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CULINARY
INSTITUTE OF
CHILD NUTRITION

CULINARY QUICK BITES

BASIC FOOD PREP SKILLS: HOW TO
MEASURE FOOD BY WEIGHT



CULINARY QUICK BITES

BASIC FOOD PREP SKILLS: HOW TO MEASURE FOOD BY WEIGHT

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

Key Area: 2 – Operations

USDA Professional Standards Code
Food Production – 2100

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TRAINING OVERVIEW

The Culinary Quick Bites training series is a tool to help child nutrition professionals develop and refine their culinary skills. Each lesson is designed to last approximately fifteen minutes. Each lesson should be facilitated (led) by the person responsible for overseeing food production at a meal site, service area, or at the district level.

Training facilitators should review the training, in its entirety, prior to conducting the training.

This training has been developed to address a variety of learning styles. The training includes an overview of the topic presented by the facilitator, an infographic to reinforce the training topic visually, a video to demonstrate the topic, and an activity to reinforce learning.

Please contact the Institute of Child Nutrition Help Desk at 1-800-321-3054 or helpdesk@theicn.org if you have any questions about how best to facilitate this training.

KEY AREA

Key Area: 2 – Operations

PROFESSIONAL STANDARDS

FOOD PRODUCTION – 2100

Employee will be able to effectively utilize food preparation principles, production records, kitchen equipment, and food crediting to prepare foods from standardized recipes, including those for special diets.

2130 – Develop culinary skills necessary for school meal preparation.

FACILITATOR'S NOTES

This training counts for 15 minutes of training credit under USDA Professional Standards learning objective 2130 – Develop culinary skills necessary for school meal preparation.

The activity at the end of this lesson involves measuring shredded cheddar cheese. The activity helps reinforce knowledge and skills learned during this lesson. The cheese used during this lesson may be included in the next day's menu production.

Before the training, prepare for the lesson activity and set up the kitchen workstation as described on page 15.

Deliver the lesson/training to participants:

- Read the lesson overview to the participants.
- Discuss the infographic and how it relates to the training topic.
- View the instruction video with participants.
- Answer any questions participants may have on the lesson, infographic, and video.

Complete the activity as instructed on page 15.

MATERIALS NEEDED



- Scale – 1 per person (or as many as are available)
- 2 oz portion cup – 1 per person
- Shredded cheddar cheese – 1 ounce per person
- Waste pan – as needed
- Infographic: Basics at a Glance – 1 per person
- Infographic: How to Measure Food by Weight – 1 per person
- Access to a screen to show the training video. Possible options include:
 - Site computer monitor with sound
 - Projector with sound
 - Tablets and smartphones
 - A QR code has been provided for quick access to the video on handheld devices.

LESSON OVERVIEW

OBJECTIVE:

At the end of this lesson, participants will be able to demonstrate how to measure food by weight.

GENERAL INFORMATION ABOUT USING WEIGHT AS A UNIT OF MEASUREMENT

- Weight is used to determine the heaviness of a product. In the kitchen, weight is the unit of measure utilized to determine the amount of a dry or non-liquid ingredient needed to produce a recipe.
- Weight is measured using a scale.
- The measurements of weight and volume are not interchangeable.
- Weight is the most accurate form of measure for non-liquid foods.
- Liquid items must be measured by volume.
- It is easier and a best practice to weigh dry and non-liquid ingredients.
- The amount of air in each food item can affect its volume every time it is measured.
- Weight is a direct measure of an ingredient itself. By contrast, the volume includes variable amounts of empty space, especially for dry ingredients. Because much of cooking is about controlling chemical reactions based on the ratio of ingredients (for example, flour and water), changes in the ratio will alter your results.
- Proper care of a scale:
 - Only pick up and carry from the base.
 - When weighing an ingredient, use a barrier between the food item and the weighing platform.
 - Do not submerge the scale in water.
 - Clean with a brush or, if needed, a damp rag.
- How to **tare (zero)** a mechanical scale:
 - Tare a mechanical scale with a calibration nut: rotate the nut until the face of the scale reads zero, prior to weighing foods.
 - To offset the weight of the weighing vessel, place the vessel on the scale and then adjust the nut until the face of the dial reads zero. Ensure the scale being used can account for the total weight of the food and weighing vessel.
- How to **tare (zero)** a digital scale:
 - Tare a digital scale by pressing the “Tare” button.
 - To offset the weight of the weighing vessel, place the vessel on the scale and press the “Tare” button. The scale will then read zero.

