input from students and other customers is critical during the evaluation phase.

Decisions made during each phase determine the flow of a recipe through this recipe standardization process. Once a recipe has been standardized for an operation, the standardization process should not have to be repeated unless changes occur in the availability of ingredients or equipment.

BENEFITS OF STANDARDIZED RECIPES

Using standardized recipes provides many benefits to school foodservice operations.

Consistent food quality

The use of standardized recipes ensures that menu items will be consistent in quality each time they are prepared and served.

Predictable yield

The planned number of servings will be produced by using standardized recipes. This can help reduce the amount of leftover food if there has been overproduction and help prevent shortages of servings on the line. A predictable yield is especially important when food is transported from a production kitchen to other serving sites.

Customer satisfaction

Well-developed recipes that appeal to students are an important factor in maintaining and increasing student participation levels. Schools may take a lesson from national restaurant chains that have developed popular menu items consistent in every detail of ingredient, quantity, preparation, and presentation. Standardized recipes provide this consistency and can result in increased customer satisfaction.

Consistent nutrient content

Standardized recipes will ensure that nutritional values per serving are valid and consistent.

Food cost control

Standardized recipes provide consistent and accurate information for food cost control because the same ingredients and quantities of ingredients per serving are used each time the recipe is produced.

Efficient purchasing procedures

Purchasing is more efficient because the quantity of food needed for production is easily calculated from the information on each standardized recipe.

Inventory control

The use of standardized recipes provides predictable information on the quantity of food inventory that will be used each time the recipe is produced.

Labor cost control

Written standardized procedures in the recipe make efficient use of labor time and allow for planned scheduling of foodservice personnel for the workday. Training costs are reduced because new employees are provided specific directions for preparation in each recipe.

Increased employee confidence

Employees feel more satisfied and confident in their jobs because standardized recipes eliminate guesswork, decrease the chances of producing poor food products, and prevent shortages of servings during meal service.

Successful completion of Administrative Reviews

Standardized recipes are a documentation source for the Administrative Review (AR). ARs determine how well schools are meeting nutrition standards. A review cannot be completed if the recipes are missing information or provide inaccurate information on ingredients, yield, or serving size. ARs require standardized recipes to ensure that the nutrient analysis is accurate. Menus, recipes, production records, and the nutrient analysis are to be kept on file for review.

IMPORTANCE OF STANDARDIZED RECIPES

There are four main areas positively impacted by the regular use of standardized recipes

Cost control

Recipes are developed with specific ingredients, as well as specific amounts of each ingredient clearly stated. When the amount or type of ingredient is changed, the cost of producing the recipe is also subject to change. Additionally, when incorrect portions of the food are served, the recipe's overall cost can be affected. Using and adhering to standardized recipes will result in better cost controls.

Customer satisfaction

Another fundamental reason to use standardized recipes is to keep customers happy and satisfied. Standardized recipes provide the same recipe outcome no matter who is preparing them. Production and other staff members can become familiar with the recipes quicker because all of the recipes have the same format. Guesswork is eliminated because staff members will have followed the standardized recipe. Customers will be more satisfied, and participation may increase, because customers know what to expect each time a product is served.

Nutrient analysis

The purpose of the nutrient analysis is to determine compliance with regulatory requirements for calories, saturated fat, and sodium and to monitor levels of these dietary components in school meals. Similar to cost, nutrient analysis is predicated on the production of the recipe using the specific ingredient, ingredient amounts, and portion size stated in the recipe.

Predictable yield

Standardized recipes produce a planned number of servings. This can help reduce the amount of leftovers and overproduction. It can also help prevent shortages of servings on the line. A predictable yield is especially important when food is transported from a production kitchen to other serving sites.

STANDARDIZED RECIPE
COMPONENTS

Consistently producing high-quality food that satisfies your customers and meets requirements for reimbursable meals is not an easy task. A standardized recipe has been tested for use in your kitchen(s). It produces consistently good results and yields when the preparer uses the same procedures, equipment, and quality and quantity of ingredients. For a standardized recipe to meet those needs, it must include the correct information.

A standardized recipe format should include:

- Recipe Title and Description
- Recipe Category
- Ingredients
- Weight/Volume of Each Ingredient
- Units of Measure for Each Ingredient
- Preparation Directions
- Cooking Time, Temperature, and Preparation Time
- Serving Size
- Yield
- Equipment and Tools Needed
- Crediting Information
- Nutrient Analysis
- Marketing Guide
- Food Safety Guidelines/Critical Control Points

Additional information such as service style, recipe variations, alternative ingredients, optional ingredients, and safety notes such as choking risks and food allergy information may also be included. This is additional information that may be included in the recipe - not directly related to the standardization process but still important information for the recipe user.

INFORMATION TO INCLUDE IN A STANDARDIZED RECIPE

Recipe Title and Recipe Description
The recipe should have a title (name) along with a brief description (1–3 sentences) of the recipe.

Recipe Category
Identify the recipe as an entrée or side dish.

Ingredients
Include all ingredients used in a recipe. The ingredient name should include the name of the product, product type/form (fresh, frozen, canned), and any preparation technique(s) (peeled, grated, minced, diced). Be sure to indicate size for preparation techniques, such as slicing and dicing (e.g., "½ inch slices" or "¼ inch diced"). List the ingredients in the order they are used when preparing the recipe.

Units of Measure for Each Ingredient
List the quantity of each ingredient in weight and volume. USDA includes both the weight and volume, except when the weight is below 1 oz because weight provides the most accurate information for the Recipe Analysis Workbook (RAW) and nutrient analysis. Avoid using packaging to describe the amount of a product, such as "1 package." The packaging is variable, and the size can vary depending on the supplier. The amount of product in a package may vary depending on its' form. List quantities in the most straightforward unit of measure (e.g., "1 lb 4 oz" instead of "20 oz" or "½ cup" instead of "8 Tbsp."). Use standard abbreviations for units of measure and a fraction format.

Preparation Directions
List the steps for the preparation of the recipe. This can include information on alternative preparation methods and helpful cooking tips.

Cooking Temperature, Cooking Time, and Preparation Time
Include the cooking temperature and cooking time, if appropriate, as well as the amount of time required to prepare the recipe. This includes time for chopping or dicing ingredients, preparing individual servings, placing items on a baking sheet, etc.

Serving Size
Provide the amount of a single portion in volume and/or weight. Give this information in a practical amount, such as ½ cup, 1 slice, 2 squares, etc.

Recipe Yield
Provide the amount of the finished or processed product (weight and volume, and number of servings) available at the completion of production.

Equipment and Utensils Needed
List the cooking and serving equipment needed to prepare and serve the recipe.

Crediting Information

This statement should identify which NSLP/SBP meal component(s) the ingredients in the recipe count toward meats/meat alternates, vegetables (including subgroups), fruits, and/or grains. If an ingredient may be credited toward more than one meal component, include both crediting statements (e.g., Bean Tostada USDA Recipe for Schools crediting statement – "Legume as Meat Alternate: 2 oz equivalent meat/meat alternate, ⅛ cup red/orange vegetable, ¼ cup other vegetable, ⅛ cup additional vegetable, and 1 oz equivalent grains." OR "Legume as Vegetable: 0.5 oz equivalent meat/meat alternate, ⅜ cup legume vegetable, ⅛ cup red/orange vegetable, ¼ cup other vegetable, ⅛ cup additional vegetable, and 1 oz equivalent grains").

Nutrient Analysis

In this section, identify the nutrients provided per serving. The purpose of the nutrient analysis is to determine compliance with school meal regulatory requirements for calories, saturated fat, and sodium and to monitor levels of these dietary components in school meals.

Marketing Guide

Use The Food Buying Guide for Child Nutrition Programs to determine the amount of product needed (as purchased) to yield the edible portion required for the recipe.

Food Safety Guidelines

Include procedures designed to ensure the safe production and service of food. Indicate Hazard Analysis Critical Control Point (HACCP) information, if appropriate. Include the appropriate cooking temperature for any ingredients that require cooking and/or chilling and a final holding temperature. As applicable, include information about food allergens or developmental considerations (e.g., choking hazards for young children).

OPTIONAL INFORMATION TO INCLUDE IN A STANDARDIZED RECIPE

Service Style – Optional
Include information about how the recipe will be served at the site (e.g., self-serve, grab-and-go, made-to-order, traditional service model). Information regarding the Service Style should be included in the Notes section of the recipe template.

Recipe Variations – Optional
If appropriate, include alternative ways of preparing the recipe.

Alternative Ingredients – Optional
If appropriate, include ingredients that can be substituted for a listed recipe ingredient.

Optional Ingredients – Optional
The use of alternative or optional ingredients may alter the nutrient analysis and/or crediting information.

RECIPE VERIFICATION PHASE

School food service programs are responsible for serving nutritionally adequate foods while being cost-effective and meeting meal pattern requirements for reimbursement. Using standardized recipes is an essential strategy to help program operators accomplish this goal.

Developing recipes that meet the needs of the program consists of three phases. The first of these phases is the Recipe Verification Phase.

The Recipe Verification Phase has several steps, these include:

- Identifying the recipe
- Sourcing ingredients
- Writing and reviewing the recipe in detail
- Preparing it in a small-batch
- Verifying its yield
- Recording changes

RECIPE VERIFICATION PHASE

SOLICITING RECIPES FROM THE SCHOOL COMMUNITY

Identifying new recipes to use in your meal program can be challenging. There are several factors to take into consideration, including food cost, labor and equipment needs, sourcing and procuring ingredients, and customer satisfaction. A key starting point in the process of recipe standardization is developing recipes that students will find appealing. Identifying student taste preferences will help you determine which recipes to select. There are several methods you can use to engage the school community and make decisions based upon your students' needs and food preferences.

STRATEGIES FOR SOLICITING RECIPES FROM THE SCHOOL COMMUNITY

Incorporating stakeholders from the school community is a method proven to increase buy-in to the program. When stakeholders see themselves as partners in the process, they become more engaged. Soliciting recipes from the school community can take many forms.

- *Conducting recipe contests*
- *Convening advisory groups*
- *Meeting with focus groups*
- *Implementing surveys*
- *Conducting student cooking competitions*
- *Hosting a recipe dropbox*

Use the table on the next two pages to identify the strategy(s) that will work best in your program. Included in the table are tips for implementing the strategy as well as an overview of the benefits associated with each of the recipe solicitation strategies.

RECIPE VERIFICATION PHASE

STRATEGIES FOR SOLICITING RECIPES FROM THE SCHOOL COMMUNITY

STRATEGY	IMPLEMENTATION	BENEFITS
Recipe Competitions	• Solicit local family favorites or regional and ethnic-inspired recipes. • Recognize the winners with their name or school attached to the recipe. • Create a school foodservice recipe book, sharing favorite recipes from the program and the community.	• Gains an understanding of local food preferences. • Solicits authentic regional and ethnic recipes. • Creates community awareness of the program. • Student buy-in to the program. • Inclusion of stakeholders in the continual improvement of the program.

Advisory Group(s)	• Regularly scheduled meetings focused on program improvements.
	  • Monthly
	  • Quarterly
	• Organized by demographics such as:
	  • Age group
	  • Meal sites
	  • Parent groups
	  • School faculty/staff
	  • Community members
	• Develop goals and action plans to meetstakeholder needs.
		• Increases program awareness by members of the school community.
		• Creates program advocates and ambassadors that share program information with a variety of stakeholders.
		• Collects regular feedback from the school community.
		• Inclusion of stakeholders in the continual improvement of the program.

Focus Groups	• Facilitated small group discussions with the intent of learning participant's opinions on a specific topic area.
	• Organized by demographics such as:
	  • Age group
	  • Meal sites
	  • Parent groups
	  • School faculty/staff
	  • Community members
	• Assess stakeholder's perception of the program.
	• Identify perceived gaps in the current menus and suggested improvements.
	• Solicit recipe ideas from participants
		• Increased program awareness by members of the school community.
		• The limited-time commitment for facilitator and participants.
		• It can be used to seek feedback on a single issue or a variety of topics.

STRATEGY	IMPLEMENTATION	BENEFITS
Surveys	• Use surveys to identify the types of menu items stakeholders want to see on the menu. • Use the information to narrow down the types of recipes to solicit from the community. • Use platforms that make sense to the user group—digital, paper, posters with stickers, in-person, etc. • Survey students by age group, meal site, grade level, etc. • Survey parents/households/community members.	• Relatively easy to develop and administer. • Low cost. • Provides representative sampling of the population. Low levels of subjectivity. • Captures the data efficiently needed for decision making. • Easy to sort the data and make informed decisions.
Student Cooking Competitions	• Pair students with a School Nutrition professional with culinary experience (site-level cooks, department staff, local chefs, etc.) to develop a recipe. • Develop requirements to use specific local products and provide guidelines for meal pattern crediting and desired nutritional parameters for each recipe by type (entrée or side dish). • Invite local producers (e.g., local farmers) to participate to highlight the products and share ideas with students.	• Creates community awareness of the program. • Improves student buy-in to the program. • Creates a buzz around the program by highlighting student-designed meals. • Engages students and the community • Builds goodwill and increases program awareness.
Recipe Dropbox	• Add a digital recipe dropbox to the School Food Authority (SFA) webpage for stakeholders to submit recipes. • Develop criteria for the recipes and post them in a centralized location. • Pre-assign categories for the recipe submissions. • Create a field for the user to input their information to request that they be reached for further questions and (if selected) to sample and provide feedback during the taste-testing and evaluation phase.	• Receive recipe ideas and concepts throughout the year. • Stakeholders can share recipes that are popular with students and the community in an easy-to-use format. • Recipe submissions can be easily categorized and sorted. • Provides high user engagement.

RECIPE VERIFICATION PHASE

STRATEGIES FOR IDENTIFYING LOCALLY SOURCED FOOD ITEMS

The next area of focus in the Recipe Verification Phase is sourcing the food items and ingredients for your recipe. Ingredients can be purchased through a variety of vendors. One way to build relationships with the local community is to purchase locally sourced food items when available.

Purchasing locally sourced foods has many benefits.

- Access to nutritious, high-quality foods
- Good stewardship of SFA funds
- Financial support of local food producers
- Community engagement
- Opportunities to increase food-related education of students
- Positive environmental impacts
- Learn about the cultural impact of regional/ethnic food traditions and preparation methods.

Almost anything can be purchased locally in different parts of the country. Local purchasing is not just about purchasing fresh fruits and vegetables from farmers. Local and regional foods can also include beans, grains, flour, meat, poultry, fish, condiments, herbs, eggs, and dairy. Local products can come from local farmers, ranchers, fishers, food processors, and distributors of all sizes.

It's up to each school district to define "local" in a way that works for their particular needs and goals. Having specific goals for your local purchasing efforts will help you craft a definition of "local" that works in service to your goals.

There are many models for getting local foods into school cafeterias, and they are not necessarily exclusive to each other. These include procuring foods:

- Through distributors
- From food processors
- Via Department of Defense Fresh Fruit and Vegetable Program (DoD Fresh)
- From individual producers (direct from farmers, ranchers, and fishers)
- From producer cooperatives (co-ops) and food hubs
- From school gardens

Incorporating local agricultural products in school food programs enriches the connection communities have with fresh, healthy food, and local producers. Building a relationship between schools and farms requires laying some groundwork. Many schools do not know how to connect with local producers, and at the same time, many local producers may be unaware that selling to schools is an option.

There are many organizations set up to help forge the relationship between schools and local food producers; these include:

National Farm to School Network

An information, advocacy, and networking hub for communities working to bring local food sourcing, school gardens, and food and agriculture education into schools and early care and education settings. Connect with Farm to School Partners in all 50 States and Territories.

Cooperative Extension Programs

Work directly with school districts and other constituents to identify barriers and obstacles to implementing farm to school and how to overcome these obstacles. Increase the market opportunities for local farmers by connecting them with local school districts.

Food Hubs

Actively manage the aggregation, distribution, and marketing of source-identified food products to multiple buyers from multiple producers, primarily local and regional producers, to strengthen these producers' ability to satisfy local and regional wholesale, retail, and institutional demand.

