



 **Kitchen Math**

Objectives
As applied to common situations in school food service:

- Use a calculator and perform basic math
- Add, subtract, multiply and divide fractions and decimals
- Convert fractions to decimals and decimals to fractions



Welcome the participants; introduce yourself briefly and review class objectives.

Ask each person to find a learning partner at their table (or trio if odd numbers of participants). Tell participants there will be many partner activities during the workshop.

Ask the participants to work with their partner on this introduction activity.

Each partner will introduce her/himself to the other and share a tip for using a calculator accurately. Tell participants they have **2 minutes** to complete both introductions and tips and then be prepared to share tips with group.

Give a 30-second warning and then depending on group size, ask for tips. Tell the group to listen closely to the tips; after each tip, ask for a show of hands of how many others had that tip. Continue until all tips are given, about **5 minutes**.

Option – if group is small, ask participants to give their names and the tip.

(Welcome, introductions, and housekeeping will take approximately 10 minutes)



Professional Development

- Operations
 - 2120 Food Production Records
 - 2150 CN Labeling and Crediting
 - 2440 Food and Supplies Orders
- Administration
 - 3320 Compliance with Regulations/Policies
 - 3330 Budgets

This training will address these USDA Professional Development Learning codes. In recording this training in your personal records, use the learning code you feel best meets your experience today.



Kitchen Math

- Turn to person next to you.
- Introduce yourself and share one tip for using a calculator accurately.



 **Kitchen Math**

- Calculator Tips
 - Clear button
 - Watch entries
 - Numbers
 - Actions (+ - x / =)
 - Decimal points
 - Write down partial answers
 - Double check work

We are not using memory or advanced functions.



Photo Credit: Laura Thomas

Hello! I am here to help you. Remember I do exactly what you tell me to do. Push my buttons gently. Let's get to work!

Here are some tips I use with a calculator, this friendly tool.

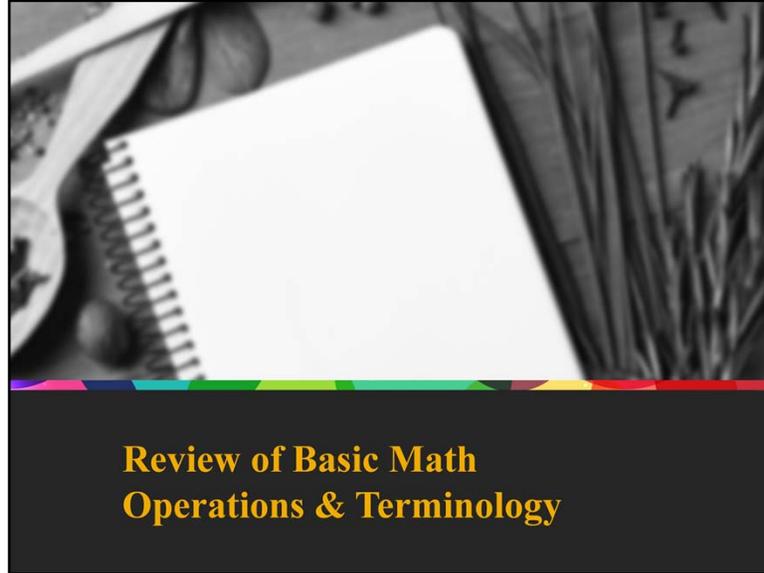
Make sure to start with a clear entry. I push the clear button several times to make sure.

Watch the screen as numbers, actions and decimal points are entered to make sure it is what is intended.

Write down partial answers. That way if a mistake is made, it is easier to re-start in the middle of the problem.

Do the calculation twice to check work.

Also for this class, we will not use the memory function or any advanced functions on a scientific calculator. We are limiting our math to the basics.



**Review of Basic Math
Operations & Terminology**



Addition

- ✦ +
- ✦ Plus
- ✦ Add to, added to, increase by
- ✦ And

Turn to page 5 in your student workbook.

Let's do a quick review of basic math. It is important to know the terms and symbols.

The symbol for addition is the + (plus) size;

When we talk about addition, we use the words:

Plus

Add to, added to, increase by

And

Note to Cadre: Substitute any of the words for addition in place of 'plus' in the examples above to illustrate different ways we describe addition.



Addition Examples

1. **Morning lunch count** estimate is 252. The office calls to add 12 adults for an onsite meeting
 - _____ meals
2. **Production record** reports this many servings
 - 106 broccoli
 - 75 apples
 - 101 bananas
 - 35 side salads
 - _____ F&V servings were served today

Many times, we do math automatically without even thinking about it.

Let's try a few simple examples with your calculator

1. During morning attendance the estimated lunch count reported was 252, but the office called and said to plan for 12 more adults because of an onsite meeting. $252+12=266$ meals.
2. After the meal, Melanie wants to see if enough fruits and vegetables were served. She pulls the completed production record, which shows that 106 servings of broccoli, 75 servings of apples, 101 bananas, and 35 side salads were served. $106+75+101+35=317$ servings were served. *(You may want to mention that this is how the State agency checks your production records to see if you are serving at least one serving of fruit or vegetable per student meal.)*

(Note to Presenter: Student Manual page 5 has these story problems. Assess the class ability to do simple math using these to determine the need for some later activities or who might need extra help.)



Subtraction

- ✦ –
- ✦ Minus
- ✦ Take away, decrease by
- ✦ From or less

Subtraction is the opposite of addition

The symbol for subtraction is the – (minus) sign.

When we talk about subtraction, we use the words:

Minus

Take away, decrease by

From or less

The examples shown here are two ways to check your work. If you are adding something, check that when you subtract the answer matches. Or if you are subtracting, add the number to see that it matches.

Note to Cadre: Substitute any of the words for subtraction in place of ‘minus’ in the examples above to illustrate different ways we describe subtraction.



Subtraction Examples

- **How many servings** of the entrée were served?
 - The kitchen prepared 1152 servings.
 - There were 27 left over.
 - _____ entrées served
- **3 cases of egg patties** (900 total)
 - Used 432 on Wednesday
 - _____ egg patties left for Friday

1. Completing a production record, Maria needs to figure out how many servings of the entrée were served. The kitchen prepared 1152 servings. There were 27 left over. $1152 - 27 = 1125$ entrees served.
2. Melanie started the week with 3 cases of egg patties, which is a total of 900 egg patties. She used 432 egg patties for Wednesday's breakfast and needs the same amount for Friday. Does she have enough?



Multiplication

- ❖ x or * (* in excel spreadsheet or 10-key)
- ❖ • (often seen in algebra level classes)
- ❖ Times, Times by

- The symbols for multiplication are X or the asterisk symbol (*) – your calculator probably shows an X and if you use a ten key or keyboard at work it might be an *.
- If you use excel spread sheets, the symbol for times is the *.
- If you have children doing algebra, you might see a solid dot used – we won't use that symbol

When we talk about multiplication, the words we use include:

- Times or Times by

[If you are using the old workbook] If you were able to do the multiplication problems on page 5, your math problems should look like this **Worksheet:**

Lunches: $\$10 \times 5 = \50

Pizza: $16 \times 11 = 176$



Multiplication Example

- **How many apples in 7 cases?**
 - 125 apples per case
 - $125 \times 7 = \underline{\hspace{2cm}}$ apples
- **Can Jane hire another employee?**
 - Cost \$15/hour
 - 20 hours per week
 - $\$15 \times 20 = \$\underline{\hspace{2cm}}$ per week.
 - $\$\underline{\hspace{2cm}} \times 38 \text{ weeks} = \$\underline{\hspace{2cm}}$ per year

1. This is a simple one-- A case of apples has 125. If Mark orders 7 cases, how many apples is that? $125 \times 7 = 875$
2. This is a two part multiplication project. Maria needs more help in the school kitchen. A new kitchen employee costs \$15.00 per hour for wages, benefits, and employer costs. How much would it cost per week to hire another person for 20 hours a week? $\$15 \times 20 = \300 per week. If there are 38 working weeks in the school year, how much would that cost per school year? $\$300 \times 38 = \$11,400$ per school year.



