

**Bi-Borough
New Jersey Student Learning Standards
Math Curriculum**

Grades K - 6

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**Oradell Public School
River Edge Public Schools**

Curriculum Contributors

**Jennifer Ali
Kaitlyn Burke
Jamie Caruana
Kristen Crawford
Julia Diminich
Scott Duthie
Helen Kapp
Kristin Karam
June Karpowich
Amy Kennedy
Jamie Krupka
Toni Violetti
Kelly Wendrychowicz**

Introduction

For more than a decade, research studies of mathematics education in high-performing countries have concluded that mathematics education in the United States must become substantially more focused and coherent in order to improve mathematics achievement in this country. To deliver on this promise, the mathematics standards were designed to address the problem of a curriculum that is “a mile wide and an inch deep.”

The new standards build on the best of high-quality math standards from states across the country. They also draw on the most important international models for mathematical practice, as well as research and input from numerous sources, including state departments of education, scholars, assessment developers, professional organizations, educators, parents and students, and members of the public.

The math standards provide clarity and specificity rather than broad general statements. They follow a design that not only stresses conceptual understanding of key ideas but also the organizing principles such as place value and the laws of arithmetic to structure those ideas.

In addition, the sequence of topics and performances outlined in the body of math standards respects what is known about how students learn, namely, that developing sequenced obstacles and challenges for students, absent from the insights about meaning that derive from careful study, is unwise. Therefore, the development of the standards began with research-based learning progressions detailing what is known today about how students' mathematical knowledge, skill, and understanding develop over time. The knowledge and skills students need to be prepared for mathematics in college, career, and life are woven throughout the mathematics standards.

Standards define what students should understand and be able to do in their study of mathematics. Teachers are required to assess understanding by asking the student to justify, in a way that is appropriate to the student's mathematical maturity, why a particular mathematical statement is true or where a mathematical rule comes from. Mathematical understanding and procedural skill are equally important, and both are assessed by using mathematical tasks of sufficient richness.

