# BURCH CHARTER SCHOOL OF EXCELLENCE

## 2020-2021

## Mathematics- Grade 4

Approved by the Burch Charter School of Excellence Board of Trustees

August 2020

**MISSION STATEMENT OF BURCH CHARTER SCHOOL OF EXCELLENCE:**

Burch Charter School of Excellence (BCSE) was founded in September, 2008. Our primal mission is to enable students to reach their intellectual and personal potential. We strive to instill integrity and respect in our students' in partnership with families and the community. We maintain a blended learning environment that enhances positive character traits that ensures our students become productive 21st century world citizens. The Burch Charter School of Excellence, a public school, is committed to providing best practices for educating our students in an environment that enables them to develop into critical thinkers that evolve into digital, life-long learners. Our curriculum emphasizes literacy and mathematics infused with technology.

We believe:

- Our students will be effective communicators, quality producers, self-directed lifelong learners, community contributors, collaborative workers and complex thinkers;
- All students are entitled to opportunities to maximize their talents and abilities;
- Our ethnic and cultural diversity is our strength and prepares students for success in a global society;
- Setting high expectations for students, teachers and administrators ensures that our students successfully meet or exceed the New Jersey Student Learning Standards.
- Parents are essential partners in the education of their children;
- Maintaining a strong partnership with the Irvington community is integral to student success;
- Understanding, implementing and responding to current trends in technology is intrinsic to success in a 21$^{st}$ century world; In ensuring that the district has a well-trained, highly qualified and competent staff; In maintaining a safe and secure learning environment.

The underlying values and principles that drive our mission and vision are our personal responsibility, a strong work ethic, cooperation, respect for others, honesty, integrity and the firm belief that every child can learn.

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| Grade: Fourth | Content: Mathematics |
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| Unit: 1 | Time Frame: 43-45 days |

| New Jersey Student Learning Standards: | Mathematical Practice | Skills |
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| 4.OA.B.4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.<br><br>**Essential Question:**<br>• What are properties of whole numbers?<br>• How are numbers alike and different? | MP.2 Reason abstractly and quantitatively.<br>MP.7 Look for and make use of structure.<br>MP.8 Look for and express regularity in repeated reasoning. | • Whole numbers are a multiple of each of its factors.<br>• Prime numbers do not have factors other than 1 and the number itself.<br>• Find all factor pairs for any whole number (between 1 and 100).<br>• Given a one-digit number, determine whether a given whole number (between 1 and 100) is a multiple of the one-digit number.<br>• Determine whether a given whole number (between 1 and 100) is prime or composite. |

## I Can Statements

• I can explain how multiples and factors are related and used.
• I can find all factor pairs for a whole number between 1 and 100.

| New Jersey Learning Standards | Mathematical Practices | Skills |
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| 4.OA.C.5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.<br><br>Essential Questions:<br>• Where are patterns in nature, architecture, music, words, and numbers?<br>• What is the repeating and/or increasing unit in the pattern?<br>• What strategies can be used to continue a sequence? | MP.8 Look for and express regularity in repeated reasoning. | • Patterns contain features that are not explicitly stated in the rule defining the numerical pattern.<br>• Produce number patterns from a given rule.<br>• Produce shape patterns from a given rule.<br>• Analyze a sequence of numbers in order to identify features that are not obvious explicitly stated in the rule. |

### I Can Statements

- I can generate a number pattern that follows a given rule.
- I can generate a shape pattern that follows a given rule.
- I can look at a number pattern and determine additional patterns found within the sequence.

| New Jersey Learning Standards | Mathematical Practices | Skills |
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| 4.MD.A.1. Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.<br>*For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36).*<br><br>Essential Questions:<br>&bull; What types of problems are solved with measurement? | MP.5 Use appropriate tools strategically.<br><br>MP.8 Look for and express regularity in repeated reasoning. | &bull; Relative sizes of measurements (e.g. a kilometer is 1000 times as long as a meter and 100,000 times as long as a centimeter).<br>&bull; Express measurements of a larger unit in terms of a smaller unit (within a single measurement system) (e.g. convert hours to minutes, kilometers to centimeters, etc).<br>&bull; Generate a two-column table to record measurement equivalents. |

