GastroKids Adventures!

Becoming Math Savvy Chefs

Possible Academic Standards to Incorporate

GLE's K-8

- 6.1.1 Use mathematical language, symbols, and definitions while developing mathematical reasoning.
- 6.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including estimation, and reasonableness of the solution.
- 6.1.3 Develop independent reasoning to communicate.
- 6.1.4 Move flexibly between concrete and abstract representations of mathematical ideas in order to solve problems, model mathematical ideas, and communicate solution strategies.
- 6.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.
- 6.1.6 Read and interpret the language of mathematics and use written/oral communication to express mathematical ideas precisely.
- 6.1.7 Recognize the historical development of mathematics, mathematics in context, and the connections between mathematics and the real world.
- 6.1.8 Use technologies/manipulatives appropriately to develop understanding of mathematical algorithms, to facilitate problem solving, and to create accurate and reliable models of mathematical concepts.

Kindergarten

- 6.1.7 Use words to describe temperature (e.g., hot, warm, cool, cold).
- 6.1.8 Recognize a thermometer as a way of measuring temperature.

- 6.2.4 Understand addition as “putting together” and subtraction as “breaking apart.”
- 6.4.6 Identify positions (such as beside, inside, outside, above, below, between, on, over, under, near, far, forward, backward, top, middle, bottom, left, right) using models, illustrations, and stories.
- 6.4.7 Make direct and indirect comparisons between objects (such as recognize which is shorter, longer, taller, lighter, heavier, or holds more).

1st Grade

- 6.1.2 Read and write time to the hour, half-hour, and quarter-hour.
- 6.1.3 Compare units of time.
- 6.1.5 Use a thermometer to measure temperature.
- 6.1.6 Recognize scales as a way of measuring weight.
- 6.1.10 Match the spoken, written, concrete, and pictorial representations of whole numbers, one-half, and one-fourth.
- 6.4.6 Recognize the essential role of units in measurement, and understand the difference between standard and non-standard units.
- 6.5.1 Represent measurements and discrete data using concrete objects, picture graphs, and bar graphs.

2nd Grade

- 6.1.1 Read and write time up to five-minute intervals.
- 6.1.3 Use strategies to make estimates of time.
- 6.1.6 Read thermometers with Fahrenheit and Celsius scales.
- 6.1.7 Measure weight to the nearest pound or kilogram.
- 6.1.8 Use concrete models or pictures to show whether a fraction is less than a half, more than a half, or equal to a half.
- 6.1.9 Match the spoken, written, concrete, and pictorial representations of halves, thirds, and fourths.
- 6.4.6 Understand the inverse relationship between the size of a unit and the number of units used in a particular measurement
- 6.5.1 Read, interpret, and analyze data

3rd Grade

- 6.1.1 Read and write time to the nearest minute.
- 6.1.5 Determine when and how to break a problem into simpler parts.

- 6.1.10 Use correct, clearly written and oral mathematical language to pose questions and communicate ideas.
- 6.1.11 Develop strategies for solving problems involving addition and subtraction of measurements.
- 6.1.2 Solve problems involving elapsed time.
- 6.1.4 Match the spoken, written, concrete, and pictorial representations of fractions with denominators up to ten.
- 6.1.7 Select appropriate units and tools to solve problems involving measures.
- 6.4.5 Understand that all measurements require units.
- 6.4.6 Recognize the use of fractions in liquid measures.
- 6.4.7 Recognize the relationships among cups, pints, quarts, and gallons.
- 6.4.8 Estimate and/or measure the capacity of a container.
- 6.4.9 Measure weight to the nearest ounce or gram.
- 6.2.5 Understand the meaning and uses of fractions.
- 6.2.6 Use various strategies and models to compare and order fractions and identify equivalent fractions.
- 6.2.7 Add and subtract fractions with like denominators using various models.
- 6.2.10 Understand that symbols such as ½, 1/3, and ¼ represent numbers called unit fractions.
- 6.2.11 Identify fractions as parts of whole units, as parts of sets, as locations on number lines, and as division of two whole numbers.
- 6.2.12 Compare fractions using drawings, concrete objects, and benchmark fractions.
- 6.2.13 Understand that when a whole is divided into equal parts to create unit fractions, the sum of all the parts adds up to one.
- 6.2.10 Identify equivalent fractions given by various representations.
- 6.2.11 Recognize and use different interpretations of fractions.

