## Winslow Schools <br> Mathematics Curriculum - Grade 4 <br> Unit 2

| Overview | Standards for <br> Mathematical Content | Unit Focus | Standards for Mathematical Practice |
| :---: | :---: | :---: | :---: |
| Unit 2 <br> Multi-digit <br>  <br> Fraction <br> Equivalence | - 4.NBT.B.4* <br> - 4.NBT.B. 5 <br> - 4.NBT.B.6 <br> - 4.OA.A.3* <br> - 4.MD.A. 3 <br> - 4.NF.A. 1 <br> - 4.NF.B.3 3 a-b | - Use place value understanding and properties of operations to perform multi-digit arithmetic <br> - Use the four operations with whole numbers to solve problems <br> - Solve problems involving measurement and conversion of measurements <br> - Extend understanding of fraction equivalence and ordering. <br> - Build fractions from unit fractions | MP. 1 Make sense of problems and persevere in solving them. <br> MP. 2 Reason abstractly and quantitatively. <br> MP. 3 Construct viable arguments and critique the reasoning of others. <br> MP. 4 Model with mathematics. |
| Unit 2: <br> Suggested Open <br> Educational <br> Resources | 4.NBT.B To regroup or not to regroup <br> 4.NBT.B. 6 mental Division Strategy <br> 4.OA.A.3, 4.MD.A. 3 Karl's Garden <br> 4.NF.A. 1 Explaining Fraction Equivalence with Pictures <br> 4.NF.A. 1 Fractions and Rectangles <br> 4.NF.A. 2 Comparing Fractions Using Benchmarks Game <br> 4.NF.A. 2 Doubling Numerators and Denominators <br> 4.NF.B.3a Comparing Sums of Unit Fractions <br> 4.NF.B.3b making 22 Seventeenths in Different Ways |  | MP. 5 Use appropriate tools strategically. <br> MP. 6 Attend to precision. <br> MP. 7 Look for and make use of structure. <br> MP. 8 Look for and express regularity in repeated reasoning. |

Major Supporting Additional (Identified by PARCC Model Content Frameworks).

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| Curriculum Unit 2 | Standards |  | Pacing |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | Days | Unit Days |
| Unit 2 <br> Multi-digit Arithmetic \& Fraction Equivalence | - 4.NBT.B.4* | Fluently add and subtract multi-digit whole numbers using the standard algorithm. | 2 | 45 |
|  | - 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; represent and explain calculations using equations, rectangular arrays, and area models. | 11 |  |
|  | - 4.NBT.B. 6 | Divide a whole number of up to four-digits by a one-digit divisor; represent and explain the calculation using equations, rectangular arrays, and area models. | 8 |  |
|  | - 4.OA.A.3* | Write and solve each equation (including any of the four operations) in order to solve multi-step word problems, using a letter to represent the unknown; interpret remainders in context and assess the reasonableness of answers using mental computation with estimation strategies. | 2 |  |
|  | - 4.MD.A. 3 | Solve real world problems with whole numbers by finding the area and perimeter of rectangles using formulas. | 5 |  |
|  | - 4.NF.A. 1 | Recognize and generate equivalent fractions and explain why they are equivalent using visual fraction models. | 7 |  |
|  | - 4.NF.A. 2 | Compare two fractions with different numerators or different denominators, recording comparison with >, =, or <, and justifying the conclusion using visual fraction models. | 3 |  |
|  | - 4.NF.B.3a-b | Decompose a fraction into a sum of fractions with the same denominator in more than one way and record the decomposition as an equation; justify the decomposition with a visual fraction model. | 3 |  |
|  | Assessment, Re-teach and Extension |  | 4 |  |