## I Can Statements

- I can explain the relative sizes of units within the same system.
- I can translate the larger units into equivalent smaller units.
- I can record measurement equivalence in a two column table or as number pairs.

| New Jersey Learning Standards | Mathematical Practice | Skills |
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| 4.OA.A.1. Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.<br><br>Essential Questions:<br>• | MP.2 Reason abstractly and quantitatively.<br><br>MP.4 Model with mathematics. | • Multiplication equations represent comparisons.<br>• Explain multiplication equations as comparisons.<br>• Write multiplication equations given word problems indicating multiplicative comparison.<br><br>. |
| 4.OA.A.2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.<br><br>**Essential Questions:**<br>• What strategies can be used to solve for unknowns? | MP.1 Make sense of problems and persevere in solving them.<br><br>MP.4 Model with mathematics.<br><br>MP.5 Use appropriate tools strategically. | • Multiply to solve word problems involving multiplicative comparison.<br>• Divide to solve word problems involving multiplicative comparison.<br>• Represent problems with drawings and equations, using a symbol for the unknown number.<br>• Distinguish word problems involving multiplicative comparison from those involving additive comparison. |

| I Can Statement |
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| • I can explain how one factor in a multiplication problem changes the other factor to make the product.<br>• I can write verbal statements about multiplicative comparisons as equations. |
| • I can solve word problems involving multiplications and division by using drawings.<br>• I can explain the difference between a multiplicative comparison and an additive comparison. |

| New Jersey Learning Standards | Mathematical Practice | Skills |
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| 4.NBT.A.1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.* [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]<br><br>**Essential Question:**<br>• How does the position of a digit in a number affect its value? | MP.7 Look for and make use of structure. | • A quantitative relationship exists between the digits in place value positions of a multi-digit number.<br>• Explain that a digit in one place represents ten times what it would represent in the place to its right. |
| 4.NBT.A.2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in place, using >, =, and < symbols to record the results of comparisons. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]<br><br>Essential Question:<br>• How can numbers be expressed, ordered, and compared? | MP.7 Look for and make use of structure. | • Multiple representations of whole numbers exist.<br>• Read and write multi-digit whole numbers using base-ten numerals.<br>• Read and write multi-digit whole numbers using number names.<br>• Read and write multi-digit whole numbers using expanded form.<br>• Compare two multi-digit numbers using >, =, and < symbols. |
| 4.NBT.A.3. Use place value understanding to round multi-digit whole numbers to any place. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]<br><br>Essential Question:<br>• How are place value patterns repeated in numbers?<br>• How can place value properties aid computation? | MP.7 Look for and make use of structure. | • Estimation<br>• Round whole numbers to any place. |
| **I Can Statement** | | |

- I can look at a multi-digit number and determine that the digit to the left is 10 times greater that a given digit.
- I can read and write multi-digit whole numbers using base ten numbers.
- I can round whole numbers to the nearest 10, 100, 1000.

| Resources | |
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| https://sso.rumba.pk12ls.com/<br><br>EnvisionMath<br>·      Benchmarks Assessments<br>·      Fluency Practice<br>·      Vocabulary Review<br>·      Topic Assessments | *www.mobymax.com*<br>*www.iready.com*<br>*www.abcya.com*<br>*www.khanacedmy.com*<br>*www.funbrain.com*<br>*www.splashlearn.com* |

## Differentiated Instruction
### (content, process, product and learning environment)

| At Risk Students | English Language Learners |
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| **Modifications for Classroom**<br><br>Pair visual prompts with verbal presentations<br><br>Use of lab or experiments to give visual representation of concept<br><br>Ask students to restate information, directions, and assignments.<br><br>Work within group or partners | **Modifications for Classroom**<br><br>Native Language Translation<br>(peer, online assistive technology, translation device, bilingual dictionary)<br><br>Preteach vocabulary<br><br>Use graphic organizers or other visual models |

