

Diocese of Erie Mathematics Second Grade		
Unit of Study: Unit 1 Fluency of Sums and Differences Purpose: Add and subtract fluently within 100, demonstrating the ability to utilize models, equations to solve real world problems.		Weeks: 6
Essential Questions: <ul style="list-style-type: none"> - What strategy/tool is appropriate for a given task? - How is mathematics used to represent and model numbers? - How can patterns be used to describe relationships in addition and subtraction operations? 		
Standards: 2.OA.1 Use addition within 100 to solve one- and two-step word problems involving situations of adding to, putting together, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 2.OA.2 Use subtraction within 100 to solve one- and two-step word problems involving situations of taking from, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 2.OA.3 Fluently add within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers. 2.OA.4 Fluently subtract within 20 using mental strategies. 2.OA.6 Write an equation to express an even number as a sum of two equal addends. 2.MD.7 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2.		
Standards Reinforced: 1.OA.1 Use addition within 20 to solve word problems involving situations of adding to, putting together and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. 1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. 1.OA.3 Use subtraction within 20 to solve word problems involving situations of taking from, taking apart and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.		
Vocabulary: addend addition difference doubles equal	fact family fewer less more near doubles	number sentence partial sums part-part-whole models subtraction sum
Authentic Performance Assessment: <ul style="list-style-type: none"> - Create real world addition and subtraction word problems, solve, and explain. - Explain why a certain operation is used to solve a problem. - Provide groups of items for students to use to create and explain addition and subtraction problems. For example, groups of candy, stuffed animals, pencils, toys, etc. - Visual models of doubles facts 		

<ul style="list-style-type: none"> - Use balance beams to demonstrate equal amounts, representing an addition/subtraction number sentence. - Practice fluency of facts through a variety of activities – flash cards, timed tests, online games, etc. - Provide a variety of word problems where students must explain which operation must be used to solve and explain the steps used. - Self-evaluate understanding of addition and subtraction. (Students would know because the sum is a bigger number than the addends and the difference is a smaller number than the minuend.)
Computation Skills: addition subtraction solving basic addition and subtraction word problems
Thinking and Reasoning Skills: <ul style="list-style-type: none"> - What do you notice when working with addition problems? Subtraction problems? - Create a balance beam equation and explain why the balance beam is equal. How do we make the balance beam equal when adding and subtracting? - Create a fact family and explain how the numbers are connected to each other. - How can we use our counting skills to help us solve and understand addition and subtraction number sentences?
Real World Problems & Application/Catholic Identity: <ul style="list-style-type: none"> - When playing a board game with friends, why would you need to be able to add or subtract? (collecting money, moving spaces forward or backward, etc.) - During school, when might we be adding or subtracting items, people, snacks, etc.? - Explain a time when you had to add or subtract items at home. Examples include collections (baseball cards, stamps, coins, etc.), donating toys, helping mom cook. - Discuss the parable of the loaves and fishes. How did Jesus help to feed the crowds? - Read the Parable of the Lost Sheep. There were 100 sheep and 1 went missing. How can we use this parable to write our own word problems?
Reading and Writing in Math: <ul style="list-style-type: none"> - Create number sentences with addition and subtraction. Show how they work together in a fact family. - Begin unit with a read aloud focusing on addition and subtraction. For example, Rooster's Off to See the World by Eric Carle, The Action of Subtraction by Brian P. Cleary, Mission: Addition by Loreen Leedy, Subtraction Action by Loreen Leedy - Math Journal: Tell the difference between addition and subtraction. Create two different word problems that show addition and subtraction. - Write math stories about your family. Tell how to solve the problem.
Questions/Discussion Strategies: <ul style="list-style-type: none"> - What tools do we need to solve these problems? - Provide students with different real-world scenarios. Have them brain storm when to use different operations. When would we need to add numbers together? Subtract? - How can adding and subtracting help us in our world? - How did you get the answer? - In subtracting, what would happen if the smaller number was first in the number sentence? - Work with a partner to brainstorm word problems. Explain how to solve the problem.
Technology/Manipulatives:

Manipulatives:

- balance beam
- weighted units
- part-part-whole mats
- snap cubes
- units
- ten frames
- flash cards
- timed tests

Websites:

- [Math Playground](#) for addition and subtraction
- [Hooda Math](#)
- [Math Fact Café](#)
- [First in Math](#) (must be a purchased program)

Accommodations/Acceleration/Differentiation:

For struggling students

- Use small groups to work one on one.
- Provide manipulatives and number lines to keep at students' desks.
- Allow students to draw pictures to explain the steps used to solve a problem.

For accelerated students

- Students can work together to create own story problems.
- Work on algebraic problems with larger numbers.
- Allow students to work one on one with struggling students.