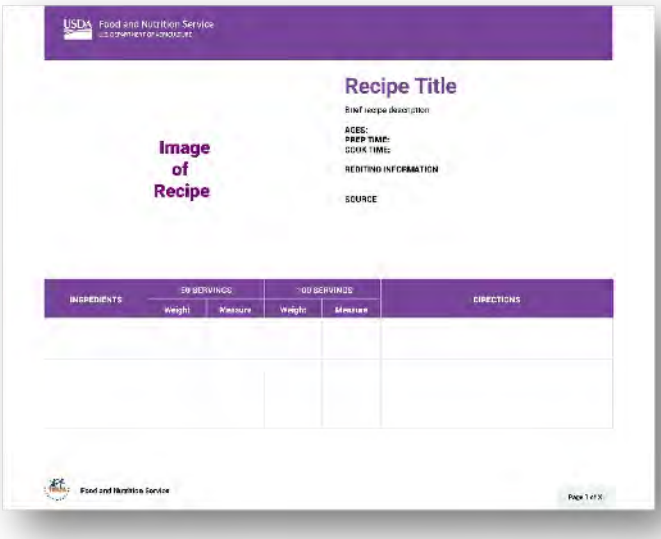
Developing relationships between the school district and local producers and suppliers benefit everyone, from teachers and administrators to parents and producers, providing opportunities to build positive community outcomes.

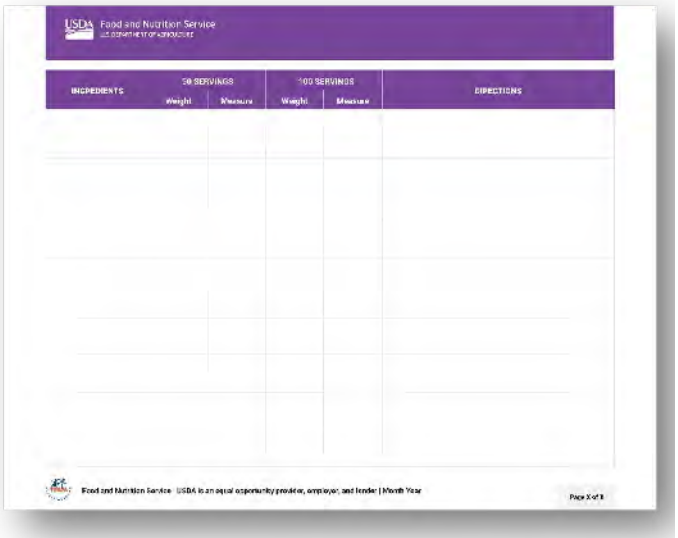
RECIPE VERIFICATION PHASE

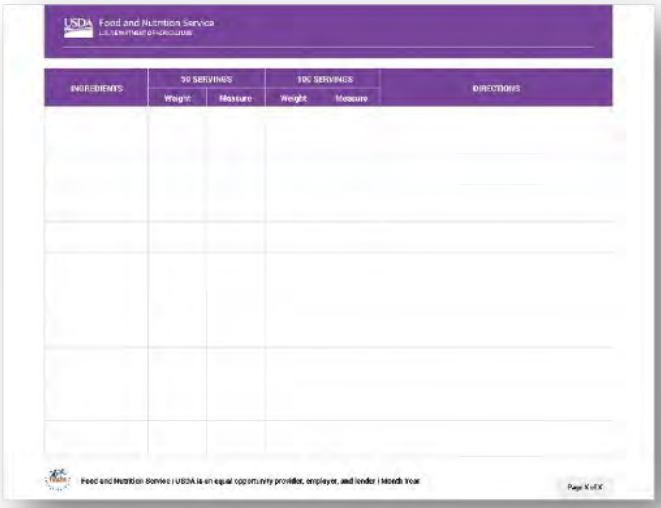
WRITING AND REVIEWING THE RECIPE

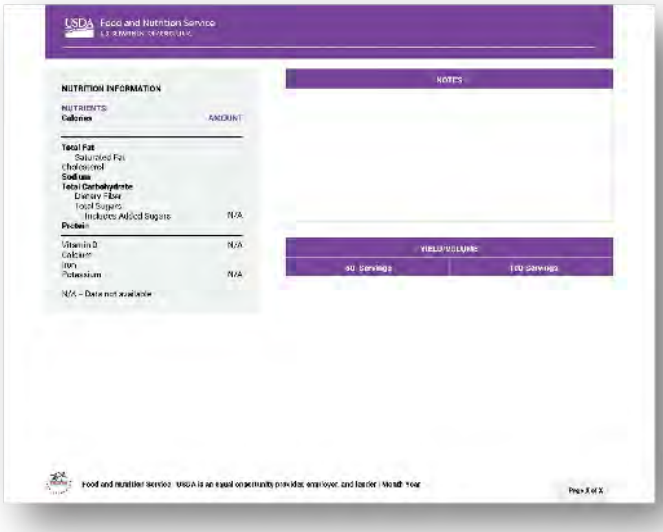
After identifying a potential recipe and sourcing ingredients, the next step under the Recipe Verification Phase is the Recipe Review Process. USDA has a Standardized Recipe Template that is extremely useful to help you in your recipe development endeavors.

USDA STANDARDIZED RECIPE TEMPLATE









See Appendix C: for the full-sized version of the USDA Recipe Template

RECIPE VERIFICATION PHASE

WRITING AND REVIEWING THE RECIPE

The recipe verification phase is the foundation of the recipe standardization process. Assessing the ease of use and feasibility of a recipe early on in the process will set your team up for success through the three phases of recipe standardization.

Once the recipe has been placed in the format used in your operation, you will need to verify that all of the required information has been included.

As a reminder, a standardized recipe should include:

- Recipe Title and Description
- Recipe Category
- Ingredients
- Weight/Volume of Each Ingredient
- Units of Measure for Each Ingredient
- Preparation Directions
- Cooking Time, Temperature, and Preparation Time
- Serving Size
- Yield
- Equipment and Tools Needed
- Crediting Information
- Nutrient Analysis
- Marketing Guide
- Food Safety Guidelines/Critical Control Points

Additional Information such as service style, recipe variations, alternative ingredients, optional ingredients, and safety notes such as choking risks and food allergy information may also be included. This is additional information that may be included in the recipe - not directly related to the standardization process but still important information for the recipe user.

RECIPE VERIFICATION PHASE

ANATOMY OF A STANDARDIZED RECIPE

Consistently producing high-quality food that satisfies your customers and meets requirements for reimbursable meals requires planning and preparation.

A standardized recipe has been tested for use in your kitchen(s). It produces consistently good results and yields when the preparer uses the same procedures, equipment, and quality and quantity of ingredients. For a standardized recipe to meet those needs, it must include the correct information.

RECIPE TITLE AND DESCRIPTION

The recipe title (name) and description should accurately describe the recipe.

The title should be descriptive of the product and easily understood by everyone working in the operation and your customers. Developing a catchy name and description is an integral part of your marketing strategy. The name and description are often the first impressions customers have of the recipe. Strategies for developing a good name and description:

- Use language that focuses on the recipe's flavors and/or textures. This helps to entice the customer to try the recipe.
- Use age-appropriate names for each grade level.
- Use words that focus on a regional or new or unfamiliar flavor*
- Use language that promotes choice and creates excitement, or use superlatives to enhance a positive message.

* Ensure words used are culturally appropriate.

RECIPE CATEGORIES

When standardizing a recipe, a recipe category should be assigned to facilitate the organization of recipes.

Recipes are divided into two classifications:

Main Dishes (Entrée)

An item that is served as the main dish and is either:

- A combination food of meats and/or meat alternates and grains
- A combination food of vegetables and/or fruits and meats and/or meat alternates
- A combination food of meats and/or meat alternates and/or grains and/or vegetables and/or fruits
- A meat or meat alternate alone with the exception of yogurt, low-fat or reduced-fat cheese, nuts, seeds, nut or seed butters, and meat snacks (such as dried beef jerky)
- A grain that is served as the main dish of the school breakfast program reimbursable meal

Side Dish

Side Dish is an accompanying item.

- Side dishes can be a wide variety of fruits and vegetables.
- Grains may be side items, such as brown rice, whole grain-rich pastas, rolls, breadsticks, or grain-based salads and side dishes.
- A combination food of vegetables and/or fruits and grains

Using recipe categories makes it easier to locate recipes at the kitchen site's recipe file box or on the computer's USDA-approved nutrient analysis software.

INGREDIENTS

The ingredient name should be exact so that the name of the product, product type/form (fresh, frozen, canned), and any preparation technique(s) (peeled, grated, minced, diced) are listed.

Tips for properly listing ingredients:

Preparation Technique

Be sure to indicate size for preparation techniques, such as slicing and dicing.

- Example: sliced ½ inch, diced ¼ inch

Order of Use

List the ingredients in order of their use in preparing the recipe.

Variations

Recipes may have variations of the ingredient included in the recipe. Be sure to include the proper unit of measurement for each variation.

- Example: utilizing canned corn (#10 can/106 ounces) or frozen corn (5 lb) for a Southwest Corn recipe

Ingredient Form of Consumption Listing

Ingredients included in a recipe may be listed in two forms, as purchased (AP) or edible portion (EP) quantity, based on how they will be **consumed**.

When fresh fruits and vegetables are processed, there is a loss in yield. This loss occurs because fresh items often have to be peeled and/or trimmed before they are ready for use in a recipe.

- Example: serving a whole, unprocessed apple versus serving a whole apple cored and cut into wedges

For raw meats, the cooked EP amount of meat is always less than the raw AP quantity because moisture and fat are lost in the cooking process. Thus, the yield on meats that are cooked in an operation is always less than 100%. The yield of precooked or processed meats usually is at or near 100%, as no loss in cooking occurs.

For rice and pasta, the cooked quantity (both in volume and weight) is more than the dry quantity because water is absorbed in the cooking process. Thus, the yield of rice and pasta is greater than 100%.

****The USDA Food Buying Guide for Child Nutrition Programs provides yield information to assist with determining EP quantity.*

INGREDIENT UNITS OF MEASURE

Listing the ingredient in a unit of measure that is both easy to understand and appropriate is critical to ensure accuracy and ease of preparation.

Weight is used to determine the heaviness of a product. Weight is the unit of measure used to determine the amount of a dry or non-liquid ingredient needed to produce a recipe.

- Weight is measured using a scale.

Volume refers to the amount of space or capacity; a product takes up in a three-dimensional space. Volume is the unit of measure used to determine the amount of a liquid ingredient needed to produce a recipe.

- Volume is measured using a liquid measure.
- Only the measurement is recorded.

Both weight and measurement will describe the amount of each dry ingredient needed for the recipe, other than those dry ingredients with a weight less than 1 oz, for which only the measurement is recorded.

Manageable unit of measure

Quantities should be listed in the most manageable unit of measure.
Examples:

- 1 lb 4 oz instead of 20 oz
- ½ cup instead of 8 Tbsp

Abbreviations Used in Standarized Recipes

Measurement	Abbreviation
teaspoon	tsp
tablespoon	Tbsp
cup	cup
quart	qt
gallon	gal
ounce	oz
pound	lb
fluid ounces	fl oz

Source: USDA,FNS, Child Nutrition Programs, Alexandria, VA

Weight and Volume Conversions

Teaspoons to Tablespoons

3 tsp	= 1 Tbsp
1½ tsp	= ½ Tbsp
1 tsp	= ⅓ Tbsp

Tablespoons to Cups

16 Tbsp	= 1 cup
12 Tbsp	= ¾ cup
10⅔ Tbsp	= ⅔ cup
8 Tbsp	= ½ cup
5½ Tbsp	= ⅓ cup
4 Tbsp	= ¼ cup
2 Tbsp	= ⅛ cup
1 Tbsp	= 1/16 cup

Ounces to Pounds

16 oz	= 1 lb	(1.00 lb)
14 oz	= ⅞ lb	(0.875 lb)
12 oz	= ¾ lb	(0.750 lb)
10⅔ oz	= ⅔ lb	(0.667 lb)
10 oz	= ⅝ lb	(0.625 lb)
8 oz	= ½ lb	(0.500 lb)
6 oz	= ⅜ lb	(0.375 lb)
5⅓ oz	= ⅓ lb	(0.333 lb)
4 oz	= ¼ lb	(0.250 lb)
2 oz	= ⅛ lb	(0.125 lb)
1 oz	= 1/16 lb	(0.063 lb)

Cups to Quarts

4 cups	= 1 qt
3 cups	= ¾ qt
2 cups	= ½ qt
1 cups	= ¼ qt

Quarts to Gallons

4 qt	= 1 gal
3 qt	= ¾ gal
2 qt	= ½ gal
1 qt	= ¼ gal

Fluid Ounces to Volume Measure

½ fl oz	= 1 Tbsp
2 fl oz	= ¼ cup
2.65 fl oz	= ⅓ cup
4 fl oz	= ½ cup
5.36 fl oz	= ⅔ cup
6 fl oz	= ¾ cup
8 fl oz	= 1 cup
16 fl oz	= 1 pt
32 fl oz	= 1 qt
64 fl oz	= 2 qt or ½ gal
96 fl oz	= 3 qt or ¾ gal
128 fl oz	= 1 gal

Adapted form *USDA Quality Recipes for School Foodservice, 1988*

ACTIVITY: Manageable Units of Measure

Instructions: Review the measurements below. Identify which measurements need to be adjusted to provide the most manageable unit of measure. Convert the identified units of measure into the most manageable measurement. Use the conversion chart (below) to assist with the activity.

ORIGINAL UNIT OF MEASURE		MOST MANAGEABLE UNIT OF MEASURE	
INGREDIENT	UNIT OF MEASURE	INGREDIENT	UNIT OF MEASURE
Flour	40 oz	Flour	
Vegetable Oil	6 cups	Vegetable Oil	
Ground Turkey	8.75 lb	Ground Turkey	
Black Pepper	7 tsp	Black Pepper	
Skim Milk	50 fl oz	Skim Milk	
Diced Celery	74 oz	Diced Celery	

ACTIVITY: Manageable Units of Measure — KEY

Instructions: Review the measurements below. Identify which measurements need to be adjusted to provide the most manageable unit of measure. Convert the identified units of measure into the most manageable measurement. Use the conversion chart (below) to assist with the activity.

ORIGINAL UNIT OF MEASURE		MOST MANAGEABLE UNIT OF MEASURE	
INGREDIENT	UNIT OF MEASURE	INGREDIENT	UNIT OF MEASURE
Flour	40 oz	Flour	2 lb + 8 oz
Vegetable Oil	6 cups	Vegetable Oil	1 qt + 2 cup
Ground Turkey	8.75 lb	Ground Turkey	8 lb + 12 oz
Black Pepper	7 tsp	Black Pepper	⅛ cup + 1 tsp
Skim Milk	50 fl oz	Skim Milk	1.5 qt + ¼ cup
Diced Celery	74 oz	Diced Celery	4 lb + 10 oz

RECIPE PREPARATION DIRECTIONS

Detailed directions should be included with each recipe to indicate how ingredients are to be combined. The directions should list, in order, the steps to be followed in preparing the recipe. Alternative preparation methods and helpful cooking tips may also be included.

All preparation and cooking terms should be reviewed to make sure staff members understand exactly what each means. If the correct procedures are not used, the final product will not be correct.

Tips for Writing Recipe Preparation Directions

- Detailed directions should be included with each recipe to indicate how to combine ingredients.
  - List directions with the corresponding ingredients.
  - The directions should list, in order, the steps to be followed in preparing the recipe.
- Ensure directions and cooking terms are clear and easily understood by the food production team or the individual preparing the recipe.
- Include pre-preparation steps as needed. For example:
  - Defrost product 3 days prior
  - Pre-heat oven at 375 °F for 15 minutes
- Include all Critical Control Points (CCP) throughout the production process.
- Include exact or near-exact preparation and cooking times.
- If the recipe has different elements, such as crust and filling, break the recipe into sections that correspond with the ingredients in each element.
- List ingredients that are to be combined using the same method of incorporation (such as in a baking recipe, combining all the wet ingredients at once) by descending (high to low) weight or volume.
- If the preparation method is simple, include the preparation method in the ingredient list. Such as “Yellow onion, 1 cup, ¼-inch diced” or “Canned black beans, 3 lb, rinsed.”
- Indicate the size or type of cookware or utensils to be used. Such as “8-quart mixing bowl,” “2-inch stainless steel hotel pan,” or “turner, perforated 8-inch.”
- Include information such as serving size, serving (portioning) utensil, service ware (disposable- such as 2 oz soufflé cup, or 9” x 9” grab-and-go carton), and any garnish information.
- If applicable, include directions for storage of leftover portions.
- Be as concise as possible. Limit extra or unneeded words.

Preparation and cooking times help the food production team or individual preparing the recipe manage their time. This information also helps the menu planner develop cycle menus. Understanding the amount of time each recipe takes to prepare will help the menu planner identify which recipes work well, from a production point of view, on which days.