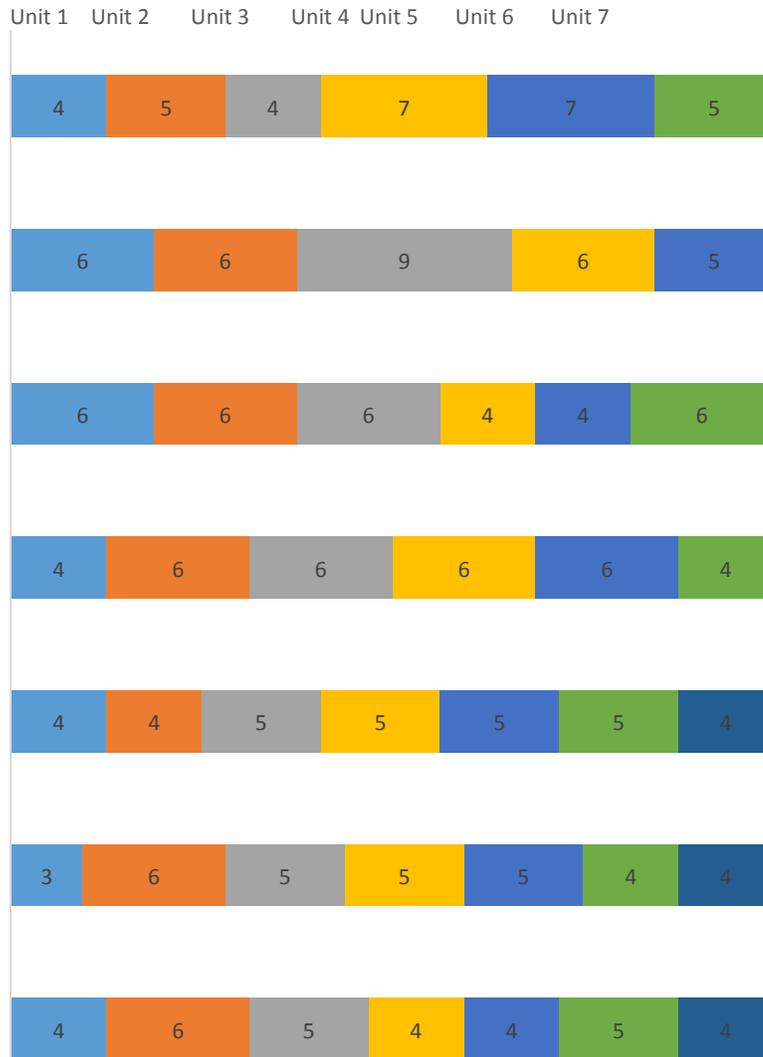
TABLE OF CONTENTS

Scope & Sequence	Page 3
Kindergarten	Page 4
Grade 1	Page 22
Grade 2	Page 39
Grade 3	Page 59
Grade 4	Page 84
Grade 5	Page 109
Grade 6	Page 136
Addendum: Modifications	Page 162

SCOPE & SEQUENCE

Scope & Sequence
K-6 Math Curricula
Kindergarten- 6th Grade

Number of Weeks



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KINDERGARTEN MATH UNITS

Unit 1: Counting from 1 to 10

Unit 2: Counting from 11 to 20 & Counting by 10s

Unit 3: Measurement & Data

Unit 4: Addition

Unit 5: Subtraction

Unit 6: Shapes

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MATH- KINDERGARTEN
UNIT 1: COUNTING FROM 1 TO 10

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

K.CC.A.1

Count to 100 by ones and by tens.

K.CC.A.3

Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

K.CC.B.4

Understand the relationship between numbers and quantities; connect counting to cardinality.

K.CC.B.4.A

When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

K.CC.B.4.B

Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

K.CC.B.4.C

Understand that each successive number name refers to a quantity that is one larger.

K.CC.B.5

Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

9.1.4.B.1

Gathering and evaluating knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Whole numbers are used to describe sets of objects.

ESSENTIAL QUESTIONS

- What are the names of numbers and where do they occur in a count sequence?
- How do you count to describe the number of objects?

UNIT ASSESSMENT

Unit 1 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Count to 10 by ones
- Write numbers from 1-10
- Represent the correct number of objects up to 5
- Understand the relationship between numbers and quantities
- Say the number names in the standard order pairing each number name with only one object
- Understand that the last number said indicates the number of objects counted- (K.CC.4b)
- Understand that the next number in counting is always one greater than the previous number
- Answer “How many?” about groups of objects up to 10 arranged in a line or up to 5 scattered.
- Create number stories based on number facts previously learned
- Assign students in math groups to cooperative learning roles
- Use smart boards, digital dice number cards, and digital calculators to solve problems

RESOURCES

- Math Textbook
- Shared Google Documents

MATH KINDERGARTEN
UNIT 2: COUNTING FROM 11 TO 20 & COUNTING BY 10'S

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

K.CC.A.1

Count to 100 by ones and by tens.

K.CC.A.2

Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

K.CC.A.3

Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

K.CC.B.5

Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1-20, count out that many objects.

K.CC.C.6

Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.

K.CC.C.7

Compare two numbers between 1 and 10 presented as written numerals.

K.NBT.A.1

Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (such as $18 = 10 + 8$); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

9.1.4.B.1

Gathering and evaluating knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

By working with numbers 11-19 lays the foundation for the understanding of place value.

ESSENTIAL QUESTIONS

- What does the number 0 represent?
- How do you identify which group has the larger number of objects?

UNIT ASSESSMENT

Unit 2 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Count as many as 20 things, in a line and 10 things scattered
- Count to 50 by ones
- Count by tens, up to 50
- Count forward beginning from a given number
- Identify whether the number of objects in a group is $>$, $<$, $=$ to the number of objects in another group
- Compare 2 numbers between 1 and 10 presented as written numerals
- Write numbers from 11-20
- Compose and decompose numbers from 11-19 into tens and ones
- Record each composition and decomposition using equations or drawings
- Create number stories based on number facts previously learned
- Assign students in math groups to cooperative learning roles
- Use smart boards, digital dice number cards, and digital calculators to solve problems

RESOURCES

- Math Textbook
- Shared Google Documents

MATH KINDERGARTEN

UNIT 3: MEASUREMENT & DATA

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

K.MD.A.1

Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.