Diocese of Erie Mathematics Second Grade		
Unit of Study: Unit 2: Place Value, comparing, odd and even, least to greatest Purpose: Use place value to accurately write, count within, and compare numbers up to 1,000.		Weeks: 3 weeks
Essential Questions: <ul style="list-style-type: none">- How is mathematics used to compare, represent, and model numbers?- What number patterns are helpful in reading and writing numbers to 1,000?- What characteristics help decide whether a number is odd or even?		
Standards: 2.OA.5 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by paring objects or counting them by 2's. 2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. 2.NBT.2 Understand that 100 can be thought of as a bundle of ten tens - called a "hundred." 2.NBT.3 Understand that the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundred (and 0 tens and 0 ones). 2.NBT.4 Count within 1000. 2.NBT.5 Skip-count by 5s, 10s, and 100s. 2.NBT.6 Identify ordinal numbers through 31. 2.NBT.7 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form. 2.NBT.8 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using symbols to record the results of comparisons.		
Standards Reinforced: 1.NBT.9 Understand that the 2 digits of a two-digit number represent amounts of tens and ones. 1.NBT.10a 10 can be thought of as a bundle of ten ones - called a "ten." 1.NBT.10b The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. 1.NBT.10c The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90, refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones). 1.NBT.11 Compare two two-digit numbers based on meanings of the tens and one's digits, recording the results of comparisons with the symbols $>$, $=$, or $<$.		
Vocabulary: after before compare digits equal to	even expanded form greater than hundreds less than	number word odd order place value standard form thousand
Authentic Performance Assessment: <ul style="list-style-type: none">- Using a balance beam, students will create unequal amounts on either side. Students will demonstrate how certain numbers are greater than, less than, or equal to another number.- Using different manipulatives, students build groups of greater than, less than, and equal to another group of items.		

- Students will use manipulatives to demonstrate even and odd numbers. They will show how even numbers can make groups of two.
- Visual models of place value using units, rods, and flats, grouping of straws, charts, etc.
- Explain what causes a digit to be placed in the different place value position. (10 ones make a ten, 10 tens make a hundred, 10 hundreds make a thousand)
- Play "Race to 100." Partner students. Give each student a place value mat with ones, tens, and hundreds labeled. Provide students with one die and units, rods, and flats. Have students take turns rolling the die. Whatever number is rolled, that is how many units are placed on the mat. With each roll, continue to add units until a trade can be made for a rod (10 units). Continue to play in this manner, trading units for rods, and eventually 10 rods for a flat. The first partner to make a flat wins the game.

Computation Skills:

greater than, less than, equal to
place value
even and odd
number order

Thinking and Reasoning Skills:

- Create balance beam equations where there is a greater than, less than, and equal to amount. Explain how you know which number is larger or smaller.
- Build models of numbers using flats, rods, and units to defend why a number is larger than another number.
- Show numbers in standard form, expanded form, and written form. (For example, create accordion style papers to fold and unfold showing expanded form)
- Create even and odd groups using manipulatives. Explain what makes a number even or odd through demonstration.

Real World Problems & Application/Catholic Identity:

- Describe at school when it would be important to know when there is more or less of something.
- Tell when you would want there to be an even or odd amount of something. (splitting snacks, making teams, etc.)
- When would the Church want to know how much of an item is present? (money, food bank, etc.) Why is it important to know the number of items?

Reading and Writing in Math:

- May begin unit with books such as "A Fair Bear Share" by Stuart J. Murphy, "How Much, How Many, How Far, How Heavy, How Long, How Tall is 1000?" by Helen Nolan, "Even Steven and Odd Todd" by Kathryn Cristaldi, and "More or Less" by Stuart J. Murphy.
- Journal: Give a three-digit number, for example 865. Explain the role of place value for each number. Tell how the role of place value lets you know if a number is larger or smaller than another number.
- Journal: Explain what makes a number larger or smaller than another number.
- Write out numbers in standard form, expanded form, and written form. Explain the difference in these three forms.

Questions/Discussion Strategies:

- Why would it be important to know if a number is larger or smaller than another number?
- Tell why it is necessary to have an even or odd amount of something. How can we show it is even or odd?
- How does expanded form help us discover which number is larger or smaller?
- When would we want a larger number of something? When would we want a smaller number?
- Tell different ways we can model a number. Why is it important to represent numbers in a variety of ways?

Technology/Manipulatives:

- balance beam
- units, rods, and flats
- items for separating (buttons, counting bears, snap cubes, chips, small toys, etc.)
- paper for building expanded form accordion
- Place value mats showing ones, tens, and hundreds
- Greater than, less than [game](#)

- Even and odd numbers [game](#)
- Place value [games](#): does require free account setup.

Accommodations/Acceleration/Differentiation:

For struggling students:

- Provide opportunities for one on one or small group teaching.
- Provide the children with units, rods, and flats to help build numbers. Have them build a number with units, for example 14. Demonstrate when to make the trade for a rod. Allow students to use units, rods, and flats while working with numbers.
- Allow manipulatives, information posters, and number lines to be available for viewing

For Accelerated students:

- Create stories using larger numbers. Stories should include terms such as greater than, less than, even, and odd. Stories should explain terms taught throughout unit.
- With the use of units, rods, flats, and cubes, allow students to build larger numbers. Place these large numbers in order from greatest to least and then least to greatest.