HOW TO MEASURE FOOD BY WEIGHT

- Utilizing the infographic, review the process for how to measure food by weight.
- Review the embedded training video.

After we review the infographic and video, there will be an activity to reinforce skills learned.

Basics at a Glance

Recipe Abbreviations

approx.	= approximate
tsp or t	= teaspoon
Tbsp or T	= tablespoon
c	= cup
pt	= pint
qt	= quart
gal	= gallon
wt	= weight
oz	= ounce
lb or #	= pound (e.g., 3#)
g	= gram
kg	= kilogram
vol	= volume
mL	= milliliter
L	= liter
fl oz	= fluid ounce
No. or #	= number (e.g., #3)
in. or "	= inches (e.g., 12")
°F	= degree Fahrenheit
°C	= degree Celsius or centigrade

Volume Equivalents for Liquids



60 drops	= 1 tsp	
1 Tbsp	= 3 tsp	= 0.5 fl oz
1/8 cup	= 2 Tbsp	= 1 fl oz
1/4 cup	= 4 Tbsp	= 2 fl oz
1/3 cup	= 5 Tbsp + 1 tsp	= 2.65 fl oz
3/8 cup	= 6 Tbsp	= 3 fl oz
1/2 cup	= 8 Tbsp	= 4 fl oz
5/8 cup	= 10 Tbsp	= 5 fl oz
2/3 cup	= 10 Tbsp + 2 tsp	= 5.3 fl oz
3/4 cup	= 12 Tbsp	= 6 fl oz
7/8 cup	= 14 Tbsp	= 7 fl oz
1 cup	= 16 Tbsp	= 8 fl oz
1/2 pint	= 1 cup	= 8 fl oz
1 pint	= 2 cups	= 16 fl oz
1 quart	= 2 pt	= 32 fl oz
1 gallon	= 4 qt	= 128 fl oz

Equivalent Weights



16 oz	= 1 lb	= 1.000 lb
12 oz	= 3/4 lb	= 0.750 lb
8 oz	= 1/2 lb	= 0.500 lb
4 oz	= 1/4 lb	= 0.250 lb
1 oz	= 1/16 lb	= 0.063 lb

Fraction to Decimal Equivalents



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



Metric Equivalents by Weight



Customary Unit (avoirdupois)	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)

Metric Equivalents by Volume



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



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Scoops (Dishers)



Size/No. ¹	Level Measure	Color Code ²
6	2/3 cup	
8	1/2 cup	
10	3/8 cup	
12	1/3 cup	
16	1/4 cup	
20	3-1/3 Tbsp	
24	2-2/3 Tbsp	
30	2 Tbsp	
40	1-2/3 Tbsp	
50	3-3/4 tsp	
60	3-1/4 tsp	
70	2-3/4 tsp	
100	2 tsp	

¹ Scoops are left or right hand or squeeze-type that can be used for both hands. Number on the scoop indicates how many level scoopfuls make one quart. For example, eight No. 8 scoops = 1 quart.



² Use colored dots matching the brand-specific color coding of scoop sizes.

Ladles Portion Servers



Ladle fl oz	Approx. Measure	Portion Server fl oz
1 oz	1/8 cup	1 oz
2 oz	1/4 cup	2 oz
3 oz	3/8 cup	3 oz
4 oz	1/2 cup	4 oz
6 oz	3/4 cup	6 oz
8 oz	1 cup	8 oz
12 oz	1-1/2 cups	—

Ladles and portion servers (measuring-serving spoons that are volume-standardized) are labeled "oz." "Fl oz" would be more accurate since they measure volume, not weight.

Use ladles for serving soups, stews, creamed dishes, sauces, gravies, and other liquid products.