K.MD.A.2

Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

K.MD.B.3

Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.¹

K.CC.A.1

Count to 100 by ones and by tens.

9.1.4.B.1

Gathering and evaluating knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

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8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Objects have measurable attributes.

ESSENTIAL QUESTIONS

- How can you describe measurable attributes?
- How can you classify objects according to those attributes?

UNIT ASSESSMENT

Unit 3 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Introduce the concept of length, longer, shorter
- Introduce the concept of weight, heavier, lighter
- Describe measurable attributes of objects, such as length and weight
- Compare objects based on a shared attribute
- Determine if compared objects are more or less based on attribute
- Classify objects into given category
- Count the number of objects in each category (no more than 10)
- Sort categories by count
- Count to 100 by ones and tens – reinforce with 100 days of school activities, counting and grouping objects
- Create number stories based on number facts previously learned
- Assign students in math groups to cooperative learning roles
- Use smart boards, digital dice number cards, and digital calculators to solve problems

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RESOURCES

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MATH KINDERGARTEN

UNIT 4: ADDITION

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

K.OA.A.1

Represent addition and subtraction up to 10 with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

K.OA.A.2

Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

K.OA.A.3

Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., $5 = 2 + 3$ and $5 = 4 + 1$).

K.OA.A.4

For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

K.OA.A.5

Demonstrate fluency for addition and subtraction within 5.

9.1.4.B.1

Gathering and evaluating knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Addition is a function of putting together and adding to.

ESSENTIAL QUESTIONS

- What are the different ways to represent addition?
- How do you identify using addition in word problems?

UNIT ASSESSMENT

Unit 4 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Introduce the concept of addition as putting together and adding to
- Represent addition with objects, fingers, mental images and drawings
- Solve addition problems within 10
- Decompose numbers less than or equal to 10 into pairs in more than one way
- For any number 1-9, find the number that makes 10
- Fluently add within 5
- Create number stories based on number facts previously learned
- Assign students in math groups to cooperative learning roles

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- Use smart boards, digital dice number cards, and digital calculators to solve problems

RESOURCES

- Math Textbook
- Shared Google Documents

MATH KINDERGARTEN

UNIT 5: SUBTRACTION

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

K.OA.A.1

Represent addition and subtraction up to 10 with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

K.OA.A.2

Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

K.OA.A.5

Demonstrate fluency for addition and subtract within 5.

9.1.4.B.1

Gathering and evaluating knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Subtraction is a function of taking apart and taking from.

ESSENTIAL QUESTIONS

- What are the different ways to represent subtraction?
- How do you identify using subtraction in word problems?

UNIT ASSESSMENT

Unit 5 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Introduce the concept of subtraction as taking apart and taking from
- Represent subtraction with objects, fingers, mental images and drawings
- Solve subtraction problems within 10
- Fluently subtract within 5
- Create number stories based on number facts previously learned
- Assign students in math groups to cooperative learning roles
- Use smart boards, digital dice number cards, and digital calculators to solve problems

RESOURCES

- Math Textbook
- Shared Google Documents

MATH KINDERGARTEN

UNIT 6: SHAPES

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

K.G.A.1

Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.

K.G.A.2

Correctly name shapes regardless of their orientations or overall size.

K.G.A.3

Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
Analyze, compare, create, and compose shapes.

K.G.B.4

Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).

K.G.B.5

Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.

K.G.B.6

Compose simple shapes to form larger shapes.

9.1.4.B.1

Gathering and evaluating knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Shapes can be used to describe objects in our environment.