Diocese of Erie Mathematics Second Grade	
Unit of Study: Unit 3 Addition and Subtraction of Numbers to 1000 Purpose: Add and subtract within 1000 using appropriate modeling, mental math, and algorithmic strategies.	Weeks: 7
Essential Questions: <ul style="list-style-type: none"> - What is the procedure necessary for adding two- and three-digit numbers? - What is the procedure necessary for subtracting two- and three-digit numbers? - How can knowledge of place value assist in mentally adding or subtracting 10 or 100 to a given number between 100-900? 	
Standards: 2.NBT.9 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. 2.NBT.10 Add up to four two-digit numbers using strategies based on place value and properties of operations. 2.NBT.11 Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. 2.NBT.12 Mentally add 10 or 100 to a given number 100 - 900, and mentally subtract 10 or 100 from a given number 100-900. 2.NBT.13 Explain why addition and subtraction strategies work, using place value and the properties of operations. 2.MD.6 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem. 2.MD.8 Represent whole-number sums and differences within 100 on a number line diagram.	
Standards Reinforced: 1.OA.1 Use addition within 20 to solve word problems involving situations of adding to, putting together and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. 1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. 1.OA.3 Use subtraction within 20 to solve word problems involving situations of taking from, taking apart and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. 2.OA.1 Use addition within 100 to solve one- and two-step word problems involving situations of adding to, putting together, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem 2.OA.2 Use subtraction within 100 to solve one- and two-step word problems involving situations of taking from, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 2.OA.3 Fluently add within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers.	

2.OA.4 Fluently subtract within 20 using mental strategies.

2.OA.6 Write an equation to express an even number as a sum of two equal addends.

Vocabulary:

addend
borrow
equation
hundreds

minuend
number line
ones
place value

regroup
tens
thousands

Authentic Performance Assessment:

- Create real world addition and subtraction word problems, solve, and explain.
- Explain why a certain operation is being used over another.
- Demonstrate how to regroup in a two- or three-digit addition problem. Explain why each step is necessary to successfully solve these addition problems.
- Demonstrate how to borrow in a two- or three-digit subtraction problem. Explain why each step is necessary to successfully solve these subtraction problems.
- Self-evaluate understanding of regrouping and borrowing. Students will show how to regroup and how to borrow during addition and subtraction problems.

Computation Skills:

addition
subtraction
regrouping
borrowing

Thinking and Reasoning Skills:

- What do you notice when regrouping during addition? What happens when borrowing during subtraction?
- Using units, rods, and flats, demonstrate the process of regrouping in addition. Explain why certain steps are taken to complete the procedure. (Show that a digit answer cannot be higher than 9 without being regrouped to the next place value)
- Using units, rods, and flats, demonstrate the process of borrowing in subtraction. Explain why certain steps are taken to complete the procedure. (Show that the top number must be larger than the bottom number. If it is not larger, you must borrow from the next place value)
- Use a hundreds chart to demonstrate how to mentally add and subtract 1 and 10 from a number. (Move left and right or up and down).
- Explain the role of place value to mentally add and subtract 10 or 100 from a number.

Real World Problems & Application/Catholic Identity:

- At school, who would need to add and subtract large numbers? (principal, cafeteria ladies, etc.)
- At home, why would you need to add and subtract large numbers? (counting money, planning for a holiday party, etc.)
- Brainstorm different stories in the Bible using larger numbers. Create word problems using these numbers.
- Students can write their parable using larger numbers. Describe adding and subtracting those numbers.

Reading and Writing in Math:

- You can begin the unit by reading “17 Kings and 42 Elephants” by Margaret Mahy (addition), “The Good Neighbors Store an Award: A Cheesy Mouse Tale of Addition with Regrouping” by

Mark Ramsay (addition), “Lights Out” by Lucille Recht Penner (subtraction), or “Shark Swimathon” by Stuart J. Murphy (subtraction)

- Create addition and subtraction word problems. Solve and explain.
- Math Journal: Draw a picture to show a given number. Use two different ways to display number.
- Math Journal: How many two-digit and three-digit numbers can you make using a given set of three numbers. For example, 2, 5, 8. Use the numbers created to different math problems. For example, use the smallest number and largest number and add them together. Students can also make word problems and solve.
- Play “Beat the Teacher” – provide students with a sheet of blank two- or three-digit math problems. Students roll a die and place number in any of the blank boxes. Continue to roll die until all boxes are filled for the math problem. Have students solve the math problem they created. Students want to arrive at a sum larger than the sum the teacher had after solving her math problem. Students will either win, lose, or tie the teacher.

Example:

$$\begin{array}{cc} \square & \square \\ + & \square \\ \hline \end{array}$$

Questions/Discussion Strategies:

- Why is it important to be able to add and subtract numbers mentally? How is this a quick option?
- Tell why you need to regroup or borrow in a math problem?
- In regrouping with addition, why can't an answer be two digits in a place value?
- In borrowing with subtraction, why can't the minuend be the smaller number?

Technology/Manipulatives:

Manipulatives:

- units
- rods
- flats
- connecting cubes
- number line
- hundreds chart
- die

Addition online games:

- Education.com
- [Math Playground](http://MathPlayground)
- [Soft Schools](http://SoftSchools)

Subtraction online games:

- [Splash Math](http://SplashMath)
- Math-Play
- [Free Training](http://FreeTraining)

Accommodations/Acceleration/Differentiation:

For struggling students:

- Provide small group instruction.
- Allow manipulatives, such as number lines and units, rods, and flats to be used until the process of regrouping and borrowing is fully understood.

For excelling students:

- Provide students with numbers larger than 1,000 to add and subtract.
- Have them work with small groups to help explain the procedures.
- Provide them with more difficult mental math equations to solve. For example, instead of $450 - 100$, give them $675 - 220$.