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| Repetition and practice | Use of manipulatives to visualize concept |
| Model skills / techniques to be mastered. | |
| | Highlight key vocabulary-chart or vocabulary bank |
| Use metacognitive work | |
| | Use of nonverbal responses (thumbs up/down) |
| Extended time to complete class work | |
| | Use sentence frames |
| Provide copy of class notes | |
| | Design questions for different proficiency levels |
| Student may request to use a computer to complete assignments. | |
| | Utilize partners and partner talk |
| Use manipulatives to examine concepts | |
| Assign a peer helper in the class setting | |
| Provide oral reminders and check student work during independent work time | |
| **Special Education** | **Gifted and Talented** |
| **Modifications for Classroom** | |
| Pair visual prompts with verbal presentations | **Extension Activities** <br> Conduct research and provide presentation of cultural topics. |
| Use of lab or experiments to give visual representation of concept | Design surveys to generate and analyze data to be used in discussion. |
| Ask students to restate information, directions, and assignments. | Use of Higher Level Questioning Techniques |
| Preteach vocabulary | Provide assessments at a higher level of thinking |
| Repetition and practice | |
| Model skills / techniques to be mastered. | Create alternative assessment which requires writing, |

| | research and presentation |
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| Use manipulatives and visual representation to examine Breakdown large assignments into smaller tasks<br><br>Extended time to complete class work<br><br>Provide copy of class notes<br><br>Preferential seating to be mutually determined by the student and teacher<br><br>Use of online component of book<br><br>Extra textbooks for home. Student may request books on tape / CD / digital media, as available and appropriate.<br><br>Assign a peer helper in the class setting<br><br>Provide oral reminders and check student work during independent work time<br><br>Assist student with long and short term planning of assignments | |

| Grade: Fourth | Content: Mathematics |
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| Unit: 2 | Time Frame: 43-45 days |

| New Jersey Student Learning Standards: | Mathematical Practice | Skills |
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| 4.NBT.B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. *[Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.] *(benchmarked)<br><br>Essential Question:<br>• What are different models for addition and subtraction? | MP.7 Look for and make use of structure.<br> MP.8 Look for and express regularity in repeated reasoning. | • Add multi-digit whole numbers using the standard algorithm with accuracy and efficiency.<br>• Subtract multi-digit whole numbers using the standard algorithm with accuracy and efficiency.<br><br>. |
| 4.NBT.B.5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]<br><br><br>**Essential Question:**<br>• How can place value properties aid computation?<br>• How do the four operations relate to another? | MP.7 Look for and make use of structure. | • Multiply a whole number of up to four digits by a one-digit whole number using strategies based on place values.<br>• Multiply two two-digit numbers using strategies based on place value.<br>• Represent these operations with equations, rectangular arrays, and area models.<br>• Explain the calculation by referring to the model (equation, array, or area model). |

| 4.NBT.B.6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.]<br><br>**Essential Questions:**<br>• What are different models for multiplication and division? | MP.7 Look for and make use of structure.<br>    MP.8 Look for and express regularity in repeated reasoning. | • Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on placF value, the properties of operations, and the relationship between multiplication and division.<br>• Represent these operations with equations, rectangular arrays, and area models.<br>• Explain the calculation by referring to the model (equation, array, or area model). |
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| I Can Statement |
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| <br>• I can easily and accurately add and subtract multi-digit whole numbers.<br>• I can multiply a whole number up to four digits by a one-digit whole number.<br>• I can show and explain these division problems by using equations, rectangular arrays, and/or area models.<br><br> |

| New Jersey :Learning Standards | **Mathematical Practice** | **Skills** |
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| 4.OA.A.3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.  *(benchmarked)<br><br>Essential Questions:<br>• What strategies can be used to solve for unknowns? | MP.1 Make sense of problems and persevere in solving them.<br><br>MP.2 Reason abstractly and quantitatively.<br><br>MP.4 Model with mathematics.<br><br>MP.7 Look for and make use of structure. | • Proper use of the equal sign<br>• Improper use of the equal sign (e.g. $3 + 7 = 10 – 5 = 5$ is incorrect)<br>• Solve multi-step word problems involving any of the four operations.<br>• Solve multi-step word problems involving interpretation (in context) of a remainder.<br>• Write equations to represent multi-step word problems, using a letter to represent the unknown quantity.<br>• Explain why an answer is reasonable.<br>• Use mental computation and estimation strategies to determine whether an answer is reasonable. |
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## I Can Statement

