



MODULE 3:

Weights and Measures

This workbook complements the corresponding online module in Canvas and is for you to use as you would like. Make notes of things you want to remember and write down questions for your director or to ask the chefs when you see them for the hands-on training. All videos, handouts, and activities are online in Canvas.



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**Remember:
Start with the pre-quiz in Canvas!**



WEIGHTS & MEASURES

Description:

In this module, participants will review common measuring tools and scales, learn how to select the right portioning tool and describe the difference between weight and volume.

Professional Standards - Learning Codes:

2130 - Culinary Skills

2140 - Use and Care of Equipment

Objectives:

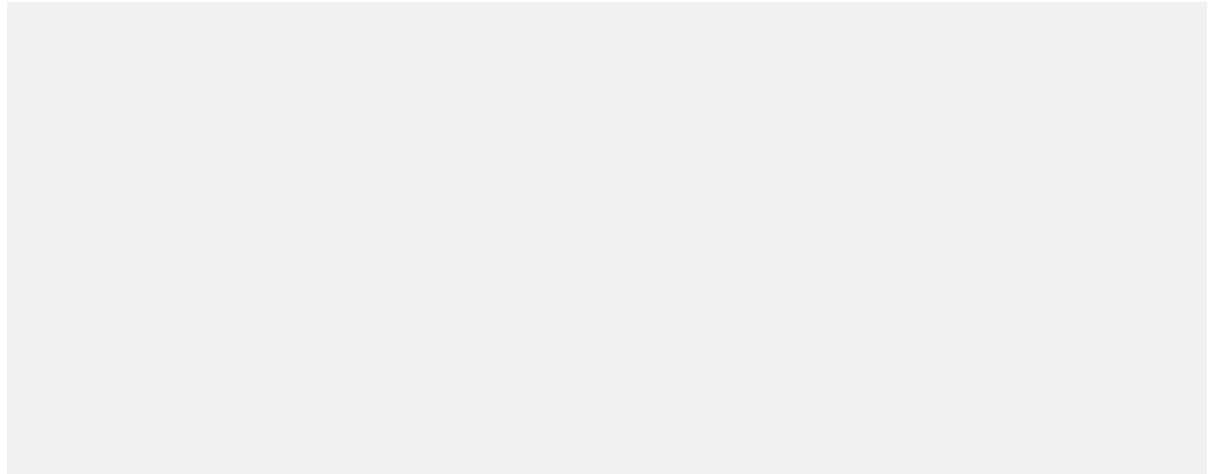
- Identify measuring tools and describe when to use each type.
- Explain how and why to tare a scale.
- Describe different portion tools used in school nutrition programs.
- Explain how to determine which scoop or spoodle to use in a recipe.
- Explain the difference between weight and volume.
- Describe why weight is the better choice.
- Demonstrate accurate measuring and weighing.



MEASURING TOOLS AND SCALES

As you listen to the video presentation or read the transcript, you may feel confident in your knowledge of this topic. That's great!

However, your staff may feel less confident. How can you help your staff learn more about this topic and feel as knowledgeable as you? Write down your ideas below.