Division

- ❖ \div
- ❖ / or — used in fractions
- ❖ $\overline{)}$ symbol from long hand math
- ❖ Divided by, Of
- ❖ Divisor: how many equal parts a whole item is split into, such as a pizza sliced in 12 equal pieces
 $1 \div 12 = 1/12$
1/12 is one slice of the pizza

- The symbols for division are the line with a dot above and below or
- A forward slash which we often see in fractions. Sometimes a fraction appears as a horizontal line
- You might remember from your school days two sides of a box – that is how I learned long hand math.

The words we used to describe division include

- Divided by or Of

The Divisor determines how many equal parts another number is split into. For example a pizza cut into 12 slices is one divided by twelve or one/twelveth.



Division – Long Hand

- Division example $1088 \div 43$

$$\begin{array}{r} 0025.3 \\ 43 \overline{)1088.0} \\ \underline{86} \\ 228 \\ \underline{215} \\ 130 \\ \underline{129} \\ 1 \text{ Remainder} \end{array}$$

- On calculator, answer is 25.30232558139535

Typically, we use a calculator for a division problem like this, but– if a calculator isn't available, it helps to review how division is done by hand.

This problem is set up “old school” to walk us through every step of the math.

Divide 1088 by 43 on your calculator. Do you get the same answer as shown?

Note: It may be helpful to walk through why the two 00's are before the 25.3 and that the remainder of 1 could be divided out as the calculator does but we would either round to the two places behind the decimal point or round to the hundredths



Division Examples

- **Mark's lasagna recipe** serves 112
 - Fills 7 steam table pans
 - $112 / 7 = \underline{\hspace{2cm}}$ servings per pan
- **Maria needs 1140 breadsticks**
 - 144 per case
 - $1140 / 144 = \underline{\hspace{2cm}}$ cases
 - Round up to the nearest whole case

Use your calculator to quickly work through these examples.

1. Mark is reading a standardized recipe for vegetable lasagna for 112 servings. The original recipe fills 7 large steam table pans. How many servings will Mark need to get from each pan? 16 servings for each pan (Bonus Questions—how do you cut a steam table pan to get 16 equal pieces? 4×4)
2. Maria needs to order enough whole grain breadsticks to serve 1150 servings. The breadsticks are in cases of 144 each. What is the minimum number of cases Maria needs to order? $1140/144= 7.91$ cases. Maria needs to order 8 cases.



Basic Math Operations Practice

Activity - Mystery Square

Complete each math problem, if there are two in a square, use the answer from the first one for the second blank. Then add all numbers, in each direction.

	A.	B.	C.	D.	E.
I.	$55 - 4 = 51$ $51 \div 3 =$ 17	$7 \times 11 = 77$ $77 - 53 =$ 24	$100 - 4 = 25$ $25 - 24 =$ 1	$8 \times 9 = 72$ $72 - 64 =$ 8	$5 + 10 =$ 15

Cadre: Student Manual page 6. If your **entire** group appears to be proficient in addition, subtraction, multiplication and division, then this exercise can be done very quickly.

Now let's give your fingers some exercise.

Find the Mystery Square activity in your work book (page 6). You will notice that there are lines to fill in the answer. For example in the first box,

$55 - 4 = 51$ 51 is then used on the next line 51 Divided by 3 equals 17.

You can see the answers to all the problems in line I. Copy the answers onto your sheet.

After the answers to the problem or problems in each square are found, you will add the numbers up and enter in the box to the right going across the page, the box at the bottom going down the page and the one line that goes diagonally across and down the page.

Work with your partner to solve the problems and add up the numbers. Work quickly – and by having two of you, it will provide a check for the math.

Option: To speed this activity assign a row or column to learning pairs, there are ten sets (4 more rows, 5 columns, and one diagonal). More than one learning pair can work on the same problem.

Allow about 5 for the activity and then have the group return attention to you. If you want to have each group report their row, column or diagonal total (should be 65 for each learning pair), do so before displaying the next slide.



Basic Math Operations Practice

						65
I	$55 - 4 = 51$ $51 \div 3 =$ 17	$7 \times 11 = 77$ $77 - 33 =$ 44	$100 - 4 = 96$ $96 \div 24 =$ 4	$8 \times 9 = 72$ $72 - 64 =$ 8	$5 \times 10 =$ 50	65
II	$24 - 1 = 23$ $23 \times 3 =$ 69	$14 \div 2 =$ 7	$7 \times 10 = 70$ $70 - 63 =$ 7	$7 \times 20 = 140$ $140 \div 10 =$ 14	$80 \div 5 =$ 16	65
III	$3 \times 8 = 24$ $24 \div 6 =$ 4	$6 \times 6 = 36$ $36 \div 6 =$ 6	$39 - 26 =$ 13	$100 - 100 =$ $100 \div 5 =$ 20	$11 \div 11 =$ 1	65
IV	$80 - 4 = 76$ $76 - 10 =$ 66	$144 \div 12 =$ 12	$10 \times 10 = 100$ $100 - 81 =$ 19	$61 - 4 =$ 57	$33 \div 3 = 11$ $30 \div 10 = 3$ 4	65
V	$15 - 7 = 8$ $8 \times 2 =$ 16	$22 \div 11 = 2$ $2 \times 9 =$ 18	$100 \div 2 = 50$ $50 \div 2 =$ 25	$18 \times 2 = 36$ $36 \div 18 =$ 2	$80 \div 1 = 80$ $81 \div 9 =$ 9	65
	65	65	65	65	65	65

When all of the math problems are done correctly, each row, column or diagonal adds up to 65.

Activity is found in the Basic Kitchen Math Workbook



Review of Terminology

- Result – happens after the equal sign (=)
 - ❖ In addition, called the **sum**
 - ❖ In subtraction, called the **difference**
 - ❖ In multiplication, called the **product**
 - ❖ In division, called the **quotient** – anything left over is called the **remainder**.
- Remainders will become important when we cover fractions and decimals.

The result of any math problem is what appears after the equals sign.

- In addition it is called the sum
- In subtraction it is called the difference
- In multiplication it is called the product
- In division it is called the quotient and if anything is left over that is called the remainder.

Remainder will become important when we cover fractions and decimals.



Math Terminology

- Whole numbers: 1, 2, 3, 10, 11, 12,... 100, 101, 102 ...

These numbers express a full unit, which is a standard amount or quantity.

1 pie

44 cases

107 inches

Whole numbers express a full unit of a quantity or standard amount such as

One pie

Forty four cases

One hundred and seven inches



Math Terminology

- Digits: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

These digits or symbols of amounts
are combined to express numbers.

What **DIGIT** is in the **Hundreds** place?

10,267

The symbols zero through nine are called digits. We use these to express different numbers

What **digit** is in the **HUNDREDS** place? If you can say this number out loud, it is easy to find out. (ten thousand **TWO** **HUNDRED** and sixty-seven)



Terminology: Place Values

Thousand	Hundred	Ten	One	Decimal	Tenth	Hundredth	Thousandth
1	2	7	9	.	4	2	6

“One thousand, two hundred, seventy-nine” “Four hundred twenty six thousandths”

This chart shows the place values of numbers. On the left side of the decimal is a whole number. On the right side are decimals, and we'll talk more about them in a moment. that can appear to the right or “behind” the decimal point. After the hundredths place is the thousandths. In kitchen math we usually don't use any more than three places after the decimal point.

