



# Teaching Math in Your Culinary Program

[www.realityworks.com](http://www.realityworks.com)

# Objectives

- Teaching Generation Z
- Find tips for teaching basic math skills
- Discover ideas for integrating foundational math concepts into your culinary lessons
- Free resources!
- BONUS: Learn about the Realityworks Culinary Math Training Kit

# Why is Math So Important?

Let's say that Josephine runs a successful restaurant that serves 350 customers per day. If she doesn't pay attention to her food costs, and her menu items are incorrectly priced by \$0.75, Josephine could lose nearly \$100,000 in revenue per year.

- *$(350 \text{ customers} \times 365 \text{ days in a year}) \times \$0.75$*
- *$127,750 \text{ customers per year} \times \$0.75 = \$95,812.50$*



# What Do They Need to Know?



- Basics
  - Decimals
  - Fractions
  - Ratios
  - Percentages
  - Measurement
  - Conversions



# How Do We Teach? Don't Confuse!

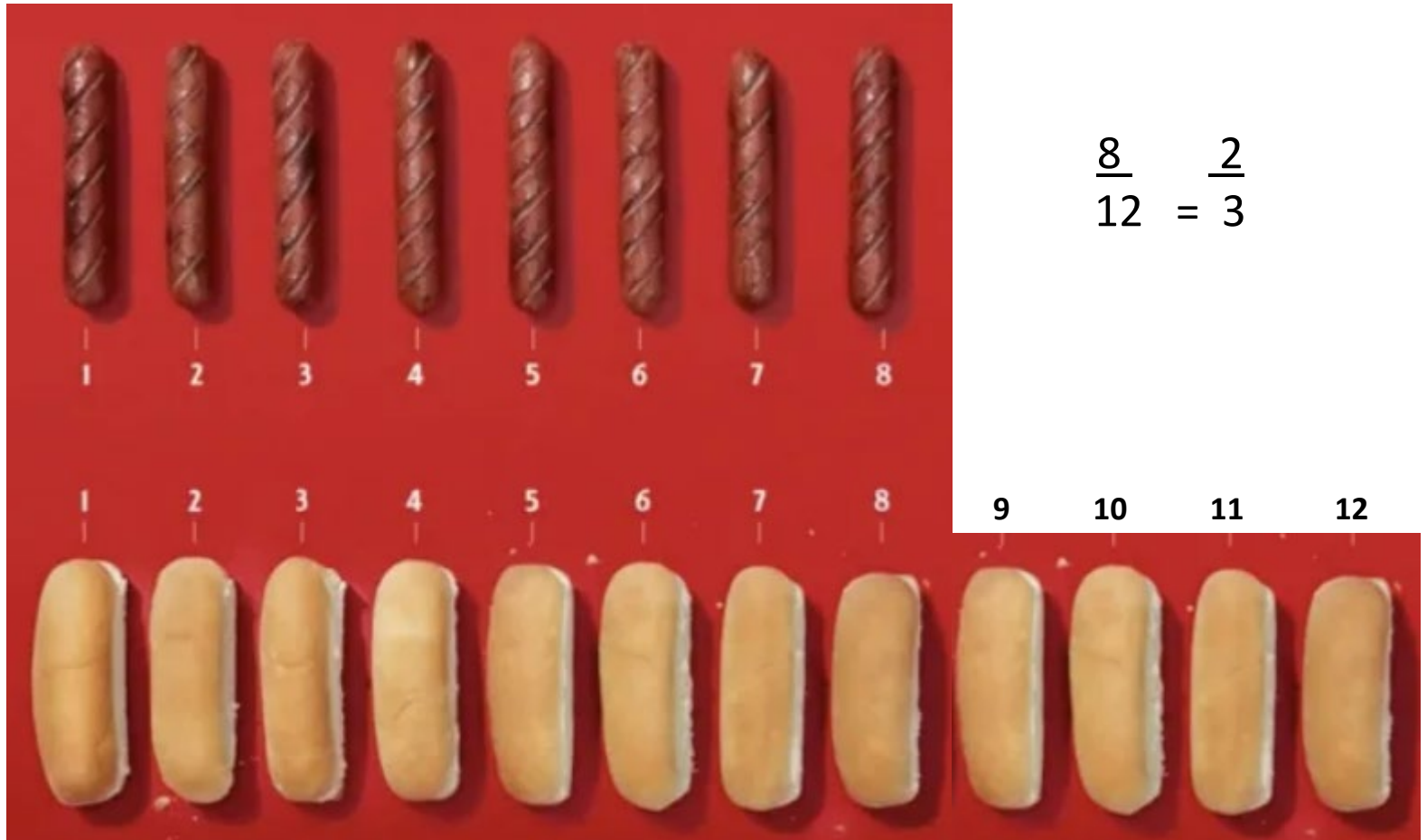




# How Do We Teach? Examples



# How Do We Teach? Example





# How Do We Teach? **Bite Sized Chunks**



<https://blog.tcea.org/generation-z-snackable-content/>



# Bite Sized Chunks – Here's More..

## Overcoming the Most Common Mistake Educators Make Leading Generation Z

<https://growingleaders.com/overcoming-the-most-common-mistake-educators-make-leading-generation-z/>