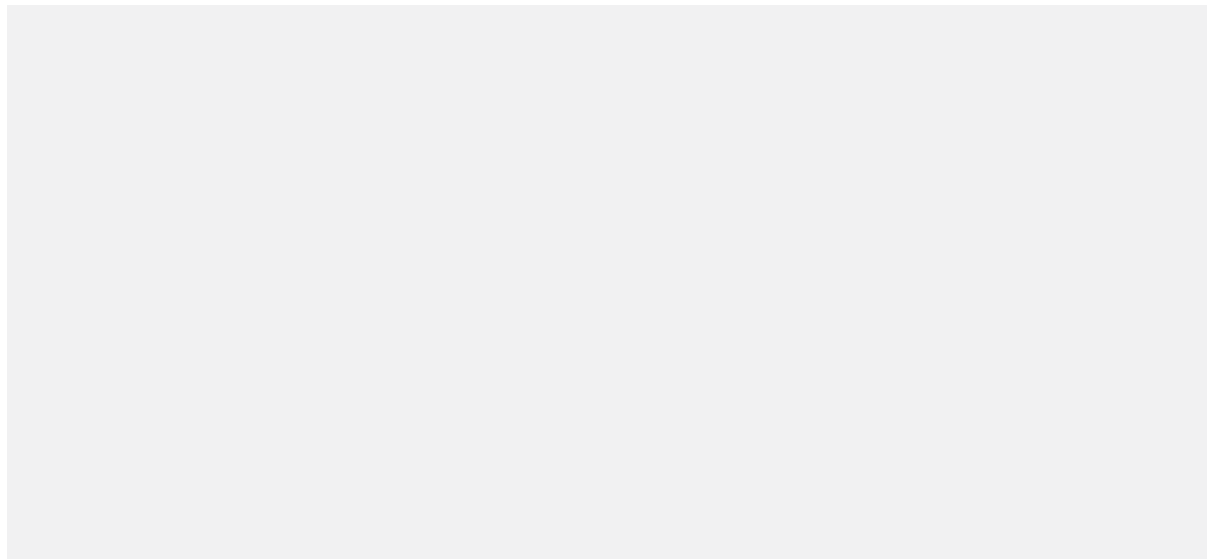


Want more? See the Weights and Measures reference at the end of the workbook.

Activity: What went wrong?

Complete this activity and find out!

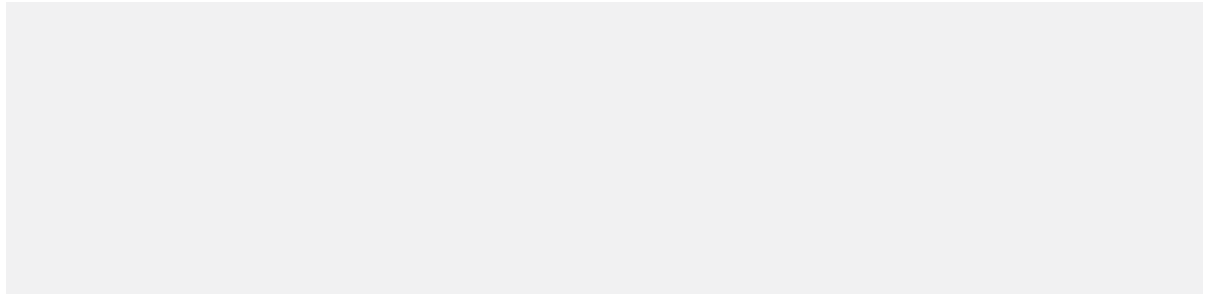
School chef Uyen baked a scratch-made banana split bread featuring local strawberries, but it came out dense and a little salty. Uyen had measuring spoons, cups, and a scale at her workstation, but the measuring spoon labels were hard to read because of wear and tear. She also did not have a tool to level the spices. So what might have gone wrong? List potential mishaps below.



Banana Split Bread	Category: Breakfast 96 Servings	Cooking Process: No HACCP Process	
Ingredients	Weight	Measure	Directions
Strawberries, fresh, diced		3 qt	1. Preheat convection oven to 325°.
Flour, white whole wheat	3 lb 8 oz	3 qt + 2 cups	2. Rinse strawberries and bananas under running water and drain.
Flour, all-purpose	3 lb 8 oz	3 qt + ½ cup	3. Remove stem from strawberries using a tomato scoop. Dice berries into 1/2" pieces. Set aside. Note: Edible portion is approximately 4 lb diced berries.
Baking powder		½ cup	4. Spray two full-sized sheet pans with pan release spray and set aside.
Baking soda		1 Tbsp + 1 tsp	5. Combine white whole wheat flour, all-purpose flour, baking powder, baking soda, and salt in a large mixer bowl. Whisk until thoroughly combined. Add diced strawberries and chocolate chips to flour mixture.
Salt		1 Tbsp + 1 tsp	6. In a large mixing bowl, peel and mash bananas. Edible portion is approximately 7 lb.
Bananas, mashed		3 qt	7. Add sugar, milk, oil, and eggs to bananas. Stir until thoroughly combined.
Sugar, granulated		1 qt	8. Add banana mixture to dry ingredients. Using a flat paddle, gently mix ingredients together until just combined. Do not overmix or bread can become tough.
Milk, low-fat or fat-free		1 qt	9. Pour batter (1 ½ gallons) into each prepared full-size sheet pan.
Oil, canola		3 cups	10. Bake for approximately 30-35 minutes, until top turns golden brown and a knife inserted into the center comes out clean.
Eggs, large		16 eggs	11. Cut each pan 6 x 8 (48 servings per pan). Serve 1 square for a 2 oz eq whole grain rich grain.
Chocolate chips, semi-sweet		1 qt + 2 cups	CCP: No bare-hand contact with ready-to-eat food.
Vanilla extract		1 Tbsp	