Cooking time and temperature should be identified on the recipe; additionally, the amount of time required to prepare the recipe should be specified. This includes time for chopping or dicing ingredients, assembling the recipe, preparing individual servings, or placing items on a baking sheet, etc.

The final internal temperature of the prepared foods also should be identified. Specifying a final internal temperature for the product will ensure that products are cooked safely and properly.

ICN Food Safety Tools and Resources

The Institute of Child Nutrition provides a wide variety of food safety resources that can assist recipe developers and program operators in ensuring their recipes and programs have the most up-to-date food safety procedures. Topics include employee health and hygiene, food safety standard operating procedures (SOPs), cooking and cooling procedures, and much more.

Please visit theicn.org/icn-resources-a-z/food-safety for the most up-to-date tools and resources.

Additional Resource
The Safe Recipe Style Guide provides easy edits to any recipe to improve food safety practices. Please visit: https://www.saferecipeguide.org/

Please check with your state or local health authority for guidance related to safe internal cooking temperatures.

SERVING SIZE AND YIELD

Serving the correct portion size is critical for maintaining the integrity of the recipes' nutritional value and meeting meal pattern requirements.

Proper portion control ensures the recipe yields the correct number of servings.

Serving Size

The size of an individual serving should be listed on the recipe. You will want to also assess the appropriateness of the serving size for each age group.

List the weight and volume of the serving. The weight and volume of the serving are needed for the nutrient analysis and should be provided for the yield information. Assess whether the serving size is appropriate for the age group being served.

Identify the weight of one serving and the general description of serving size.

- Give this information in a reasonable amount, such as ½ cup, 1 slice, 2 squares, etc.
- Provide information regarding the correct serving utensil to use when portioning food items.

Identifying proper serving sizes helps to ensure the correct portion of food is being served. Incorrect portioning can lead to:

- Running out of food on the service line or when plating meals
- Inaccurate nutritional makeup of the serving
- Increase in food and labor costs
- Unsatisfied customers

Yield

Recipe yield refers to the amount of product that will be obtained when preparing a recipe. Provide the amount of the finished or processed product (weight, volume, and number of servings) available at the completion of production.

Identify recipe yield in total weight and/or volume, as well as a more general description such as 50 servings or 8 (12" x 20" x 4") pans. Include the number of servings per pan. For example, each 2" full pan yields (50) servings.

EQUIPMENT AND TOOLS

Standardized recipes yield consistent results when replicated using the same ingredients and equipment. Therefore the recipes must be standardized to the production site and the specific equipment available at the site. As mentioned at the beginning of the training, this applies to new recipes, not recipes that have already been successfully standardized by the program.

Recipes may include detailed alternative preparation methods highlighting the preparation steps, times, and equipment needed to produce the recipe in the alternative method accurately.

Tips for Listing Equipment and Tools

- List the cooking and serving equipment needed to prepare and serve the recipe.

- School foodservice kitchens come equipped with a variety of pieces of equipment.
    - Different pieces of equipment can be used to achieve the same outcome.
        - For example, use a convection or conventional oven to bake a casserole, or use a steamer, tilt-skillet (braising pan), steam-jacketed kettle, or oven for cooking rice or pasta.
    - Identify the exact piece(s) of equipment required to prepare and cook the product.

- Always consider the capacity of the cooking equipment.
    - For example, the site may need 1,000 rolls made, but if the mixer capacity cannot hold the needed quantity of ingredients, the site must prepare the recipe in batch sizes the mixer can accommodate.

- Determine cooking time and temperature based on the specific piece of equipment used to prepare the recipe.

- Identify the pans needed to produce and serve the product.
    - Include the length, width, and depth of the pans.

- List the utensil(s) for portioning and/or serving the product on the recipe.

CREDITING INFORMATION

The crediting statement is a crucial component for identifying how the recipe contributes to the meal pattern. Including the crediting statement on the recipe helps foodservice workers and menu planners assess how the recipe contributes to the daily menu's meal pattern compliance.

Each meal component has a minimum creditable amount. Crediting refers to how a food counts toward the required meal component for reimbursement.

The crediting statement identifies which NSLP/SBP food component(s) the ingredients in the recipe can count toward:

- Meats/meat alternates
- Vegetables (including subgroups)
- Fruits
- Grains

The minimum creditable amount is the smallest portion of food that counts toward meal component requirements, for example, ⅛ cup green beans. Understanding minimum creditable amounts helps you plan reimbursable meals while considering food costs. If you serve food items in portions smaller than the minimum creditable amount, they cannot count toward reimbursement requirements.

Beans, peas, and lentils may be credited toward more than one food component, include a crediting statement for both.

- Example: 2 Bean tostadas provide:
  - Legume as Meat Alternate: 2 oz equivalent meat/meat alternate, ⅛ cup red/orange vegetable, ¼ cup other vegetable, ⅛ cup additional vegetable, and 1 oz equivalent grains.

OR

  - Legume as Vegetable: 0.5 oz equivalent meat/meat alternate, ⅜ cup legume vegetable, ⅛ cup red/orange vegetable, ¼ cup other vegetable, cup additional vegetable, and 1 oz equivalent grains.

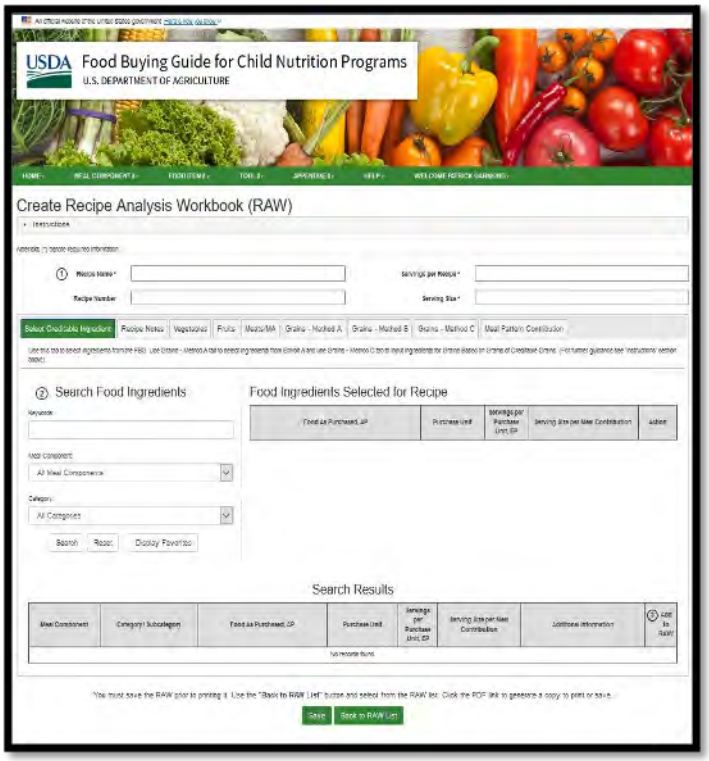
Reviewing the crediting statement on the recipe is helpful when unplanned substitutions are necessary. Site staff can use the crediting statement to identify the component(s) that need substitution and search for alternative recipes that will meet the planned menu's meal pattern requirements.

SAMPLE: Crediting Statement – Bean Tostada USDA Recipe for Schools

Recipe Analysis Workbook (RAW)

Determining meal pattern contributions for recipes is an important step in ensuring that meals served are nutritious and meet Federal meal pattern requirements. When developing recipes it is important to use the *Recipe Analysis Workbook* (RAW) to determine the crediting statement.

The Recipe Analysis Workbook is a tool for calculating the meal pattern contribution of a recipe's ingredients toward the vegetables (expressed in subgroups), fruits, meats/meat alternates, and grains components of the Federal meal pattern requirements.



The Recipe Analysis Workbook determines the meal pattern contribution of recipes served in the National School Lunch Program (NSLP) and School Breakfast Program (SBP). The information may also be used to determine the meal pattern contribution of recipes served in the Child and Adult Care Food Program (CACFP), Summer Food Service Program (SFSP), and NSLP Afterschool Snack Service.

The Recipe Analysis Workbook (RAW) is available at https://foodbuyingguide.fns.usda.gov/

STEPS TO COMPLETE THE RECIPE ANALYSIS WORKBOOK

Search and select only the recipe food ingredients that contribute to the meal pattern. These ingredients will automatically populate under the appropriate meal component tabs. It is important to select the correct form of the ingredient (fresh, frozen, etc.) from the Food Buying Guide (FBG). If an exact match is not available, choose a food item in the FBG that closely matches your recipe ingredient.

Please note there are three methods to calculate meal pattern contribution for grains:

Method A

based on Exhibit A – Go to this tab to search and select ingredients from Exhibit A.

Method B

based on Food Buying Guide – This tab will automatically populate if food ingredients are selected from the search below.

Method C

based on Grams of Creditable Grains – Go to this tab to manually enter grain ingredients. Use Method C for grain ingredients used in finished products that are listed in Groups A-I in Exhibit A. For example, your recipe is a roll (Group B) or a muffin (Group D).

NOTE: These instruction steps correspond to the numbers listed next to the data entry fields below.

1. Enter Recipe Name, Servings per Recipe, and Serving Size. These fields are required for to calculate the Meal Pattern Contribution. The Recipe Number field is optional. Select a Folder to place the RAW into (optional).
2. Search for food ingredients as listed in the Food Buying Guide.
3. Click the Add button to select the ingredient from the search results. The ingredient will display in the Food Ingredients Selected for Recipe table and on the corresponding Meal Component tab.

Vegetables, Fruits, Meats/Meat Alternates, and Grains – Method B tabs – for each ingredient:

4. Enter Quantity of Ingredient.
5. Enter Prepared Yield (if applicable).
6. Calculated Quantity to Purchase will automatically calculate. Meal Pattern Contribution will calculate per Meal Component and display on the Meal Pattern Contribution tab.

Grains – Method A – for each ingredient:

4. Search for ingredients as listed in Exhibit A.
5. Click the Add button to select the ingredient from the search results.
6. Enter Quantity of Product.
7. Enter Weight of One Unit.
8. Enter Measurement Unit.
9. Quantity of Product in Ounces will automatically calculate. Grains Meal Pattern Contribution will calculate and display on the Meal Pattern Contribution tab.

Grains – Method C – for each ingredient:

4. Click Add New Ingredient button to enter a creditable grain ingredient.
5. Enter Description of the Creditable Grain Ingredient.
6. From the drop-down menu, select the Exhibit A Group (A - I) that the End Product Belongs To.
7. Enter Quantity of Ingredient in Grams.
8. The Gram Standard of Creditable Grain per Oz Equivalent will automatically populate.
9. Grains Meal Pattern Contribution will calculate and display on the Meal Pattern Contribution tab.

NUTRIENT ANALYSIS

Performing an accurate nutrient analysis is critical to the evaluation of menus and menu documentation. School meals provide the essential nutrients students need because of the meal pattern requirements. This section of the recipe identifies the nutrients provided per recipe per serving. The purpose of the nutrient analysis is to determine compliance with school meal regulatory requirements for calories, saturated fat, and sodium and to monitor levels of these dietary components in school meals.

The nutrient content of foods may vary greatly depending on the method of preparation. As foods cook, they may lose moisture and nutrients. All ingredients in recipes prepared “from scratch” must be entered into the computer using the Yield Factor Method to account for nutrient value changes due to preparation and cooking.

NUTRITION INFORMATION
For 2 tostadas.

NUTRIENTS	AMOUNT
Calories	**246**
Total Fat	**9 g**
Saturated Fat	3 g
Cholesterol	8 mg
Sodium	**437 mg**
Total Carbohydrate	**35 g**
Dietary Fiber	7 g
Total Sugars	3 g
Added Sugars included	N/A
Protein	**11 g**
Vitamin D	2 IU
Calcium	236 mg
Iron	2 mg
Potassium	351 mg

At a minimum, include a nutrient analysis that includes calories, saturated fat, and sodium. Your USDA-approved software may have the capability to analyze additional nutrients.

The following nutritional targets (per serving) will help in meeting overall nutrient requirements.

- Contain 200 mg or less of sodium/serving for side dish items; and 450 mg or less of sodium/serving for entrees.
- Total fat shall not exceed 35% of calories.
- Saturated fat must be less than 10% of total calories.

Grains shall meet USDA’s definition for whole-grain rich.

The USDA has approved several software programs for conducting the Nutrient Analysis of recipes. Visit www.fns.usda.gov/tn/usda-approved-nutrient-analysis-software for an up-to-date listing of approved software.

RECIPE NUTRIENT ANALYSIS – A FIVE-STEP PROCESS

STEP 1

Gathering Materials

- Nutrient information for ingredients used in recipes that are not already loaded (included) into the software database
- Collect Nutrition Facts labels or the manufacturer's nutrient data statement (spec sheet) from the food items in the recipe
- Utilize the USDA Nutrient Database, USDA FoodData Central, for food items without a Nutrition Facts label
    - FoodData Central (usda.gov)

STEP 2

Entering Food Items (Ingredients) into the Local Database

- Assign each new food product an identification number. Some software will auto-assign numbers.
- Enter a description of the food item/ingredient.
- Enter or select a food category for the food item/ingredient.
- Identify the source of the data as "Local," "school name," or "user-added."
- If the product is commercially prepared, enter the name of the manufacturer and/or brand name.
- Enter the unit(s) of measurement for the food item/ingredient.
- Enter the nutrient composition information
    - Include information from the product's Nutrition Facts label or the USDA Nutrient Database
    - Include weight and volume measurements
- Ensure all ingredients are accounted for.
    - If the Nutrition Facts label or the manufacturer's nutrient data statement indicates there is an insignificant amount of a nutrient, enter zero ("0") for the nutrient value

STEP 3

Adding the Recipe to the Local Database

- Recipes nutrient analyses are based on the form in which the food is consumed. If quantity recipes include raw ingredients that will be cooked or further prepared before consuming, they will need to be converted to the ingredients edible prepared or cooked form. This is referred to as the Yield Factor Method (utilize the *USDA Food Buying Guide* to obtain the Yield Factor for ingredients)
- Basic Rules for the Yield Factor Method
    - Use the form and portion of the food as served.
    - Select raw if not heated or cooked.
    - If cooked before serving, select cooked (or a cooked preparation method) using the database food code for the cooked ingredient.
    - Convert the amount to the prepared amount (yield after preparation or cooking)

STEP 4

Entering Specific Menu Planning Data

- Identify the age group for the recipe
- Identify the meal type – breakfast or lunch
- Determine the number of servings and serving size

STEP 5

Evaluating the Recipe for Dietary Specifications Requirements

- Review the SFA established nutrient threshold for menu items
- Review any changes in the quantity and/or product specifications of the recipe ingredients – adjust as needed

MARKETING GUIDE

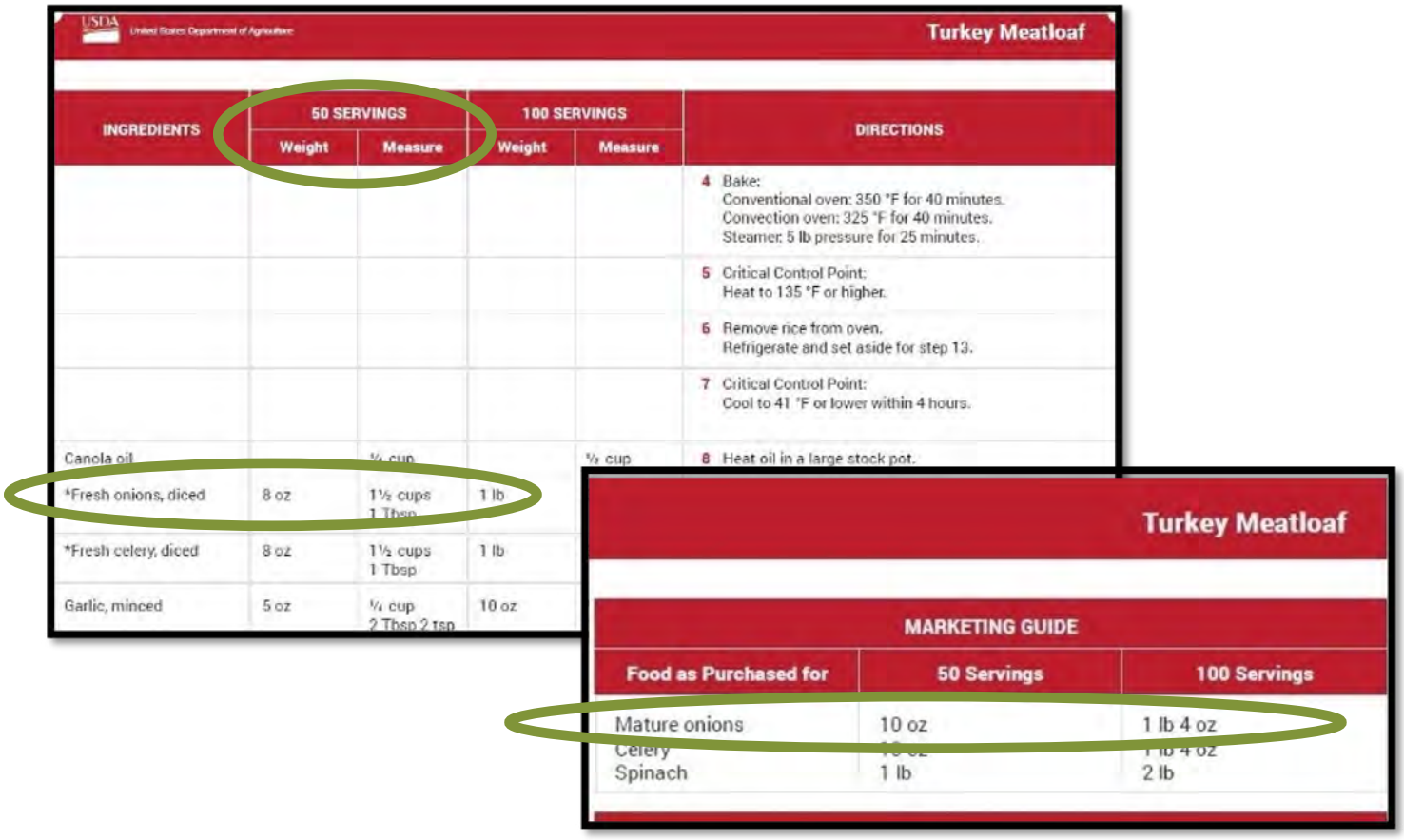
The recipe Marketing Guide is a table that shows the amount of each fresh vegetable (or fruit) to purchase that, when trimmed, provides the amount the recipe requires. Recipes call for a specific amount of an ingredient. However, the ingredient amount is seldom equal to the purchasing amount for many types of food. Marketing Guides help prevent under- and over-purchasing. Adding a Marketing Guide to all of your school recipes is strongly recommended. USDA recipes provide information to assist in purchasing necessary quantities of food for recipe production.