Quick question: Is this number a whole number? (No--- it has a decimal, so it is not whole)



Terminology: Place Values

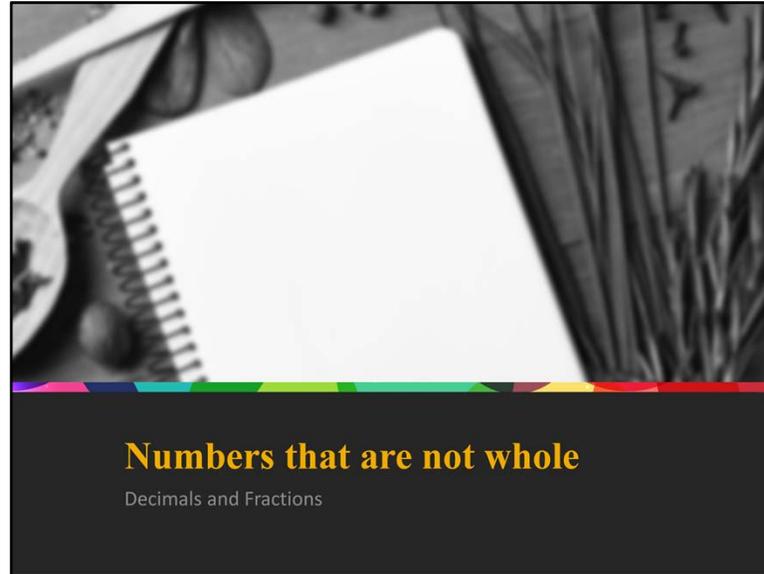
Thousands	Hundreds	Tens	Ones	Decimal	Tenth	Hundredth	Thousandth
				.			

Complete LA 1 Place Values - Individually

Turn to page ___ in the participant workbook and quickly complete the worksheet.

Turn to page 7 in your workbook. Complete Learning Activity 1 to practice place value (digit) identification.
(This should take 2 minutes or less)

[Cadre: This should take about 2 minutes. If necessary, an information sheet on place value is on page 9 of the workbook]



When we talk about numbers that are not whole, we're talking about Decimals and fractions.

Basic Math Skills

Number That Are Not Whole

- Whole number- 1 apple
- Fraction $\frac{1}{2}$ of an apple
- Decimal 0.25 of an apple



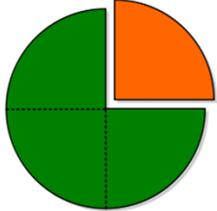
Numbers that are not whole can be expressed as either a fraction or a decimal. In recipes you may see either.

When you see a fraction or a decimal, it is a part of whole.

Turn to page 8 of your student manual, so we can make sure everyone understands this concept. (Choose students who are comfortable with reading out loud read the 1st section, 2nd section, and 3rd section.)

Let's dig deeper.

 **Number That Are Not Whole**
What is a Fraction?



$\frac{3}{4}$

Numerator
(How many pieces?)

Denominator
(How many pieces in a whole?)

In a fraction, think of cutting a whole into pieces. The top number tells you how many pieces you have, and the bottom number tells you how many pieces you originally cut it into.

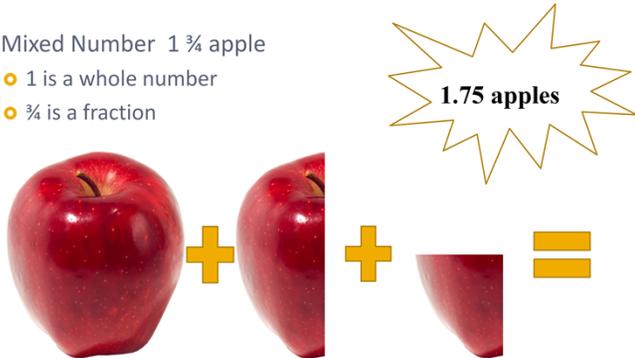
In recipes, you may be measuring fractions, like $\frac{3}{4}$. To visualize the concept, mentally the item in four equal pieces and take 3 pieces. $\frac{3}{4}$.

Whole numbers can also be expressed as a fraction. If I cut the circle into 4 equal pieces, and I have all 4 of those pieces, it is $\frac{4}{4}$ or 1.

Fractions have two parts, the top number, or the numerator; and the bottom number, or the denominator. Remember the **D**enominator is “**D**OWN” at the bottom of the fraction.

 **Number That Are Not Whole**
What is a Mixed Number?

- Mixed Number $1\frac{3}{4}$ apple
- 1 is a whole number
- $\frac{3}{4}$ is a fraction



The diagram illustrates the conversion of a mixed number to a decimal. It shows one whole red apple followed by a plus sign and a red apple cut in half. This is followed by another plus sign and a red apple cut into four equal quadrants, with three of those quadrants shaded. This is followed by an equals sign and a yellow starburst containing the text "1.75 apples".

Mixed numbers (also sometimes called Compound Fractions) have a whole number and a fraction, like $1\frac{3}{4}$ apples. You frequently see mixed numbers in recipes. Mixed numbers can also be expressed as decimals.

Bonus Question: What would be the decimal equivalent of $1\frac{3}{4}$ apples?

[Ask to assess the current understanding of your group before clicking. This will be covered next, but if you have a group that is confident, it may be a quick review. If some in your group don't know this, take it slow.]



Number That Are Not Whole

Recipes

Recipe: 990010 ALMOND CHICKEN PILAF

Recipe Source: ALMOND BOARD

Recipe Group: ENTREES

Alternate Recipe Name:

Number of Portions: 50

Size of Portion: CUP

020345 RICE, WHITE, LONG-GRAIN, REG, CKD, ENR, W/SALT...	3 QT
011282 ONIONS, RAW.....	5 small
011215 GARLIC, RAW.....	5 cloves
011124 CARROTS, RAW.....	5 CUP, grated
004584 OIL, VEG, SUNFLOWER, HI OLEIC (70% & OVER).....	3/4 CUP ★
002012 CORIANDER LEAF, DRIED.....	2 1/2 TSP ★
002014 CUMIN SEED.....	2 TSP
002024 MUSTARD SEED, YELLOW.....	2 TSP
014429 WATER, MUNICIPAL.....	3 QT
002004 SPICES, BAY LEAF.....	5 LEAF(s)
901843 CHICK, DICED, CKD, FROZEN-COMMOD.....	3 1/2 LB ★
012563 ALMONDS, DRY RSTD, W/SALT.....	5 CUP, whole kernels
011297 PARSLEY, RAW.....	1 1/4 CUP ★

[NOTE TO PRESENTER: THIS SLIDE HAS ANIMATION]

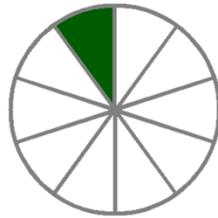
In kitchen math, one of the most common places we see fractions and mixed numbers are recipes.

In this recipe, [stars will appear with animation] there is $\frac{3}{4}$ cup of vegetable oil, (click) $2\frac{1}{2}$ teaspoons of coriander leaf, (click) $3\frac{1}{2}$ pounds of diced chicken (click) and $1\frac{1}{4}$ cup of raw parsley.



Number That Are Not Whole

What is a Decimal?



Decimals are a numeric method of expressing a number that is not whole.

Ones	Decimal	Tenth		
0	.	1		

0.1 = “one tenth” = $1/10$

Fractions are great to visualize, but when you use a calculator, decimals are usually easier to work with. A decimal is just a fraction in number form. Decimals are divided by 10's, 100's, 1000's, so the Denominators will be 10, 100, 1000, etc. This makes it easy to convert any decimal to a fraction by putting the number after the decimal as the numerator (top number) and the furthest place holder number as the denominator (bottom number). With 0.1, the 1 is in the 10th place so we put a 1 over 10 and get $1/10^{\text{th}}$. Let's try this with a more complicated decimal

Number That Are Not Whole
Decimal to Fraction

Ones	Decimal	Tenths	Hundredth	Thousandth
0	.	6	2	5

$0.625 = \frac{625}{1000}$

Imagine that you a case of single serve ketchup that has 1000 packets. You need 625 packets, or $625/1000^{\text{th}}$ of a case.