4th Grade

- 6.1.1 Understand the relationship between use of answers and the accuracy of the number.
- 6.1.5 Measure using ruler, meter stick, clock, thermometer, or other scaled instruments.
- 6.4.7 Measure liquids using both standard units and metric units.
- 6.4.6 Determine situations in which a highly accurate measurement is important.
- 6.4.7 Determine appropriate size of unit of measurement in problem situations involving length, capacity or weight.
- 6.1.6 Identify geometric or physical attributes that are appropriate to measure in a given situation.

- 6.1.4 Compare objects with respect to a given geometric or physical attribute and select appropriate measurement instrument. (ex. liquid vs. solid)
- 6.4.8 Convert measurements within a single system that are common in daily life (e.g., hours and minutes, inches and feet, centimeters and meters, quarts and gallons, liters and milliliters).
- 6.2.5 Add and subtract fractions with like and unlike denominators.
- 6.2.13 Solve multi-step problems of various types using whole numbers, fractions, and decimals.
- 6.2.11 Use models, benchmarks, and equivalent forms to compare fractions/decimals and locate them on the number line.
- 6.2.5 Generate equivalent forms of common fractions and decimals and use them to compare size.
- 6.2.7 Convert improper fractions into mixed numbers and/or decimals.
- 6.2.8 Add and subtract proper fractions with like and unlike denominators and simplify the answer.
- 6.2.10 Solve contextual problems using whole numbers, fractions, and decimals.
- 6.4.2 Understand and use measures of length, area, capacity, and weight.
- 6.4.3 Solve problems that involve estimating and measuring length, area, capacity and weight.
- 6.4.8 Recognize that a measure of area represents the total number of same-sized units /that cover the shape without gaps or overlaps.
- 6.4.9 Recognize that area does not change when 2-dimensional figures are cut apart and rearranged.

5th Grade

- 6.1.2 Make reasonable estimates of fraction and decimal sums or differences using models.
- 6.1.5 Use age-appropriate [materials] books, stories, and videos to convey ideas of mathematics.
- 6.1.6 Communicate answers in correct verbal and numerical form; including use of mixed numbers or fractions and use of units.
- 6.1.4 Identify missing information and/or too much information in contextual problems.
- 6.2.4 Develop fluency with addition and subtraction of proper and improper fractions and mixed numbers; explain and model the algorithm.
- 6.2.5 Develop fluency in solving multi-step problems using whole numbers, fractions, mixed numbers, and decimals.

- 6.2.3 Use visual models, benchmarks, and equivalent forms to add and subtract commonly used fractions and decimals.
- 6.2.5 Make reasonable estimates of fraction and decimal sums and differences.
- 6.2.6 Add and subtract mixed numbers.
- 6.4.4 Solve problems that require attention to both approximation and precision of measurement.
- 6.4.7 Understand, select and use units of appropriate size and type to measure
- 6.4.9 Correctly interpret significant digits in the accuracy of measurements and associated calculations.
- 6.4.10 Recognize that measurements are never exact.
- 6.4.11 Understand the usefulness of approximations.
- 6.4.12 Develop strategies for choosing correct tools of measurement.
- 6.4.13 Recognize and use measures of weight and temperature.

6th Grade

- 6.1.2 Recognize when an estimate is more appropriate than an exact answer in a variety of problem situations.
- 6.1.3 Recognize errors generated by rounding.
- 6.1.4 Describe how changes in one quantity or variable result in changes in another.
- 6.1.5 Use age-appropriate [materials] books, stories, and videos to convey ideas of mathematics.
- 6.1.8 Determine an appropriate sample to test a hypothesis.
- 6.2.2 Solve multi-step mathematical, contextual and verbal problems using fractions, mixed numbers, and decimals.
- 6.2.1 Efficiently compare and order fractions, decimals and percents.
- 6.2.4 Solve multi-step arithmetic problems using fractions, mixed numbers, and decimals.
- 6.2.5 Transform numbers from one form to another (fractions, decimals, percents, and mixed numbers).