ESSENTIAL QUESTIONS

- How can shapes be identified and described?
- How can shapes be compared and created?

UNIT ASSESSMENT

Unit 6 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Describe objects in the environment using shapes
- Describe relative position using terms, above, below, beside, in front of, behind, next to
- Correctly name shapes- circle, square, triangles, rectangles, hexagons,

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- cubes, cones, cylinders spheres.
- Create and compose shapes
 - Compare 2 dimensional and 3 dimensional shapes in different sizes, describe similarities and differences
 - Use language to describe shapes such as number of sides, corners/vertices
 - Model shapes in the world by building and drawing shapes
 - Compose simple shapes to form larger ones
 - Create number stories based on number facts previously learned
 - Assign students in math groups to cooperative learning roles
 - Use smart boards, digital dice number cards, and digital calculators to solve problems

RESOURCES

- Math Textbook
- Shared Google Documents

GRADE 1 MATH UNITS

Unit 1: Adding & Subtraction within 20

Unit 2: Solving Problems Using Addition & Subtraction Using 3 Numbers

Unit 3: Extending Counting Sequence & Place Value

Unit 4: Measurement

Unit 5: Shapes & Their Attributes

MATH GRADE 1
UNIT 1: ADDING & SUBTRACTING WITHIN 20 USING 2 NUMBERS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

1.OA.A.1

Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, 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.

1.OA.B.3

Apply properties of operations as strategies to add and subtract.² *Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.) (Students need not use formal terms for these properties)*

1.OA.B.4

Understand subtraction as an unknown-addend problem.

1.OA.C.5

Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

1.OA.C.6

Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$);

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decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.2.4.A.1

Linking educational achievement, career choice and entrepreneurial skills to achieve a desired level of income and lifestyle choices

8.1.2.A.1

Use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

There are strategies that can be employed for adding and subtracting larger whole numbers.

ESSENTIAL QUESTIONS

- What properties of operations can be applied in doing addition and subtraction?
- What is the relationship between addition and subtraction?

UNIT ASSESSMENT

Unit 1 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Relate counting to addition and subtraction
- Add and subtract within 20 using 2 numbers.
- Demonstrate fluency for addition and subtraction within 10
- Understand subtraction as an unknown- addend problem- (ex. subtract 10-8 by finding the number that makes 10 when added to 8)
- Use addition and subtraction within 20 to solve word problems
- Apply properties of operations as strategies to add and subtract such as commutative property of addition- (ex. $8+3=11$ the $3+8=11$)
- Create composite shapes, tally charts, number sentences, and questions based on data from graphs
- Play math games and solve problems as a group task
- Allow for different individual strategies to be used to solve problems
- Utilize digital math resources
- Applying concepts of money and making change in running the school store
- Use calculators for adding and subtracting

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH GRADE 1
UNIT 2: SOLVING PROBLEMS INVOLVING ADDITION &
SUBTRACTION USING 3 NUMBERS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

1.OA.A.2

Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

1.OA.B.3

Apply properties of operations as strategies to add and subtract.² *Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.) (Students need not use formal terms for these properties)*

1.OA.C.6

Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

1.OA.D.7

Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.

1.OA.D.8

Determine the unknown whole number in an addition or subtraction equation relating three whole numbers.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.2.4.A.1

Linking educational achievement, career choice and entrepreneurial skills to achieve a desired level of income and lifestyle choices

8.1.2.A.1

Use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

There are strategies that can be employed for adding and subtracting larger whole numbers.

ESSENTIAL QUESTIONS

- What properties of operations can be applied in doing addition and subtraction?
- What is the relationship between addition and subtraction?