The marketing guide section of each recipe provides purchasing information, including:

- Food As Purchased (AP) – lists each food item to purchase
- Food quantity to purchase for each recipe yield; for example, 50 servings or 100 servings

Example

Using the USDA Turkey Meatloaf Recipe as an example, the 50-serving recipe calls for 8 oz of diced fresh onions. The marketing guide shows that 10 oz of mature onions will trim and dice to 8 oz. Both of these measurements are weight. A volume amount of diced onion is also provided: 1½ cups + 1 Tbsp for 8 oz. When appropriate, both weight and volume are listed in the recipe.



Turkey Meatloaf

INGREDIENTS	50 SERVINGS		100 SERVINGS		DIRECTIONS
	Weight	Measure	Weight	Measure	
					4 Bake: Conventional oven: 350 °F for 40 minutes. Convection oven: 325 °F for 40 minutes. Steamer: 5 lb pressure for 25 minutes.
					5 Critical Control Point: Heat to 135 °F or higher.
					6 Remove rice from oven. Refrigerate and set aside for step 13.
					7 Critical Control Point: Cool to 41 °F or lower within 4 hours.
Canola oil		¼ cup		½ cup	8 Heat oil in a large stock pot.
*Fresh onions, diced	8 oz	1½ cups 1 Tbsp	1 lb		
*Fresh celery, diced	8 oz	1½ cups 1 Tbsp	1 lb		
Garlic, minced	5 oz	¼ cup 2 Tbsp 2 tsp	10 oz		

Turkey Meatloaf

MARKETING GUIDE

Food as Purchased for	50 Servings	100 Servings
Mature onions	10 oz	1 lb 4 oz
Celery	[illegible]	[illegible]
Spinach	1 lb	2 lb

The *Food Buying Guide for Child Nutrition Programs* (FBG) shows how to determine marketing guide quantities. Use the FBG information under the Additional Information Column. Here you see that 1 lb fresh mature onions, when trimmed and cooked, yield about 0.78 lb of the finished product.

Meal Component	Vegetables
Meal Category	Other Vegetables[1]
Subcategory	ONIONS, MATURE
Food As Purchased, AP	**Onions, Mature, fresh** *All sizes, Whole*
Purchase Unit	Pound
Servings per Purchase Unit, EP	7.90
Serving Size per Meal Contribution	1/4 cup cooked vegetable pieces
Purchase Units for 100 Servings	12.70
Additional Information	1 lb AP = 0.78 lb cooked onion; 1 lb AP = 0.88 lb ready-to-serve or -cook raw onion
Footnote	[1] For the purposes of the NSLP, the "Other Vegetables" requirement may be met with any additional amounts from the dark green, red/orange, and beans/peas (legumes) vegetable subgroups as defined in § 210.10(c)(2)(iii). Additional documentation from the vendor would be necessary to determine crediting.

FOOD SAFETY GUIDELINES

Food safety must be at the forefront of all aspects of food production. Including food safety information in the recipe helps ensure the production team understands and follows safe food handling practices.

Include the appropriate food safety temperature for any ingredients that require one. This includes cooking, chilling, and final hot or cold holding temperatures. As applicable, include information about food allergens or developmental considerations. For example: choking hazards for young children.

A recipe must include procedures designed to ensure the safe production and service of food. Indicate Hazard Analysis Critical Control Point (HACCP) information, if appropriate.

UNDERSTANDING FOOD SAFETY GUIDELINES

Important HACCP Terms

Hazard Analysis – review of operation to identify areas where food safety problems may occur.

Control Measures – steps to reduce food contamination or bacterial growth.

Critical Control Points (CCPs) – points in food preparation where process control (example – cooking) is essential to keep food safe.

Critical Limits – time and temperature range for food preparation and service for keeping food safe (hot, 135 °F or higher; cold, 41 °F or lower).

Process Approach – a HACCP method of grouping menu items into one of three processes depending upon the number of times food goes through the temperature danger zone (41 °F to 135 °F).

Process #1 – No Cook

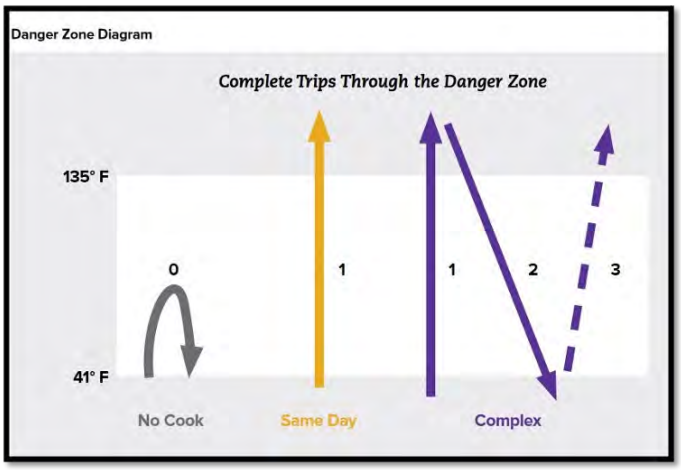
- The menu item does not go through the entire danger zone at any time.
- Example: Melon is washed, peeled, cut, and held for service at 41 °F or lower.

Process #2 – Same Day Service

- The menu item goes through the danger zone once during cooking.
- Example: Pizza is cooked to 165 °F; held for service at 135 °F or higher; leftovers discarded.

Process #3 – Complex Food Preparation

- The menu item goes through the temperature danger zone at least twice, first heating (cooking) and then proper cooling for future use.



RECIPE VERIFICATION PHASE

WRITING AND REVIEWING THE RECIPE

When reviewing the recipe, it is strongly encouraged to include the food production team in the review process; after all, they will ultimately be the people producing the recipe when it is incorporated into the program's menu.

In addition to verifying you have included all of the information required for a standardized recipe, you will also want to evaluate the following areas:

Execution of the recipe

- Does the production site have the equipment and staff skill level needed to produce the recipe?

Ingredient sourcing

- Are the ingredients selected readily available at the time of year the recipe is planned to be served?
- Does the cost of the ingredients work within the food budget?

Production schedule

- How long will it take to prepare the recipe from start to finish?
- How will that impact other menu items?
- What equipment will be needed to prepare the recipe, and will there be conflicts with other menu items being prepared using the same equipment?

Menu mix

- How will the recipe be incorporated into the menu?
- Which other menu items will be offered the same day/meal period?
- What main dish or side will accompany the recipe?

Likeability

- Is this a recipe that will be well received by your customers?
- Have the customers' needs and expectations been met, allowing for the recipe to be successfully implemented?

Get feedback and buy-in from the production staff. Since the staff will be responsible for executing the recipe, gaining their support and buy-in from the onset will be critical as your team works through all of the standardization process steps.

There are many steps in the initial development of a recipe, but putting the work in on the front end will help save time and money in the long run.

Once the recipe has been developed and entered into the local recipe management software, you will need to evaluate the recipe's nutrition composition and meal component contribution (crediting statement) with the food production team.

- Ask the staff to provide feedback regarding each of the areas:
  - Recipe title
  - Ingredients
  - Directions
  - Cooking and preparation times

Use the Recipe Review Checklist to verify all of the components have been included.

RECIPE REVIEW
CHECKLIST

The recipe review checklist is a tool to verify the recipe includes all of the information required to move into the recipe testing phase.

REVIEW STEPS	QUESTIONS	YES	NO	N/A	ACTION NEEDED
Title	Does the title reflect the content?				
	Is the title appealing to customers?				
Recipe Category	Are recipes organized by category?				
Ingredients	Are all the ingredient names clear?				
	Are the ingredients listed in the order they are used?				
	Does each ingredient name indicate product type/form (i.e., fresh, frozen, canned [drained, packed in syrup, packed in juice], dried, dehydrated, cooked)?				
	Does each ingredient name indicate the pre-preparation technique to be applied to the ingredient (i.e., peeled, sliced, chopped, diced, grated, minced) and size, if applicable (¼ inch, ½ inch)?				
Weight or volume	Is there a weight or volume listed for each ingredient?				
Directions	Do the written directions clearly describe exactly what needs to be done to prepare the recipe?				

REVIEW STEPS	QUESTIONS	YES	NO	N/A	ACTION NEEDED
Food preparation (hot and cold) and holding temperature and cooking and preparation time	Is the preparation temperature stated on the recipe?				
	Is the cooking time stated on the recipe?				
	Have time standards been established for the preparation of the recipe?				
Serving Size	Is the serving size stated on the recipe?				
	Is the serving weight given?				
	Are directions given for how to divide the product into individual servings?				
Recipe Yield	Is the recipe yield indicated?				
Equipment	If preparation equipment is needed, is it indicated?				
	Is the cooking equipment indicated?				
	Is the serving utensil listed?				
Food Safety Guidelines	Have the Critical Control Points been identified for each step of the process?				
	Has a HACCP Approach Process been identified?				
Nutrient Analysis	Is the nutrient analysis accurate and meets the desired nutrient profile?				
Crediting Statement	Are meal components appropriately credited?				

RECIPE REVIEW CHECKLIST
DECISION GUIDE

REVIEW STEPS	QUESTIONS	YES	NO	N/A	ACTION NEEDED
Title	Does the title reflect the content?				• If yes, leave the title as listed, move to next title question. • If no, consider new title.
	Is the title appealing to customers?				• If yes, leave title as listed, move to next review step. • If no, consider alternate title to be used on menu.
Recipe Category	Are recipes organized by category?				• If yes, move to next review step. • If no, identify recipe category on recipe.
Ingredients	Are all the ingredient names clear?				• If yes, move to next ingredient question. • If no, rewrite ingredient name.
	Are the ingredients listed in the order they are used?				• If yes, move to next ingredient question. • If no, change order so ingredients are listed in order used.
	Does each ingredient name indicate product type/form (i.e., fresh, frozen, canned [drained, packed in syrup, packed in juice], dried, dehydrated, cooked)?				• If yes, move to next ingredient question. • If no, add product type information to ingredient name.
	Does each ingredient name indicate the pre-preparation technique to be applied to the ingredient (i.e., peeled, sliced, chopped, diced, grated, minced) and size, if applicable (¼ inch, ½ inch)?				• If yes, move to next review step. • If no, indicate the preparation technique to the ingredient name.
Weight or volume	Is there a weight or volume listed for each ingredient?				• If yes, move to next review step. • If no, indicate weight (preferred) or volume for each ingredient.
Directions	Do the written directions clearly describe exactly what needs to be done to prepare the recipe?				• If yes, move to next review step. • If no, write specific directions for preparing the recipe.

REVIEW STEPS	QUESTIONS	YES	NO	N/A	ACTION NEEDED
Food preparation (hot and cold) and holding temperature and cooking and preparation time	Is the preparation temperature stated on the recipe?				• If yes, move to next preparation temperature and time question. • If no, write down the cooking temperature.
	Is the cooking time stated on the recipe?				• If yes, move to next review step. • If no, write cooking time on the recipe.
	Have time standards been established for the preparation of the recipe?				• If yes, move to next review step. • If no, write the preparation times on the recipe.
Serving Size	Is the serving size stated on the recipe?				• If yes, move to next serving size question. • If no, the serving size will need to be determined when the recipe is prepared as part of the Verification Phase and written on recipe.
	Is the serving weight given?				• If yes, move to next serving size question. • If no, the serving size weight will need to be determined when the recipe is made during the Verification Phase and written on recipe.
	Are directions given for how to divide the product into individual servings?				• If yes, move to next review step. • If no, write the directions for portioning the product.
Recipe Yield	Is the recipe yield indicated?				• If yes, move to next review step. • If no, the yield will need to be determined when the recipe is made during Verification Phase and written on recipe.
Equipment	If preparation equipment is needed, is it indicated?				• If yes, move to next equipment question. • If no, write down what size pan should be used.
	Is the cooking equipment indicated?				• If yes, move to next equipment question. • If no, write down which piece(s) of equipment should be used.
	Is the serving utensil listed?				• If yes, move to next review step. • If no, indicate the serving utensil.

REVIEW STEPS	QUESTIONS	YES	NO	N/A	ACTION NEEDED
Food Safety Guidelines	Have the Critical Control Points been identified for each step of the process?				• If yes, move to next review step. • If no, indicate the proper CCP.
	Has a HACCP Approach Process been identified?				• If yes, move to next review step. • If no, indicate the proper Process Approach.
Nutrient Analysis	Is the nutrient analysis accurate and meets the desired nutrient profile?				• If yes, move to next review step. • If no, conduct a nutrient analysis of the recipe.
Crediting Statement	Are meal components appropriately credited?				• If yes, the review is complete • If no, use the *Recipe Analysis Work Book* and/or *Exhibit A* tool to complete the crediting statement.

SMALL BATCH TESTING

The Product Evaluation is conducted in two parts and focuses on determining the acceptability of the product produced from the recipe.

- Informal Evaluation — The recipe development team conducts a taste test
- Formal Evaluation — A taste test is conducted with program stakeholders

To streamline the process and reduce food waste, the informal evaluation can be conducted at the same time as the Small Batch Taste-Testing occurs. You may also choose to conduct an informal evaluation with the recipe development team and then conduct an additional informal evaluation with a larger number of program staff.

Once the recipe has gone through the initial steps of the Recipe Verification Phase, create a small batch of the recipe. The recommended small batch size is 25 servings. It is relatively simple to scale up a recipe from 25 servings. Throughout the process of making the small-batch version of the recipe, taste as you go, and keep careful notes about any variations you make. Record this information directly on the recipe for future reference.

There are several tools you can use to determine if the recipe will meet your program's desired outcome. Included in this guide are templates you can use to conduct the informal evaluation of the recipe. These include an Informal Evaluation Checklist and Decision Guide as well as Quality Score Cards for a variety of food items and recipes.

INFORMAL EVALUATION
CHECKLIST

QUESTIONS	YES	NO	CORRECTIVE ACTION
Is the visual appearance of the product acceptable?			
Is the flavor of the product one that students might enjoy?			
Are the ingredients in the recipe easily obtained?			
Is the texture of the recipe correct?			
Is the labor time to make the product within foodservice department guidelines?			
Do employees possess the skills to prepare this item?			
Is the recipe within nutrition guidelines/goals?			
Is the equipment available to prepare this item?			
Is the recipe acceptable enough to continue with more evaluation?			