Use portion servers (solid or perforated) for portioning solids and semi-solids such as fruits and vegetables, and condiments.

Cooking or Serving Spoons

Solid Spoons



Perforated Spoons



Slotted Spoons






Spoons vary in length (11", 13", 15", 18", 21") for ease of use in cooking or serving. Spoons can have plastic handles that are heat-resistant. Level scoops, ladles, and portion servers provide more accurate portion control than serving spoons that are not volume-standardized measure.

Specialty Spoons



A thumb notch on a server or spoon handle prevents the spoon from slipping into the pan and prevents hands from sliding into the food. Triple-edge (solid or perforated) spoons have a flat edge that increases the area where the spoon touches the bottom of the pan when stirring.

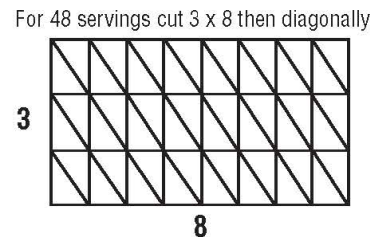
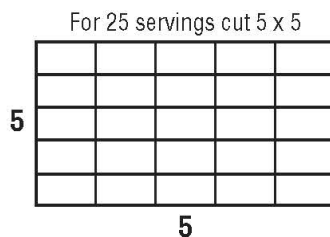
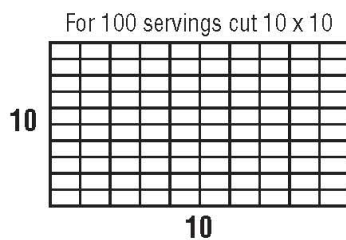
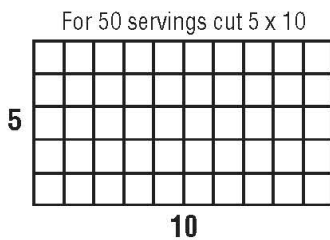
Steamtable Pan Capacity

Pan Size	Approx. Capacity	Serving Size	Ladle (fl oz)	Scoop #	Approx. # Servings
 12" x 20" x 2-1/2"	2 gal	1/2 cup	4 oz	8	64
		3/8 cup	3 oz	10	80
		1/3 cup	2.65 oz	12	96
		1/4 cup	2 oz	16	128
 12" x 20" x 4"	3-1/2 gal	1/2 cup	4 oz	8	112
		3/8 cup	3 oz	10	135
		1/3 cup	2.65 oz	12	168
		1/4 cup	2 oz	16	224
 12" x 20" x 6"	5 gal	1/2 cup	4 oz	8	160
		3/8 cup	3 oz	10	200
		1/3 cup	2.65 oz	12	240
		1/4 cup	2 oz	16	320

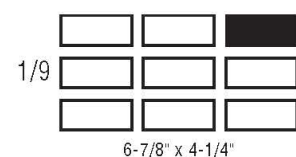
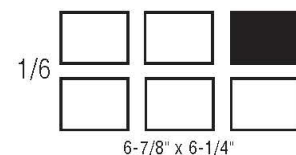
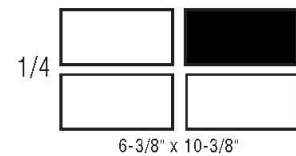
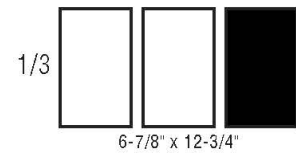
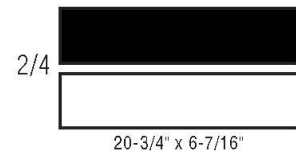
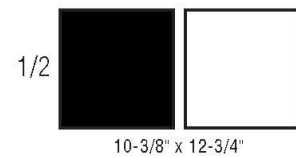
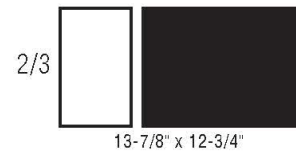
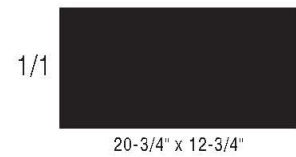
Approximate Dimensions of Serving Sizes from Different Pan Sizes