UNIT ASSESSMENT

Unit 2 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Add and subtract within 20, using three numbers, include making 10 (ex. $8+6=8+2+4=10+4=14$) and decomposing 10. (ex. $13-4=13-3-1=10-1=9$)
- Create equivalent and easier known sums (ex. Adding $6+7$ by creating the known equivalent $6+6+1=12+1=13$)
- Apply properties of operations to add and subtract such as the associative property of addition (ex. $2+6+4=2+10=12$)
- Solve word problems that call for the addition of three whole numbers whose sum is less than 20.
- Understand the meaning of an equal sign, determine if equations are true or false (ex. $7=8-1$)
- Determine the unknown whole number in an addition or subtraction equation. (ex. $8+?=11$)
- Create composite shapes, tally charts, number sentences, and questions based on data from graphs
- Allow for different individual strategies to be used to solve problems
- Utilize digital math resources
- Applying concepts of money and making change in running the school store
- Use calculators for adding and subtracting

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH GRADE 1
UNIT 3: EXTENDING COUNTING SEQUENCE AND PLACE VALUE

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

1.NBT.A.1

Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

1.NBT.B.2

Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases

1.NBT.B.2.A

10 can be thought of as a bundle of ten ones — called a "ten."

1.NBT.B.2.B

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.B.2.C

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.B.3

Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

1.NBT.C.4

Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models (e.g., base ten blocks) 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 and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

1.NBT.C.5

Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

1.NBT.C.6

Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Understanding of place value and properties of operations allow for more sophisticated strategies that can be applied to solve addition and subtraction problems.

ESSENTIAL QUESTIONS

How can the counting sequence be extended?

- What is the significance of understanding place value?
- How can place value and properties of operations be used in addition and subtraction?

UNIT ASSESSMENT

Unit 3 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Count to 120 starting at any number less than 120.
- Represent a number of objects with a written numeral
- Understand that 2 digit numbers consist of amounts of tens and ones
- Understand that 10,20,30, 40, 50, etc. are one, two, three, four, five, tens
- Compare two digits based on tens and ones and determine if the numbers are $<$, $>$, $=$.
- Add within 100, include a one digit number and a two digit number
- Add within 100, include adding a two digit number and a multiple of 10
- Understand that in adding two digit numbers it involves adding tens and tens, ones and ones, and sometimes it is necessary to compose a ten
- Mentally be able to find 10 more or 10 less of a given number, explain the reasoning.
- Subtract multiples of 10 from multiples of 10 within 10-90, use multiple strategies. Be able to explain reasoning.
- Create composite shapes, tally charts, number sentences, and questions based on data from graphs
- Allow for different individual strategies to be used to solve problems
- Utilize digital math resources

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH Curriculum K-6
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MATH GRADE 1

UNIT 4: MEASUREMENT

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

1.MD.A.1

Order three objects by length; compare the lengths of two objects indirectly by using a third object.

1.MD.A.2

Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

1.MD.B.3

Tell and write time in hours and half-hours using analog and digital clocks.

1.MD.C.4

Organize, represent, and interpret data with up to three categories; 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.

1.OA.A.1

Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, 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.¹

1.OA.C.6

Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.D.3

Understand different cultural perspectives to enhance communication

9.1.4.E.1

Integrate digital media to enhance communication

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

There are processes and concepts that contribute to a deeper understanding of the significance of measurement like iterating and the transitive principle for indirect measurement.

ESSENTIAL QUESTIONS

- How can you measure lengths indirectly and by iterating unit lengths?
- How do you tell and write time?
- How do you represent and interpret data?

UNIT ASSESSMENT

Unit 4 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Introduce the concept of measurement
- Order objects by length and compare the length of two objects indirectly by using a third object
- Express the length of an object as a whole number of length units
- Understand that the length of an object is the number of the same size length with no spans or overlaps.
- Use addition and subtraction within 20 to solve word problems regarding length
- Demonstrate fluency for addition and subtraction within 10 to solve problems involving length
- Understand how to tell time using a digital and analog clock
- Write time using a digital and analog clock
- Organize data in a chart or table with up to three categories
- Interpret total number of data points, how many are in each category and how many more or less are in one category
- Create composite shapes, tally charts, number sentences, and questions based on data from graphs
- Play math games and solve problems as a group task
- Allow for different individual strategies to be used to solve problems
- Utilize digital math resources

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH Curriculum K-6
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MATH GRADE 1

UNIT 5: SHAPES AND THEIR ATTRIBUTES

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

1.G.A.1

Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.