7th Grade

- 6.1.2 Recognize round-off error and the inaccuracies it introduces.
- 6.1.3 Check answers both by estimation and by appropriate independent calculations, using calculators or computers judiciously.
- 6.1.5 Use age-appropriate [materials] books, stories, and videos to convey ideas of mathematics.

- 6.2.4 Use ratios, rates and percents to solve single- and multi-step problems in various contexts.
- 6.2.15 Report results of calculations appropriately in a given context (i.e. using rules of rounding, degree of accuracy, and/or significant digits).
- 6.4.4 Compare angles, side lengths, perimeters and areas of similar shapes.

8th Grade

- 6.1.4 Relate data concepts to relevant concepts in the earth and space, life, and physical sciences.
- 6.1.5 Use age-appropriate [materials] books, stories, and videos to convey ideas of mathematics.
- 6.1.3 Calculate rates involving cost per unit to determine the best buy.
- 6.2.3 Solve real-world problems using rational and irrational numbers.
- 6.4.3 Understand the necessary levels of accuracy and precision in measurement.
- 6.4.4 Understand both metric and customary units of measurement.
- 6.4.3 Select or use the appropriate measurement instrument to determine or create a given length, area, volume, angle, weight, or mass.
- 6.4.4 Understand how the precision of measurement influences accuracy of quantities derived from these measurements.
- 6.4.6 Make within-system and between-system conversions of derived quantities including distance, temperature, and money.
- 6.4.4 Convert between and within the U.S. Customary System and the metric system.

High School: Foundations

- 4.0 Students will become familiar with the units and processes of measurement in order to use various tools, techniques, and formulas to determine and estimate measurements in problem solving.
- 4.1 apply appropriate techniques, tools, and formulas to determine measurements;
- 4.2 communicate the concepts and strategies being to estimate measurements;

High School: Algebra

- 2.1.1 Use mathematical language, symbols, definitions, proofs and counterexamples correctly
- and precisely in mathematical reasoning.
- 2.1.2 Apply and adapt a variety of appropriate strategies to problem solving, including testing

- cases, estimation, and then checking induced errors and the reasonableness of the solution.
- 2.1.3 Develop inductive and deductive reasoning to independently make and evaluate
- mathematical arguments and construct appropriate proofs; include various types of
- reasoning, logic, and intuition.
- 2.1.4 Move flexibly between multiple representations (contextual, physical, written, verbal, iconic/pictorial, graphical, tabular, and symbolic), to solve problems, to model
- mathematical ideas, and to communicate solution strategies.
- 2.1.5 Recognize and use mathematical ideas and processes that arise in different settings, with an emphasis on formulating a problem in mathematical terms, interpreting the solutions, mathematical ideas, and communication of solution strategies.
- 2.1.6 Employ reading and writing to recognize . . . the connections between mathematics and the real world.
- 2.1.7 Use technologies appropriately to develop understanding of abstract mathematical ideas, to facilitate problem solving, and to produce accurate and reliable models.
- 2.4.2 Apply appropriate units of measure and convert measures in problem solving situations.
- 2.4.4 Convert rates and measurements.
- 2.1.19 Recognize and practice appropriate use of technology in representations and in problem solving.

Possible Academic Vocabulary to Incorporate

Kindergarten

- Addition
- Compare
- Difference
- Hour
- Location
- Number
- Order
- Position
- Quarter
- Sort
- Subtraction
- Sum
- Time
- Value

1st Grade

- Direction
- Equal to
- Estimate
- Even
- Greater than/less than
- Half-hour
- Length
- Measure/measurement
- Minute
- Numeral
- Odd

- One-half
- Part
- Plus
- Symbol
- Total
- Unit (standard, non-standard)
- Weight, scales
- Whole

2nd Grade

- Dimensions
- Distance
- Dollar
- Elapsed time/time interval
- Equivalent
- Foot
- Fraction
- Inch
- Interpret
- Kilogram
- Likely/unlikely
- Meter/centimeter
- One-fourth
- One-third
- Outcome
- Perimeter
- Pound
- Quarter-hour
- Rotate
- Second (time)
- Set
- Symmetry
- Transformations
- Yard

3rd Grade

- Area
- Capacity
- Change (money)
- Conclusion
- Decimal
- Denominator (like, unlike)
- Factor
- Gram
- Intersecting lines
- Liquid measures
- Multiples
- Numerator
- Ounce
- Parallel
- Perpendicular
- Product
- Unit fraction