- I can solve multi-step word problems using addition, subtraction, multiplication and division with remainders.
- I can solve multi-step word problems using addition, subtraction, multiplication and division using equations where a symbol is used for the unknown.
- I can determine if the answer makes sense by using mental math, estimation, and rounding.

| New Jersey Learning Standards | Mathematical Practice | Skills |
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| 4.MD.A.3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*<br><br>**Essential Questions:**<br>• How do units within a system relate to each other? | MP.2 Reason abstractly and quantitatively.<br><br>MP.5 Use appropriate tools strategically. | • Solve real world and mathematical problems by finding the area of rectangles using a formula.<br>• Solve real world and mathematical problems by finding the perimeter of rectangles using a formula. |

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| • I can solve real-world problems involving the perimeter of rectangles.<br>• I can solve real-world problems involving the area of rectangles. |

| New Jersey Learning Standards | Mathematical Practices | Skills |
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| 4.NF.A.1. Explain why a fraction $a/b$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]<br><br>**Essential Questions:**<br>• What are the steps to equivalent fractions? | MP.1 Make sense of problems and persevere in solving them.<br><br>MP.4 Model with mathematics.<br><br>MP.5 Use appropriate tools strategically.<br><br>MP.6 Attend to precision.<br><br>MP.7 Look for and make use of structure. | • Equivalent fractions are the same size while the number and size of the parts differ.<br>• Explain, using visual fraction models, why two fractions are equivalent.<br>• Generate equivalent fractions, using fraction $a/b$ as equivalent to fraction $(n \times a)/(n \times b)$. |

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| 4.NF.A.2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]<br><br>**Essential Questions:**<br>• How can you compare two fractions with the same numerator and different denominators or with the same denominators and different numerators? | MP.1 Make sense of problems and persevere in solving them.<br><br>MP.4 Model with mathematics.<br><br>MP.5 Use appropriate tools strategically.<br><br>MP.6 Attend to precision.<br><br>MP.7 Look for and make use of structure. | • Fractions may only be compared when the two fractions refer to the same whole.<br>• Create common denominators in order to compare two fractions.<br>• Create common numerators in order to compare two fractions.<br>• Compare two fractions with different numerators and different denominators by comparing to a benchmark fraction.<br>• Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. |
| 4.NF.B.3.  Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$.<br>4.NF.B.3a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.<br>4.NF.B.3b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.* [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]<br><br>**Essential Questions:**<br>• How are equivalent fractions the same size even though the number and size of the parts are different?<br>• How can you add and subtract fractions with like denominators? | MP.1 Make sense of problems and persevere in solving them.<br><br>MP.2 Reason abstractly and quantitatively.<br><br>MP.3 Construct viable arguments and critique the reasoning of others.<br><br>MP.4 Model with mathematics.<br><br>MP.5 Use appropriate tools strategically.<br><br>MP.6 Attend to precision.<br><br>MP.7 Look for and make use of structure. | • Some fractions can be decomposed.<br>• Addition/subtraction of fractions is joining/separating parts referring to the same whole.<br>• Decompose a fraction into a sum of fractions with the same denominator in more than one way.<br>• Write decompositions of fractions as an equation.<br>• Develop visual fraction models that represent decomposed fractions and use them to justify decompositions. |

## I Can Statements:

- I can create and explain equivalent fractions even though the number and size of the parts of the fraction may change.
- I can compare two fractions by creating common numerators or common denominators.
- I can explain the concepts of adding and subtracting fractions with like denominators.
- I can decompose (break down) a fraction into a sum of fractions with the same denominator in more than one way.

## Resources

https://sso.rumba.pk12ls.com/

EnvisionMath
- Benchmarks Assessments
- Fluency Practice
- Vocabulary Review
- Topic Assessments

www.mobymax.com
www.iready.com
www.abcya.com
www.khanacedmy.com
www.funbrain.com
www.splashlearn.com

## Differentiated Instruction
*(content, process, product and learning environment)*

| At Risk Students | English Language Learners |
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| **Modifications for Classroom**<br><br>Pair visual prompts with verbal presentations<br><br>Use of lab or experiments to give visual representation of concept<br><br>Ask students to restate information, directions, and assignments. | **Modifications for Classroom**<br><br>Native Language Translation<br>(peer, online assistive technology, translation device, bilingual dictionary)<br><br>Preteach vocabulary |