1.G.A.2

Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or 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

1.G.A.3

Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

1.MD.C.4

Organize, represent, and interpret data with up to three categories; 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.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.D.3

Understand different cultural perspectives to enhance communication

9.1.4.E.1

Integrate digital media to enhance communication

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Shapes have unique attributes that can be combined or decomposed, forming shapes with different attributes.

ESSENTIAL QUESTIONS

- What are the whole/part relationships when building shapes?
- How do shapes appear relative to different perspective and orientation?
- What are the geometric attributes of different shapes?

UNIT ASSESSMENT

Unit 5 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Distinguish between defining attributes versus non-defining attributes of shapes (ex. Triangle has 3 sides, not all triangles are red)
- Build and draw shapes to possess defining attributes
- Construct / build two dimensional shapes (rectangles, squares, trapezoids, triangles, half circles, quarter circles)
- Construct / build three dimensional shapes (cubes, right rectangular prisms, right circular cones, right cylinders – students do not need to know formal names)
- Create composite shapes by combining 2D and 3D shapes
- Partition circles and rectangles into two or four equal shares
- Describe shares using the words halves, fourths and quarters
- Describe the whole as two halves, four fourths, or four quarters.
- Understand that dividing the shares creates smaller shares
- Organize, represent and interpret data with up to three categories
- Create composite shapes, tally charts, number sentences, and questions based on data from graphs
- Play math games and solve problems as a group task
- Allow for different individual strategies to be used to solve problems
- Utilize digital math resources

RESOURCES

- Math Textbook
- Shared Google Documents

GRADE 2 MATH UNITS

Unit 1: Place Value

Unit 2: Addition

Unit 3: Subtraction

Unit 4: Measurement – Length

Unit 5: Measurement – Time & Money

Unit 6: Data & Geometry

MATH GRADE 2 UNIT 1: PLACE VALUE

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

2.NBT.A.1

Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:

2.NBT.A.1.A

100 can be thought of as a bundle of ten tens — called a "hundred."

2.NBT.A.1.B

The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

2.NBT.A.2

Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.A.3

Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

2.NBT.A.4

Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

In multi-digit numbers written in base-ten notation, the digits in each place represent amounts of thousands, hundreds, tens, and ones.

ESSENTIAL QUESTIONS

- How does the understanding of place value allow for comparing numbers?
- How can place value understanding be used to add and subtract?

UNIT ASSESSMENT

Unit 1 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones.
- Understand that 100 can be thought of as a bundle of ten tens — called a

“hundred.”

- Understand the numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
- Count within 1000; skip-count by 5s, 10s, and 100s.
- Read and write numbers to 1000 using base-ten numerals, number names, and expanded form (i.e. 923, nine hundred twenty three, 9 hundreds plus 20 tens plus 3 ones)
- Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- Apply knowledge to solve multi-step problems
- Develop math skills by working in groups playing games, doing explorations, or working in centers
- Use digital tools for math to reinforce math concepts

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 2 UNIT 2: ADDITION

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

2.OA.B.2

Fluently add and subtract within 20 using mental strategies.² By end of Grade 2, know from memory all sums of two one-digit numbers.
Work with equal groups of objects to gain foundations for multiplication.

2.OA.C.3

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 2s; write an equation to express an even number as a sum of two equal addends.

2.OA.C.4

Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

2.NBT.A.2

Count within 1000; skip-count by 5s, 10s, and 100s.

2.NBT.B.5

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.B.6

Add up to four two-digit numbers using strategies based on place value and properties of operations.

2.NBT.B.7

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.B.8

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.B.9

Explain why addition and subtraction strategies work, using place value and the properties of operations.¹

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

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MATH Curriculum K-6

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ENDURING UNDERSTANDINGS

Generalizable methods for addition can be applied to compute sums of larger whole numbers.