Diocese of Erie Mathematics Second Grade		
Unit of Study: Unit 4 Graphing and Data Collection Purpose: Use patterns and graphs to represent data and solve problems.		Weeks: 2
Essential Questions: <ul style="list-style-type: none">- How do we gather data and display it in a variety of manners?- How can different graphs be used to show data and answer questions?- How can you decide what type of graph would be best after collecting data?		
Standards: 2.MD.12 Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole number units. 2.MD.13 Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. 2.MD.14 Extend repeating patterns. 2.MB.15 Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.		
Standards Reinforced: 1.MD.7 Organize, represent, and interpret data with up to three categories. 1.MD.8 Ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.		
Vocabulary: bar graph data	line plot	picture graph
Authentic Performance Assessment: <ul style="list-style-type: none">- Create data charts to gather information from the class. Examples may be favorite color, favorite food, number of family members, etc.- Create different 3D bar graphs as a class. Each child will make a cube sided with their favorites (Ex: sport, color, food, book, subject, animal) and then stack the cubes to make bar graphs.- Use data collected to build bar graphs, pictographs, and line plot graphs. Students will be able to answer questions based on the graphs of which is more, how many more or fewer than another item, etc.		
Computation Skills: <ul style="list-style-type: none">- gathering data- building graphs		
Thinking and Reasoning Skills: <ul style="list-style-type: none">- Create different graphs showing data that was gathered. What do you notice about the information gathered on the graph?- Why do you think it is a good idea to collect data and organize it in the form of a graph?- Explain why one graph – bar graph, pictograph, or line plot graph - would be better to use than another graph.		
Real World Problems & Application/Catholic Identity:		

<ul style="list-style-type: none"> - When is gathering data important in our lives (school supplies, food bank knowing how much food to gather for the needy, knowing how much food to buy at the grocery store, etc.)? - Discuss different Bible stories known throughout the class. Gather vote information and create different types of graphs.
<p>Reading and Writing in Math:</p> <ul style="list-style-type: none"> - May begin unit by reading a variety of graphing stories, such as “Lemonade for Sale” by Stuart J. Murphy, “The Great Graph Contest” by Loreen Leedy, “Let’s Make a Picture Graph” by Robin Nelson - Collect data about students’ favorites and build different graphs to represent data. Students will use information gathered to create short stories about the data.
<p>Questions/Discussion Strategies:</p> <ul style="list-style-type: none"> - Why do we want to gather data? - How does putting data on a graph make it easier to understand the data?
<p>Technology/Manipulatives:</p> <p>Manipulatives:</p> <ul style="list-style-type: none"> - bar graph template - pictograph template - line plot graph template - Legos or snap cubes to build bar graphs <p>Websites</p> <ul style="list-style-type: none"> - Fuzz Bugs Graphing - Turtle Diary - Top Marks Data Handling
<p>Accommodations/Acceleration/Differentiation:</p> <ul style="list-style-type: none"> - For struggling students on gathering data and building graphs: work one on one and in small groups to practice gathering information on a tally chart. Use manipulatives to build 3D graphs by moving the items around. - For excelling students on gathering data and building graphs: Students can make numerous graphs from the same data, create own stories full of data and have others build graphs from the information.

Diocese of Erie Mathematics Second Grade		
Unit of Study Unit 5: Money Purpose: Navigate money problems concerning addition and subtraction in real world situations.		Weeks: 3 weeks
Essential Questions: <ul style="list-style-type: none"> - What is the value of each coin – penny, nickel, dime, quarter, half dollar? - What strategies can be used to count money? - Is there more than one way to make the same amount of money? - How does place value help in adding and subtracting money? 		
Standards: 2.MD.10 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and symbols appropriately. 2.MD.11 Determine equivalent coin values.		
Standards Reinforced: 2.OA.1 Use addition within 100 to solve one and two-step word problems involving situations of adding to, putting together, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 2.OA.2 Use subtraction within 100 to solve one and two-step word problems involving situations of taking from, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 2.OA.3 Fluently add within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers. 2.OA.4 Fluently subtract within 20 using mental strategies. 2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. 2.NBT.5 Skip-count by 5s, 10s, and 100s. 2.NBT.9 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.		
Vocabulary: add cent sign decimal point dime dollar	dollar sign equivalent estimate half dollar money	nickel penny quarter subtract
Authentic Performance Assessment: <ul style="list-style-type: none"> - Stations <ol style="list-style-type: none"> 1. Give students pictures of different items with price tags. Students must build the amount shown on the price tag. 2. Matching game – students will look at cards with coins and try to find the card displaying the matching money amount. 3. Students will be given a money amount, for example 35 cents. They will work with a partner to create that money amount in as many ways as possible. 		