Pan	Approx. Size	No. and Approx. Size Servings per Pan		
		25	50	100
Baking or steamtable	12" x 20" x 2-1/2"	2" x 3-3/4"	2" x 2"	-----
Sheet or bun	18" x 26" x 1"	3-1/4" x 5"	3-1/4" x 2-1/2"	1-3/4" x 2-1/2"

Cutting Diagrams for Portioning



Other Pan Sizes



Steamtable or counter pans are available in various sizes. Smaller size pans may require the use of an adapter bar.

Culinary Quick Bites

BASIC FOOD PREPARATION SKILLS

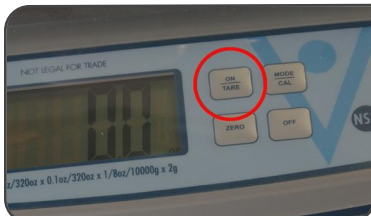
HOW TO MEASURE FOOD BY WEIGHT



Mechanical Scale

Digital Scale

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



To ensure accuracy, a scale must be set to zero or tare before weighing an item.



Tare a mechanical scale with a calibration nut or the dial on the face of the scale.



To offset the weight of the weighing vessel (food pan or portioning disposable), place the vessel on the weighing platform of the scale and tare the scale. The scale will then read zero.



Simply rotate the nut or dial until the face of the scale reads zero, prior to weighing foods.

PRO TIP:



Non-liquid food items, including those “wet or moist” like tomato paste, pumpkin puree, or honey should be measured by weight.

PRO TIP:



Dry herbs, spices, and leavening agents (baking powder, cream of tartar, baking soda) can be measured by volume, in small quantities.



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CULINARY QUICK BITES

How to Measure Foods by Weight

[WATCH THE VIDEO](#)

<https://vimeo.com/854356818/52f1f23660>

QR CODE

Utilize the QR code embedded to the right to share the video with staff utilizing handheld devices such as smartphones and tablets. Use the photo app on the smart device to scan the code to be directed to the video.



ACTIVITY

SETUP

MATERIALS:



Scale
– 1 per person (or as many as are available)



Shredded cheddar cheese
– 1 ounce per person



Infographic: How to Measure Food by Weight
– 1 per person



2 oz portion cup
– 1 per person



Waste pan
– as needed



Infographic: Basics at a Glance
– 1 per person

NOTE: If your site does not have enough materials for all participants to complete the activity simultaneously, divide participants into groups based on your materials. Allow enough time for each participant to complete the activity.

SETUP INSTRUCTIONS FOR FACILITATOR

- 1** Prior to the training, gather all of the materials needed for the activity. Set up a workstation for each participant with a scale, portion cup, shredded cheese, and waste pan.
- 2** During the activity, remember to monitor and observe staff as they practice their measurement skills.

ACTIVITY

ACTIVITY INSTRUCTIONS FOR PARTICIPANTS

- 1** Refer the participants to the infographic. Then read the instructions for the activity. Ask the participants if there are any questions before beginning the activity.
- 2** Instruct all participants to wash their hands and put on single-use gloves before starting the activity.
- 3** Participants will demonstrate the difference between measuring by weight or volume using two items commonly found in child nutrition programs, a 2 oz portion cup and shredded cheddar cheese.
 - Place portion cup on scale and tare.
 - Fill the portion cup with shredded cheddar cheese.
 - Yield – volume 2 oz, weight approx. 1 oz

POST ACTIVITY

- After completing the hands-on activity, recap the lesson with the participants. Offer an opportunity for participants to share their learning experience during the training and highlight any tips or takeaways they want to share with the group.
- If time allows, facilitate a discussion with the participants. Suggested discussion topics include:
 - Ask participants to discuss menu items they measure using a scale versus measuring cups.
 - Ask participants to describe how they can use a scale in their daily activities.
- Ask if the participants feel more comfortable with using a scale to weigh foods or want more time to develop the skill further if time allows.
- Plan the next training session based on the needs of your staff.



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