## Teachers Meet Generation Z

<https://www.hollyclark.org/2019/04/30/teachers-meet-generation-z/>

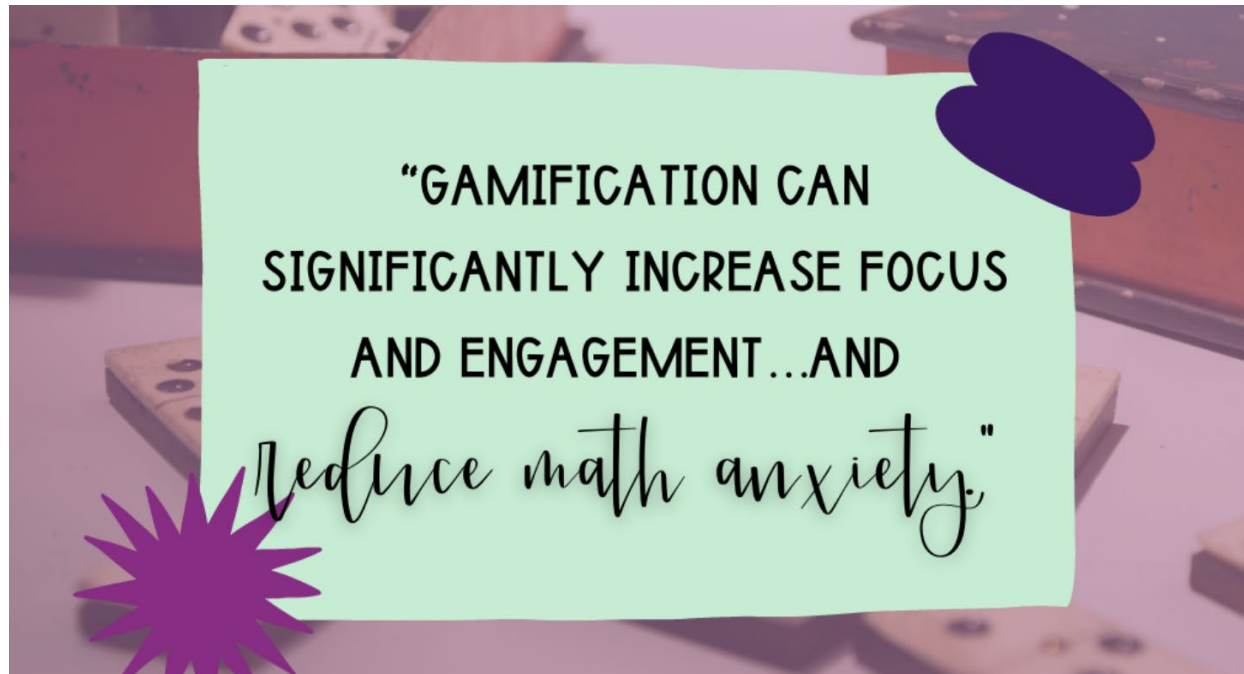
## Learning From Gen Z - Training For Today's Workforce

<https://www.linkedin.com/pulse/learning-from-gen-z-training-todays-workforce-jackie-peer/>