0.625 is a decimal that goes out to the 1000^{th} 's place, so the numerator would be 625 (click) and the denominator would be 1000. (click)



Number That Are Not Whole

Decimal to fraction/Fraction to decimal

An apple	Half of an apple	Quarter of an apple
1/1 apple	$\frac{1}{2}$ apple	$\frac{1}{4}$ apple
1.0 apple	0.5 apple	0.25 apple





Numbers that are not whole can be expressed as decimals or fractions. One half of an apple is the same as 0.5 of an apple. One fourth of an apple is the same as 0.25 of an apple. Whole numbers can be expressed as fractions or decimals also. (Student Manual page 9 for reference) Notice that common fractions like $\frac{1}{2}$ and $\frac{1}{4}$ are expressed verbally as “half” or “quarter”, where as less common fractions, like $\frac{3}{8}$ are expressed verbally as “three-eighths”

Having a good sense of how to convert fractions and decimals back and forth can help in the kitchen. There may be times that you want to use a calculator to adjust a measurement, but then need to switch it back to a fraction for measuring.



Kitchen Math

Practice converting fraction to decimal

- Complete LA 3: Convert Fractions to Decimals individually

NOTE TO PRESENTER- This slide and next slide achieve the same purpose, but LA3 is individual work, and the animated slide is more whole-class effort that can be used as a review of the individual work .
Now is the time to get more practice with fractions and decimals.

Turn to page 10 in your work book, LA 3: Convert Fractions to Decimals.

You will notice that the fractions on this activity are the ones we commonly use in the kitchen.

Work by yourself to complete all the conversions. When you are finished you will have a useful chart. We'll check your answers on the next slide

[Note: Allow about 5 minutes for participants to complete the chart.]



Kitchen Math

Numbers That Are Not Whole



Fraction	Decimal
1/8	
1/4	
1/3	
3/8	
1/2	
5/8	
2/3	
3/4	
7/8	
8/8	

NOTE TO PRESENTER- THIS SLIDE HAS ANIMATION. Use this slide to check the work done in LA 3 . Please note The 1/8th fraction is not in their workbook.

Let's review some answers. 1/8 is not in your workbook, so quickly use your calculator to find the answer. $1/8 = .125$ etc. (Each answer appears on click using animation).



Table 6:

Decimal Equivalents of Commonly Used Fractions

$1/8 = 0.125$	$1/3 = 0.333$	$2/3 = 0.666$
$1 \div 8 = 0.125$	$1 \div 3 = 0.333$	$2 \div 3 = 0.666$
$1/4 = 0.25$	$1/2 = 0.50$	$3/4 = 0.75$
$1 \div 4 = 0.25$	$1 \div 2 = 0.50$	$3 \div 4 = 0.75$
$3/8 = 0.375$	$5/8 = 0.625$	$7/8 = 0.875$
$3 \div 8 = 0.375$	$5 \div 8 = 0.625$	$7 \div 8 = 0.875$

Here is the completed chart along with the math equation you would enter on the calculator.



Dollars and Cents

Written in decimals



Another easy way to think of decimals is using dollars and cents.

 **Whole Numbers and Decimals**

Whole Numbers:
those digits to the left
of the decimal point

Decimal Numbers (cents):
those digits to the right
of the decimal point



$\$3 \bullet 75$

3 Whole Dollars and 0.75 or 3/4 Dollar

Remember that whole numbers appear to the left of decimal point and

The 'part' of the whole number appears to the right of the decimal point.

[Cadre: If necessary, refer back to page 9 "About fractions and decimals" - of participant workbook.]



Rounding and Reducing

Dollars

Other numbers

Measurements

Reducing Fractions



Rounding Decimals #1:

Veronica is calculating meal costs for her menu and this is her number:

\$ 1.136624915

Or $1 \frac{136,624,915}{1,000,000,000}$

... that's not a fun number as a fraction OR decimal.



When you are dividing, numbers don't always come out into nice easy decimals. So, if I were calculating my cost per meal, and my calculator gives me a number with a lot of digits past the decimal point, don't panic.



Rounding Decimals #1:

\$ 1.13624915

For money, we normally look to the nearest penny (2 digits past the decimal point)

But we have to look at the 3rd digit for rounding.

- If it is less than 5 we keep the number to the left the same
- If it is 5 or more, we add one to the number to the left

So, our 3 becomes a 4 when we round up



For money, we normally look to the nearest penny– which is two digits past the decimal point. (click for animation)
(Click again)

But we have to look at the third digit for rounding (click for animation) If that third digit is less than 5, we round down. If it is 5 or more, we round up. In this case, our digit is 6, so we're going to round up. The three in the hundredths place becomes a 4. (click for next slide)



Rounding Decimals #1:

\$ 1.146624915

For money, we normally look to the nearest penny (2 digits past the decimal point)

But we have to look at the 3rd digit for rounding.

- If it is less than 5 we keep the number to the left the same
- If it is 5 or more, we add one to the number to the left

So, our 3 becomes a 4 when we round up



So our cost per meal is \$1.14 .

(Understand that in some very tightly run operations, meal costs may be recorded to the 100th's place as in one dollar and 13.5 cents per meal, but we chose to go to the nearest penny for this example.)

Let's try this again with measurement



Rounding Decimals #2:

Jessie is downsizing a recipe for a small school. When she calculates those numbers, the downsized recipe now needs

2.124363319627 cups

WHOA! How do you measure that?



Jessie is downsizing the recipe. She is using a calculator to figure out how much of an ingredient she needs. Her calculator shows this number. How does she figure out how to measure this number in cups? Don't let the long number overwhelm you— she can just round.



Rounding Decimals:

2.12436331927 cups



1. In Kitchen Math, we normally look at the first 3 digits past the decimal point.
2. BUT we have to consider the 4th digit for rounding
 1. If it is less than 5, the number to the left to it stays the same
 2. If it is 5 or more, the number to the left to it goes up by one

For this question, the 3 is less than 5, so we leave it the same.

For kitchen math, such as in recipes, we normally look at the first 3 digits past the decimal point. (click for animation)
click again)
We use the 4th digit for rounding. (click) In this case it is a 3, which is less than 5– so the “4” to its left stays the same.



Rounding Decimals:

2.124~~36331927~~ cups

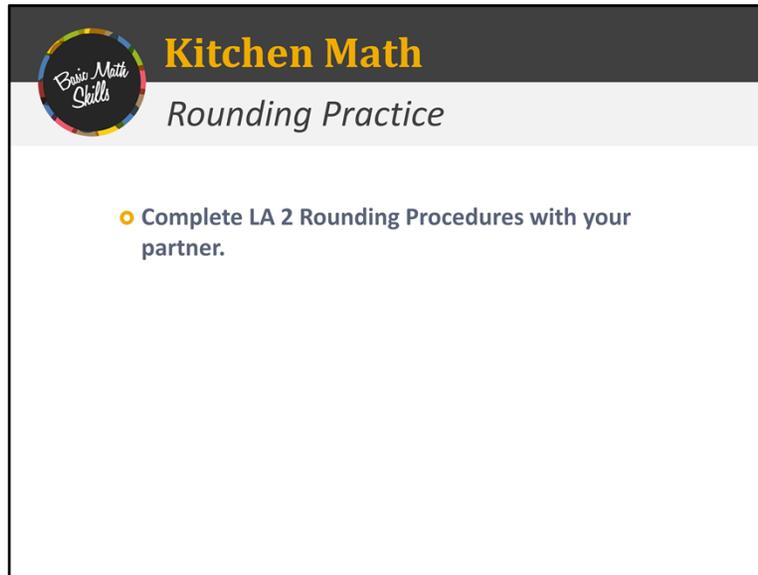


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 2. If it is 5 or more, the number to the left to it goes up by one

For this question, the 3 is less than 5, so we leave it the same.