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| Work within group or partners | Use graphic organizers or other visual models |
| Repetition and practice | Use of manipulatives to visualize concept |
| Model skills / techniques to be mastered. | Highlight key vocabulary-chart or vocabulary bank |
| Use metacognitive work | Use of nonverbal responses (thumbs up/down) |
| Extended time to complete class work | Use sentence frames |
| Provide copy of class notes | Design questions for different proficiency levels |
| Student may request to use a computer to complete assignments. | Utilize partners and partner talk |
| Use manipulatives to examine concepts | |
| Assign a peer helper in the class setting | |
| Provide oral reminders and check student work during independent work time | |

| Special Education | Gifted and Talented |
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| **Modifications for Classroom** | **Extension Activities** |
| | Conduct research and provide presentation of cultural topics. |
| Pair visual prompts with verbal presentations | |
| Use of lab or experiments to give visual representation of concept | Design surveys to generate and analyze data to be used in discussion. |
| Ask students to restate information, directions, and assignments. | Use of Higher Level Questioning Techniques |
| Preteach vocabulary | Provide assessments at a higher level of thinking |
| Repetition and practice | |

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| Model skills / techniques to be mastered.<br><br>Use manipulatives and visual representation to examine<br>Breakdown large assignments<br>into smaller tasks<br><br>Extended time to complete<br>class work<br><br>Provide copy of class notes<br><br>Preferential seating to be mutually determined by the student and teacher<br><br>Use of online component of book<br><br>Extra textbooks for home. Student may request books on tape / CD / digital media, as available and appropriate.<br><br>Assign a peer helper in the class setting<br><br>Provide oral reminders and check student work during independent work time<br><br>Assist student with long and short term planning of assignments | Create alternative assessment which requires writing, research and presentation |

| **Grade: Fourth** | **Content:** Mathematics |
|---|---|
| **Unit:** 3 | **Time Frame:** 43-45 days |

| **New Jersey Student Learning Standards:** | **Mathematical Practice** | Skills |
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| 4.NF.B.3. Understand a fraction $a/b$ with $a > 1$ as a sum of fractions $1/b$. <br> 4.NF.B.3c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. <br> 4.NF.B.3d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem. <br> [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.] | MP.1 Make sense of problems and persevere in solving them. <br><br> MP.2 Reason abstractly and quantitatively. <br><br> MP.3 Construct viable arguments and critique the reasoning of others. <br><br> MP.4 Model with mathematics. <br><br> MP.5 Use appropriate tools strategically. <br><br> MP.6 Attend to precision. <br><br> MP.7 Look for and make use of structure. | • Some fractions can be decomposed. <br> • Addition/subtraction of fractions is joining/separating parts referring to the same whole. <br> • Add and subtract fractions having like denominators in order to solve real world problems. <br> • Develop visual fraction models and write equations to represent real world problems involving addition and subtraction of fractions. <br> • Add and subtract mixed numbers with like denominators. |
| **Essential Questions:** <br> • How are equivalent fractions the same size even though the number and size of the parts are different? <br> • How can you add and subtract fractions with like denominators? | | |

| I Can Statement |
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- I can add mixed numbers with like denominators using a variety of strategies.
- I can subtract mixed numbers with like denominators using a variety of strategies.
- I can solve real-world problems involving addition of fractions,
- I can solve real-world problems involving subtraction of fractions.

| New Jersey Learning Standards | Mathematical Practice | Skills |
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| 4.MD.B.4. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*<br><br>**Essential Questions:**<br>• How can you interpret a line plot that displays measurements in fractions of a unit? | MP.4 Model with mathematics.<br><br>MP.5 Use appropriate tools strategically. | • Given a data set consisting of measurements in fractions of a unit, create a line plot.<br>• Using measurement information presented in line plots, add and subtract fractions with like denominators in order to solve problems. |

| I Can Statements |
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- I can make a line plot to display a set of data in fractions measured to the nearest ½. ¼ or 1/8 units.
- I can use information from a line plot to solve problems involving addition and subtraction of fractions.