# Learning by Generation..

| Silents                                                                                                                           | Baby Boomers                                                                                                                         | Generation X                                                                                                          | Generation Y                                                                                                                        | Generation Z                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Born 1925-1945                                                                                                                    | Born 1946-1964                                                                                                                       | Born 1965-1981                                                                                                        | Born 1982-1995                                                                                                                      | Born 1996-2009                                                                                                                                                                                  |
| a.k.a.<br>Traditionalists<br>Veterans<br>Builders                                                                                 | a.k.a.<br>Boomers<br>Me Generation                                                                                                   | a.k.a.<br>Gen X<br>Latch-Key Kids<br>MTV Generation<br>13 <sup>th</sup> Generation                                    | a.k.a.<br>Gen Y<br>Millennials<br>Echo Boomers                                                                                      | a.k.a.<br>iGeneration (iGen)<br>Post-Millennials<br>Centennials                                                                                                                                 |
| Telephone                                                                                                                         | TV                                                                                                                                   | PC                                                                                                                    | Internet                                                                                                                            | iPhone, Social Media                                                                                                                                                                            |
| Largely disengaged from technology                                                                                                | Early IT adopters                                                                                                                    | Digital immigrants                                                                                                    | Digital natives                                                                                                                     | Technoholics                                                                                                                                                                                    |
| Face-to-face                                                                                                                      | Face-to-face; telephone or email if required                                                                                         | Text messaging or email                                                                                               | Online/social media and text messaging                                                                                              | Visual communication using technology                                                                                                                                                           |
| <b>Teach Me</b><br>Prefer a structured "command and control" oriented learning, classroom lectures, books and on-the-job training | <b>In Person</b><br>Prefer classroom setting with in-class participation; will use technology and may prefer books to reading online | <b>Learn by Doing</b><br>Prefer self-directed learning and freedom to figure things out on own; computer before books | <b>Short and Sweet</b><br>Thrive on flexibility and space to explore; favor on-demand, highly personalized and interactive training | <b>Get it Now. Do it Now. Learn it Now.</b><br>Want to learn on their own terms; prefer visual and interactive, bite-sized and hands-on learning; use of technology and social media is a given |

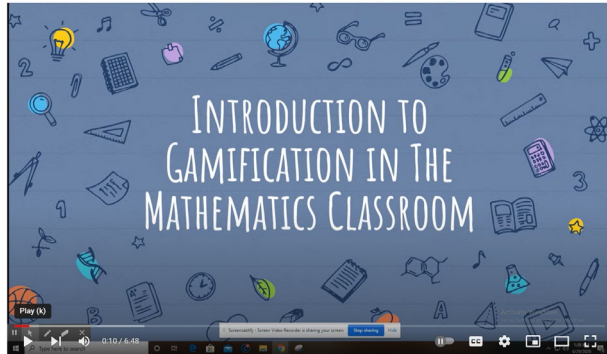
# How Do We Teach?