For kitchen math, such as in recipes, we normally look at the first 3 digits past the decimal point. (click for animation)
click again)

We use the 4th digit for rounding. (click) In this case it is a 3, which is less than 5– so the “4” to its left stays the same.



The slide features a dark grey header with a circular logo on the left containing the text "Basic Math Skills". To the right of the logo, the title "Kitchen Math" is written in a bold, yellow font, and "Rounding Practice" is written in a smaller, grey font below it. The main body of the slide is white and contains a single instruction: "Complete LA 2 Rounding Procedures with your partner." This instruction is preceded by a yellow circle icon.

Turn the page in your work book to find LA 2 (**pg 11**) Rounding Procedures. In this activity you will always round using the very last digit that is showing.

- Do the Rounding Procedures activity with your partner.
- When you and your partner have finished the Rounding Procedures activity stand up. When everyone is standing up we will move on in the class. Use this opportunity to stretch in your place and shake out any sitting static and re-energize.

Note: Allow about 5 minutes to complete both activities. Even if participants are not completely done, ask everyone to stand after about 5 minutes a do a quick stretch. Then ask them to be seated and continue the lesson.

 LA 2 Answers			
103.7359682	2	under 5	round down
103.735968	8	5 or over	round up
103.73597	7	5 or over	round up
103.7360	0	under 5	round down
103.736	6	5 or over	round up
103.74	4	under 5	round down
103.7	7	5 or over	round up
104.0			

Here are the answers to the Rounding Procedures. Check your answers



Decimals #2:

Remember-- Jessie downsizing a recipe for a small school. When calculating those numbers, the downsized recipe now needs

2.124 cups

How does she measure this?

We now have a rounded number, but we don't know which measure to use for the recipe.



So, we've rounded to a nice decimal. How does Jessie use measuring cups to measure a decimal?



Kitchen Math

Decimal to Fraction (Rounded)

2.12436331927 cups

For practical purposes, we'll just go up to the nearest 1/8 cup

2.124 cups is very close to 2.125 cups

2 1/8 cups

Fraction	Decimal
1/8	0.125
1/4	0.25
1/3	0.333
3/8	0.375
1/2	0.5
5/8	0.625
2/3	0.666
3/4	0.75
7/8	0.875
8/8	1.0

So remember our question-- we've rounded to 2.124 cups, but how does that convert to my measuring cups?

Remember that chart we created on page 10 of your workbook? Here it is again. For practical purposes, 2.124 cups is very close to 2.125 cups.... 0.125 is 1/8. So, although it is not exact-- it is very close, so for 2.124 cups, Jesse should use 2 1/8 cups measure.

This method works best when you are changing a recipe and the number is CLOSE, BUT be very careful in using this method. We'll address how to get this EXACT later in the presentation.



Kitchen Math

Rounding Cautions

- Baking- rounding may result in a different quality product.
- The Meal Pattern requires a minimum amount, so **do not round UP** if you are calculating for crediting



	Breakfast Meal Pattern			Lunch Meal Pattern		
	Grades K-5 ¹	Grades 6-8 ²	Grades 9-12 ³	Grades K-5	Grades 6-8	Grades 9-12
Meal Pattern	Amount of Food ⁴ Per Week (Minimum Per Day)					
Fruit (cups) ⁵	5 (1) ⁶	5 (1) ⁶	5 (1) ⁶	2½ (½)	2½ (½)	5 (1)
Vegetables (cups) ⁵	0	0	0	3½ (½)	3½ (½)	5 (1)
Dark green ⁷	0	0	0	½	½	½
Red/Orange ⁷	0	0	0	½	½	½
Beans/Pea (Legumes) ⁷	0	0	0	½	½	½
Starchy ⁷	0	0	0	½	½	½
Other ⁷	0	0	0	½	½	½
Additional Veg to Reach Total ⁸	0	0	0	1	1	1½
Grains (oz eq) ⁹	7-10 (1) ¹⁰	8-10 (1) ¹⁰	9-10 (1) ¹⁰	8-9 (1)	8-10 (1)	10-12 (2)
Meat/Meat Alternates (oz eq)	0 ¹¹	0 ¹¹	0 ¹¹	8-10 (1)	9-10 (1)	10-12 (2)

Bakers often have very precise measurements for items such as breads, muffins, and other baked goods. You may have a difference in quality if you adjust a recipe and “round” to the nearest fraction. In fact, baking often uses weight in decimals rather than volume measures to get a consistent product every time.

There are times when you cannot round up in Child Nutrition Programs. For example, in the meal patterns, the amount listed is a MINIMUM amount required. If your recipe provides 0.245 cups of tomato sauce per serving, you cannot round up to .25 cup or ¼ cup. It would have to credit at 1/8th of a cup. To credit ¼ cup, your recipe would need to have **at least** .25 cup or more per serving. Let’s look at this more closely. [CADRE: This concept is especially important for those who are meal planners, the meal pattern sheet should be provided to all participants in addition to the work book.]



Crediting

Always round down

My soup includes 0.48 cups of tomato sauce per serving.

Meal Pattern crediting is in 1/8 cup increments.

How much Red/Orange vegetable will one serving of soup credit?

Fraction	Decimal
1/8	0.125
1/4	0.25
1/3	0.333
3/8	0.375
1/2	0.5
5/8	0.625
2/3	0.666
3/4	0.75
7/8	0.875
8/8	1.0

Okay, let's look at rounding for crediting toward the meal pattern. The meal pattern crediting volumes are measured in 1/8 cup increments, so we've grayed out the 1/3 and 2/3 measurements, as they aren't used in crediting. Remember that you have to have a minimum volume of the food to credit, so you cannot round up. So, if I want to credit the red/orange vegetable subgroup, how much does it credit?

(click) 3/8 cup.

Does everyone understand why? It may be closer to .5 c or 1/2 of a cup, but it doesn't meet the minimum 0.5 cup, so you must round down.

[CADRE: If necessary, stay on this slide and discuss until the class understands this concept that crediting is a MINIMUM amount, and you must hit the minimum amount— you cannot round up. This is especially important for menu planners to understand.]



Decimal to Fraction

Convert and Reduce

To convert a decimal to a fraction exactly-

Remember

$$0.1 = 1/10$$

$$0.25 = 25/100$$

$$0.625 = 625/1000$$

But these aren't useful fractions in kitchen measuring, we need to reduce them

Ones	Decimal	Tenths	Hundredths	Thousandths
0	.	2	5	

$$0.25 = \frac{25}{100}$$



Remember that to convert a decimal to a fraction, you just put the number beyond the decimal over the number of the furthest place holder. For example, for 0.1, the furthest digit, 1, is in the 10th place, so it is 1/10th. For .25, the furthest digit, 5, is in the 100ths place, so it is 25/100th. And 0.625, the furthest digit, 5, is in the thousandths place, so it is 625/1000.

Unfortunately, these aren't practical fractions to use in measuring in the kitchen, so we reduce them.



Decimal to Fraction

Convert and Reduce

$$0.25 = 25/100$$

Common Factors
between 25 and 100
5
25

$$\frac{25}{100}$$



To reduce a fraction, figure out what numbers go evenly into both the top and the bottom number. These are called factors. So, common factors between 25 and 100 are 5 and 25.

 **Decimal to Fraction**
Convert and Reduce

$0.25 = 25/100$

$$\frac{25}{100}$$

Common Factors
between 25 and 100
5
25

Greatest
common
factor



When reducing fractions, you want to find the BIGGEST number that goes evenly into both the numerator and denominator, in this case, it is 25, so 25 is known as the Greatest common factor.