Decision Guidelines

- If the answer is yes to all of the above questions, then proceed to the Formal Evaluation Phase of the recipe.
- If the answer is no to one or two of the above questions, return to the recipe Preparation Phase, make necessary corrections to the draft recipe, and do another small batch taste-testing and informal evaluation.
- If the answer is no to three or more of the above questions, strong consideration should be given to not continuing with this recipe's standardization.

QUALITY SCORECARD
FOR MEAT, POULTRY, AND FISH

Date: Name of Menu Item:

Proudly Prepared by: Quality Scored by:

Instructions: When the food is ready to serve, use this Quality Scorecard to evaluate the quality. Mark **YES** when the food meets the standard and **NO** when it does not. Mark **NA** (Not Applicable) when a specific quality standard does not apply to the evaluated food. Use the **COMMENTS** section to explain why a food does not meet a standard.

Remember, if a food does not meet the quality standards, it should not be placed on the serving line.

QUALITY STANDARDS	YES	NO	N/A	COMMENTS
APPEARANCE				
Product appears moist.				
Product has been trimmed of any excess visible fat.				
Product has been drained, and no cooking fat is visible.				
Color is a rich brown, characteristic of the meat, poultry, or fish item.				
Browning is even and correct for the product (not too brown).				
Portions are uniform in size.				
Portions maintain integrity when being held during service.				
TEXTURE OR CONSISTENCY				
Product is tender and easily chewed.				
Product can be pierced with a fork with minimum pressure.				
Product is firm and moist.				
FLAVOR AND SEASONING				
Product is juicy.				
Flavor is fresh and appropriate for the product (no refrigerator taste or freezer burn).				
Seasonings enhance but do not overpower the taste (no greasy taste, not too much salt).				
SERVICE TEMPERATURE				
Meat or poultry products served cold – 40 °F or below				
Meat and poultry products served hot – 135 °F or above				

QUALITY SCORECARD
FOR SANDWICHES

Date: Name of Menu Item:

Proudly Prepared by: Quality Scored by:

Instructions: When the food is ready to serve, use this Quality Scorecard to evaluate the quality. Mark **YES** when the food meets the standard and **NO** when it does not. Mark **NA** (Not Applicable) when a specific quality standard does not apply to the evaluated food. Use the **COMMENTS** section to explain why a food does not meet a standard.

Remember, if a food does not meet the quality standards, it should not be placed on the serving line.

QUALITY STANDARDS	YES	NO	N/A	COMMENTS
APPEARANCE				
The proportion of sandwich filling to bread is balanced.				
Vegetable accompaniments are attractive and not wilted.				
If sandwich is toasted, the color of the bread is even and golden.				
TEXTURE OR CONSISTENCY				
Sandwich bread is fresh.				
Crumb is moist but not doughy.				
Vegetables, if used, are crisp.				
FLAVOR AND SEASONING				
Flavors of the filling, spread, and accompaniments complement each other.				
Bread is free from unexpected flavors such as rancid fat or sour taste.				
SERVICE TEMPERATURE				
Cold sandwiches: 34 °F – 38 °F				
Hot sandwiches: 135 °F or above				

QUALITY SCORECARD
FOR PASTA, RICE, GRAINS

Date: Name of Menu Item:

Proudly Prepared by: Quality Scored by:

Instructions: When the food is ready to serve, use this Quality Scorecard to evaluate the quality. Mark **YES** when the food meets the standard and **NO** when it does not. Mark **NA** (Not Applicable) when a specific quality standard does not apply to the evaluated food. Use the **COMMENTS** section to explain why a food does not meet a standard.

Remember, if a food does not meet the quality standards, it should not be placed on the serving line.

QUALITY STANDARDS	YES	NO	N/A	COMMENTS
APPEARANCE				
Pasta strands or pieces are distinct.				
Rice grains are intact (still whole).				
Grains/cereals have distinct particles, grains, or flakes.				
Product is moist but not watery.				
No oil or fat is visible.				
TEXTURE OR CONSISTENCY				
Pasta pieces are tender (*al dente*) but not gummy.				
Rice/grains are firm but tender, fluffy.				
Cereal is thick but not gummy.				
Portions maintain integrity when being held during service.				
Product does not have lumps.				
FLAVOR AND SEASONING				
Flavor is bland but does not taste starchy.				
Flavor is typical of the grain.				
Product is free from a scorched or burned taste.				
A mixed dish is well seasoned but not to excess.				
SERVICE TEMPERATURE				
Hot pasta, rice, and grain dishes – 135 °F or above				
Cold pasta, rice, or grain salads – 34 °F – 38 °F				

QUALITY SCORECARD
FOR COOKED VEGETABLES

Date: Name of Menu Item:

Proudly Prepared by: Quality Scored by:

Instructions: When the food is ready to serve, use this Quality Scorecard to evaluate the quality. Mark **YES** when the food meets the standard and **NO** when it does not. Mark **NA** (Not Applicable) when a specific quality standard does not apply to the evaluated food. Use the **COMMENTS** section to explain why a food does not meet a standard.

Remember, if a food does not meet the quality standards, it should not be placed on the serving line.

QUALITY STANDARDS	YES	NO	N/A	COMMENTS
APPEARANCE				
Bright color typical of the vegetable.				
Vegetable pieces are similar in size.				
Vegetable pieces are intact (pieces are not overcooked with a mushy appearance).				
Garnish is edible and appropriate for the dish.				
TEXTURE OR CONSISTENCY				
Vegetable is fork-tender (slightly crisp and not overcooked).				
All pieces of the vegetable have the same texture.				
Vegetables in casserole-type recipes are well blended, tender, and identifiable.				
FLAVOR AND SEASONING				
Vegetable has a definite, good flavor.				
Seasonings are detectable but not overpowering.				
Seasonings enhance the vegetable flavor.				
A minimal amount of salt has been added (according to the recipe, if applicable).				
If a sauce is used, it complements the vegetable (mild, not overpowering).				
SERVICE TEMPERATURE				
Hot – 135 °F or above				

RECIPE YIELD VERIFICATION

Once the recipe has been tried and tested in a small batch and adjustments to the original recipe have been made, you will need to verify the recipe for accuracy. Yield accuracy is critical for ensuring that the nutritional composition and number of portions between the written and prepared recipes correspond.

Verify the correct yield has been reached

- Verifying yields includes verification that the ingredients, recipe, and serving yields are accurate.
- When verifying a recipe, the As Purchased (AP) quantity needed to yield the necessary Edible Portion (EP) quantity of an ingredient must be determined.
- Yields can vary depending on product quality, preparation techniques, cooking times, and temperatures.
- Recipe yield verification occurs once all of the ingredients have been combined, and the recipe preparation is completed.

How to determine yield

- Recipe yield should be specified in both the total quantity (weight and volume) and the number of servings.
- Recipe yield can be determined by weighing the final product or measuring its volume.
- The weight of a serving is determined by taking the total final product's weight and dividing it by the number of servings the recipe makes.
- Guidelines for portioning the product into individual servings must be included in the recipe.
- A serving utensil should be identified for each product.
- Weights of these actual servings should be compared to the calculated serving weight to ensure portioning is being done correctly.
- If the desired serving size is not achieved when verifying the yield, changes in the recipe, portioning, or ingredient amounts may be needed.

VERIFY NUTRIENT ANALYSIS AND CREDITING STATEMENT

Once the correct yield has been verified, the next step is to re-analyze the recipe using USDA-approved Nutrient Analysis Software. Even small changes that may have occurred to a recipe during small-batch testing can have a massive impact on the overall contribution to pattern requirements and nutrition standards.

The purpose of the nutrient analysis is to determine compliance with school meal regulatory requirements for calories, saturated fat, and sodium and to monitor these dietary components' levels in school meals.

The Crediting Statement is a crucial component for identifying how the recipe contributes to the meal pattern. Errors in crediting can cause burdensome issues.

Review the recipe in the Nutrient Analysis Software by:

- Verifying the nutrition labels of products is the same as when the recipe was first designed.
- Verify all changes to ingredient quantities (measurements) have been reconciled and are accurate in the local Nutrient Analysis Software system.

- Changes to ingredient quantities can impact:
  - Meal pattern compliance
  - Nutritional values of the recipe
- Utilize the *Food Buying Guide* and *Recipe Analysis Workbook* to verify the accuracy of meal pattern contribution.

Once the Recipe Verification Phase has been completed, you can move into the Product Evaluation Phase of Recipe Standardization.

PRODUCT EVALUATION PHASE
OVERVIEW

Product evaluation follows the recipe verification phase and is an important part of the recipe standardization process. It will help determine the acceptability of the recipe and will provide objective information that can be used to further improve the recipe.

Recipe evaluation should include the manager, foodservice staff members, and customers (can include students, teachers, administrators, and parents).

Two types of evaluation occur in the evaluation phase: informal and formal. The recipe needs to pass the informal evaluation before it goes on to the formal evaluation. The informal evaluation may have been conducted with the recipe development team during the Recipe Verification Phase. You may choose to conduct another informal evaluation with the broader school nutrition team to gather additional feedback.

INFORMAL EVALUATION PROCESS

Begin with the recipe development team are taste testers. Once a group has been selected to sample the product(s), and an evaluation form has been selected, the recipe can be prepared for evaluation. Typically, recipes for sampling are made in small quantities, such as for servings of 25.

- An assessment is made of whether efforts to standardize the recipe should continue.
- Use the Food Product Evaluation Form, the Recipe Score Cards located in the Recipe Standardization Guide, or a form you have developed for your own program.

Three decisions are possible as a result of the informal evaluation.

1. If the product was found to be unacceptable based on several of the informal evaluation criteria, the decision might be made to discontinue any further work on standardizing the recipe.

2. If most of the informal evaluation criteria were drafted as acceptable, the recipe might go back to the verification phase to allow for changes to be made to the recipe and a new version of the recipe prepared.

3. If all evaluation criteria were rated as acceptable in the informal evaluation, then the recipe may be prepared for formal evaluation.

FORMAL EVALUATION PROCESS

The formal evaluation occurs after successfully completing the informal evaluation process when the foodservice staff believes a recipe has potential for service in their operation. Getting feedback from taste testers is key. If the taste testers do not like the recipe, it needs to be re-evaluated.

Procedures for Conducting a Formal Evaluation

Select a group(s) of people to taste the sample recipe.

- School foodservice staff members, students, and other customers should evaluate recipes during the formal evaluation of the recipe.
- Keep the group size manageable when evaluating a recipe. Usually, 10 or fewer people should sample a food item at a given time.

Choose an evaluation form.

The evaluation form used should be appropriate for the age of the group members who are sampling the food items.

- It should address the questions the school foodservice manager and employees want to be answered, be easy for the evaluators to read and complete, and should provide the information needed to adequately evaluate the product.
- When selecting or developing an evaluation form, consider:
    1. What questions need to be answered?
    2. Who will fill out the form?
    3. How the results will be tallied?

Two sample evaluation forms are included in this guide. One was developed for use with older students and staff members, and the other for younger children.

Preparing the Sample Recipe Process

Once a group has been selected to sample the product(s), and an evaluation form has been selected, the recipe can be prepared for evaluation. Typically, recipes for sampling are made in small quantities, such as for servings of 25.

Set up sampling areas - The area to be used for sampling should be prepared with drinking water, eating and serving utensils, napkins, evaluation forms, and pens or pencils.

- If more than one food item is being evaluated, evaluators should be provided with unsalted soda crackers to nibble between foods. The cracker will help prevent flavor carryover from the first food.
- Seat evaluators apart to prevent them from talking with each other during the evaluation and influencing the ratings.

Taste and Evaluate Process

Tasting procedures should be explained to those who will be evaluating the product, and the evaluation form should be reviewed with them prior to tasting.

- Remind evaluators of the importance of not making facial expressions or verbal comments about the food during the tasting. If asking for an evaluation of qualities such as moistness and/or temperature, explain what these terms mean.

Summarizing the Results Process

The evaluation form used will help determine the way results are summarized.

When evaluating a product, the total score, mean score, and individual attribute ratings should be reviewed.

Determine if Recipe Is Acceptable

Based on the formal evaluation results, the recipe will be accepted as is, rejected, or changed.

If the formal evaluation comments are positive, and the recipe is accepted as is, no further changes in ingredients will be needed. At this point, a decision is made on whether the recipe is in the correct quantity or not. If a different yield is needed, the recipe moves to the quantity adjustment phase of the recipe standardization process.

- If no additional quantity adjustment is needed, the recipe is considered standardized.
- If the evaluation comments are very poor, the recipe likely will be rejected, and no further work will be done to standardize it for an operation.
- If the evaluation comments were neither very good nor very poor, additional work on the recipe might be needed. This likely would mean that the recipe would go back through the verification phase with changes being made to ingredients, preparation directions, or cooking procedures.

TASTE-TESTING SURVEY
TEMPLATE

(For Elementary Students)

For younger grades (3rd and below), provide emoji faces to choose from instead of a b c options.

Recipe Name_____

Please read the following questions and circle your answer.
(For younger students, staff may need to read the questions to the student.)

1. Do you like the way this food looks?
    a. Yes
    b. No
    c. Don't know

2. Do you like the taste?
    a. Yes
    b. No
    c. Don't know

3. Would you try this food item if it were served in your school cafeteria?
    a. Yes
    b. No
    c. Don't know

Comments:

FOOD PRODUCT EVALUATION
TEMPLATE

(For Foodservice Staff, Students, and Teachers)

Recipe Name_____

Please rate the following traits of this product using the scale provided.

	Very Undesirable	Moderately Undesirable	Neither Desirable nor Undesirable	Moderately Desirable	Very Desirable
The **appearance** of the food	1	2	3	4	5
The **taste** of the food	1	2	3	4	5
The **temperature** of the food	1	2	3	4	5
The **texture** of the food	1	2	3	4	5
The overall **acceptability** of the food	1	2	3	4	5

Total Score_____

Comments:

EVALUATING STUDENT ACCEPTABILITY

SMALL SCALE

Students are the primary customer. Getting their feedback is key. No matter how much the adults may like a recipe, if the students do not care for it, the recipe needs to be re-evaluated.

Getting student's feedback is the final step in the recipe standardization process.

- The best way to gauge student acceptability is to conduct taste-testing with the students and collect their feedback.

To conduct a taste-test of a new recipe, keep the group size manageable.

Develop an appropriate survey for the age group the recipe is intended for and keep it simple.

Gathering feedback may take on various forms:

- Paper surveys
- Posters with stickers – "Loved it," "Liked it," "Not really my thing."
- Facilitated questions with a show of hands
- Online surveys
- Ballots boxes

When developing a survey, consider the following:

- What questions need to be answered?
- Who will fill out the form?
- How will the results be tallied?

Suggested methods for conducting a taste-test event include:

- Sample station in the cafeteria
- Incorporated into a nutrition education lesson
- In conjunction with a visit from a local farm/rancher/fisher highlighting an ingredient
- Part of a student leadership group (Associated Student Body or other Student Government group) meeting
- Work with school administration to make being a "taste-tester" a reward

Once the Evaluation Phase has been completed the final step in the process is to conduct the Quantity Adjustment Phase.

QUANTITY ADJUSTMENT PHASE

OVERVIEW

Once a recipe is accepted, you need to adjust it for quantity production. Adjusting the recipe for quantity production entails scaling the recipe to reflect the number of servings you will use in your program.

> As your team completes recipe standardization, you may find modifications necessary to create the quality and quantity required. Always test and standardize recipes before including them in your school nutrition program menus.

While many schools have software that will adjust recipes, all staff members need to receive training on quantity adjustment for recipes to understand the process. There are several ways to increase or decrease the ingredients in a standardized recipe, which is the process of scaling a recipe.
The factor method is often used in school nutrition programs during standardization.

Other methods include:

- Direct reading tables method
- Percentage method
- Computerized recipe adjustments

FACTOR METHOD OF RECIPE ADJUSTMENT

The factor method for adjusting recipes involves mathematical calculations, and is the most commonly used manual adjustment method.

- Determine the factor to be used
- Multiply each ingredient quantity by the factor
- Change the amounts into more common measurements

Factor Method Steps to Adjust Recipe Yield

Using the factor method, you can adjust the yield of a standardized recipe for your school nutrition program. Three steps in the process include:

Determine the factor to be used: the desired yield ÷ current yield = factor.

- Multiply each ingredient by the factor: current measure x factor = new measure.
- Change amounts into more common measurements: a new measure may not convert to a useful measure.