kpkpkp.com

*4 Innovative Ways to Teach with Video Games* – Leila Meyer

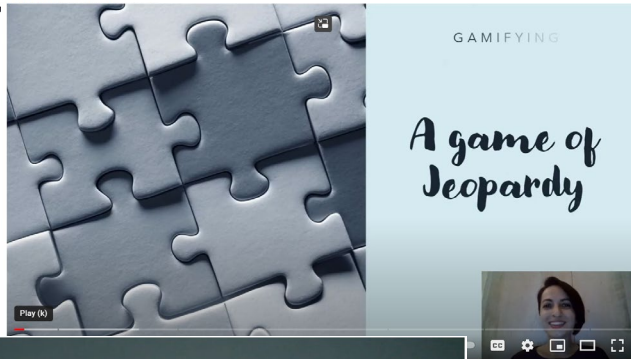
# Resources for Gamifying Math



Introduction to Gamification

## ***Introduction to Gamification in the Math Classroom***

<https://www.youtube.com/watch?v=iYzKgp4JfbM>



## ***A Game of Jeopardy***

<https://www.youtube.com/watch?v=JyW3bWI8uF8>



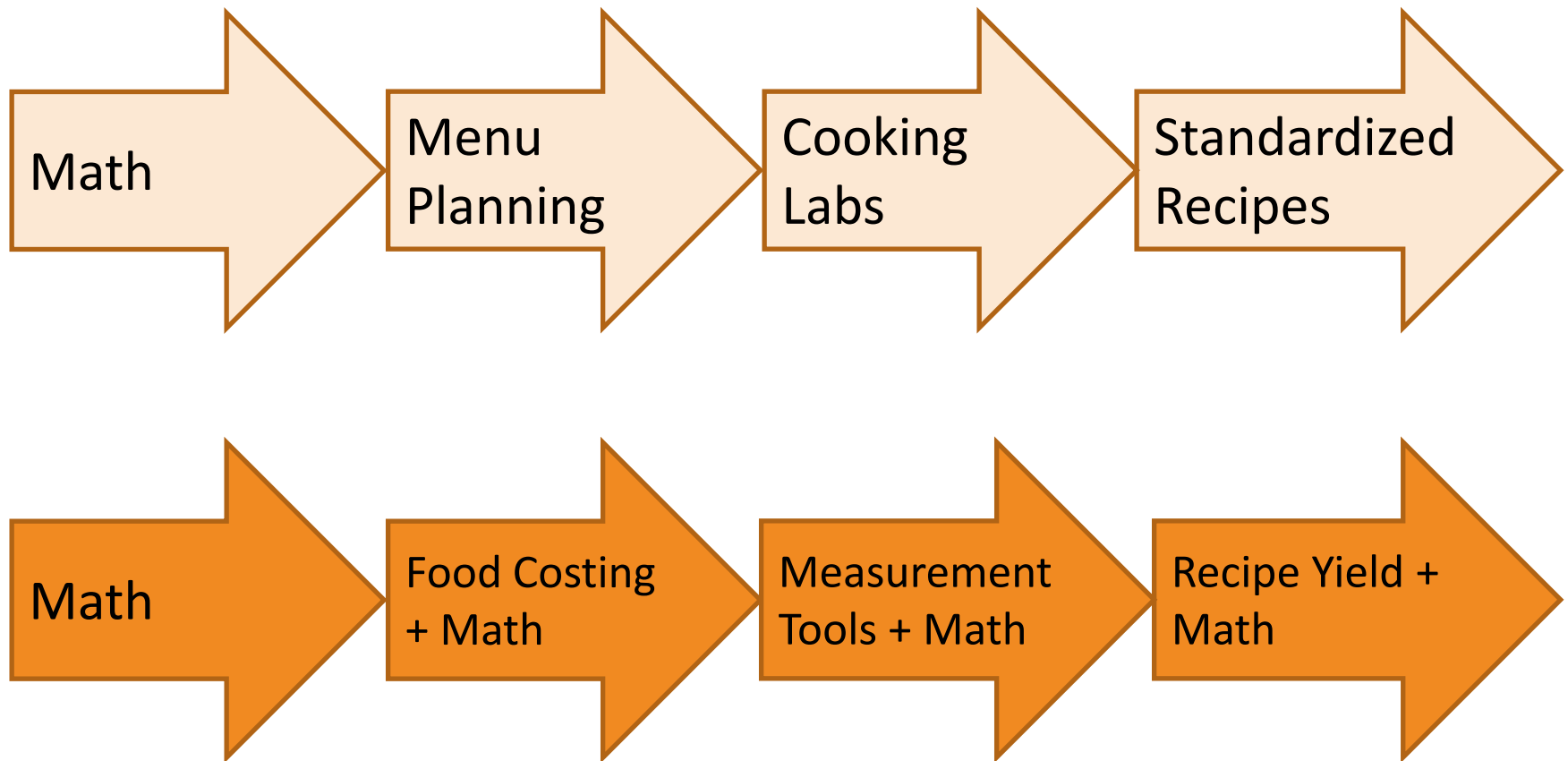
PokeMath - Gotta Solve 'Em All! Pokemon Gamification of Math Class

## ***PokeMath – Gotta Solve Em All Pokemon Gamification of Math Class***

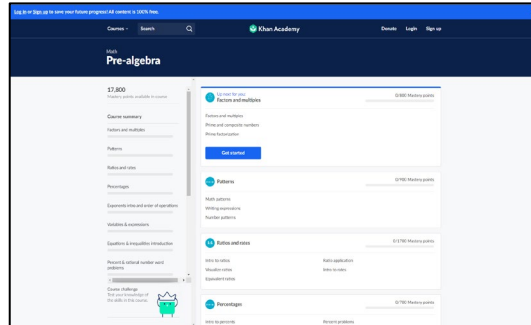
<https://www.youtube.com/watch?v=z-78rvo8pOw>



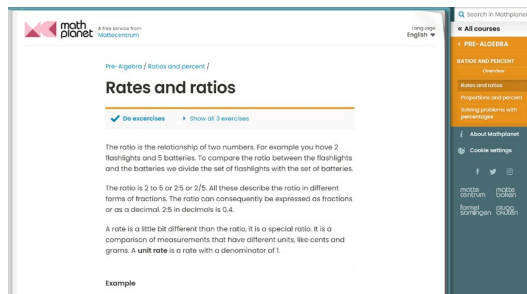
# How Do We Teach? **Integration**



# How Do We Teach? **Smarter**



[www.khanacademy.org](http://www.khanacademy.org)