PORTION TOOLS

Listen to the video presentation or read the transcript. Do you know all your scoops and spoodles? Make any notes below to share with your staff.



What's the Scoop? Activity

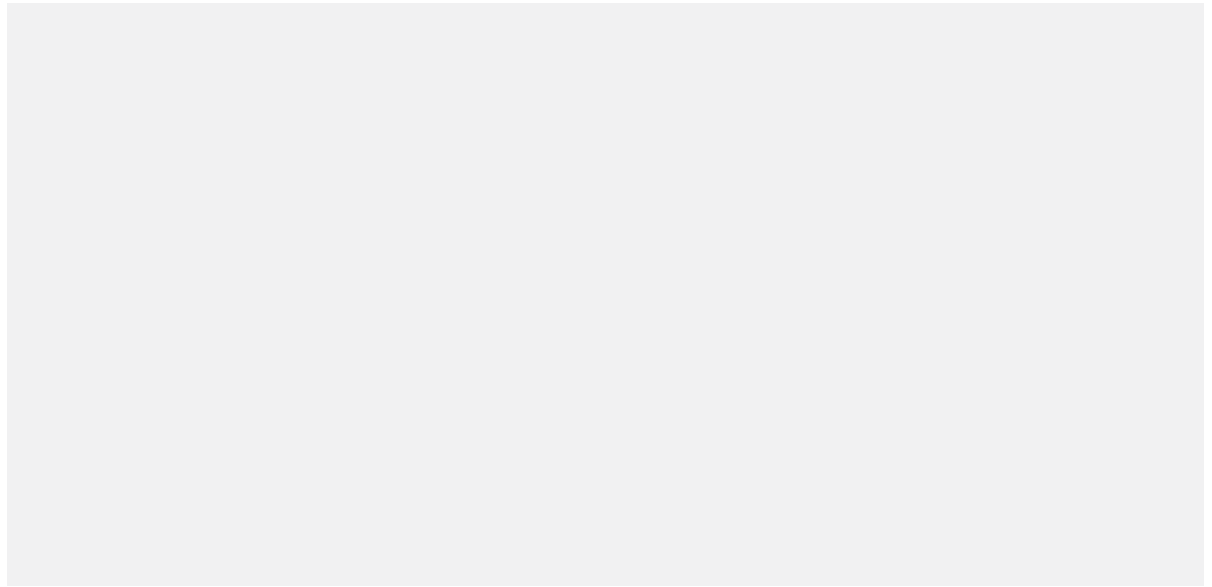
First, evaluate the below menu items with serving sizes and determine which tool(s) you need for service. Then, take a scavenger hunt in your school kitchen and see if you have all the tools you listed! The answer key will be on the last page of this workbook.

Menu Items	Serving Size	Tool(s)	Got it? Y or N
Hummus (condiment)	2 Tablespoons		
Spanish Rice	½ cup		
Hulk Fruit Smoothie	8 fluid ounces		
Moroccan Chicken Tagine (similar to a thick stew)	⅔ cup serving + 1 cup rice		
Cuban Black Beans	½ cup		
Lo Mein Noodles	¾ cup		
Mashed Potatoes	½ cup		
Local Blueberry Crisp	¼ cup		

P.S. Make sure you have a “Basics at a Glance” poster hung up in your kitchen and office. Do you need a Spanish version? Download or order one from [ICN](#) if needed.

WEIGHT VS. VOLUME

Weight and volume are concepts that many nutrition professionals confuse. If you have questions about these concepts, listening to the video presentation or reading the transcript will likely answer them. But if you still have questions, jot them down below to ask the chefs when you see them in person.