Here is an example of increasing a recipe for the first two steps:

Determine the factor to be used: desired yield ÷ current yield = factor

- Example: 250 (desired serving yield) ÷ 100 (current serving yield) = 2.5 (factor).
- Multiply each ingredient by the factor: current measure x factor = new measure
- Example: 5 pounds (current measure for 100 servings) x 2.5 (factor) = 12.5 pounds (measure for 250 servings).

Here is an example of decreasing a recipe for the first two steps:

Determine the factor to be used: desired yield ÷ current yield = factor

- Example: 125 (desired serving yield) ÷ 250 (current serving yield) = 0.5 (factor).
- Multiply each ingredient by the factor: current measure x factor = new measure
- Example: 5 pounds (current measure for 250 servings) x 0.5 (factor) = 2.5 pounds (measure for 125 servings).

Then, if necessary, use the third step:

- Change amounts into more common measurements: a new measure may not convert to a useful measure.
    - Example: A recipe for 50 servings calls for ⅔ cup (0.66 cups) shredded carrots; the amount for 300 servings is 3.96 cups of shredded carrots—convert to 1 quart.
    - Example: A recipe for 100 servings calls for 2 cups of diced onions; the amount for 60 servings is 1.2 cups—convert to 1¼ cups of diced onions.

Note: The factor to decrease a recipe is always less than 1; the factor to increase a recipe is always greater than 1.

Some ingredients require special attention during recipe standardization. These ingredients do not increase or decrease proportionately:

- Herbs and spices
- Leavening agents – baking powder, soda, and yeast
- Thickening agents – flour, cornstarch, and eggs
- Liquids – water and juice.

The best method to determine the quantities of these specific ingredients is to prepare the recipe.

Factor Method Activity

Instructions: Using the Factor Method, adjust the Broccoli Salad recipe below to determine the amount of each ingredient needed to make 225 servings.

The measure of some ingredients will need to be converted to simplify the math equation.

Broccoli Salad **Desired Yield: 225** **Current Yield: 100** **Factor: _____**

INGREDIENTS	100 SERVINGS / RECIPE AMOUNT	CONVERTED QUANTITIES	FACTOR	225 SERVINGS / (CALCULATED AMOUNT)	225 SERVINGS / (COMMON MEASURE)
Broccoli, fresh	13 lb 8 oz				
Mayonnaise, low-fat	2 qt				
Sugar	2 lb				
White Vinegar	½ cup				
Milk, low-fat	⅓ cup				

ANSWER KEY

FACTOR METHOD ACTIVITY

Instructions: Using the Factor Method, adjust the Broccoli Salad recipe below to determine the amount of each ingredient needed to make 225 servings.

The measure of some ingredients will need to be converted to simplify the math equation.

Broccoli Salad **Desired Yield: 225** **Current Yield: 100** **Factor: 2.25**

INGREDIENTS	100 SERVINGS — RECIPE AMOUNT	CONVERTED QUANTITIES	FACTOR	225 SERVINGS — (CALCULATED AMOUNT)	225 SERVINGS — (COMMON MEASURE)
Broccoli, fresh	13 lb 8 oz	13.5 lb	2.25	30.375 lb	30 lb 6 oz
Mayonnaise, low-fat	2 qt	2 qt	2.25	4.5 qt	4 qt + 1 pt
Sugar	2 lb	2 lb	2.25	4.5 lb	4 lb 8 oz
White Vinegar	½ cup	0.5 cup	2.25	1.125 cups	1 cup + 2 Tbsp
Milk, low-fat	⅓ cup	0.333 cup	2.25	0.759 cup	¾ cup

STEP 1:

Determine the "factor" to be used

The factor is determined by dividing the desired yield in servings (225) by the current yield in servings (100).

225 ÷ 100 = 2.25

STEP 2:

Multiply each ingredient quantity by the "factor."

Several conversions could be done before multiplying to simplify the math. For example, the 13 lb 8 oz of fresh broccoli could be converted to 13.5 lb; the ½ cup of white vinegar could be converted to 0.5 cup.

STEP 3:

Change amounts into more common measurements.

Once the new quantities have been calculated, conversion to more common measures may be needed. For example, if an operation weighs ingredients in pounds and ounces, the 30.375 lb of fresh broccoli could be converted to 30 lb 6 oz.

COMPARISON OF STANDARDIZED RECIPE ADJUSTMENT METHODS

METHOD	ADVANTAGES	DISADVANTAGES	INITIAL RECIPE	FINAL RECIPE
Factor Method	➤ Can be used for most recipes ➤ Easy to use	➤ Math skills required ➤ Does not calculate proportionally for certain ingredients	➤ Can start with any recipe and desired yield	➤ Final recipe can yield any number of servings desired
Direct Reading Tables Method	➤ Minimal math skills required	➤ Direct reading tables must be available ➤ Must know how to read tables ➤ Can only be used for yields in multiples of 25	➤ Must have yield of 25 servings or multiples of 25 servings	➤ Yield of 25 servings or multiples of 25 servings (i.e.,200, 175, 500)
Percentage Method	➤ Further adjustments to a single recipe are easy after initial ingredient percentages are calculated	➤ Many steps in the process ➤ Math skills required ➤ Must use weights for all ingredients ➤ Must calculate and adjust for handling loss	➤ Can start with any recipe and yield ➤ Initial recipe ingredients must be in weights	➤ Yield can be any amount desired ➤ All final ingredients are in weights
Computerized Recipe Adjustment	➤ Adjustments easy after recipe entered into system ➤ No math skills needed	➤ Computer programs can be expensive ➤ Some programs require ingredients to be entered in weights only ➤ Ingredient quantities may be listed in decimals	➤ Can start with any recipe and desired yield	➤ Final recipe can yield any number of servings desired

EVALUATING STUDENT ACCEPTABILITY

(LARGE SCALE)

The final step in the Quantity Adjustment Phase is to evaluate the acceptability of the recipe with the larger school community during meal service. The key stakeholders in the school nutrition program are the students that the program is designed to serve. Meeting their needs and expectations is important for the overall health of your program.

When evaluating the new recipe as part of the pilot meal service, consider a student survey or other way to collect feedback:

- Paper surveys
- Posters with stickers – “Loved it,” “Liked it,” “Not really my thing”
- Facilitated questions with a show of hands
- Online surveys
- Ballots boxes

Students are the primary customer. Getting their feedback is key. No matter how much the adults may like a recipe, if the students do not care for it, the recipe’s implementation needs to be re-evaluated. Sometimes how the recipe is served on the line may affect student feedback regarding the quality or taste of the food.

Congratulations!

If you have followed the Recipe Standardization Guide through the Three-Phase process, you will have a recipe that your students will enjoy. Furthermore, you will have a recipe your staff will be able to consistently produce with the same good results and yield every time when the exact procedures are used with the same type of equipment and the same quantity and quality of ingredients.

APPENDIX A:
DEFINITION

1. Crediting Statement
A crediting statement shows how much each creditable ingredient contributes to the meal pattern requirements

2. Entrée (Main Dish)
An item that is served as the main dish and is either:

- A combination food of meat and/or meat alternate and grains
- A combination food of vegetables and/or fruits and meat and/or meat alternates
- A combination of food of meat and/or meat alternates and/or grains and/or vegetables and/or fruits
- A meat or meat alternate alone with the exception of yogurt, low-fat or reduced-fat cheese, nuts, seeds, nut or seed butters, and meat snacks (such as dried beef jerky)
- A grain served as the main dish of the School Breakfast Program reimbursable meal

3. Farm to School Program
Established efforts that connect schools with local or regional producers to serve local or regionally produced foods in school cafeterias; improve student nutrition; provide agriculture, health, and nutrition education opportunities; and support local and regional farmers.

4. Farm to School Grant
On an annual basis, USDA competitively awards grant funds for training, supporting operations, planning, purchasing equipment, developing school gardens, developing partnerships, and implementing farm to school programs. Additional information on Farm to School Grants: https://www.fns.usda.gov/cfs/farm-school-grant-program

5. *Food Buying Guide for Child Nutrition Programs* (FBG)
The authoritative guide developed by USDA to help child nutrition professionals determine how much food to purchase, in the most cost-effective manner, for crediting meal components in food-based menu planning. This can be especially helpful in preparing a new standardized recipe for meal service. FBG and related resources: https://foodbuyingguide.fns.usda.gov/

6. Grain-Based Dessert
Grain-based desserts are those items that have a superscript 3 or 4 in the *Food Buying Guide for Child Nutrition Programs' Exhibit A: Grain Requirements for Child Nutrition Programs*.

7. Local Agricultural Product
The definition of "local agricultural products", for which there is no Federal definition, can depend on geographic, social, governmental, physical, or economic parameters; seasonality; and/or other factors. Local procurement options differ greatly across communities depending on district and school size, proximity to agricultural areas, growing season, and demographics. USDA expects that State agencies will have varying definitions of "local agricultural products" that align with their particular needs and goals. The intent of schools utilizing local agricultural products in their standardized recipes is to serve more locally produced foods in school cafeterias, improve student nutrition, provide nutrition education opportunities, and support local and regional farmers, ranchers, and fishers. Local agricultural products can be meats, seafood, fruits, vegetables, nuts, seeds, dairy foods, or legumes.

8. Marketing Guide
Based on the *Food Buying Guide for Child Nutrition Programs*, this component of a final standardized recipe gives the amount of product needed as purchased to yield the edible portion required for the recipe.

9. Meal Service
The time period during a school day when schools offer meals to students through the National School Lunch Program or School Breakfast Program. A meal service includes all lunch or breakfast periods during a particular day.

10. Nutrient Analysis
The purpose of a nutrient analysis, using USDA-approved software, is to determine compliance with regulatory requirements for calories, saturated fat, and sodium and to monitor levels of these dietary components in school meals. Performing an accurate nutrient analysis is critical to the evaluation of menus and menu documentation.

11. *Recipe Analysis Workbook* (RAW)
A tool used to determine the expected meal pattern contribution and crediting statement for a recipe. This tool is available as part of the Food Buying Guide for Child Nutrition Programs: https://foodbuyingguide.fns.usda.gov/

12. Recipe Category
Identifies the recipe classification as an entrée or side dish.

13. School Community
In addition to students, the school community encompasses the school administrators, teachers, and staff members who work in a school; parents and families of students; and local residents and organizations invested in the school's success.

14. Standardized Recipe
A standardized recipe is a recipe that has been tried, adapted, and retried at least three times for use by a given foodservice operation. The recipe has been found to produce the same good results and yield every time it is prepared when the exact procedures are used with the same type of equipment and the same quantity and quality of ingredients.

A USDA standardized recipe for school meals is verified, evaluated, and adjusted for yield quantities using a prescribed process. It presents information for recipe yields of 50 and 100 servings in accordance with a specific template.

15. Yield
Yield information is a valuable menu planning and production tool used to:

- Estimate the amount of food to purchase
- Determine meal pattern contribution for each food component
- Help control foods costs
- Minimize food waste
- Ensure an adequate quantity of food is produced each meal
- Purchase the appropriate amount of food for the meal preparation

APPENDIX B:
RESOURCES

Food Buying Guide for Child Nutrition Programs (FBG) and *Recipe Analysis Workbook* (RAW)

The Food Buying Guide (FBG) is the essential resource for food yield information for all child nutrition programs (CNP). The FBG assists CNP operators, food manufacturers, and other stakeholders with:

- Purchasing the correct amounts of foods for child nutrition meal programs
- Determining the contribution that each food makes toward meal pattern requirements

https://www.fns.usda.gov/tn/food-buying-guide-for-child-nutrition-programs

Team Nutrition Menu Planner

The Menu Planner for School Meals is a comprehensive guide for local school nutrition professionals to assist them with developing healthy, safe, affordable, and appealing school meals and snacks that meet the meal pattern requirements.

https://www.fns.usda.gov/tn/menu-planner

USDA Approved Nutrient Analysis Software

This information is provided to assist state agencies, school food authorities, and local schools with the selection of a software program that has been USDA-approved for nutrient analyses required in the school meal programs.

https://www.fns.usda.gov/tn/usda-approved-nutrient-analysis-software

Child Nutrition Recipe Box

Your resource for USDA Standardized Recipes for Child Nutrition Programs.

https://theicn.org/cnrb/

Culinary Institute of Child Nutrition (CICN) Resources

Visit the Culinary Institute of Child Nutrition (CICN) website for tips and strategies for preparing and serving healthy culinary-inspired school meals.

https://theicn.org/cicn/

Institute of Child Nutrition (ICN) eLearning Portal

The ICN eLearning Portal provides a variety of free online trainings for Child Nutrition Professionals. Notable culinary focused trainings include:

- Culinary Math Series
- Food Buying Guide Training
- Culinary Techniques Series

https://theicn.docebosaas.com/learn

APPENDIX C:

RECIPE STANDARDIZATION TOOLS AND TEMPLATES

USDA Standardized Recipe Template

Checklist for Reviewing Recipes during Recipe Verification Phase of Recipe Standardization Process

Decision Guide for Checklist for Reviewing Recipes during Recipe Verification Phase of Recipe Standardization Process

Informal Evaluation Checklist

Food Product Evaluation Form (For Foodservice Staff, Students, and Teachers)

Food Product Evaluation Form (For Elementary Students)

Culinary Terms and Definitions

Recipe Conversion Charts

Food Buying Guide Tables and Figures

USDA STANDARDIZED RECIPE
TEMPLATE

USDA Food and Nutrition Service
U.S. DEPARTMENT OF AGRICULTURE

Image of Recipe

Recipe Title

Brief recipe description

AGES:
PREP TIME:
COOK TIME:

REDITING INFORMATION

SOURCE

INGREDIENTS	50 SERVINGS		100 SERVINGS		DIRECTIONS
	Weight	Measure	Weight	Measure	

Food and Nutrition Service

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INGREDIENTS	50 SERVINGS		100 SERVINGS		DIRECTIONS
	Weight	Measure	Weight	Measure	

INGREDIENTS	50 SERVINGS		100 SERVINGS		DIRECTIONS
	Weight	Measure	Weight	Measure	

NUTRITION INFORMATION

NUTRIENTS	AMOUNT
Calories	
Total Fat	
Saturated Fat	
Cholesterol	
Sodium	
Total Carbohydrate	
Dietary Fiber	
Total Sugars	
Includes Added Sugars	N/A
Protein	
Vitamin D	N/A
Calcium	
Iron	
Potassium	N/A

N/A = Data not available

NOTES

YIELD/VOLUME	
50 Servings	100 Servings

RECIPE REVIEW
CHECKLIST

The recipe review checklist is a tool to verify the recipe includes all of the information required to move into the recipe testing phase.

Review Steps	Questions	Yes	No	N/A	Action Neeeded
Title	Does the title reflect the content?				
	Is the title appealing to customers?				
Recipe category	Are recipes organized by category?				
Ingredients	Are all the ingredient names clear?				
	Are the ingredients listed in the order they are used?				
	Does each ingredient name indicate product type/form (i.e., fresh, frozen, canned [drained, packed in syrup, packed in juice], dried, dehydrated, cooked)?				
	Does each ingredient name indicate the pre-preparation technique to be applied to the ingredient (i.e., peeled, sliced, chopped, diced, grated, minced) and size, if applicable (¼ inch, ½ inch)?				
Weight or volume	Is there a weight or volume listed for each ingredient?				
Directions	Do the written directions clearly describe exactly what needs to be done to prepare the recipe?				

Review Steps	Questions	Yes	No	N/A	Action Neeeded
Food preparation (hot and cold) and holding temperature and cooking and preparation time	Is the preparation temperature stated on the recipe?				
	Is the cooking time stated on the recipe?				
	Have time standards been established for the preparation of the recipe?				
Serving Size	Is the serving size stated on the recipe?				
	Is the serving weight given?				
	Are directions given for how to divide the product into individual servings?				
Recipe yield	Is the recipe yield indicated?				
Equipment	If preparation equipment is needed, is it indicated?				
	Is the cooking equipment indicated?				
	Is the serving utensil listed?				
Food Safety Guidelines	Have the Critical Control Points been identified for each step of the process?				
	Has a HACCP Approach Process been identified?				
Nutrient Analysis	Is the nutrient analysis accurate and meets the desired nutrient profile?				
Crediting Statement	Are meal components appropriately credited?				