<https://www.mathplanet.com>



<https://www.homeschoolmath.net>

# How Do We Teach? Use Videos!

## FIVE REASONS WHY EXPLAINER VIDEOS HELP TEACH GENERATION Z

written by Guest Blogger | September 14, 2017

**5 Reasons**  
Why Explainer Videos  
Are Ideal For Teaching  
Generation Z



**70%**  
of Gen Z students  
agree that  
technology helps  
them learn

**92%**  
are online on  
a daily basis

their **8 sec**  
attention span  
needs a simple  
and fast message

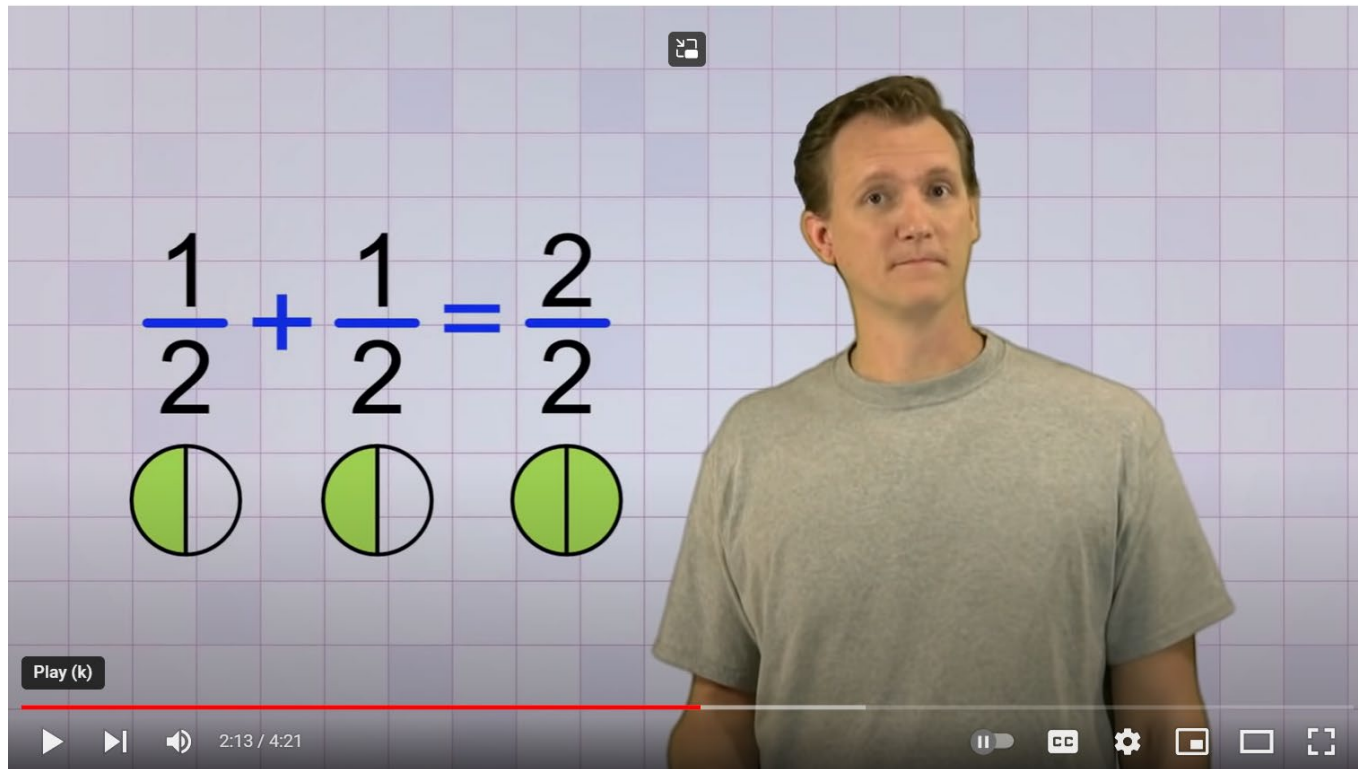
**2-4 hours**  
of video content  
consumed a day

**10+**  
hours of  
tech use a day

# How Do We Teach? Use Videos!

## Adding and Subtracting Fractions (4:21)

<https://www.youtube.com/watch?v=5juto2ze8Lg>



# What Do They Need to Know, Part 2



## Culinary Applications

- Calculating Food Costs
- Kitchen Measuring Tools
- Converting Standardized Recipes



# Calculating Food Costs Example

## Edible Portion v. As Purchased

The Amount Needed for  
the Recipe

Every Ingredient has a Yield  
Percentage



The Amount Purchased  
and the Size Purchased

also known as  
Raw Food Cost



# Unit Cost Formula

The Cost of the Amount in the recipe

As Purchased Cost  
\_\_\_\_\_ = Cost per unit  
# of Units

Cost per Unit x Amt in the recipe =  
Edible Portion cost

Hint: the Units need to be the Same  
If not, you need to convert one of them  
Ex: 1 lb. = 16 oz



# Unit Cost Example

Try this Example:

You spent \$5.29 for 32 oz of cheese

The recipe uses 6 oz of cheese

What is the cost of the amount in the recipe for the cheese?



# Measuring Techniques

## Dry Volume

Over fill the measuring cup or measuring spoon and scrape off excess

\*Some recipes call for packing ingredients like brown sugar



**Tools:** measuring cups, measuring spoons

**Suggested Video:** How to Measure Dry Ingredients Like a

Pro (1:48) <https://www.youtube.com/watch?v=XIV8h3LJNj4>

# Measuring Techniques

## Liquid Volume

Set the clear measuring cup on a flat surface.