Bonus video! Chef V discusses weight vs. volume while demonstrating which method is better.

Activity: How much does it weigh?

Weigh 1 cup of two foods to compare. Choose from lettuce, rice, oats, flour, raisins, macaroni noodles, dried cereal, or anything else you can find!

List the food item below and then the weight!

Food Item (1 cup)	Weight



**Wrap up this module by taking
the post-quiz and seeing what
you've learned.**

Weights and Measures Reference

Do I use a scale or a measuring cup? What are they asking for? Weights and measures are often confused but are not the same. Don't let it weigh you down. Let's take a measured approach and look at how these level out!

Dry Measuring Tools

Dry Measuring Cups



Underfilled



Correctly filled

Dry Measuring Spoons



Not recommended



Recommended for most accurate measure



Overfilled



Level spices to measure accurately

Chef's Tip: Purchase the same brand of measuring spoons for all schools in your district or division. Different brands measure differently! Also, be sure they are NSF certified.

Liquid Measuring Tools

Liquid Measuring Cups



Spout = liquid measure



Meniscus

Did you know? The liquid in a measuring cup is not straight across. It is actually concave! Get eye level to look at the bottom of the curve.

Scales

Spring-loaded



Turn the dial to tare the scale

Digital



Press the tare button to remove the weight of the container

Did you know? Tare = remove the weight of the container

Chef's Tip: Always carry a spring-loaded scale by the base.

Weight vs. Volume

- Weight: how heavy an item is
- Volume: how much space an item takes up

Are they the same?



2 quarts whole grain pasta



Weight = 21.50 oz

Did you know? While 2 quarts equals 64 **fluid** oz, that is not the same as oz by weight. Two quarts of pasta = 21.50 oz.



2 oz cup



Weight = 1 oz

Did you know? Portion cups are named by volume, not weight. For example, a 2 oz portion cup holds 1 oz shredded cheese by weight.

Chef's Tip: Fluid oz does not equal oz on a scale. If a recipe calls for oz, pull out the scale!

Which one do I choose?

Ingredients	Amount		Amount	
	Weight	Measures	Weight	Measures
Black pepper		1/8 tsp		1/2 tsp
Apple, green, diced 1/2"	2 oz	1/2 cup	8 oz	2 cups
Cilantro, fresh, chopped	0.3 oz	1/4 cup	0.8 oz	1 cup
Onion, red, raw, diced 1/4"	1.6 oz	1/4 cup	6.1 oz	1 cup
Lettuce, romaine, shredded	3.5 oz	2 1/2 cup	13.9 oz	2 qt + 2 cups

Chef's Tip: Many recipes include both a weight and a volume measure. Go with the weight! We can all measure volume differently, but weight is the same every time!



1 cup flour, packed



1 cup flour, spooned in and leveled

Did you know? Often when a baked good comes out dense, it's from improper measuring. Measuring the amount by weight helps guarantee a light and fluffy texture!

So remember...choose the **right tool** for the job.

Weight and volume are not equal; when offered a choice, go with the weight!

Answers for “What Went Wrong” Activity

Potential answers: School chef Uyen used the volume measure for flour vs. weight and packed it. She under-measured the baking powder or soda, not scraping the measuring spoons flush. She over-measured salt and used a heaping Tbsp and/or teaspoon. She might have also mixed up the measuring spoons.

Answer Key for What’s the Scoop Activity

Menu Items	Serving Size	Tool(s)
Hummus (condiment)	2 Tablespoons	#30 disher
Spanish Rice	1/2 cup	4 oz spoodle
Hulk Fruit Smoothie	8 fluid ounces	1 cup liquid measuring cup
Moroccan Chicken Tagine (similar to a thick stew)	2/3 cup serving + 1 cup rice	#6 disher + 8 oz spoodle
Cuban Black Beans	1/2 cup	4 oz perforated spoodle
Lo Mein Noodles	3/4 cup	6 oz spoodle + tongs (optional)
Mashed Potatoes	1/2 cup	#8 disher
Local Blueberry Crisp	1/4 cup	#16 disher