<ul style="list-style-type: none"> - Turn the classroom into a store. Students can earn pretend money for good behavior. At the end of the week, the students will add up the amount of money they have earned. They will record the amount of money earned on a data sheet. After they have recorded their total, students may shop at the classroom store. They will have to count out the amount of money needed to pay for the item. After they have bought the item, they will subtract the amount they spent from the total amount they had originally on the data sheet. - Create piggy banks for the students to hold the pretend money they earn in the classroom. - Play “I have...Who has...” money game from Teacher Pay Teacher - “Mandy and Randy” program – this is a free program offered by Erie Bank to help promote money knowledge.
Computation Skills: counting money estimation addition subtraction
Thinking and Reasoning Skills: <ul style="list-style-type: none"> - Review different coins and their values. Explain why it is important to know the value of each coin. - Why is it beneficial to count money beginning with the largest value? Why would it be more difficult to start with the pennies and then count by fives, tens, twenty-fives? - It is helpful to make an organized list when naming all the ways to make a certain money amount. Why? - Solve a double-digit math problem. For example, $29+58$. How is solving this math problem the same as solving 29 cents + 58 cents? How is it different?
Real World Problems & Application/Catholic Identity: <ul style="list-style-type: none"> - At school, when do we use money? (lunch room, field trips, collecting for donations) - At home, how can you earn money? (Doing chores) - At our church, why are we collecting money? (weekly collection, money for the poor, for our sister parishes) - Start a collection to donate money to the local food bank. - How can we use our knowledge of money to help others in need? - What would the world be like if we did not have money?
Reading and Writing in Math: <ul style="list-style-type: none"> - May begin unit with books such as, “Alexander, Who Used to Be Rich Last Sunday”, by Judith Viorst, “Money Madness” by David A. Adler, “Pigs Will Be Pigs”, by Amy Axelrod, Ginger and Pickles Shop,” by Beatrix Potter - Journal: If you had one hundred dollars, what would you do with that money? - Journal: How can money be used to help the world? - Interactive notebook: Create flip charts that explain how many pennies make a dollar, how many nickels make a dollar, how many dimes, how many quarters. - Interactive notebook: Create flip charts that have an item for sale with a price tag. underneath the paper, draw coins to make that money amount. - Have students create posters that display the front and back of each coin and their value. - Create organized lists showing the different ways to make certain money amounts.
Questions/Discussion Strategies: <ul style="list-style-type: none"> - How do you earn or receive money? - Why do we earn and receive money?

- What are some things you like to spend money?
- Do mom and dad make you save your money? Do they always let you spend your money the way you want?
- Why is it important to know how to count money?
- What are some examples of when we would be adding money amounts together?
- What are some examples of when we would be subtracting money amounts?

Technology/Manipulatives:

- pretend money
- [Splash Math](#) money games: does require free account set up. This site offers games on coin value, adding, subtracting, comparing amounts, naming the coins, etc.
- [Education.com](#) money games- This site offers games on identifying coins, putting coins in order by value, adding money together.
- [Math Play](#) money games- This site offers games on counting money, adding money, and money word problems.

Accommodations/Acceleration/Differentiation:

For struggling students:

- Allow one on one or small group instruction time.
- Some students struggle with counting by the different value amounts. Give the coins "hair" and allow the students to count by five no matter the value. A nickel gets one line of hair. A dime gets two lines of hair. A quarter gets five lines of hair. A half dollar gets ten lines of hair. Pennies are bald and you add by one after counting the rest of the coins.



For accelerated students:

- Challenge students to create money amounts using the smallest number of coins.
- Provide students with larger money amounts to figure out the value.
- Challenge students to use their estimating skills to decide if they have enough money to buy certain items.

Diocese of Erie Mathematics Second Grade		
Unit of Study Unit 6: Time Purpose: Measure time using common units.		Weeks: 3 weeks
Essential Questions: <ul style="list-style-type: none"> - What parts of the analog clock help to tell time correctly to the five minutes? - What is the difference between AM and PM? - What different ways can you say what time it is on the clock? (quarter after, half past, quarter to, ____ minutes before, ____ blank minutes after, etc.) - Why is it important to know how to tell and write time? 		
Standards: 2.MD.9 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.		
Standards Reinforced: 1.MD.6 Tell and write time in hours and half hours using analog and digital clocks 2.NBT.5 Skip-count by 5s, 10s, and 100s.		
Vocabulary: A.M. Analog/digital half hour half past	hour hour hand minute minute hand	P.M. quarter quarter past quarter to
Authentic Performance Assessment: <ul style="list-style-type: none"> - Provide students with paper plates to create clocks. Divide plate into quarters to evenly create a clock. Give students a template for an hour hand and a minute hand. Cut out hands and attach to the center of the plate with a brad. Students will then use the clocks to demonstrate different times – when they wake up in the morning, go to school, eat lunch, do their homework, eat dinner, go to bed, etc. Struggling students – provide an already made clock Excelling students – students can tell if the time is AM or PM. Allow students to figure out military time and explain. - Students explain the roles of the minute hand and hour hand on an analog clock and demonstrate their understanding by moving the hands and describing the time to the nearest 5 minutes. - With knowledge of hour and minute hands, students can explain the process of elapsed time by hours and half hours. They may demonstrate their understanding using two clocks. 		
Computation Skills: <ul style="list-style-type: none"> - telling time to five minutes - AM/PM - different ways to say the time 		
Thinking and Reasoning Skills: <ul style="list-style-type: none"> - Demonstrate different times on your clocks. Explain why the hands are placed in a certain manner. What is the role of the hands on the clock? - Why is it important to know the difference between AM and PM? What activities would you do in the AM? PM? 		