4th Grade

- Accuracy
- Chance
- Common fraction
- Convert
- Diameter
- Equation
- Expression
- Improper fraction
- Mixed number
- Probability
- Proper fraction
- Relationship
- Remainder
- Right

5th Grade

- Divisibility
- Edge
- Formula
- Irregular
- Justify
- Line graph
- Model
- Remainder
- Round

- Solution
- Surface area
- Undefined
- Variable
- View
- Volume

6th Grade

- Circumference
- Equilateral
- Percent
- Poll
- Power
- Random
- Rate
- Sample
- Similarity

7th Grade

- Function
- Greatest common divisor
- Greatest common factor
- Intercepts
- Perfect square
- Property

8th Grade

- Sequence
- Bisect (bisector)
- Construction
- Family
- Chemical Change
- Physical Change

GastroKids Adventures!

Becoming Math Savvy Chefs

Image Credit: All Head Chef cooking tool images found at Amazon.com

Math is in every kitchen, on every recipe card, and at each holiday gathering. The mathematics of cooking often goes unnoticed, but in reality, there is a large quantity of math skills involved in cooking and baking.

Conversions

Most ranges have dials that display the cooking temperature of the oven. In North America, most of these temperatures are written in Fahrenheit and usually are in increments of 25°. In Canada, and other countries recipe and oven temperatures are often presented in degrees Celsius. It is important then to understand how to convert a Fahrenheit temperature to an appropriate Celsius temperature. For example, let's say your oven displays Fahrenheit temperatures with 50° increments. Your recipe tells you to bake your dish at 220°C. What temperature do you turn your oven to? Well, you will need to convert 220°C to a Fahrenheit measurement.

To make sure you do not over bake the cookies, you will need to set the oven to 428°F. But remember, your oven only displays the temperature in 50° increments, so you must estimate on the dial where 428°F is, somewhere between 400°F and 450°F. The relationship between celsius and fahrenheit is a linear function:

We also use conversions when we bake or cook to convert sizes and amounts. Many recipes are written in imperial units (teaspoon,

tablespoons, and cups). Some newer recipes and measuring devices in Canada are labeled in metric units, such as milliliters (mL). If the recipe calls for ½ cup of butter and your measuring equipment is labeled in mL, how will you know which measurement to use? We can apply this conversion formula: 1 cup = 237mL. This means that ½ cup = 118.5mL. Again, this exact measurement is probably not on the measuring cup. It is probably closest to 125mL, so we will again have to estimate.

Making Enough

Most recipes give guidelines as to how much a single batch will produce. But what if you want more? It seems too time consuming to mix up another batch. What if the recipe makes only one dozen cupcakes and you need three dozen? Clearly, three dozen is three times more than 1 dozen, so we can multiply all the ingredients by three to make a larger batch. It is also important to understand how to multiply fractions. If the cupcake recipe calls for ¾ cup of milk and we want to triple it, we need to know that we will need 2 and 1/4 cups of milk to make three dozen cupcakes.

This knowledge of fractions is also helpful when we need to make our batch smaller. For example, recipe guidelines approximate that each batch will yield 6 dozen cookies. But, what if your family is small and you only want 2 dozen cookies. First, we need to see the relationship between 2 and 6. We can see that 2 dozen is one third (1/3) of 6 dozen because 2 x 3 = 6. That means that in order to make only 2 dozen cookies, we will need to use one third of each ingredient. So, if the recipe asks for 2 teaspoons of baking powder, we will only need 2/3 of a teaspoon. But what if we do not have a measuring spoon that is equal to 2/3 teaspoon? We may need to use 1/3 twice, or estimate using ¼.
Option: Re-write a recipe using improper fractions so the students have to convert before measuring. For example: 12/4 cup of flour= 3 cups, use the improper and equivalent with higher level 4th graders and older students. Younger groups would need the standard recipe.