Read with your eye at the level of the mark

Fill to the mark



**Tools:** graduated containers, measuring cups, measuring spoons

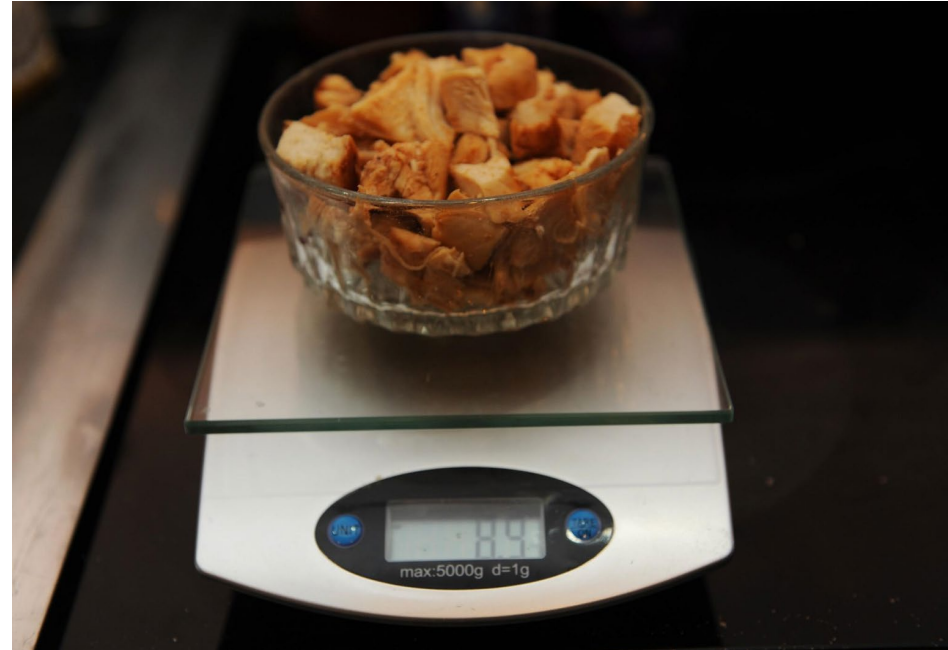
**Suggested Video:** How to Measure Liquid Ingredients for Beginners (1:01)

<https://www.youtube.com/watch?v=twkjkLftHCQ>

# Measuring Techniques

## Weight

Place the container on the scale and reset the scale to zero to account for the tare weight, the weight of the container the food is in.



**Tools:** scale, containers to hold food on scale

**Suggested Video:** How to Use a Digital Scale That Has Tare

Weight (2:01) <https://www.youtube.com/watch?v=MTWCAIGRw6U>



# Kitchen Measuring Tools Activity

## Measuring for Food Lab

<https://www.uen.org/lessonplan/view/25773>

The resources include the lesson plan, slide presentation, activities, worksheets, and recipes.

**LAB PLANNING SHEET: OATMEAL MUNCHIES**

Date of Lab \_\_\_\_\_ Unit \_\_\_\_\_ Period \_\_\_\_\_ Score \_\_\_\_\_

Student Names \_\_\_\_\_

**Ingredients**

2 Tbsp. margarine  
1 1/4 c. plus 2 Tbsp. sugar  
2 Tbsp. brown sugar  
2 Tbsp. milk  
2 tsp. cocoa  
Dash salt  
2 Tbsp. peanut butter  
1 1/4 tsp. vanilla  
3/4 c. quick oats  
2 Tbsp. flour



- Line the jelly roll pan or cookie sheet with waxed paper.
- In a small sauce pan combine margarine, sugar, brown sugar, milk, cocoa, and salt.
- Place sauce pan on burner with medium high heat. Stir with a wooded spoon.
- Bring mixture to a boil and let it boil for one minute (Begin timing when the first bubble rises from the bottom of the pan).
- Remove pan from heat and place on heat-resistant surface.
- Add peanut butter, vanilla, quick oats, and flour. Stir until well mixed. (Mixture should be moist and shiny. If mixture is dry and crumbly, add more milk 1 t. at a time until mixture is moist and shiny.)
- Using two small spoons, scoop a small portion of mixture into one spoon; with the back of the second spoon, push the mixture onto your jellyroll pan or cookie sheet lined with waxed paper.
- Allow mixture to cool in refrigerator before eating. (It sets up as it cools).

Makes about 12 cookies

Before you begin, turn this paper over and complete the lab planning sheet. Assign at least one preparation duty and one cleanup duty to each member of your group. Put the name of the student who is responsible for each task on the line in front of that task.