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| Unit 2 Grade 4 |  |  |
| :---: | :---: | :---: |
| Content Standards | Suggested Standards for Mathematical Practice | Critical Knowledge \& Skills |
| - 4.NBT.B.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. <br> [Grade 4 expectations in this domain are limited to whole numbers less than or equal to $1,000,000] *.($ benchmarked $)$ | MP. 7 Look for and make use of structure. MP. 8 Look for and express regularity in repeated reasoning. | Concept(s): No new concept(s) introduced <br> Students are able to: <br> - 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> Learning Goal 1: Fluently add and subtract multi-digit whole numbers using the standard algorithm. |
| 4.NBT.B.5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two twodigit 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. <br> [Grade 4 expectations in this domain are limited to whole numbers less than or equal to $1,000,000$.] | MP. 7 Look for and make use of structure. | Concept(s): No new concept(s) introduced <br> Students are able to: <br> - 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). <br> Learning Goal 2: Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers; represent and explain calculations using equations, rectangular arrays, and area models. |

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- 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 $1,000,000$.]
- 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)

MP. 7 Look for and make use of structure. MP. 8 Look for and express regularity in repeated reasoning.

Concept(s): No new concept(s) introduced
Students are able to:

- 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 the relationship between multiplication and division.
- represent these operations with equations, rectangular arrays, and area models.
- explain the calculation by referring to the model (equation, array, or area model).

Learning Goal 3: Divide a whole number of up to four-digits by a one-digit divisor; represent and explain the calculation using equations, rectangular arrays, and area models.
MP. 1 Make sense of problems and persevere in solving them.
MP. 2 Reason abstractly and quantitatively.
MP. 4 Model with mathematics.
MP. 7 Look for and make use of structure.

Concept(s):

- Proper use of the equal sign
- Improper use of the equal sign (e.g. $3+7=10-5=5$ is incorrect)

Students are able to:

- solve multi-step word problems involving any of the four operations.
- solve multi-step word problems involving interpretation (in context) of a remainder.
- write equations to represent multi-step word problems, using a letter to represent the unknown quantity.
- explain why an answer is reasonable.
- use mental computation and estimation strategies to determine whether an answer is reasonable.

Learning Goal 4: Write and solve each equation (including any of the four operations) in order to solve multi-step word problems, using a letter to represent the unknown; interpret remainders in context and assess the reasonableness of answers using mental computation with estimation strategies.

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- 4.MD.A.3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
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.
- 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.]
- 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.]

MP. 2 Reason abstractly and quantitatively. MP. 5 Use appropriate tools strategically.

MP. 1 Make sense of problems and persevere in solving them.
MP. 4 Model with mathematics.
MP. 5 Use appropriate tools strategically.
MP. 6 Attend to precision.
MP. 7 Look for and make use of structure.

MP. 1 Make sense of problems and persevere in solving them.
MP. 4 Model with mathematics.
MP. 5 Use appropriate tools strategically.
MP. 6 Attend to precision.
MP. 7 Look for and make use of structure.

## Concept(s): No new concept(s) introduced

Students are able to:

- solve real world and mathematical problems by finding the area of rectangles using a formula.
- solve real world and mathematical problems by finding the perimeter of rectangles using a formula.

Learning Goal 5: Solve real world problems with whole numbers by finding the area and perimeter of rectangles using formulas.
Concept(s):

- Equivalent fractions are the same size while the number and size of the parts differ
Students are able to:
- explain, using visual fraction models, why two fractions are equivalent.
- generate equivalent fractions, using fraction $a / b$ as equivalent to fraction $\quad(n \times a) /(n \times b)$.

Learning Goal 6: Recognize and generate equivalent fractions and explain why they are equivalent using visual fraction models.

Concept(s):

- Fractions may only be compared when the two fractions refer to the same whole.
Students are able to:
- create common denominators in order to compare two fractions.
- create common numerators in order to compare two fractions.
- compare two fractions with different numerators and different denominators by comparing to a benchmark fraction.
- record the results of comparisons with the symbols >, $=$, or <, and justify the conclusions, e.g., by using a visual fraction model.

Learning Goal 7: Compare two fractions with different numerators or different denominators, recording comparison with $>,=$, or <, and justifying the conclusion using visual fraction models.