To reduce a fraction, figure out what number goes evenly into both the top and the bottom number. In this case, 25 goes evenly into both numbers, so we divide the top and bottom number by 25 (Remember $25/25 = 1$, so you're dividing by one) and you get $\frac{1}{4}$.

On page 15 of the participant workbook, practice reducing fractions with your partner. (Give class 5 minutes to do this)



Kitchen Math

- To change a fraction to another form by multiplying or dividing by any form of 1.

$$1 = \frac{1}{1} = \frac{2}{2} = \frac{3}{3} = \frac{4}{4} = \frac{5}{5} = \frac{6}{6}$$

As we've learned in reducing fractions, the way to change a fraction to another form is to multiply or divide it by a form of the number 1.

Because any number divided by itself equals 1, we can convert fractions to another form easily. $\frac{4}{4}$ equals 1.

Knowing this information is useful when we need to add fractions that in their smallest form don't have the same bottom number or denominator.



Decimal to Fraction

Convert and Reduce

$0.25 = 25/100$

$$\frac{25}{100} \div \frac{25}{25} = \frac{1}{4}$$

Common Factors
between 25 and 100

5
25

Greatest
common
factor



To reduce a fraction, figure out what number goes evenly into both the top and the bottom number. In this case, 25 goes evenly into both numbers, so we divide the top and bottom number by 25 (Remember $25/25 = 1$, so you're dividing by one) and you get $\frac{1}{4}$.

On page 15 of the participant workbook, practice reducing fractions with your partner. (Give class 5 minutes to do this)



Decimal to Fraction

Convert and Reduce

- Refer to page 12 in the workbook
- Complete LA 4 Reduce or Simplify Fractions with your partner.

On page 12 of the workbook, there is some explanation and diagrams for reducing fractions. Use it if you find it helpful. On page 13 of the participant workbook, practice reducing fractions with your partner. [CADRE: Give class 5 minutes to do this]



Decimal to Fraction

LA 4: Reduce or Simplify Fractions

Reduce or Simplify Fractions

Use your calculator to reduce or simplify the following fractions.

Fraction to Be Reduced or Simplified	Divide Both the Numerator and the Denominator	By a Number That Will Yield the Smallest Numerator and Denominator	=	Reduced or Simplified Fraction
30/100	÷	10	=	3/10
35/100	÷	5	=	7/20
10/30	÷	10	=	1/3
4/80	÷	4	=	1/20
24/60	÷	12	=	2/5
90/180	÷	90	=	1/2
12/60	÷	12	=	1/5
37/100	÷	1	=	37/100

Can you reduce or simplify fractions?

Circle one: Yes, I can reduce or simplify fractions. No, I need more practice.

Let's check your answers

[CADRE: Go through each answer. Pay attention to point out that we want to reduce it to the lowest fraction possible. Some of these fractions can be reduced to fractions that can be reduced again. These answers reflect the lowest reduction.]



Decimal to Fraction

Convert and Reduce

Now that you understand how to reduce fractions, you can convert decimals to fractions

● LA 5, Convert Decimals to Fractions with your partner.

Decimal to be converted to fraction	The numerator becomes	How many place values are in the numerator?	The denominator becomes	The converted fraction becomes	Reduce the fraction
0.875	875	3	1000	875/1000	(125) 7/8

Greatest common factor

On page 14 of the participant workbook, there is some explanation of how to convert decimals to fractions. Refer to it if you find it useful. On Page 15, practice reducing fractions with your partner. Identify the numerator and the denominator, and write the new fraction. Find the greatest common factor (you may use trial & error on your calculator to figure that out) and reduce the fraction

[CADRE: Give class 10 minutes to do this. These will all reduce down to usable kitchen fractions. If your students struggle with greatest common factor and reducing, it will be reviewed again in the next section as part of multiplying fractions. If they do get it, you can speed through that review again.]



Decimal to Fraction

Convert Decimals to Fractions
 Use your calculator to convert the following decimals to fractions.
 Reducing or simplifying the fractions may be difficult. Do the easy ones first; then go back to the others as time permits.

Decimal to be converted to fraction	The numerator becomes	How many place values are in the numerator?	The denominator becomes	The converted fraction becomes	Reduce the fraction
0.875	875	3	1000	875/1000	(125) 7/8
0.75	75	2	100	75/100	(25) 3/4
0.666	666	3	1000	666/1000	(333) 2/3
0.625	625	3	1000	625/1000	(125) 5/8
0.5	5	1	10	5/10	(5) 1/2
0.33	33	2	100	33/100	(33) 1/3
0.375	375	3	1000	375/1000	(125) 3/8
0.25	25	2	100	25/100	(25) 1/4

Can you convert decimals to fractions? Circle one: Yes, I can convert decimals to fractions. No, I need more practice.

† These two numbers do not divide into 1000 or 100 evenly; there is 1 left over. The 3 and the 6 are known as repeating numbers. Even though they are not evenly divisible, they are accepted as 1/3 and 2/3.

Let's check your answers

[CADRE: Go through each answer. Pay attention to point out that we want to reduce it to the lowest fraction possible. Some of these fractions can be reduced to fractions that can be reduced again. These answers reflect the lowest reduction.]



Math Operation with Fractions

Multiplication
Division
Addition
Subtraction



Multiply Fractions

Melanie wants to double a recipe from 100 servings to 200 servings. It calls for $\frac{1}{4}$ gallon (*Multiply*)



$$\frac{1}{4} \text{ gallon} \times 2 = \frac{2}{4} \text{ gallon}$$

$$\frac{1}{4} \times \frac{2}{1} = \frac{2}{4}$$

Sometimes it is easier just to work with the fractions than to pull out a calculator and convert to decimals. Here's an example.

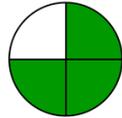
Melanie wants to double a recipe from 100 servings to 200 servings. The original recipe calls for $\frac{1}{4}$ gallon. We often just do this in our head, but let's look at how this is done mathematically. When you multiply a fraction by a whole number, you multiply the top number of the fraction by the whole number and leave the bottom one along.

1. If it helps, you can convert the whole number to a fraction, like $\frac{2}{1}$ and just multiply the top and the bottom



Multiply Fractions

Now Melanie just needs to cut a recipe in half. The original calls for $\frac{3}{4}$ of a #10 can.



How much is half of a $\frac{3}{4}$ can?

You may need to adjust a recipe, where you'll have to look at a fraction of a fraction. This isn't as complicated as it sounds. Let's walk Melanie through her math question.

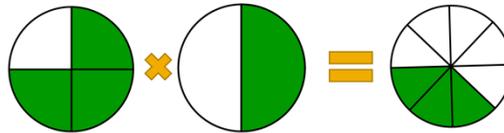
Read scenario on slide

What will this math problem would look like? [$\frac{3}{4} \times \frac{1}{2} =$ Assess for understanding.]



Multiply Fractions

How much is $\frac{1}{2}$ of $\frac{3}{4}$?



$$\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$$

Although there are a few ways to approach this, we're going to multiply. If you want $\frac{1}{2}$ of something, you multiply it by half.

So, $\frac{3}{4} \times \frac{1}{2}$ looks like this. Multiply the top numbers and multiply the bottom numbers



Multiply Fractions

- Multiplying fractions is easy.
- Multiply the top numbers
- Multiply the bottom numbers
- The fraction will need to be reduced

$$\frac{2}{3} \times \frac{3}{8} = \frac{6}{24}$$



Multiplying fractions is easy.

- Multiply the top numbers.
- Multiply the bottom numbers.

2 times 3 is 6 and 3 times 8 is 24;

6/24 reduces to $\frac{1}{4}$ which is .25 as a decimal



Reducing Fractions

- Multiplying fractions is easy.
- Multiply the top numbers
- Multiply the bottom numbers
- The fraction will need to be reduced

$$\frac{2}{3} \times \frac{3}{8} = \frac{6}{24}$$

Common Factors
between 6 and 24

2
4
6

Let's take a minute to look at how to reduce a fraction. Most measuring utensils don't have $6/24^{\text{th}}$ marked on the side— is there an easier reduced fraction?