<ul style="list-style-type: none"> - Explain the different ways to say the time on the clock. Why do we have these different ways to say the time? - If I know the time I am starting an event and what time the event is ending, how can I figure out how long the event will last?
<p>Real World Problems & Application/Catholic Identity:</p> <ul style="list-style-type: none"> - When do we need to be able to tell time? Where are some places you need to be at a certain time (school, church, sports, movies, bed time)? - What would happen if we didn't have a way to measure time? - Discuss the times we devote to God throughout the day. What time do we go to Mass? When do we say our AM and PM prayers? At what time do we say our blessings before and after lunch?
<p>Reading and Writing in Math:</p> <ul style="list-style-type: none"> - Begin unit by reading stories, such as "What Time is it?" by Sheila Keenan, "Game Time," by Stuart Murphy, "A Second is a Hiccup," by Hazel Hutchings, "Rodeo Time," by Stuart Murphy - Write a story that uses one of the above stories as a mentor text and incorporates telling time. - Create word problems for telling time. - Journal: Give students a picture of a given time. Students will describe where the hands are located, what time the clock says, and the different ways to say the time on the clock. - Create daily schedules to show the different times activities are completed throughout the day. Identify AM and PM. Explain amount of time each activity takes.
<p>Questions/Discussion Strategies:</p> <ul style="list-style-type: none"> - When is it necessary to tell time? - Why is it important to be on time to places? - How can telling time help with schedules? - Why is it important to know how long an event will take?
<p>Technology/Manipulatives:</p> <p>Manipulatives</p> <ul style="list-style-type: none"> - clocks - items to make own clocks (paper plate, brads, paper hour and minute hands) <p>Websites</p> <ul style="list-style-type: none"> - Education.com time games - Abcya time game - Splash Math time games - Homeschool math clock
<p>Accommodations/Acceleration/Differentiation:</p> <p>For struggling students:</p> <ul style="list-style-type: none"> - Work one on one or in a small group to practice counting by fives. Use the minute hand on the clock while counting by fives to show how the minute hand is related to counting by fives. - Provide a clock that has the five-minute intervals labeled. <p>For accelerated students:</p> <ul style="list-style-type: none"> - Students will work on more complex problems involving elapsed time - Students will work on telling time to the minute, not just the five-minute intervals.

Diocese of Erie Mathematics Second Grade		
Unit of Study: Unit 7 Geometry Purpose: Name and create 2 and 3D shapes. Partition shapes into portions as small as fourths and recognize the relationship between the portions and whole. Create composite shapes using familiar two- and three-dimensional shapes.		Weeks: 5 weeks
Essential Questions: <ul style="list-style-type: none"> - How can shapes and solids be described, compared, and used to make other shapes? - Why are geometric figures relevant and important? - How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems? - How are shapes divided into halves, thirds, and fourths? - Why is it important that shapes are divided equally when splitting them into fractions? 		
Standards: 2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. 2.G.2 Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. 2.G.3 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. 2.G.4 Partition circles and rectangles into two, three, or four equal shares. Describe the shares using the words, halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.		
Standards Reinforced: 1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size). 1.G.2 Build and draw shapes to possess defining attributes. 1.G.3 Compose two-dimensional shapes (rectangles, square, trapezoids, triangles, half-circles and quarter-circles) to create a composite shape and compose new shapes from the composite shape. 1.G.4 Compose three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape and compose new shapes from the composite shape. 1.G.5 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarter, and use the phrases half of, fourth of, and quarter of. 1.G.6 Describe the whole as two of, or four of the shares. 1.G.7 Understand for "half of" and "fourth of" that decomposing into more equal shares creates smaller shares.		
Vocabulary: angle circle columns cone cube cylinder edge	halves fourths thirds hexagon parallelogram pentagon plane shapes	rectangular prism rows side solid figure sphere square trapezoid

equal faces flat surface fractions	polygon pyramid quadrilateral rectangle	triangle unequal vertex (vertices)
Authentic Performance Assessment: <ul style="list-style-type: none"> - Divide the class into groups. Each group will be given a 3D shape. Students will answer 5 different questions about each shape on a recording sheet (5 columns: name of shape, faces, vertices, edges, plain shapes that can be traced from 3D shape). - Give students different 3D shapes that have been discussed in class. Their job is to build the tallest structure using all the shapes. This will help them see how the shapes work together. They must explain why they placed the shapes where they did. - Make new shapes. Students will be given a picture of a shape that had been put together by an unknown variety of smaller 2D shapes. They must use the smaller shapes to try and duplicate the larger shape presented to them. - Create fraction flower garden. Provide each student with a paper plate. Have them decorate the plate to look like a flower. Students will equally divide the plate into halves, thirds, and fourths to represent the different fractions. - Using playdoh, students can create different 3D shapes, plain shapes, and fractions. - Students will create a variety of 2D shapes to give to a partner. The partner must identify the number of vertices, sides, and angles. After identifying the vertices, sides, and angles, students must divide the shapes into halves, thirds, or fourths. 		
Computation Skills: 3D shapes plain shapes fractions		
Thinking and Reasoning Skills: <ul style="list-style-type: none"> - Build a structure using different 3D shapes. Explain why the shapes chosen were the best to use to keep the structure stable. - What plain shapes can be traced from different 3D shapes. Why is it helpful to know what shapes can be traced? - Fractions make things equal. Why is it important to split things equally? Why can't I split an item into 2 unequal parts and call it halves? - Give the students different riddles describing different 3D shapes and plain shapes. Have the children identify the shape and explain how they knew the answer. 		
Real World Problems & Application/Catholic Identity: <ul style="list-style-type: none"> - Where in the real world do we see these different shapes? Why do we need such a variety of shapes? - Describe using different shapes at the places you play. (the beach, the playground, your backyard, the classroom, etc.) - When at home, school, and play do we use fractions? - Using different plain shapes, create a stained glass window design for church. - What plain shapes can be used to make the shape of the Cross? 		
Reading and Writing in Math: <ul style="list-style-type: none"> - May begin the unit with stories such as "Captain Invincible and the Space Shapes" by Stuart J. Murphy, "The Greedy Triangle" by Marilyn Burns, "The Art of Shapes: For Children and Adults" by Margaret Steele and Cindy Estes, "Fraction Action" by Loreen Leedy, "Eating Fractions" by Bruce McMillan, "Give Me Half" by Stuart J. Murphy 		

- Journal: Choose 2 different 3D shapes. Describe how they are the same and different.
- Journal: Create your own riddles describing a shape. Have a partner or the whole class guess your shape.
- Write a story about a baker who doesn't use fractions correctly. Tell how his recipe would go wrong.
- Create a small town using 3D shapes. Explain the different parts of the town and why you used the shapes you did.