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- 4.NF.B.3. Understand a fraction $a / b$ with $a>1$ as a sum of fractions $1 / b$. 4.NF.B.3a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. 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: $3 / 8=1 / 8+1 / 8+1 / 8$; $3 / 8=1 / 8+2 / 8 ; 21 / 8=1+1+$ $1 / 8=8 / 8+8 / 8+1 / 8$.
[Grade 4 expectations in this domain are limited to denominators of $2,3,4,5$, $6,8,10,12$ and 100.]

MP. 1 Make sense of problems and persevere in solving them.
MP. 2 Reason abstractly and quantitatively.
MP. 3 Construct viable arguments and critique the reasoning of others.
MP. 4 Model with mathematics.
MP. 5 Use appropriate tools strategically.
MP. 6 Attend to precision.
MP. 7 Look for and make use of structure.

## Concept(s):

- Some fractions can be decomposed.
- Addition/subtraction of fractions is joining/separating parts referring to the same whole.
Students are able to:
- decompose a fraction into a sum of fractions with the same denominator in more than one way.
- write decompositions of fractions as an equation.
- develop visual fraction models that represent decomposed fractions and use them to justify decompositions

Learning Goal 8: Decompose a fraction into a sum of fractions with the same denominator in more than one way and record the decomposition as an equation; justify the decomposition with a visual fraction model.

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| Unit 2 Grade 4 |  |
| :---: | :---: |
| School/District Formative Assessment Plan | School/District Summative Assessment Plan |
| Pre-Assessment, Quizzes Exit Tickets Daily Monitoring Math Journals Interactive Notebooks Portfolios | Chapter Benchmark Link-It |
| Focus Mathematical Concepts |  |
|  |  |

## Winslow Schools <br> Mathematics Curriculum - Grade 4 <br> Unit 2

## Common Misconceptions:

4.NBT.4-6 Often students mix up when to 'carry' and when to 'borrow'. Also students often do not notice the need of borrowing and just take the smaller digit from the larger one.

Emphasize place value and the meaning of each of the digits.
Specific strategies or students having difficulty with lining up similar place values in numbers as they are adding and subtracting.
Sometimes it is helpful to have them write their calculations on grid paper or lined notebook paper with the lines running vertical. This assists the student with lining up the numbers more accurately.
4.NF.1-2 Students think that when generating equivalent fractions they need to multiply or divide either the numerator or denominator, such as, changing $\frac{1}{2}$ to sixths.

They would multiply the denominator by 3 to get $\frac{1}{6}$, instead of multiplying the numerator by 3 also. Their focus is only on the multiple of the denominator, not the "whole fraction".
It's important that students use a fraction in the form of one such as $\frac{3}{3}$ so that the numerator and denominator do not contain the original numerator or denominator.

## Number Fluency:

4.NBT. 4 Students fluently add and subtract multi-digit whole numbers using the standard algorithm.

Achieve the Core - GoMath Fluency Activities
https://achievethecore.org/page/2853/go-math-k-5-guidance-documents
Achieve the Core - Fluency Activities
https://achievethecore.org/page/2948/fluency-resources-for-grade-level-routines
Math Coach - Fact Fluency http://schoolwires.henry.k12.ga.us/Page/21865
Math Wire - Basic Facts Link http://mathwire.com/numbersense/bfactslinks.html
Math Fact Practice http://www.playkidsgames.com/games/mathfact/mathFact.htm