Remember, to reduce a fraction, look for common factors of both the top and bottom number

In math, a factor is a number that divides into a larger number evenly. (Whole number— no remainder, no fraction/decimal)



Reducing Fractions

- Multiplying fractions is easy.
- Multiply the top numbers
- Multiply the bottom numbers
- The fraction will need to be reduced

$$\frac{2}{3} \times \frac{3}{8} = \frac{6}{24}$$

Common Factors between 6 and 24	
2	
4	
6	Greatest common factor

Let's quickly review how to reduce a fraction to get a more useful number.

To reduce a fraction, look for factors of both the top and bottom number and figure out the common factors. Identify the greatest common factor and



Reducing Fractions

- Multiplying fractions is easy.
- Multiply the top numbers
- Multiply the bottom numbers
- The fraction will need to be reduced (6)

$$\frac{2}{3} \times \frac{3}{8} = \frac{6}{24}$$

$$\frac{6}{24} \div \frac{6}{6} = \frac{1}{4}$$

Divide by 6/6 (remember 6/6 equals one, so you are dividing by one)

Now divide your fraction by one in the form of 6 over six.

6/24 reduces to $\frac{1}{4}$ which is .25 as a decimal



Practice- Multiply Fractions

- Complete LA 6 with your partner. You don't need to do the decimal (last) column unless you want to.

Optional

Fraction	x	Fraction	=	Fraction	=	Reduced	=	Decimal Truncated to Three Decimal Places
$\frac{2}{3}$	x	$\frac{2}{6}$	=	$\frac{4}{18}$	=	$\frac{2}{9}$	=	$\frac{2}{9} = 0.2222$ or truncated to 0.222

Multiply the numerators together, Multiply the denominators together, reduce.



Divide by Fraction

- This operation is not used frequently in kitchen math, but we'll discuss it briefly.
- To divide by a fraction, flip one fraction and multiply!

$$\frac{5}{8} \div \frac{2}{3} \qquad \frac{5}{8} \times \frac{3}{2}$$

Dividing by a fraction is not commonly used, but we'll discuss it in the event you are curious or ever encounter it.



Practice Divide Fractions

- Work on LA 7 with a partner

Numerator	Divided by	Denominator	Equals	Converted to Decimal
1/2	÷	2/3	3/4	0.75

Flip and Multiply

Remember Flip and multiply. It may be hard to grasp, but when you divide by a fraction less than one, you get a larger number than you started with.

Example: 5 divided by $\frac{1}{2} = 10$. Multiplying fractions is an easier concept. $5 \times \frac{2}{1} = 10$ Flip and multiply.



Multiply or Divide by 1

- Remember: to change a fraction to another form by multiplying or dividing by any form of 1.

$$1 = \frac{1}{1} = \frac{2}{2} = \frac{3}{3} = \frac{4}{4} = \frac{5}{5} = \frac{6}{6}$$

As we've learned in reducing fractions, the way to change a fraction to another form is to multiply or divide it by a form of the number 1.

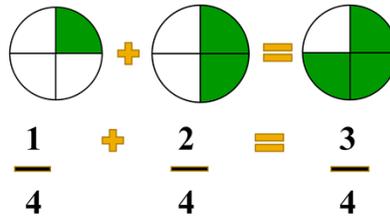
Because any number divided by itself equals 1, we can convert fractions to another form easily. $4/4$ equals 1.

Knowing this information is useful when we need to add fractions that in their smallest form don't have the same bottom number or denominator.



Kitchen Math: Add Fractions

Adding Fractions is EASY if the denominator (bottom number) is the same



When you add fractions, First, you make sure the denominators match. In this case, we're adding fourths. So, because all the pieces are the same size, all we need to do is add the top numbers, so $1 + 2 = 3$. $\frac{3}{4}$ ths.

So in this case, $\frac{1}{4}$ of a pizza plus $\frac{2}{4}$ of a pizza equals $\frac{3}{4}$ of a pizza.



Kitchen Math: Add Fractions

After breakfast, Nick sees that there are two partially used 5 gallon containers of flour. One is $\frac{1}{3}$ full and the other is $\frac{1}{2}$ full. If he puts them together in one bucket until lunch, how full will the bucket be?


$$\frac{1}{3} + \frac{1}{2} = \frac{?}{?}$$

When the denominators are different, it takes a few more steps.

After breakfast, Nick sees that there are two partially used 5 gallon containers of flour. One is $\frac{1}{3}$ full and the other is $\frac{1}{2}$ full. If he puts them together in one bucket until lunch, will it overflow?

In this case, the denominators don't match, (the piece sizes are different), so how do we add?

First, we'll multiply each fraction by 1 to make version of each fraction that has the same denominator.

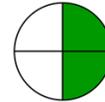


Kitchen Math: Add Fractions

Change the denominator to be the same for both fractions by multiplying each by a form of 1.



+



$$\frac{1}{3} \times \frac{2}{2} = \frac{2}{6}$$

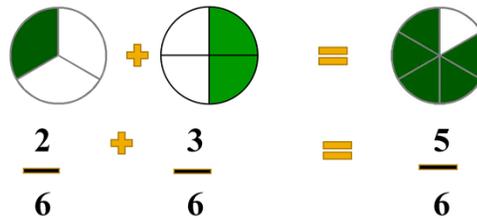
$$\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}$$

Just to keep it simple, we know that 3 times 2 equals 6, so we'll change them both so the bottom number is 6. The first fraction we'll multiply by 2/2, which is the same as 1. The second fraction we'll multiply by 3/3, which is one. NOW our denominators match.



Kitchen Math: Add Fractions

We've converted our fractions so they both have the same denominator, so adding is now easy.



Now we have the same denominator, or same sized pieces, we can just add the top straight across. Luckily, in kitchen math we normally work with eighths, fourths, and halves, which makes it easy to convert back and forth. The school meal patterns do crediting in these fractions too. When we use $\frac{1}{3}$ measures, it is harder to convert. Ideally, in NSLP, you will find it much easier to work with serving sizes and crediting with eighths, quarters, and halves. Avoid thirds when you can.

So, how full will Nick's bucket be?



Adding Fractions

- If the denominator is the same– EASY
 - Just add the numerators,
 - keep the denominator the same
- If the denominator is different
 - Multiply by a form of 1 to get common denominators
 - Add numerators

So, before we practice, when adding fractions, if the denominator is the same (or we're working with pieces of the whole that are the same size), we just add the numerators and leave the denominator alone.

If the denominator is different, we need to multiply by a form of one so that both fractions have a common (same) denominator before we add.



Practice - Add Fractions

- LA 6 Adding Fractions with your partner

Add Fractions Using the common denominator, restate the problem, solve it, and convert the fraction to its decimal equivalent.					
Problem	Common Denominator	Problem Restated With Common Denominator	Answer	Fraction Reduced	Decimal Equivalent
$1/8 + 1/24$	24	$3/24 + 1/24$	$4/24$	$1/6$	0.166



Subtracting Fraction

- If the denominator is the same—EASY
 - Just subtract the numerators
 - Keep the denominator the same
- If the denominator is different
 - Multiply by a form of 1 to get common denominators
 - Subtract numerators

$$2/3 - 1/3 = 1/3$$

$$\begin{aligned} 5/6 - 2/3 &= \\ 5/6 - 3/6 &= 2/6 \text{ reduced } 1/3 \end{aligned}$$

Subtracting fractions is just like adding. You'll need a common denominator.

When subtracting fractions, if the denominator is already the same (or we're working with pieces of the whole that are the same size), we just subtract the numerators and leave the denominator alone.