When recipes indicate how much a particular batch will make, they give a general amount of food. If we are cooking for a group, we need to estimate how much each person will eat and make appropriate amounts of the particular item. For example, if a package of spaghetti makes 1L of cooked spaghetti, will we have enough to feed six people with one

package? If not, how much of a second package will we have to use? First, we need to estimate how much each person will eat. We can guess that each person will eat 1 cup of spaghetti, which is 237mL. For convenience sake, we can round this to 250mL. That means that six people will eat 1500mL of spaghetti. If 1L=1000mL, we know that we will need to make one whole package, plus half of the second package to ensure that everyone has enough to eat.

Being Creative

Sometimes, we may not have all the ingredients to make a recipe, but we may have something we can fittingly substitute. How does this affect the measurement amounts in the recipe? For example, let's imagine we are making Rice Krispie cake. The recipe calls for 32 large marshmallows, but we only have miniature marshmallows. We can still use the small marshmallows, but we will need to estimate how many mini marshmallows would make one large marshmallow, and multiply that number by 32.

What if you want to spice up your chocolate chip cookies by adding almonds and coconut? Your recipe calls for 2 cups of chocolate chips, but you want to add 1/3 cup of almonds and 1/6 cup of coconut. How much chocolate chips do you still have to add? Well, we simply need to subtract, using fractions. We still need to add 1 and ½ cups of chocolate chips. It is important to remember that when adding and subtracting fractions, we need to use a common denominator.

Weight

Weight often affects cooking time. Consider the following hypothetical situation: we are cooking an 8 pound turkey for dinner. If the turkey needs to thaw in the refrigerator for 24 hours, per 5 pounds, we need to take the turkey out of the freezer in advance. We can use a proportional relation to help us decide how early to thaw the turkey.

The above proportion reads as follows: 5 pounds is to 24 hours as 8 pounds is to x hours. By cross-multiplying and dividing, we can find an answer of 38.4 hours, which is the solution for x. If we are instructed to cook the turkey for 20 minutes per pound, how long do we need to cook the turkey? Well, 20 minutes per pound for 8 pounds is 20 x 8 = 160 minutes. And, 160 minutes is two hours and 40 minutes. If we only knew the weight of our turkey in kilograms, we would need another conversion formula (kilograms to pounds) to find the weight of the turkey in pounds first, and then apply the recommendations.

Cost

We also use math when cooking and baking to estimate the cost of a certain dish and how much it cots to make per person. We can understand that cheesecake is more expensive to make than a batch of cookies, particularly when people buy ingredients such as flour, sugar,

and butter in bulk and cream cheese is more expensive. When comparing recipes, it may be beneficial to estimate the cost of each recipe.
Mathematical skills are used quite frequently when baking and cooking. It can be very helpful to understand how math affects the quality of culinary in order to make the most delicious meals and treats.

The following easy recipes need to be used to practice the above mentioned skills and other math skills with your students. Not all recipes will be used in the same lesson. Remember, we aren't doing a cooking lesson, we're practicing and learning real-world Math through cooking. Choose a single recipe per lesson and then do different math activities and practice math skills related to it. Measuring will naturally be incorporated, but other skills such as fractions, cost, etc need to be practiced as well.

For example:

Your students are now caterers. You have brought the "supply store."

- Have them calculate how many serving sizes they need for their classroom. Have them factor in how big a serving size is. Ex. with the fudge it is 1 small piece, with the trail mix it is ¼ cup. How big is that? Is that really all they and their customers will eat?
- How much of each ingredient they will need in order to make that many serving sizes. Does the supply store have enough? Do you have to substitute anything? How many packages will you need to use? *Have students make the recipe using their calculated amounts. Were they correct?*
- As caterers they want to sell their food, how much does it cost to make it per recipe, per serving, how much do they need to charge in order to make a profit?
- How long does it take them to make their recipe? How long would it take them to make more or less batches? When calculating cost and profit, did they calculate in the cost of their own time spent making it?
- Convert the measurements and weights from US Standard to metric, and back.
- Practice fractions. Write the recipe in improper fractions or in decimals and have your students convert them to proper fractions.
- Practice estimations. Take away one or more of their measuring cups. If you don't have a ½ cup measuring cup, what can they do? What if we do not have a

measuring spoon that is equal to 2/3 teaspoon? We may need to use 1/3 twice, or estimate using ¼. Remember, some newer recipes and measuring devices in Canada are labeled in metric units, such as milliliters (mL). If the recipe calls for ½ cup of butter and your measuring equipment is labeled in mL, how will they know which measurement to use? We can apply this conversion formula: 1 cup = 237mL. This means that ½ cup = 118.5mL. Again, this exact measurement is probably not on the measuring cup. It is probably closest to 125mL, so we will again have to estimate. Does that effect the recipe?