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| District/School Tasks | District/School Primary and Supplementary Resources |
| :---: | :---: |
| PARCC Released Items <br> http://www.parcc-assessment.org/released-items <br> NJDOE Digital Item Library https://nj.digitalitemlibrary.com/home <br> NJSLA Mathematics Evidence Statements <br> https://docs.google.com/spreadsheets/d/18M5r1jk4P729fTpAlWAzrw1gE6tken233I- <br> Yk0U712M/edit\#gid=554025491 <br> LinkIt! Form A, B, \& C | Text - Go Math <br> Think Central <br> https://www- <br> k6.thinkcentral.com/ePC/viewResources.do?method=retrieveResources\&pageName=res ourcepage <br> Flip Book - Gr 4 <br> http://community.ksde.org/Default.aspx?tabid=5646 <br> North Carolina Dept of Ed. Wikispaces: <br> http://maccss.ncdpi.wikispaces.net/Elementary <br> PARCC Math Resources <br> http://www.parcc-assessment.org/assessments/test-design/mathematics/math-test-specifications-documents <br> 101 Math Discourse Questions: <br> http://www.casamples.com/downloads/100MathDiscourseQuestions_Printable.pdf <br> Asking Effective Questions <br> http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffective <br> Questions.pdf <br> GoMath Personal Math Trainer <br> XtraMath <br> http://www.xtramath.org <br> Prodigy <br> http://www.prodigygame.com <br> MobyMax <br> http://www.mobymax.com |
| Instructional Best Practices and Exemplars |  |
| 1. Identifying similarities and differences <br> 2. Summarizing and note taking <br> 3. Reinforcing effort and providing recognition <br> 4. Homework and practice <br> 5. Nonlinguistic representations | 6. Cooperative learning <br> 7. Setting objectives and providing feedback <br> 8. Generating and testing hypotheses <br> 9. Cues, questions, and advance organizers 10. Manage response rates |

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| Vocabulary |  |
| :---: | :---: |
| 4.NBT.B.4, 5 \& 6 <br> Use place Value understanding and properties of operations to perform multidigit arithmetic. <br> add, addend, sum, subtract, difference, equation, strategies, (properties)-rules about how numbers work, rectangular arrays, area model, multiply, divide, factor, product, quotient, reasonableness <br> 4.OA.A. 3 <br> Use the four operations with whole numbers to solve problems. multiplication/multiply, division/divide, dividend, divisor, addition/add, subtraction/subtract, equations, unknown, remainders, reasonableness, mental computation, estimation, rounding | 4.MD.A. 3 <br> Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. <br> area, perimeter <br> 4.NF.A. 1 \& 2 <br> Extend understanding of fraction equivalence and ordering. partition(ed), fraction, unit fraction, equivalent, expression, multiple, reason, denominator, numerator, comparison/compare, $\langle\rangle,,=$, benchmark fraction <br> 4.NF.B. 3 <br> Build fractions from unit fractions by applying and extending previous understanding of operations on whole numbers. <br> operations, addition/joining, subtraction/separating, fraction, unit fraction, equivalent, multiple, reason, denominator, numerator, decomposing, mixed number,(properties)-rules about how numbers work, multiply, multiple |

## Winslow Schools <br> Mathematics Curriculum - Grade 4 <br> Unit 2

9.1 Personal Financial Literacy, 9.2 Career Awareness, Exploration, Preparation, and Training, \& 9.4 Life Literacies and Key Skills
9.1.5.PB.1: Develop a personal budget and explain how it reflects spending, saving, and charitable contributions.
9.4.5.IML.7: Evaluate the degree to which information meets a need including social emotional learning, academic, and social (e.g., 2.2.5. PF.5)
9.4.5.TL.3: Format a document using a word processing application to enhance text, change page formatting, and include appropriate images graphics, or symbols.
9.4.5.TL.4: Compare and contrast artifacts produced individually to those developed collaboratively (e.g., 1.5.5.CR3a).
9.4.5.TL.5: Collaborate digitally to produce an artifact (e.g., 1.2.5CR1d).

The implementation of the 21 st Century skills and standards for students of the Winslow Township District is infused in an interdisciplinary format in a variety of curriculum areas that include, English language Arts, Mathematics, School Guidance, Social Studies, Technology, Visual and Performing Arts, Science, Physical
Education and Health, and World Language.: Additional opportunities to address 9.1, 9.2 \& 9.4:

## Philadelphia Mint

https://www.usmint.gov/learn/kids/resources/educational-standards

## Different ways to teach Financial Literacy.

https://www.makeuseof.com/tag/10-interactive-financial-websites-teach-kids-money-management-skills/