Questions/Discussion Strategies:

- What jobs need to know about different shapes, angles, and fractions? Why do they need to know these things?
- How would our world be different if we didn't have such a variety of shapes? Would it be better or worse if there were less shapes?
- How does knowing the faces, edges, and vertices of a shape help in building different things? What could go wrong if you used the wrong shape?
- How can fractions help me share different things with my friends?
- What are some different instances when we will need to know fractions?

Technology/Manipulatives:

- 3D shapes
- plain shapes
- snapping cubes
- paper plates
- For shapes: [Math Playground](#)
- For shapes: [Splash Math](#), a free membership is required to use this site.
- For fractions: [Sheppard Software](#)
- For fractions: [Math Games](#)

Accommodations/Acceleration/Differentiation:

For struggling students:

- Provide an information sheet with different shapes and their names, along with fractions for halves, thirds, and fourths.
- Work one on one or in small groups with students.
- Provide 3D shapes color coded for faces, vertices, and edges.

For accelerated students:

- Allow students to explore deconstructing shapes and constructing their own shapes in the form of puzzles.
- Allow them to explore fractions beyond halves, thirds, and fourths.

Diocese of Erie Mathematics Second Grade		
Unit of Study Unit 8: Measurement Purpose: Measure length using common units.		Weeks: 4 weeks
Essential Questions: <ul style="list-style-type: none"> - What measurement units and tools are most beneficial when measuring an object? - How can you compare measurements of different objects? - What makes a good estimation of lengths? 		
Standards: 2.MD.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. 2.MD.2 Measure the length of an object twice, using length units of different lengths for the two measurements. Describe how the two measurements relate to the size of the unit chosen. 2.MD.3 Estimate lengths using units of inches, feet, centimeters, and meters. 2.MD.4 Identify the most appropriate unit of measurement. 2.MD.5 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard-length unit.		
Standards Reinforced: 1.MD.4 Understand that the length measurement of an object is the number of same-size length units that span the object with no gaps or overlaps. All measurements should equal only whole numbers. 1.MD.5 Distinguish between customary and metric units of measure.		
Vocabulary: centimeter feet height length	inch meter width yard	
Authentic Performance Assessment: <ul style="list-style-type: none"> - Create different lengths of snap cubes for students to measure. Using knowledge of length, describe what is longer, shorter, in centimeters, inches, etc. - Students measure and describe objects throughout the classroom. Compare how objects are different in length. - Identify why objects have more centimeters and less inches. - Participate in the Measurement Olympics. This activity works on the skills of measuring, estimating, and team work. An example of Olympics: Love to Teach, or here - Students can make and fly paper airplanes. They will estimate how far their planes will fly, and then measure the actual distance. 		

Computation Skills: measurement estimation
Thinking and Reasoning Skills: <ul style="list-style-type: none"> - What do you notice when measuring items in different units of measurement? - When would it be best to use centimeters or inches to measure an item? Feet, yards, or meters? - What is considered a good estimation on measurement? - Why would we need to measure something? - Why would we want to estimate a measurement?
Real World Problems & Application/Catholic Identity: <ul style="list-style-type: none"> - When would we need to measure items at home and school? - Why is it important to know the length of an item? - When would it cause a problem if we didn't know the length of an object? - Estimate the length of the Crucifix and Mary statue in the classroom. Complete actual measurements. - Construct your own crucifix using given measurements.
Reading and Writing in Math: <ul style="list-style-type: none"> - Begin unit with a read aloud that focuses on measuring. For example, "Get up and Go" by Stuart J. Murphy and "Measuring Penny" by Loreen Leedy. - Create word problems for comparing measurement. - In groups, create measurement questions about items around the room. Once complete, questions will be traded with another group for them to solve. - Measure a friend – estimate his/her length, then measure actual measurement. Measure in centimeters, then inches. Explain why measurements are different and why centimeters measurement is a higher number than inches.
Questions/Discussion Strategies: <ul style="list-style-type: none"> - Why would it be important to measure an item? How can measuring help us? - When would you want to use centimeters/inches? meters/feet? Why?
Technology/Manipulatives: Manipulatives <ul style="list-style-type: none"> - rulers - yard sticks - meter sticks - objects to measure - snap cubes Websites for measurement: <ul style="list-style-type: none"> – Splash Math – Education.com – Funbrain – Abcya
Accommodations/Acceleration/Differentiation: <ul style="list-style-type: none"> - For struggling students: work one on one or in a small group to help them become comfortable with basic measurement of centimeters and inches. Provide many hands-on measurement opportunities.

- For excelling students: provide children with measurement puzzles. For example, how can we measure a wavy line, figuring out the total length of numerous lines, find the difference between an estimation of a line and the actual length of a line.