Ice Cream in a Bag

Mix, shake, serve - who knew ice cream could be this fun & easy?

Servings per batch: 1

Ingredients:

2 tablespoons sugar
1 cup half and half
1/2 teaspoon vanilla extract
1/2 cup salt (The bigger the granules, the better. Kosher or rock salt works best, but table salt is fine.)
Ice cubes (enough to fill each gallon-size bag about half full)
1 pint-size ziplock freezer bag with easy-zipper
1 gallon-size ziplock freezer bag with easy-zipper
Plastic spoon
Paper towels: to protect hands
Ice cream toppings like syrups, crushed cookies, chopped fruit, or candy coated chocolate

Directions:

1. Combine the sugar, half and half, and vanilla extract in the pint-size bag and seal it tightly. Put it off to the side.
2. Fill the gallon-size bag halfway with ice.
3. Place the salt on the ice in the gallon-size bag.
4. Then place the sealed smaller bag inside as well.
5. Seal the larger bag.
6. Now shake the bags until the mixture hardens (about 5 minutes).
7. Feel the small bag to determine when it's done.

Take the smaller bag out of the larger one, add mix-ins, and eat the ice cream right out of the bag. Easy cleanup too! Serves 1.

Option: To save frozen hands, with mixed age groups, limited supplies, or limited time, pair students up put 2 bags of the ice cream in the bag of ice so you get twice as much done in the same amount of time. The partners can take turns shaking the bag.

Variations:

Make It Chocolatey--Up the sugar to 4 Tbsp and add 4 Tbsp Cocoa Powder- Stir it before you shake it or you end up with little "powder pockets" that taste bitter.
Use this with just plain fruit juice and it turns out slushy!

Make Mint Chip, by adding 1/4 tsp of peppermint extract, some tiny chocolate chips and a few drops of green food color to the original recipe. Cookies and Cream, by adding crushed Oreos at the end once the ice cream is firm.

Advice: Use 2-gallon-size bags together, because it gets so cold to hold.

Two-Ingredient Fudge

It is so smooth and creamy it will melt in your mouth and almost embarrassingly easy to make.

Servings per batch: 12-16

Ingredients:

1 (12-ounce) package of baking chips (ex. chocolate, mint, butterscotch, white, or peanut butter)
1 (16-ounce) tub of prepared frosting
1/4 teaspoon salt (optional)
1/2 teaspoon extract of your choice (optional)
3/4 cup nuts of your choice (optional)

Directions:

1. Lightly butter an 8 x 8-inch baking pan or a 9-inch diameter pan. Set aside.
2. Melt the baking chips in the microwave in a medium bowl, stirring every 30 seconds until smooth.
3. Melt frosting until pourable, about 30 seconds.
4. Stir in the frosting, salt, extract, and nuts until well combined.
5. Scrape into the prepared pan and refrigerate for at least 1/2 hour or until firm. Cut it into squares to serve.

Option: make this into truffles too by rolling the soft fudge into balls and into some sprinkles or nuts.

Baker's notes: Your baking chips need to be of the finest quality. You may substitute wafers. Try these suggested combinations: Chocolate Walnut Mint, Butterscotch Vanilla Pecan, and Chocolate Macadamia Cream Cheese.

In our testing we used both Betty Crocker and Pillsbury brands of frosting. We preferred Betty Crocker frosting since it made a firmer fudge.

Variations:

Easiest Peanut Butter Fudge
Put one bag of Reese's peanut butter chips (I believe it was 12 ounces) in a glass bowl, and spread them so that they are not all in the middle of the bowl and they will melt easier. Cook in microwave for 1 minute and a half.

Get out and stir, then stir in one can of vanilla cake frosting, stir well and put in microwave and cook for 1 minute and a half (in 30 second increments helps you control the melting), get out and stir, then put in 9 x 9 grease plate or pan, let cool, cut and eat.