RECIPE REVIEW CHECKLIST

CHECKLIST DECISION GUIDE

Review Steps	Questions	Yes	No	N/A	Action Neeeded
Title	Does the title reflect the content?				• If yes, leave the title as listed, move to next title question. • If no, consider new title.
	Is the title appealing to customers?				• If yes, leave title as listed, move to next review step. • If no, consider alternate title to be used on menu.
Recipe category	Are recipes organized by category?				• If yes, move to next review step. • If no, identify recipe category on recipe.
Ingredients	Are all the ingredient names clear?				• If yes, move to next ingredient question. • If no, rewrite ingredient name.
	Are the ingredients listed in the order they are used?				• If yes, move to next ingredient question. • If no, change order so ingredients are listed in order used.
	Does each ingredient name indicate product type/form (i.e., fresh, frozen, canned [drained, packed in syrup, packed in juice], dried, dehydrated, cooked)?				• If yes, move to next ingredient question. • If no, add product type information to ingredient name.
	Does each ingredient name indicate the pre-preparation technique to be applied to the ingredient (i.e., peeled, sliced, chopped, diced, grated, minced) and size, if applicable (¼ inch, ½ inch)?				• If yes, move to next review step. • If no, indicate the preparation technique to the ingredient name.
Weight or volume	Is there a weight or volume listed for each ingredient?				• If yes, move to next review step. • If no, indicate weight (preferred) or volume for each ingredient.
Directions	Do the written directions clearly describe exactly what needs to be done to prepare the recipe?				• If yes, move to next review step. • If no, write specific directions for preparing the recipe.
Food preparation (hot and cold) and holding temperature and cooking and preparation time	Is the preparation temperature stated on the recipe?				• If yes, move to next preparation temperature and time question. • If no, write down the cooking temperature.
	Is the cooking time stated on the recipe?				• If yes, move to next review step. • If no, write cooking time on the recipe.
	Have time standards been established for the preparation of the recipe?				• If yes, move to next review step. • If no, write the preparation times on the recipe

Review Steps	Questions	Yes	No	N/A	Action Neeeded
Serving Size	Is the serving size stated on the recipe?				• If yes, move to next serving size question. • If no, the serving size will need to be determined when the recipe is prepared as part of the Verification Phase and written on recipe.
	Is the serving weight given?				• If yes, move to next serving size question. • If no, the serving size weight will need to be determined when the recipe is made during the Verification Phase and written on recipe.
	Are directions given for how to divide the product into individual servings?				• If yes, move to next review step. • If no, write the directions for portioning the product.
Recipe yield	Is the recipe yield indicated?				• If yes, move to next review step. • If no, the yield will need to be determined when the recipe is made during Verification Phase and written on recipe.
Equipment	If preparation equipment is needed, is it indicated?				• If yes, move to next equipment question. • If no, write down what size pan should be used.
	Is the cooking equipment indicated?				• If yes, move to next equipment question. • If no, write down which piece(s) of equipment should be used.
	Is the serving utensil listed?				• If yes, review is complete. • If no, indicate the serving utensil.
Food Safety Guidelines	Have the Critical Control Points been identified for each step of the process?				• If yes, move to next review step • If no, indicate the proper CCP
	Has a HACCP Approach Process been identified?				• If yes, move to next review step • If no, indicate the proper Process Approach
Nutrient Analysis	Is the nutrient analysis accurate and meets the desired nutrient profile?				• If yes, move to next review step • If no, conduct a nutrient analysis of the recipe.
Crediting Statement	Are meal components appropriately credited?				• If yes, the review is complete • If no, use the *Recipe Analysis Work Book* and/or *Exhibit A* tool to complete the crediting statement.

INFORMAL EVALUATION
CHECKLIST

Questions	Yes	No	Corrective Action
Is the visual appearance of the product acceptable?			
Is the flavor of the product one that students might enjoy?			
Are the ingredients in the recipe easily obtained?			
Is the texture of the recipe correct?			
Is the labor time to make the product within foodservice department guidelines?			
Do employees possess the skills to prepare this item?			
Is the recipe within nutrition guidelines/goals?			
Is the equipment available to prepare this item?			
Is the recipe acceptable enough to continue with more evaluation?			

Decision Guidelines

- If the answer is yes to all of the above questions, then proceed to the Formal Evaluation Phase of the recipe.
- If the answer is no to one or two of the above questions, return to the recipe Preparation Phase, make necessary corrections to the draft recipe, and do another small batch taste-testing and informal evaluation.
- If the answer is no to three or more of the above questions, strong consideration should be given to not continuing with this recipe's standardization.

TASTE-TESTING SURVEY
TEMPLATE

(For Elementary Students)

For younger grades (3rd and below), provide emoji faces to choose from instead of a b c options.

Recipe Name_____

Please read the following questions and circle your answer.

(For younger students, staff may need to read the questions to the student.)

1. Do you like the way this food looks?
    a. Yes
    b. No
    c. Don't know

2. Do you like the taste?
    a. Yes
    b. No
    c. Don't know

3. Would you try this food item if it were served in your school cafeteria?
    a. Yes
    b. No
    c. Don't know

Comments:

FOOD PRODUCT EVALUATION
TEMPLATE

(For Foodservice Staff, Students, and Teachers)

Recipe Name_____

Please rate the following traits of this product using the scale provided.

	Very Undesirable	Moderately Undesirable	Neither Desirable nor Undesirable	Moderately Desirable	Very Desirable
The **appearance** of the food	1	2	3	4	5
The **taste** of the food	1	2	3	4	5
The **temperature** of the food	1	2	3	4	5
The **texture** of the food	1	2	3	4	5
The overall **acceptability** of the food	1	2	3	4	5

Total Score_____

Comments:

CULINARY TERMS

Al dente – to cook until tender but still slightly firm, usually used to describe pasta but can also apply to vegetables; Italian cooking term that translates literally “to the tooth”

As Purchased (AP) – the amount of food item as it is purchased before any preparation has been completed

Bias cut – cutting on the diagonal, which improves visual appeal, and increases surface area for faster cooking or better browning

Bake – to cook by dry heat, usually in an oven. A suitable cooking method for bread and many other foods

Baste – to spoon liquids, sauce, or meat juice over food to keep it moist during cooking and to add flavor

Beat – to mix vigorously by hand or with mixing equipment to make a mixture light, fluffy, or smooth

Blend – to mix two or more ingredients

Boil – to cook rapidly in water or a liquid so that the bubbles rise and break on the surface

Braise – to cook slowly in a covered container with a small amount of liquid or water; a good method for less tender cuts of meat

Bread – to coat food with bread crumbs, cracker crumbs, or flour before cooking

Broil – to cook by direct heat from a flame, electric unit, or glowing coals; a suitable cooking method for tender meat cuts

Brown – to cook food, generally meat, until it is uniformly brown on all sides

Chill – to cool food with ice water or refrigeration

Chop – to cut food into small pieces with a knife or chopping equipment

Combine – to mix together two or more ingredients

Cream – to work foods such as shortening and sugar together with a spoon or mixer until soft, fluffy, and thoroughly blended

Crumb – to cover a food with bread (or cracker) crumbs or to break food, such as bread, into crumbs

Cut in – to mix solid fat, such as butter or margarine, into dry ingredients with a cutting motion so that the fat remains in small particles

Dice – to cut into small cubes with a knife or chopping equipment

Dredge – to coat a food by dipping in crumbs, flour, cornmeal, sugar, or other coatings

Edible Portion (EP) – the amount of a food item that is ready for use in a recipe after all pre-preparation

Fold – to combine several food ingredients into a mixture by gently turning the mixture, with a minimum of motions, until the ingredients are blended

Fry – to cook in fat over heat in a skillet, pan, or griddle, or in a fryer

Glaze – to coat with a mixture to produce a glossy appearance on the food

Grill – to cook uncovered over direct heat on a griddle or pan, removing fat as it accumulates

Grind – to chop or pulverize food, such as meat, into small particles by using a food chopping device or meat grinder

Julienne – to cut food in narrow, lengthwise strips, resembling matchsticks

Knead – to work with dough, such as bread dough, by pressing, folding, and stretching to develop the dough structure

Leaven – to cause food, such as bread, to rise and increase volume by adding a leavening agent, such as yeast or baking powder

Marinate – to treat food with a marinade to add flavor, and when used with meats, to provide some tenderizing action

Melt – to turn solid food into liquid by heating

Mince – to finely chop food, such as garlic, into very small pieces

Mix – to blend or combine with two or more foods or ingredients

Parboil – to boil in water briefly as a preliminary cooking step; may be used with vegetables and meat

Pare – to thinly trim off the outer covering or skin of a food, such as potatoes

Peel – to strip off the outer covering of a food, such as oranges

Punch down – to remove air bubbles from risen yeast dough by pushing the dough down with the fists

Reconstitute – to bring back a concentrated food, such as a juice concentrate, to the original strength—or dry food, such as nonfat dry milk, to the original state—by adding liquid

Rehydrate – to add fluids back into a dried food, such as dehydrated onions

Roast – to bake without water, uncovered, in an oven

Scald – to heat a liquid (such as milk) to a temperature just below the boiling point; tiny bubbles will appear around the edge of the pan

Shred – to cut or grate foods into narrow strips

Simmer – to cook in liquid that is kept just below the boiling point

Slice – to cut a food with a knife or slicing equipment

Steam – to cook food with steam, with or without pressure

Stir – to mix with a circular motion

Stir-fry – to cook quickly, in a small amount of oil or water, tossing and stirring lightly to preserve the shape of the food

Whip – to rapidly beat a food (such as eggs or cream), incorporating air to lighten the mixture and increase its volume; usually done with a whisk, fork, or mixing equipment

CHARTS

Weight and Volume Conversions

Teaspoons to Tablespoons

3 tsp	= 1 Tbsp
1½ tsp	= ½ Tbsp
1 tsp	= ⅓ Tbsp

Tablespoons to Cups

16 Tbsp	= 1 cup
12 Tbsp	= ¾ cup
10⅔ Tbsp	= ⅔ cup
8 Tbsp	= ½ cup
5½ Tbsp	= ⅓ cup
4 Tbsp	= ¼ cup
2 Tbsp	= ⅛ cup
1 Tbsp	= 1/16 cup

Ounces to Pounds

16 oz	= 1 lb (1.00 lb)
14 oz	= ⅞ lb (0.875 lb)
12 oz	= ¾ lb (0.750 lb)
10 ⅔ oz	= ⅔ lb (0.667 lb)
10 oz	= ⅝ lb (0.625 lb)
8 oz	= ½ lb (0.500 lb)
6 oz	= ⅜ lb (0.375 lb)
5⅓ oz	= ⅓ lb (0.333 lb)
4 oz	= ¼ lb (0.250 lb)
2 oz	= ⅛ lb (0.125 lb)
1 oz	= 1/16 lb (0.063 lb)

Cups to Quarts

4 cups	= 1 qt
3 cups	= ¾ qt
2 cups	= ½ qt
1 cups	= ¼ qt

Quarts to Gallons

4 qt	= 1 gal
3 qt	= ¾ gal
2 qt	= ½ gal
1 qt	= ¼ gal

Fluid Ounces to Volume Measure

½ fl oz	= 1 Tbsp
2 fl oz	= ¼ cup
2.65 fl oz	= ⅓ cup
4 fl oz	= ½ cup
5.36 fl oz	= ⅔ cup
6 fl oz	= ¾ cup
8 fl oz	= 1 cup
16 fl oz	= 1 pt
32 fl oz	= 1 qt
64 fl oz	= 2 qt or ½ gal
96 fl oz	= 3 qt or ¾ gal
128 fl oz	= 1 gal

Adapted form *USDA Quality Recipes for School Foodservice, 1988*

Abbreviations Used in Standarized Recipes

Measurement	Abbreviation
teaspoon	tsp
tablespoon	Tbsp
cup	cup
quart	qt
gallon	gal
ounce	oz
pound	lb
fluid ounces	fl oz

Source: USDA,FNS, Child Nutrition Programs, Alexandria, VA

Rounding Rules
Weights

If the total amount of an ingredient is	Round it to
Less than 2 oz	Volume measure only unless weight 1/4, 1/2, or 3/4 oz amounts
2 to 10 oz	Nearest 1/4 oz
10 oz to 2 lb 8 oz	Nearest 1/2 oz
2 lb 8 0z to 5 lb	Nearest full oz
5 lb or more	Nearest 2 oz

Measures

If the total amount of an ingredient is	Round it to
Less than 2 Tbsp	Nearest 1/4 tsp
2 Tbsp to 1/2 cup	Nearest tsp
1/2 cup to 3/4 cup	Nearest Tbsp (unless measure 2/3 cup)
3/4 cup to 2 cups	Nearest Tbsp (unless measure 1 1/3 or 1 2/3 cups)
2 cups to 2 qt	Nearest 1/4 cup
2 qt to 4 qt	Nearest 1/2 cup
1gal to 2 gal	Nearest full cup
2 gal and more	Nearest full qt

Source: USDA, FNS, Child Nutrition Programs, Alexandria, VA

Converting Fractions to Decimals

1/8	0.125
1/4	0.250
1/3	0.333
3/8	0.375
1/2	0.500
5/8	0.625
2/3	0.666
3/4	0.750
7/8	0.875

Chart for Converting to Decimal Part of a Pound

Ounces	Decimal Part of lb
1/4	0.016
1/3	0.021
1/2	0.031
2/3	0.042
3/4	0.047
1	0.063
1 1/4	0.078
1 1/3	0.083
1 1/2	0.094
1 2/3	0.104
1 3/4	0.109
2	0.125
2 1/4	0.141
2 1/3	0.146
2 1/2	0.156
2 2/3	0.166
2 3/4	0.172
3	0.188
3 1/4	0.203
3 1/3	0.208
3 1/2	0.219
3 2/3	0.229
3 3/4	0.234
4	0.250
4 1/4	0.266
4 1/3	0.271
4 1/2	0.281
4 2/3	0.292
4 3/4	0.297
5	0.313
5 1/4	0.328
5 1/3	0.333
5 1/2	0.344
5 2/3	0.354
5 3/4	0.359
6	0.375
6 1/4	0.391
6 1/3	0.393
6 1/2	0.406
6 2/3	0.417
6 3/4	0.422
7	0.438
7 1/4	0.453
7 1/3	0.456
7 1/2	0.469
7 2/3	0.479
7 3/4	0.484

Ounces	Decimal Part of lb
8	0.500
8 1/4	0.516
8 1/3	0.521
8 1/2	0.531
8 2/3	0.542
8 3/4	0.547
9	0.563
9 1/4	0.578
9 1/3	0.583
9 1/2	0.594
9 2/3	0.604
9 3/4	0.609
10	0.625
10 1/4	0.641
10 1/3	0.644
10 1/2	0.656
10 2/3	0.667
10 3/4	0.672
11	0.688
11 1/4	0.703
11 1/3	0.708
11 1/2	0.719
11 2/3	0.729
11 3/4	0.734
12	0.750
12 1/4	0.766
12 1/3	0.771
12 1/2	0.781
12 2/3	0.792
12 3/4	0.797
13	0.813
13 1/4	0.828
13 1/3	0.833
13 1/2	0.844
13 2/3	0.854
13 3/4	0.859
14	0.875
14 1/4	0.891
14 1/3	0.896
14 1/2	0.906
14 2/3	0.917
14 3/4	0.922
15	0.938
15 1/4	0.953
15 1/3	0.958
15 1/2	0.969
15 2/3	0.979
15 3/4	0.984
16	1.000

TABLES AND FIGURES

TABLE 1:

Abbreviations and Symbols

Abbreviation	Meaning
AP	as purchased
EP	edible portion
incl	including
excl	excluding
cyl	cylinder
pkg	package
No.	number
approx.	approximately
wt	weight
oz	ounce
lb	pound
g	gram
kg	kilogram
vol	volume
tsp	teaspoon
Tbsp	tablespoon
fl oz	fluid ounce
c	cup
pt	pint
qt	quart
gal	gallon
mL	milliliter
L	liter
oz eq	ounce equivalent

TABLE 2:

Common Can and Jar Sizes
Average Net Weight or Fluid Measure and Average Volume Per Can

Can Size	Average Net Weight or Fluid Measure Per Can		Average Volume Per Can	
	Customary	Metric	Cups	Liters
No.10	6 lb (96 oz) to 7 lb 5 oz (117 oz)	2.72 kg to 3.31 kg	12 cups to 13⅔ cups	2.84 L to 3.24 L
No. 3 Cyl	51 oz (3 lb 3 oz) or 46 fl oz (1 qt 14 fl oz)	1.44 kg or 1.36 L	5¾ cups	1.36 L
No. 2½	26 oz (1 lb 10 oz) to 30 oz (1lb 14 oz)	737 g to 850 g	3½ cups	0.83 L
No. 2 Cyl	24 fl oz	709 mL	3 cups	0.71 L
No. 2	20 oz (1 lb 4 oz) or 18 fl oz (1 pt 2 fl oz)	567 g or 532 mL	2½ cups	0.59 L
No. 300	14 oz to 16 oz (1 lb)	396 g to 453 g	1¾cups	0.41 L
No. 2 (Vacuum)	12 oz	340 g	1½ cups	0.36 L
No. 1 (Picnic)	10½ oz to 12 oz	297 g to 340 g	1¼ cups	0.30 L
8 oz	8 oz	226 g	1 cup	0.24 L