Diocese of Erie Mathematics Second Grade		
Unit of Study Unit 9: Introduction to Multiplication and Division Purpose: Calculate and explain multiplication and division in different ways (e.g. arrays, repeated addition/unknown factor, etc.).		Weeks: 5 weeks
Essential Questions: <ul style="list-style-type: none"> - What is the relationship between arrays, repeated addition, and multiplication? - How can recognizing repetition help assist in solving problems more efficiently? - How can we use what we know about addition and subtraction to help explain multiplication and division? - How can knowing a multiplication fact help solve a related division problem or another multiplication problem? 		
Standards: 2.OA.7 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns. 2.OA.8 Write an equation to express the total number of objects in a rectangular array as a sum of equal addends. 2.OA.9 Explore basic multiplication facts. 3.OA.7 Understand division as an unknown-factor problem.		
Standards Reinforced: 2.OA.3 Fluently add within 20 using mental strategies. By the end of Grade 2, know from memory all sums of two one-digit numbers. 2.OA.4 Fluently subtract within 20 using mental strategies. 2.OA.5 Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2's. 2.OA.6 Write an equation to express an even number as a sum of two equal addends.		
Vocabulary: array columns fact family	product quotient repeated addition	repeated subtraction rows
Authentic Performance Assessment: <ul style="list-style-type: none"> - Provide students with a group of manipulatives (bingo chips, counters, chocolate chips, popcorn seeds, etc.) and have them build an array. Explain what makes it an array (equal rows), the repeated addition sentence, and the multiplication sentence. - Create 3D division problems. Students may use a certain number of hula-hoops, boxes, plates, etc. to create groups. Provide students with several manipulatives that must be divided equally. Explain the process of dividing while splitting the manipulatives into the different groups. Discuss the repeated subtraction sentence. - Create multiplication and division stories. Solve problems and explain the steps necessary to solve the equations. 		

Computation Skills:

repeated addition
repeated subtraction
simple multiplication
simple division

Thinking and Reasoning Skills:

- What connection do you notice between addition and multiplication? Subtraction and division?
- Explain when multiplication can be used instead of addition. (When using repeated addition)
- Explain when division can be used instead of subtraction. (When using repeated subtraction)
- Create fact families to show the connection between multiplication and division.
- How can we use our knowledge of addition and subtraction to help us solve multiplication and division problems?
- Why would you want to multiply and divide instead of add and subtract?

Real World Problems & Application/Catholic Identity:

- Look around the room. What arrays do you see? Who can quickly figure out the number of items in the array (Example: box of crayons)
- How can multiplying and dividing help in the real world?
- Why would it be important to be able to solve math problems quickly? Give an example of when solving math problems quickly would be beneficial.
- At school and home, when do we have to divide things evenly between others?
- At school and home, when do we have to make sure we have enough so everyone gets the same amount?
- What stories in the Bible discuss multiplying and dividing? (Example: 5 loaves and 2 fish)

Reading and Writing in Math:

- May begin the unit with "What Comes in 2's, 3's, and 4's" by Suzanne Aker, "Minnie's Diner: A Multiplying Menu" by Dayle Ann Dodds, or "One Hungry Cat" by Joanne Rocklin
- Create stories that work with multiplying and dividing. Have students draw the arrays, for example a plate of cookies, and explain the process of multiplying. Have them divide the item, such as cookies, into equal groups. Write down the steps to solving the math problems.
- Journal: Explain the difference between multiplication and division. When would you use each type of operation? Why?
- On an 8x11 piece of paper, have students make an animal array. Students pick their favorite animal and draw an array of that animal. Underneath the picture, create the repeated addition and multiplication problems. Attach all drawings together to display in a quilt fashion.
- On an 8x11 piece of paper, create groups of favorite foods. Students draw their favorite food and separate equally on a given number of plates. Underneath the picture, create the repeated subtraction and division problems. Attach all drawings together to display in a quilt fashion.

Questions/Discussion Strategies:

- What steps are needed to solve a multiplication or division problem?
- How are addition and multiplication similar? How are subtraction and division similar?
- When would multiplication and division be better choices than addition and subtraction for solving a math problem?
- When would addition and subtraction be better choices than multiplication and division for solving math problems?
- Which math problem can be made a multiplication problem, $2+5$ or $2+2+2+2$? Why?

- Which math problem can be made a division problem, $16 - 4 - 4 - 4 - 4$ or $10-3$? Why?

Technology/Manipulatives:

Manipulatives

- two color counters
- array diagrams
- part-part-part-whole mats (to help with division)
- manipulatives (bingo chips, counters, snap cubes, chocolate chips, popcorn seeds, etc)

Websites

- Education.com (building arrays) Do need to make a free account to use
- [Turtle Diary](http://TurtleDiary.com) multiplication games
- [Math Playground](http://MathPlayground.com)
- [Turtle Diary](http://TurtleDiary.com) division games

Accommodations/Acceleration/Differentiation:

For the struggling student:

- Allow children to have manipulatives to group. Have them model different math problems and explain.
- Work one on one with them, giving them repeated addition and subtraction sentences to build with their manipulatives. Have them explain every step as they work through the problems.

For the excelling student:

- Challenge them to provide examples of multiplication and division in their lives. Create word problems to solve and explain.
- Give them the opportunity to work on larger multiplication and division problems. They may use flash cards to help with fluency.