Favorite Cookies and Cream Fudge
1 (12 oz.) pkg. vanilla chips
1 can cookies and cream frosting
10 oreos, cut in quarters
3 oreos, crushed

Line an 8 inch square pan with foil. Melt chips over low heat or in microwave safe bowl. Remove from heat. Add frosting. Stir in quartered oreos, and mix until well coated. Quickly spread into pan. Sprinkle with crushed cookies.
Refrigerate 1 hour until firm.

Further Easy Fudge Variations

Frostings	Chips	Options to all mixes
Vanilla	Peanut Butter Butterscotch Chocolate White add coconut	Add ½ to 1 Teaspoon Vanilla Pinch of Salt
Cream Cheese	Milk Chocolate White chips &Wht./Gr. Cherries White chips add coconut/almonds Heath bar chips w/toffee bits, add walnuts	Vanilla chips/any flavor frosting Vanilla frosting /any flavor chips
Chocolate fudge	Milk Chocolate Chocolate add pecans Semi sweet chips add nuts	Make two different colors Chocolate chips/vanilla frosting and make another combination put on top when first batch is harden
Coconut/Pecan	Butterscotch Toffee Dark chocolate/ pecans Dark chips-taste like mounds	Add any dry fruit, cranberries, fruit cake mix, cherries, etc.
Chocolate	Chocolate Peanut Butter-taste like Reeses mint Mint Chocolate-taste like Andes mint Cherry â€“taste like chocolate	

	covered cherries Raspberry Cinnamon Chocolate Carmel	

Put one small bag of chips in glass bowl, [I use 4 cup measuring cup,] Cook for 1-1/2Â½ minutes in microwave. [I find if i do 50-50-50 seconds I can control the melting.] Take out and stir, then stir in one can of frosting, put back in microwave and cook for 1 Â½ minutes. Take out and stir. Put in 8x8 grease pan or line with foil if you like. Let cool, cut in pieces [I do one inch squares]

Trail Mix

Servings per batch: 12
Serving size: 1/4 cup

Ingredient Ideas:

Pick one ingredient from each list.

DRIED FRUIT (1 cup chopped)

- Raisins
- Dried pineapple
- Dried apple rings
- Pitted prunes
- Dried peaches
- Dried apricots
- Mixed dried fruit
- Dried banana chips

CEREAL (1 cup)

- Bran Chex
- Wheat Chex
- Rice Chex
- Corn Chex
- Shredded wheat
- Granola
- Cheerios
- Kix

NUTS & SEEDS (1/2 cup)

- Sunflower seeds
- Mixed nuts
- Peanuts
- Cashews
- Pecans
- Walnuts
- Sunflower seeds

OPTIONALS (1/2 cup)

- Toasted soybeans
- Popcorn
- Pretzels
- Chocolate Chips
- M & M candies
- Peanut Butter chips
- Butterscotch chips

Directions
Mix well and store in an airtight container.

Fruity Morning Shakes and Smoothies

Smoothies, made by blending fruit with yogurt, juice or milk, are perfect for a breakfast-on-the-go or a healthful after-school snack. The combinations are endless, from raspberries and blueberries to mangoes and bananas. Try the simple recipes featured here, then use your imagination to create your own delicious blends.

Ingredients:
6 fresh or frozen strawberries
6 ice cubes
1 cup fresh orange juice
1 banana, peeled and cut into chunks
1/2 cup plain, vanilla or berry yogurt
Directions:
Trim the berries
Before you start, be sure an adult is nearby to help.

Using a paring knife, cut a thick slice from the top of each strawberry to remove the stem. (If you are using frozen strawberries, you can skip this step.)

Blend it all together
Put the strawberries, ice cubes, orange juice, banana and yogurt into a blender. Cover the blender with the lid and hold down the lid while you blend. Blend on high speed until the mixture is frothy and there are no big chunks of fruit or ice, 30 to 40 seconds.

More Ideas: For a Peach Smoothie, replace the strawberries and orange juice with 1/2 cup fresh or frozen peach chunks and 1 cup apple juice. Add 1/4 teaspoon ground cinnamon before you blend everything together.

For a Pineapple Smoothie, replace the strawberries and orange juice with 1/2 cup fresh or canned pineapple chunks and 1 cup pineapple juice.