When you have completed your lab work as outline, fill in this section for evaluation.

**GRADING SCALE (10 = Excellent, 1 = Needs Improvement)**

|                                    | Student Grade | Teacher Grade |
|------------------------------------|---------------|---------------|
| Lab area is clean                  |               |               |
| Followed directions                |               |               |
| Lab was completed on time          |               |               |
| Overall rating of product          |               |               |
| Group members worked well together |               |               |
| TOTAL                              |               |               |

**Kitchen Measuring Equipment**

Click to add subtitle



**Measuring Practice Relay**

Go into your kitchen lab and gather the following measuring equipment.

Measuring spoons  
Liquid Measuring cup  
Dry measuring cup

Number each person in your kitchen group 1-4.

When the teacher says go please do the following. (The next student is not allowed to start until the student before them is sitting down.)

- Measure 1 cup of flour at the teacher demo area and get checked off before returning to your kitchen.
- Measure 1/2 cup sugar at the teacher demo area and get checked off before returning to your kitchen.
- Measure 1 Tbs. vanilla at the teacher demo area and get checked off before returning to your kitchen.
- Measure 1/4 cup brown sugar and get checked off before returning to your kitchen.

When all members of your group are finished, wash, dry and put away all the measuring equipment. Then one student will go back to the teacher demo area and announce being finished.

**Measuring Practice Relay**

Go into your kitchen lab and gather the following measuring equipment.

Measuring spoons  
Liquid Measuring cup  
Dry measuring cup

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# Converting Standardized Recipes Activity

## Adjusting Standardized Recipes Lab

<https://theicn.org/cacfp-ittrain-simple-lesson-plans/training-scripts/Adjusting-Standardized-Recipes.pdf>

The resources include the lesson plan and:

- Lesson at a glance
- Preparation checklist
- Instructor script
- Recipe
- Worksheets
- Answer keys



Adjusting Standardized Recipes

CACFP iTrain Simple Lesson Plan

### Broccoli Bites USDA Recipe for CACFP

These Broccoli Bites are a delicious combination of broccoli, bread crumbs, and low-fat cheese all baked together.

CACFP Crediting Information  
1 broccoli bite provides 1/2 cup vegetable.

| Ingredients                      | 25 Servings |                  | 50 Servings |                   | Directions                                                                                                                                                                    |
|----------------------------------|-------------|------------------|-------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                  | Weight      | Measure          | Weight      | Measure           |                                                                                                                                                                               |
| Frozen broccoli, chopped         | 4 lb 12 oz  | 1 gal 3 qt 1 cup | 9lb 8 oz    | 3 gal 2 qt 2 cups | 1. Combine broccoli, cheese egg whites, and bread crumbs in a large bowl. Stir well.                                                                                          |
| Low-fat cheddar cheese, shredded | 12 oz       | 3 cups           | 1 lb 8 oz   | 1 qt 2 cups       |                                                                                                                                                                               |
| Frozen egg whites, thawed        | 1lb 12 oz   | 3 1/2 cups       | 3 lb 8 oz   | 1 qt 3 cups       |                                                                                                                                                                               |
| Bread crumbs                     | 15 oz       | 3 1/4 cups       | 1 lb 14 oz  | 3 1/2 cups        |                                                                                                                                                                               |
|                                  |             |                  |             |                   | 2. Using a No. 6 scoop, portion 2/3 cup (about 4 oz) broccoli mixture onto a sheet pan (18" x 26" x 1") lined with parchment paper and lightly coated with pan-release spray. |
|                                  |             |                  |             |                   | For 25 servings, use 1 pan. For 50 servings, use 2 pans.                                                                                                                      |
|                                  |             |                  |             |                   | 3. Bake: Convection oven: 375 °F for 25 minutes. Convection oven: 350 °F for 15 minutes.                                                                                      |
|                                  |             |                  |             |                   | 4. Critical Control Point: Heat to 165 °F or higher for at least 15 seconds.                                                                                                  |
|                                  |             |                  |             |                   | 5. Critical Control Point: Hold for hot service at 140 °F or higher.                                                                                                          |
|                                  |             |                  |             |                   | 6. Serve 1 broccoli bite                                                                                                                                                      |



### Recipe Adjustment

#### Instructions:

- **Group A:** Increase the yield for the Broccoli Bites from 25 to 30 servings. Determine the new amount needed for the broccoli in the recipe. Follow the steps given below.
- **Group B:** Decrease the yield for the Broccoli Bites from 25 to 15 servings. Determine the new amount needed for the cheddar cheese in the recipe. Follow the steps given below.