TABLE 3:

Common Can and Jar Sizes - per Case and Principal Products

Can Size	Cans Per Case	Principal Products
No.10	6 cans per case	Institutional size: Fruits, vegetables, some other foods
No. 3 Cyl	12 cans per case	Institutional size: Condensed soups, some vegetables, meat and poultry products, fruit, and vegetable juices
No. 2½	24 cans per case	Family size: Fruits, some vegetables
No. 2 Cyl	24 cans per case	Family size: Juices, soups
No. 2	24 cans per case	Family size: Juices, ready-to-serve soups, some fruits
No. 300	24 cans per case	Small cans: Some fruits and meat products
No. 2 (Vacuum)	24 cans per case	Small cans: Principally vacuum-packed corn
No. 1 (Picnic)	48 cans per case	Small cans: Condensed soups, some fruits,vegetables, meat, fish
8 oz	48 or 72 cans per case	Small cans: Ready-to-serve soups, fruits, vegetables

TABLE 4:

A Guide for Substituting Cans

Can Size in Yield Table	No.10	No. 3 Cyl	No. 2½	No. 2	No. 300
No.10	1.0	2.1	3.7	5.3	7.4
No. 3 Cyl	0.5	1.0	1.8	2.6	3.3
No. 2½	0.3	0.6	1.0	1.5	2.0
No. 2	0.2	0.4	0.7	1.0	1.5
No. 300	0.1	0.3	0.5	0.7	1.0

TABLE 5:
Decimal Weight Equivalents

Ounces	Pounds
1 oz	0.06 lb
2 oz	0.12 lb
3 oz	0.19 lb
4 oz	0.25 lb
5 oz	0.31 lb
6 oz	0.38 lb
7 oz	0.44 lb
8 oz	0.50 lb
9 oz	0.56 lb
10 oz	0.62 lb
11 oz	0.69 lb
12 oz	0.75 lb
13 oz	0.81 lb
14 oz	0.88 lb
15 oz	0.94 lb
16 oz	1.00 lb
32 oz	2.00 lb
35 oz	2.19 lb
48 oz	3.00 lb
64 oz	4.00 lb
71 oz	4.44 lb
80 oz	5.00 lb
96 oz	6.00 lb
106 oz	6.63 lb
112 oz	7.00 lb
128 oz	8.00 lb
141 oz	8.82 lb
144 oz	9.00 lb
160 oz	10.00 lb

TABLE 6:
Decimal Equivalents of Commonly Used Fractions

Fraction	Decimal
⅛	0.125
¼	0.250
⅓	0.333
⅜	0.375
½	0.500
⅝	0.625
⅔	0.667
¾	0.750
⅞	0.875

TABLE 7:
Converting Decimal Equivalents to the Nearest Portion of a Cup for Fruits and Vegetables

If decimal equivalent is	The recipe contributes
0.125-0.249	⅛ cup
0.250-0.374	¼ cup
0.375-0.499	⅜ cup
0.500-0.624	½ cup
0.625-0.749	⅝ cup
0.750-0.874	¾ cup
0.875-0.999	⅞ cup
1.000-1.124	1 cup

TABLE 8:

Decimal Equivalents for Fractions of a Unit

Whole units are on the left. The fraction or part of the unit is to the right.

If the whole units are:	The decimal equivalents part are of:
Ounces	1 pound
Tablespoons	1 cup
Cups	1 gallon

Fraction or Part of the Unit

Number of Units	_	+¼ of unit	+⅓ of unit	+½ of unit	+⅔ of unit	+¾ of unit
0	_	0.02	0.02	0.03	0.04	0.05
1	0.06	0.08	0.08	0.09	0.10	0.11
2	0.12	0.14	0.15	0.16	0.17	0.17
3	0.19	0.20	0.21	0.22	0.23	0.23
4	0.25	0.27	0.27	0.28	0.29	0.30
5	0.31	0.33	0.33	0.34	0.35	0.36
6	0.38	0.39	0.40	0.41	0.42	0.42
7	0.44	0.45	0.46	0.47	0.48	0.48
8	0.50	0.52	0.52	0.53	0.54	0.55
9	0.56	0.58	0.58	0.59	0.60	0.61
10	0.62	0.64	0.65	0.66	0.67	0.67
11	0.69	0.70	0.71	0.72	0.73	0.73
12	0.75	0.77	0.77	0.78	0.79	0.80
13	0.81	0.83	0.83	0.84	0.85	0.86
14	0.88	0.89	0.90	0.91	0.92	0.92
15	0.94	0.95	0.96	0.97	0.98	0.98
16	1.00	1.02	1.02	1.03	1.04	1.05

TABLE 9:
A Guide to Metric Conversions

To change	To	Multiply by
ounces (oz)	grams (g)	28.35
pounds (lb)	grams (g)	453.6
pounds (lb)	kilograms (kg)	0.4536
teaspoons (tsp)	milliliters (mL)	4.93
tablespoons (Tbps)	milliliters (mL)	14.79
fluid ounces (fl oz)	milliliters (mL)	29.57
cups (c)	liters (L)	0.236
pints (pt)	liters (L)	0.473
quarts (qt)	liters (L)	0.946
gallons (gal)	liters (L)	3.785

Table 10:
Metric Equivalents by Weight

Customary Unit	Metric Unit
Ounces (oz)	Grams (g)
1 oz	28.35 g
4 oz	113.4 g
8 oz	226.8 g
16 oz	453.6 g
Pounds (lb)	Grams (g)
1 lb	453.6 g
2 lb	907.2 g
Pounds (lb)	Kilograms (kg)
2.2 lb	1 kg (1000 g)

TABLE 11:
Metric Equivalents by Volume

Customary Unit Fluid ounces (fl oz)	Metric Unit
1 cup (8 fl oz)	236.59 milliliters (mL)
1 quart (32 fl oz)	946.36 milliliters (mL)
1.5 quarts (48 fl oz)	1.42 liters (L)
33.818 fl oz	1.0 liters (L)

TABLE 12:
Guide to Volume Equivalents for Liquids

1 tablespoon	= 3 teaspoons	= 0.5 fluid ounce
1/8 cup	= 2 tablespoons	= 1 fluid ounce
1/4 cup	= 4 tablespoons	= 2 fluid ounces
1/3 cup	= 5⅓ tablespoons	= 2.65 fluid ounces
3/8 cup	= 6 tablespoons	= 3 fluid ounces
1/2 cup	= 8 tablespoons	= 4 fluid ounces
5/8 cup	= 10 tablespoons	= 5 fluid ounces
2/3 cup	= 10⅔ tablespoons	= 5.3 fluid ounces
3/4 cup	= 12 tablespoons	= 6 fluid ounces
7/8 cup	= 14 tablespoons	= 7 fluid ounces
1 cup	= 16 tablespoons	= 8 fluid ounces
1/2 pint	= 1 cup	= 8 fluid ounces
1 pint	= 2 cup	= 16 fluid ounces
1 quart	= 2 pints	= 32 fluid ounces
1 gallon	= 4 quarts	= 128 fluid ounces
1 peck	= 8 quarts (dry)	
1 bushel	= 4 pecks	

TABLE 13:
Sizes and Capacities of Scoops (for Dishers)

Number on Scoop (Disher)	Level Measure
6	2/3 cup
8	1/2 cup
10	3/8 cup
12	1/3 cup
16	1/4 cup
20	3 1/3 tablespoons
24	2 2/3 tablespoons
30	2 tablespoons
40	1 2/3 tablespoons
50	3 3/4 teaspoons
60	3 1/4 teaspoons
70	2 3/4 teaspoons
100	2 teaspoons

TABLE 14:
Sizes and Capacities of Ladles

Number on Ladles	Approximate Measure
1 ounce	1/8 cup
2 ounce	1/4 cup
4 ounce	1/2 cup
6 ounce	3/4 cup
8 ounce	1 cup

TABLE 15:

Sizes and Capacities of Measuring-Serving Spoons

Sizeee of Measuring/Serving Spoon	Approximate Measure
2 oz	1/4 cup
3 oz	3/8 cup
4 oz	1/2 cup
6 oz	3/4 cup
8 oz	1 cup

FIGURE 1: CAN SIZE TEMPLATE

Lie a can on its side directly on this actual size template to help you determine what size can it is.

Dimensional Food Can Standards: Height

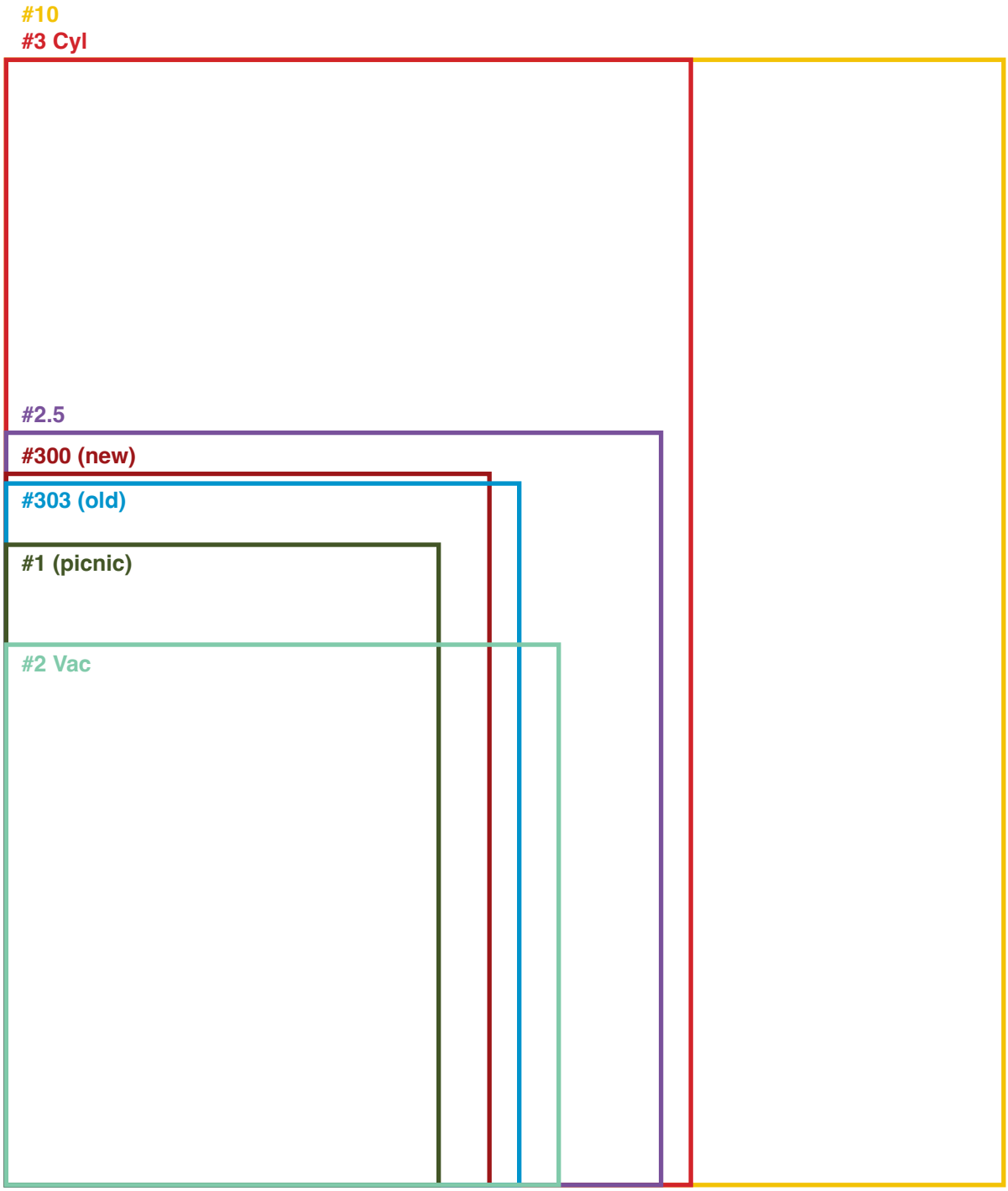
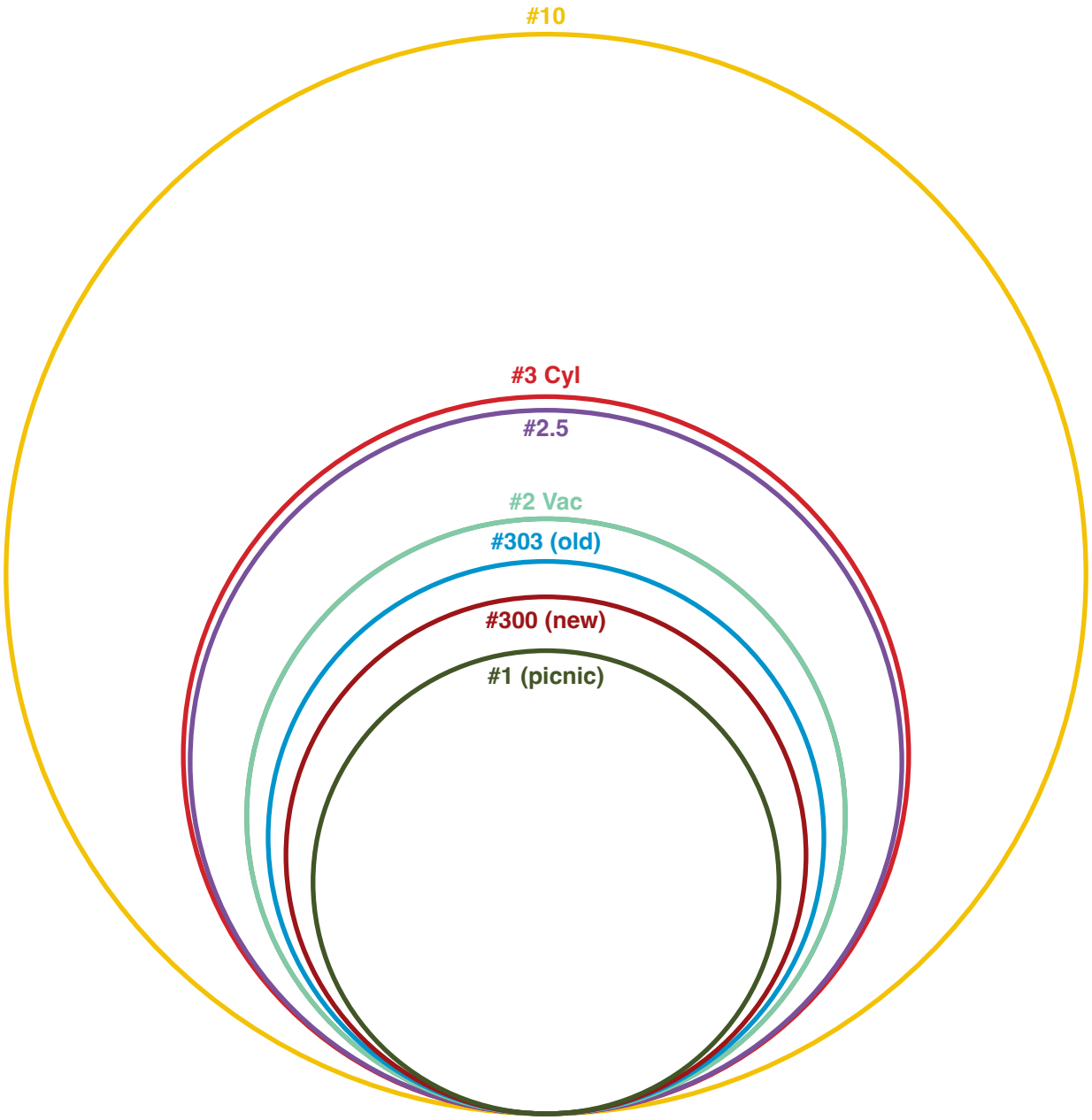


FIGURE 2: CAN SIZE TEMPLATE

Position the top side of a can directly on this actual size template to help you determine what size can it is.

Dimensional Food Can Standards: Diameter



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The University of Mississippi
School of Applied Sciences
800-321-3054
www.theicn.org