| New Jersey Learning Stndards | Mathematical Practices | Skills |
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| 4.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.<br>4.NF.B.4a. Understand a fraction $a/b$ as a multiple of $1/b$.<br>    *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*<br>4N.F.4.B.4b. Understand a multiple of $a/b$ as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number.<br>    *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*<br>4.NF.4.B.4c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.<br>    *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*<br>[Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]<br><br>**Essential Question:**<br>  • What are the steps when multiplying a whole number by a fraction? | MP.1 Make sense of problems and persevere in solving them.<br><br>MP.4 Model with mathematics.<br><br>MP.5 Use appropriate tools strategically.<br><br>MP.7 Look for and make use of structure. | • Fraction Multiplication: any fraction $a/b$ as a multiple of fraction $1/b$.<br>• Fraction Multiplication: any multiple of fraction $a/b$ is also a multiple of fraction $1/b$.<br>• Represent $a/b$ as a x ($1/b$) using a visual fraction model.<br>• Represent $n × (a/b)$ as $(n × a)/b$ in a visual fraction model.<br>• Multiply a fraction by a whole number.<br>• Solve real world problems by multiplying a fraction by a whole number, using visual fraction models and equations to represent the problem. |
| 4.NF.C.5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.<br>    *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*<br>[Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]<br><br>**Essential Questions:**<br>  • How can you write a fraction as a decimal? (using tenth and hundredths) | MP.7 Look for and make use of structure. | • Equivalent Fractions<br>• Add two fractions with respective denominators of 10 and 100 using equivalent fractions. |

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| 4.NF.C.6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]<br><br>**Essential Questions:**<br>• How can you write a fraction as a decimal? (using tenth and hundredths) | MP.7 Look for and make use of structure. | • Relationship between place value (decimals) and fraction<br>• Write a decimal as a fraction that has a denominator of 10 or 100. |
| 4.NF.C.7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. [Grade 4 expectations in this domain are limited to denominators of 2, 3, 4, 5, 6, 8, 10, 12 and 100.]<br><br>**Essential Questions:**<br>• How can you order decimals greatest to least? | MP.5 Use appropriate tools strategically.<br><br>MP.7 Look for and make use of structure. | • Represent a decimal using a model.<br>• Compare two decimals to hundredths by reasoning about their size.<br>• Explain that comparisons are valid only when the two decimals refer to the same whole.<br>• Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual model). |

## I Can Statement

- I can explain how a fraction a/b is a multiple of 1/b.
- I can explain how multiplying a whole number times a fraction can be changed to a whole number times a unit fraction.
- I can solve word problems involving multiplication of a fraction by a whole number using visual fraction models and equations.
- I can change fractions with denominators of 10 or 100 to decimals and can explain how these decimals differ in size.

| New Jersey Learning Standards | Mathematical Practices | Skills |
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| 4.MD.A.2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.<br><br>**Essential Questions:**<br>• What are tools of measurement and how are they used?<br>• What types of problems are solved with measurement? | MP.4 Model with mathematics.<br><br>MP.5 Use appropriate tools strategically. | • Solve word problems (using addition, subtraction and multiplication) involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals.<br>• Solve word problems (using all four operations) involving whole number distances, intervals of time, liquid volumes, masses of objects, and money, including problems requiring expressing measurements given in a larger measurement unit in terms of a smaller measurement unit (conversion).<br>• Construct diagrams (e.g. number line diagrams) to represent measurement quantities. |

### I Can Statements

• I can use the four operations to solve word problems expressing measurement
• I can use the number lines and diagrams to illustrate solutions.

| New Jersey Learning Standards | Mathematical Practices | Skills |
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| 4.NBT.B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.] *(benchmarked) Essential Questions: • What are different models for addition and subtraction? | MP.7 Look for and make use of structure. | • Add using the standard algorithm with accuracy and efficiency. • Subtract using the standard algorithm with accuracy and efficiency. |
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**I Can Statements:**

- I can easily and accurately add and subtract multi-digit whole numbers.