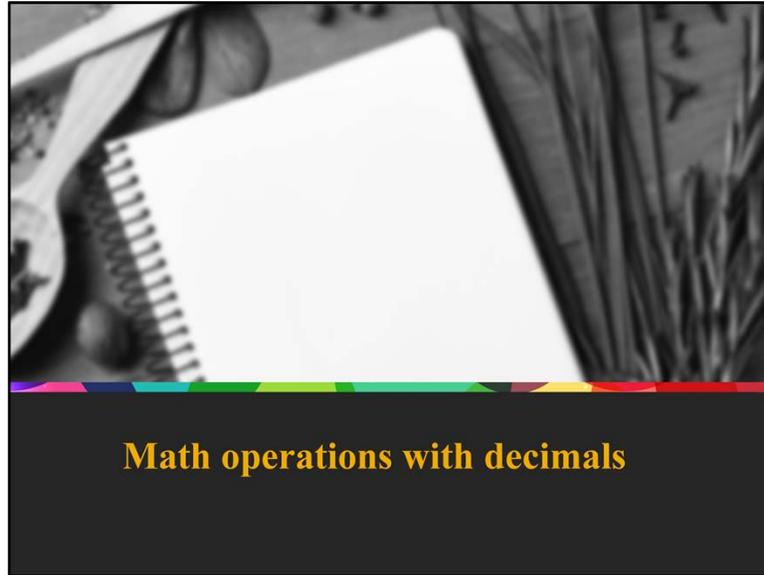
If the denominator is different, we need to multiply by a form of one so that both fractions have a common (same) denominator before we subtract.



Practice - Subtracting Fractions

- Work on LA 9 Subtracting Fractions with your partner

Subtract Fractions							
Fraction	Minus	Fraction	=	Fraction	Minus	Fraction	= Answer
2/3	-	2/6	=	4/6	-	2/6	= 2/6 or 1/3 or 0.33 in decimals





Calculators are made for decimals!

- Addition
- Subtraction
- Multiplication
- Division

For decimal calculations, most often, we'll use a calculator. BUT-- Just for review, we'll talk briefly about how to do it without a calculator.



Doing it by hand - add & subtract

- In addition and subtraction, line the decimal points up.

$$\begin{array}{r} \downarrow \\ 3.14159 \\ + 7.54321 \\ \hline 10.68480 \end{array}$$

$$\begin{array}{r} \downarrow \\ 7.14159 \\ - 3.54321 \\ \hline 3.59838 \end{array}$$

When adding or subtracting decimals by hand, remember to keep the decimals lined up so that you are adding the digits in the same place value, ones to ones, tenths to tenths, hundredths to hundredths... and so on.



Adding and Subtracting Decimals

Work these two pages quickly with your calculator.
Ignore the fractions.

- LA 10 Add Decimals
- LA 11 Subtract Decimals

Add Decimals					
Convert the fraction to a decimal and record in the following row. Use your calculator to add the two decimals.					
Fraction	Converted to Decimal	+	Fraction	Converted to Decimal	= Answer
2/3	0.666	+	2/6 (1/3)	0.333	= 0.999 (1)



Doing it by hand: Multiply

- In multiplication just do the math with the digits, and put the decimal back in afterwards.

$$\begin{array}{r} 3.14159 \\ \times 26.5 \\ \hline 83.252135 \end{array}$$

5 places
1 place
6 places

When multiplying, you don't need to keep the decimal points lined up, just do the math and ignore the decimal until the end. Your final answer will have the same number of digits past the decimal as the numbers you are multiplying. So, our first number has 5 places, our second number has 1 place, so the decimal will go 6 places from the last digit in our answer



Practice: Multiply Decimals

- Quickly practice LA 11 with your calculator

Decimal	x	Decimal	=	Decimal Product	=	Rounded Up or Down to 2 Decimal Places
23.5	x	17.35	=	407.725	=	407.73



Doing it by hand: Division

Move the decimal to make the “divide by” number a whole number.

Move the decimal over the same amount on the other number.

6 divided by 0.57 or $6 \div 0.57 =$

1. Move the decimal on both numbers 2 spots to make 0.57 into 57
2. 600 divided by 57 equals 10.5263....

Check this on your calculator using the original problem

When dividing by a decimal, move the decimal point all the way to the right to make the “divided by” number a whole number. At the same time, move the decimal over the same number on the number you are dividing. (Another way to look at it is that we are multiplying both sides of the division problem by 100)



Practice: Decimal Division

- Quickly practice LA 12 Divide Decimals with your calculator

Numerator Convert to Decimal	Divided by	Denominator	Equals	
$1/2 = 0.5$	÷	$2/3 = 0.666$	0.750	



Truncate vs Round

- Truncate means to shorten without rounding
- In kitchen math, it is preferable to round a decimal to 3 digits, not truncate.

2.624956

Truncated to 3 decimal places

2.624

Rounded to 3 decimal places

2.625



What have we learned?

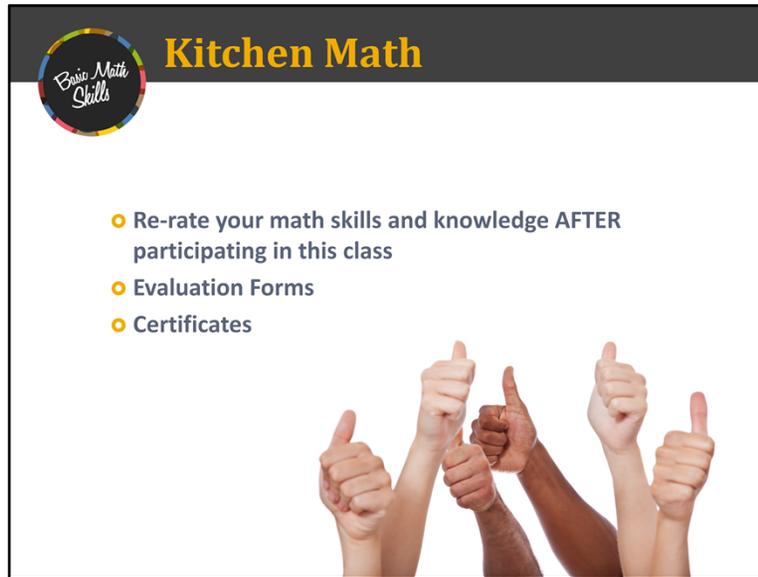
- Addition, Subtraction, Multiplication, Division
 - Whole numbers
 - Fractions
 - Decimals
- Rounding
- Reducing Fractions
- Converting fractions to decimal, decimal to fraction

Let's just do a quick review of what we covered. First we covered all the basic math operations with whole numbers. We also learned about fractions and decimals, including how to round a decimal, when rounding is not appropriate and how to reduce fractions. We learned how to switch back and forth between fractions and decimals. And we learned how to do all the basic math operations with fractions and decimals.



Putting it all together!

- Work on the word problems.
- Work independently, but it's OK to check with your partner if you aren't sure.



The slide features a dark grey header with the text "Kitchen Math" in a bold, yellow font. To the left of the header is a circular logo with a colorful border and the text "Basic Math Skills" in a white, cursive font. Below the header, there is a white background with a list of three items, each preceded by a yellow circle. At the bottom of the slide, there is a photograph of several hands of different skin tones giving thumbs up.

Kitchen Math

- Re-rate your math skills and knowledge **AFTER** participating in this class
- Evaluation Forms
- Certificates



Please look at your pre-activity rating and rate yourself again, now that you have taken this class. Hopefully you have gained some skill and confidence in the math you need to use in the kitchen.

After you've completed the self assessment, please complete the training evaluation form. I will collect your evaluation forms and hand out your certificates of completion.



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Washington, D.C. 20250-9410;

(2) fax: (202) 690-7442; or

(3) email: program.intake@usda.gov.

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Team Nutrition Statement

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