For a Purple Cow, replace the strawberries and orange juice with 1/2 cup fresh or frozen blueberries and 1 cup purple grape juice.

For Banana-Strawberry-Peach: very ripe bananas, frozen strawberries, peaches, peach nectar

Banana-Pineapple Smoothies: Substitute 1 cup frozen pineapple cubes for the strawberries and peach. Add 1/4 cup plain yogurt and only 1/4 cup peach nectar. Other types of nectar, such as mango, can also be used in place of the peach nectar.

Adapted from Williams-Sonoma Essentials of Breakfast and Brunch, by Georgeanne Brennan, Elinor Klivans, Jordan Mackay and Charles Pierce (Oxmoor House, 2007).

Possible Lesson Extension

If television is any indicator, it appears the competitive spirit has spread from surviving obstacles to singing to cooking. Shows like "Cook-off America," "Top Chef," and "Iron Chef America" invite us to watch chefs battle to be the best. Even celebrated Southern cook Paula Deen and her sons recently hosted a friendly "Deen Family Cook-off" on her Food Network series "Paula's Home Cooking."

Cook-offs are an American concoction, says Amy Sutherland, author of *Cookoff: Recipe Fever in America*. Each year, contestants around the country enter cooking contests ranging from the famous Pillsbury Bake-Off to small-town firehouse chili competitions. "There's no other country that does it like us," says Sutherland. Competitive cooking began in the early 19th century as a way to attract the female demographic to state fairs. "They added cooking and horseback riding contests, and women turned out in droves," she says.

Math Savvy Chefs: The Competition

Depending on group size students can compete as individuals, paired, or divided into color coded teams. If multiple grade levels are in the same group the teams will consist of older Lead Chefs and younger Assistant Chefs. Option: If the group is large a teacher may be assigned to supervise each team, but the students are to come up with the ideas and the execution of those ideas. Each of the teams must make the required number of dishes using a mystery ingredient.

Once the secret ingredient is revealed, the teams will have a few minutes to conceptualize their dishes and decide on a game plan.

Once the competition starts, the teams can use anything they want out of the available ingredients to "create" anything from a single dish, to a three-course meal, depending on your competition parameters and available equipment. The only rule is, the secret ingredient must appear in every dish.

Provide them with an array of "stuff" to cook with. For example, if your competition was to make the most delicious sandwich and your secret ingredient was "Cold Cuts," you could have a tray of ham and turkey, sliced and shredded, kept covered until the last minute. Or your secret ingredient could be bananas, it's fun to make it funky. (Trust us, you won't soon forget the cool creaminess of a banana and mayo, the deliciousness of a grilled

peanut butter, banana and bacon sandwich, or one cooked like a grilled cheese, but filled with melted peanut butter and warm bananas!) Either way, clearly seen on the table beforehand would be all the other ingredients they could use such as **small** amounts of ingredients like boiled eggs, bread, sauces or spreads, lettuce, tomatoes, peanut butter, jelly, avocados, onions, dressings, apples, and cheese.

Further Ideas:

Dip Competition: Have a Sweet or Savory Salsa Fiesta! Give them small amounts of ingredients like tomatoes, different fruits (melons, pineapple, berries, etc), bell pepper lime, cilantro, corn, beans, and jalapenos and challenge students to come up with a fresh fruit or vegetable dip for chips. Since salsas are traditionally spicy and vegetable based, it is easy to forget how delicious and different the taste of fruit can be alongside the tomatoes. Remember, the secret ingredient must go in each recipe.

Fudge: Have students compete using the Two-Ingredient Fudge recipe to create the best tasting fudge of their own invention. Remember, the secret ingredient must go in each recipe.

Berry Delicious: Now that students have practiced making smoothies, have them compete to come up with the best. Remember, the secret ingredient must go in each recipe.

TIPS: Decide how you want to compete. "There are two basic approaches," says Sutherland. "One is that you're executing the best of a dish, and the other is that you pick a category and the best overall dish wins." So whether everyone is striving to make the most decadent fudge or the best sandwich, determine the format first so there is less confusion.

- Pitch in for a fun prize for the winner, such as a gift certificate to a cooking store, a chef's hat, or gaudy "white elephant" trophy to be passed from winner to winner each year.
- Have the kids design ribbons to be awarded for each dish.