| **Resources** | |
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| https://sso.rumba.pk12ls.com/ EnvisionMath · Benchmarks Assessments · Fluency Practice · Vocabulary Review · Topic Assessments | www.mobymax.com www.iready.com www.abcya.com www.khanacedmy.com www.funbrain.com www.splashlearn.com |

| **Grade: Fourth** | **Content:** Mathematics |
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| **Unit:** 4 | **Time Frame:** 43-45 days |

| New Jersey Student Learning Standards: | Mathematical Practice | Skills |
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| 4.G.A.1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.<br><br>**Essential Questions:**<br>• How can you identify and draw points, line segments, lines, rays, perpendicular and parallel lines? | MP.5 Use appropriate tools strategically.<br><br>MP.7 Look for and make use of structure. | • Draw points, lines, line segments and rays.<br>• Draw angles (right, acute, obtuse).<br>• Draw perpendicular and parallel lines.<br>• Distinguish between lines, line segments, and rays.<br>• Identify points, lines, line segment, rays, right angles, acute angles, obtuse angles, perpendicular lines and parallel lines in two-dimensional figures. |
| 4.G.A.2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.<br><br>**Essential Questions:**<br>• How can you classify two-dimensional figures by their angles? | MP.5 Use appropriate tools strategically.<br><br>MP.7 Look for and make use of structure. | • Trapezoid is a quadrilateral with at least one pair of parallel sides.<br>• Classify triangles based on the presence or absence of perpendicular lines and based on the presence or absence of angles of a particular size.<br>• Classify quadrilaterals based on the presence or absence of parallel or perpendicular lines and based on the presence or absence of angles of a particular size. |

| 4.G.A.3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.<br><br>**Essential Questions:**<br>• How can you identify and draw lines of symmetry in shapes? | MP.5 Use appropriate tools strategically.<br><br>MP.7 Look for and make use of structure. | • Fold a figure along a line in order to create matching parts.<br>• Identify lines of symmetry as a line across the figure such that the figure can be folded along the line into matching parts.<br>• Identify figures having line symmetry.<br>• Draw lines of symmetry.<br><br>. |

| I Can Statements |
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• I can draw and identify lines and angles and use these to classify shapes.
• I can draw and identify a line segment, a ray, a right angle, obtuse angle, perpendicular lines, parallel lines.
• I can put 2-D figures in like groups based on whether certain sides are parallel or perpendicular.
• I can put 2-D figures in like groups based on whether certain angles are acute, obtuse, or right.
• I can identify line-symmetry.
• I can identify figures that have symmetry and can then draw the lines of symmetry.

| New Jersey Learning Standards | Mathematical Practice | Skills |
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| 4.MD.C.5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement.<br>4.MD.C.5a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.<br>4.MD.C.5b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. | MP.2 Reason abstractly and quantitatively. | • Angles are formed by two rays sharing a common endpoint and result from the rotation of one ray around the endpoint.<br>• Angle Measurement: An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.<br>• Describe an angle as measured with reference to a circle with the center of the circle being the common endpoint of the rays. |

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| **Essential Questions:**<br>• How can plane and solid shapes be described and measured?<br>• How are geometric properties used to solve problems in everyday life? | | • Explain a 'one-degree angle' and its relation to a circle; a "degree" is defined as 1/360 (one degree angle) of the entire circle. |
| 4.MD.C.6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.<br><br>Essential Questions:<br>• How can I accurately measure in an angle? | MP.2 Reason abstractly and quantitatively.<br>MP.5 Use appropriate tools strategically. | • Measure angles in whole-number degrees.<br>• Given an angle measure, sketch the angle. |
| 4.MD.C.7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.<br><br>Essential Questions:<br>• How can I accurately find an angle when I only know one part of the angle? | MP.1 Make sense of problems and persevere in solving them.<br><br>MP.7 Look for and make use of structure. | Concept(s):<br><br>• Angle measures may be added; when an angle is decomposed into non-overlapping parts, the angle measure of the whole (original angle) is the sum of the angle measures of the parts.<br>• Add and subtract to find unknown angles on a diagram in real world and mathematical problems.<br>• Write an equation with a symbol for the unknown angle measure. |
| **I Can Statements** | | |

- I can explain how an angle is measured by its reference to a circle.
- I can use a protractor to measure whole degree angles.
- I can explain how when angles are joined in non-overlapping parts, the total measure is the sum of the parts.
- I can solve real-world problems involving addition and/or subtraction to find unknown angles on a diagram.