## Winslow Schools <br> Mathematics Curriculum - Grade 4

Unit 2
Suggested Modifications for Special Education/504
Students with special needs: The students' needs will be addressed on an individual and grade level using a variety of modalities.
Accommodations will be made for those students who need extra time to complete assignment. Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.
$\square$ Provide the opportunity to re-take tests
$\square$ Modify activities/assignments/projects/assessmentsBreakdown activities/assignments/projects/assessments into manageable units$\square$ Additional time to complete activities/assignments/projects/assessmentsProvide an option for alternative activities/assignments/projects/assessmentsify ContentModify AmountSmall Group Intervention/RemediationIndividual Intervention/RemediationAdditional Support MaterialsGuided NotesGraphic OrganizersAdjust Pacing of ContentIncrease one on one timePeer SupportOther Modifications for Special Education:

- Think Central Online Resources:
- Reteach
- Strategic Intervention
- Intensive Intervention Skill Pack
- Response to Intervention Activities


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## Suggested Modifications for At-Risk Students

Formative and summative data will be used to monitor student success. At first signs of failure, student work will be reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations
$\square$ Provide the opportunity to re-take tests
$\square$ Increase one on one timeOral prompts can be givenUsing visual demonstrations, illustrations, and modelsGive directions/instructions verbally and in simple written formatPeer SupportModify activities/assignments/projects/assessmentsAdditional time to complete activities/assignments/projects/assessmentsProvide an option for alternative activities/assignments/projects/assessmentsModify ContentModify AmountAdjust Pacing of ContentSmall Group Intervention/RemediationIndividual Intervention/RemediationAdditional Support MaterialsGuided NotesGraphic OrganizersModifications for Students At-Risk:

- Think Central Online Resources:
- Reteach
- Strategic Intervention
- Intensive Intervention Skill Pack
- Response to Intervention Activities


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| English Language Learners | Suggested Modifications for Gifted Students |
| :---: | :---: |
| All WIDA Can Do Descriptors can be found at this link: https://wida.wisc.edu/teach/can-do/descriptors <br> Grades 4-5 WIDA Can Do Descriptors: <br> $\square$ Listening $\square$ Speaking <br> $\square$ Reading $\square$ Writing Oral Language <br> Students will be provided with accommodations and modifications that may include: <br> - Relate to and identify commonalities in mathematics studies in student's home country <br> - Assist with organization <br> - Use of computer <br> - Emphasize/highlight key concepts <br> - Teacher Modeling <br> - Peer Modeling <br> - Label Classroom Materials - Word Walls | Students excelling in mastery of standards will be challenged with complex, high level challenges related to the topic. <br> - Raise levels of intellectual demands <br> - Require higher order thinking, communication, and leadership skills <br> - Differentiate content, process, or product according to student's readiness, interests, and/or learning styles <br> - Provide higher level texts <br> - Expand use of open-ended, abstract questions <br> - Critical and creative thinking activities that provide an emphasis on research and in-depth study <br> - Enrichment Activities/Project-Based Learning/ Independent Study <br> Additional Strategies may be located at the links: <br> * Gifted Programming Standards <br> * Webb's Depth of Knowledge Levels and/or Revised Bloom's Taxonomy <br> * REVISED Bloom's Taxonomy Action Verbs |
| Suggested Activities |  |
| Do Now/Warm-Up Whole Group Small Groups Guided Practice Independent Practice Daily 5 CAFÉ | Centers Intervention/Remediation Projects Academic Games Other Suggested Activities: |

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## Interdisciplinary Connections

Science/Social Studies questions embedded in series (math, science, social studies)
Think Central Go Math! Real World Videos (math, reading, science, social studies)
Think Central S.T.E.M. Activities (math and science)

## Integration of Computer Science and Design Thinking NJSLS 8

8.1.5.CS.1: Model how computing devices connect to other components to form a system.
8.1.5.CS.2: Model how computer software and hardware work together as a system to accomplish tasks.
8.1.5.CS.3: Identify potential solutions for simple hardware and software problems using common troubleshooting strategies
8.1.5.NI.2: Describe physical and digital security measures for protecting sensitive personal information.
8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim
8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data.
8.1.5.DA.4: Organize and present climate change data visually to highlight relationships or support a claim
8.1.5.DA.5: Propose cause and effect relationships, predict outcomes, or communicate ideas using data.