#### Step 1: Determine the "multiplying factor"

$$\frac{\text{New yield}}{\text{Original yield}} = \text{Multiplying factor}$$

#### Step 2: Determine the new quantity of each ingredient

Group A: Broccoli

$$\frac{\text{Original quantity}}{\text{Multiplying factor}} = \text{New quantity}$$

Group B: Cheddar Cheese

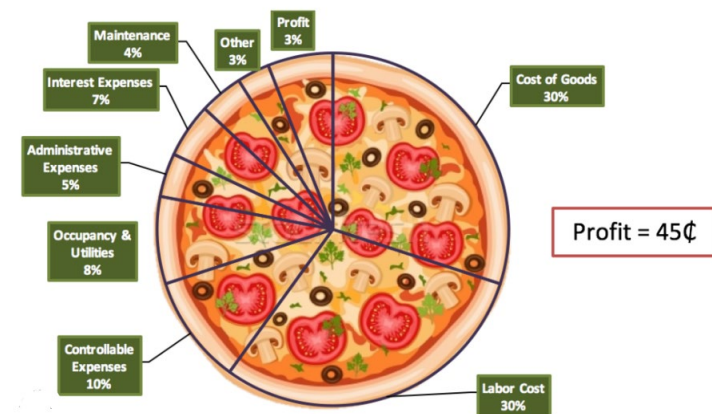
$$\frac{\text{Original quantity}}{\text{Multiplying factor}} = \text{New quantity}$$

# Teaching Food Costs

## 8 Ideas for Teaching Food Costs

<https://cafemeetingplace.com/fifty-minute-classroom/item/590-50-minute-classroom-teaching-food-costs>

1. Start at Receiving.
2. Show How Little Money Can Buy.
3. Discuss Cost Per Item.
4. Explain Why.
5. Bulk vs. Individual.
6. As Purchased vs. Edible Yield.
7. Sharpen Their Pencils.
8. Make Your Students Cost Accountants for a Day.



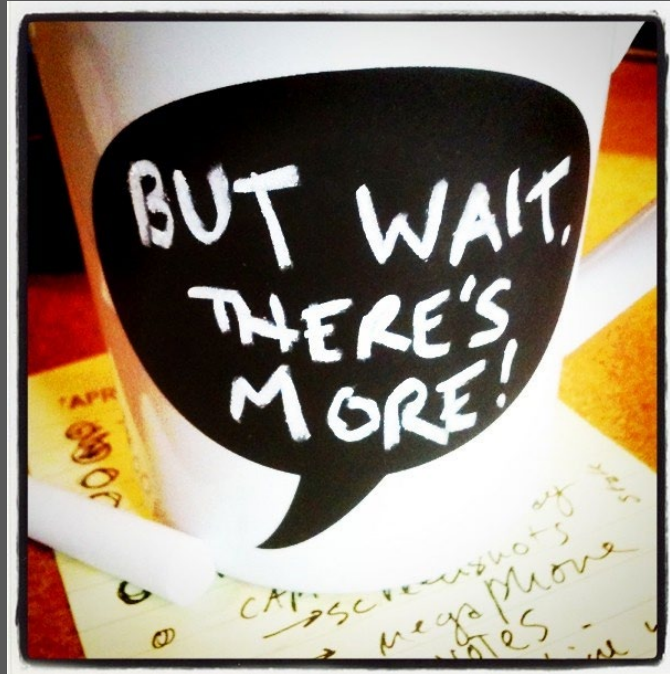
# Culinary Math Training Kit



[Culinary Math Training Kit - Realityworks](#)

[Try Realityworks' online FCS programs \(salesfusion.com\)](#)

[Fractions, Decimals, Ratios, and Percentages - Overview \(realityworks.com\)](#)



# Realityworks Webinars



<http://realityworks.com/webinars>

# More FREE Resources

FREE infographics

<https://www.realityworks.com/resources/realityworks-interactive-posters-downloads/>





# Free Career Exploration



■ CULINARY ARTS AND FOOD SCIENCE CAREER EXPLORATION

■ FAMILY & CONSUMER SCIENCES (FCS) CAREER EXPLORATION

■ SOCIAL MEDIA FOR FCS PROGRAMS

■ STEM FOR FCS PROGRAMS

■ HUMAN SERVICES CAREER EXPLORATION

<https://www.realityworks.com/resources/free-lesson-plans/>

# Social Media

- Realityworks Blog
  - <http://realityworks.com/blog/>
- Facebook
  - <https://www.facebook.com/realityworksinc>
- Twitter
  - <https://twitter.com/RealityworksInc>





[www.realityworks.com](http://www.realityworks.com)

For more information please contact Realityworks, Inc.  
through email at [information@realityworks.com](mailto:information@realityworks.com)  
or call toll free at 800.830.1416

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