| New Jersey Learning Standards | Mathematical Practices | Skills |
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| 4.OA.A.3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.  *(benchmarked)<br><br>**Essential Questions:**<br>• How does finding patterns in word problems help with computation?<br>• What strategies can be used to solve for unknowns? | MP.1 Make sense of problems and persevere in solving them.<br><br>MP.2 Reason abstractly and quantitatively.<br><br>MP.4 Model with mathematics.<br><br>MP.7 Look for and make use of structure. | • Proper use of the equal sign.<br>• Improper use of the equal sign (e.g. 3 + 7 = 10 − 5 = 5 is incorrect).<br>• Solve multi-step word problems involving any of the four operations.<br>• Solve multi-step word problems involving interpretation (in context) of a remainder.<br>• Write equations to represent multi-step word problems, using a letter to represent the unknown quantity.<br>• Explain why an answer is reasonable.<br>• Use mental computation and estimation strategies to determine whether an answer is reasonable. |

## I Can Statements

- I can solve multi-step word problems using addition, subtraction, multiplication and division using equations where a symbol is used for the unknown.

| 4.NBT.B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. [Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.] *(benchmarked) **Essential Questions:** <br> • What are different models for addition and subtraction? | MP.7 Look for and make use of structure. | • add using the standard algorithm with accuracy and efficiency <br> • subtract using the standard algorithm with accuracy and efficiency |

| **I Can Statements:** |
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| • I can easily and accurately add and subtract multi-digit whole numbers. |

| **Resources** | |
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| https://sso.rumba.pk12ls.com/ <br> EnvisionMath <br> · Benchmarks Assessments <br> · Fluency Practice <br> · Vocabulary Review <br> · Topic Assessments | **www.mobymax.com** <br> **www.iready.com** <br> **www.abcya.com** <br> **www.khanacedmy.com** <br> **www.funbrain.com** <br> **www.splashlearn.com** |

## Differentiated Instruction
*(content, process, product and learning environment)*

| At Risk Students | English Language Learners |
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| **Modifications for Classroom**<br><br>Pair visual prompts with verbal presentations<br><br>Use of lab or experiments to give visual representation of concept<br><br>Ask students to restate information, directions, and assignments.<br><br>Work within group or partners<br><br>Repetition and practice<br><br>Model skills / techniques to be mastered.<br><br>Use metacognitive work<br><br>Extended time to complete class work | **Modifications for Classroom**<br><br>Native Language Translation<br>(peer, online assistive technology, translation device, bilingual dictionary)<br><br>Preteach vocabulary<br><br>Use graphic organizers or other visual models<br><br>Use of manipulatives to<br>visualize concept<br><br>Highlight key vocabulary-chart or vocabulary bank<br><br>Use of nonverbal responses<br>(thumbs up/down)<br><br>Use sentence frames |

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| Provide copy of class notes<br><br>Student may request to use a computer to complete assignments.<br><br>Use manipulatives to examine concepts<br><br>Assign a peer helper in the class setting<br><br>Provide oral reminders and check student work during independent work time | Design questions for different proficiency levels<br><br>Utilize partners and partner talk |
| **Special Education** | **Gifted and Talented** |
| **Modifications for Classroom**<br><br>Pair visual prompts with verbal presentations<br><br>Use of lab or experiments to give visual representation of concept<br><br>Ask students to restate information, directions, and assignments.<br><br>Preteach vocabulary<br><br>Repetition and practice<br><br>Model skills / techniques to be mastered.<br><br>Use manipulatives and visual representation to examine<br>Breakdown large assignments<br>into smaller tasks<br><br>Extended time to complete<br>class work<br><br>Provide copy of class notes | **Extension Activities**<br>Conduct research and provide presentation of cultural topics.<br><br>Design surveys to generate and analyze data to be used in discussion.<br><br>Use of Higher Level<br>Questioning Techniques<br><br>Provide assessments at a<br>higher level of thinking<br><br>Create alternative assessment which requires writing,<br>research and presentation |

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| Preferential seating to be mutually determined by the student and teacher<br><br>Use of online component of book<br><br>Extra textbooks for home. Student may request books on tape / CD / digital media, as available and appropriate.<br><br>Assign a peer helper in the class setting<br><br>Provide oral reminders and check student work during independent work time<br><br>Assist student with long and short term planning of assignments | |