ESSENTIAL QUESTIONS

- How can an understanding of place value and the properties of operations be applied to addition?
- What is the relationship of addition to multiplication?

UNIT ASSESSMENT

Unit 2 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- 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 2s.
- Write an equation to express an even number as a sum of two equal addends.
- Count within 1000; skip-count by 5s, 10s, and 100s.
- Fluently add within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- Fluently add within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- Add up to four two-digit numbers using strategies based on place value and properties of operations.
- Add 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 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.
- Mentally add 10 or 100 to a given number 100–900.
- Explain why addition strategies work, using place value and the properties of operations.

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- Apply knowledge to solve multi-step problems
- Develop math skills by working in groups playing games, doing explorations, or working in centers
- Use digital tools for math to reinforce math concepts

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 2 UNIT 3: SUBTRACTION

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

2.OA.A.1

Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, 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.¹

2.OA.B.2

Fluently add and subtract within 20 using mental strategies.² By end of Grade 2, know from memory all sums of two one-digit numbers.

2.NBT.B.5

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.B.7

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.B.8

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.B.9

Explain why addition and subtraction strategies work, using place value and the properties of operations.¹

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Generalizable methods for subtraction can be applied to compute differences of larger whole numbers.

ESSENTIAL QUESTIONS

- How can an understanding of place value and the properties of operations be applied to subtraction?

UNIT ASSESSMENT

Unit 3 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Fluently subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
- Fluently subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- 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 subtracting three digit numbers, one subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
- Mentally subtract 10 or 100 from a given number 100–900.
- Explain why subtraction strategies work, using place value and the properties of operations.
- Use addition and subtraction within 100 to solve one- and two-step word problems.
- Apply knowledge to solve multi-step problems
- Develop math skills by working in groups playing games, doing explorations, or working in centers
- Use digital tools for math to reinforce math concepts

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH GRADE 2

UNIT 4: MEASUREMENT - LENGTH

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

2.MD.A.1

Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

2.MD.A.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.A.3

Estimate lengths using units of inches, feet, centimeters, and meters.

2.MD.A.4

Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
Relate addition and subtraction to length.

2.MD.B.5

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.B.6

Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Standard units of measure are necessary in understanding the type of quantity being measured.

ESSENTIAL QUESTIONS

- How do you represent length using standard units?
- How are addition, subtraction, and length related?
- How is data represented and interpreted?

UNIT ASSESSMENT

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MATH Curriculum K-6
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Unit 4 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- 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.
- Estimate lengths using units of inches, feet, centimeters, and meters.
- Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
- 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.
- Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.
- Apply knowledge to solve multi-step problems
- Develop math skills by working in groups playing games, doing explorations, or working in centers
- Use digital tools for math to reinforce math concepts

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 2
UNIT 5: MEASUREMENT OF TIME & MONEY

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

2.MD.C.7

Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

2.MD.C.8

Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

2.OA.A.1

Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, 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.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater

efficiency

9.2.4.A.1

Link educational achievement, career choice, and entrepreneurial skills to achieve a desired level of income and lifestyle choices

9.2.4.A.4

Understand the role that taxes and employee benefits affect income

9.2.4.B.1

Promote financial responsibility related to prioritizing between wants and needs, financial planning, savings, investment, and charitable giving

9.2.4.E.1

Understand what it means to be a responsible consumer and the factors to consider when making consumer decisions

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Standard units of measure are necessary in understanding the type of quantity being measured.

ESSENTIAL QUESTIONS

- What does time and money measure?
- How is data represented and interpreted?

UNIT ASSESSMENT

Unit 5 Assessment

SKILLS & OBJECTIVES

- Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
- Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.
- Use addition and subtraction within 100 to solve one- and two-step word problems.
- Apply knowledge to solve multi-step problems
- Develop math skills by working in groups playing games, doing explorations, or working in centers
- Apply knowledge about money exchange to income, taxes, buying, and spending
- Use digital tools for math to reinforce math concepts

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 2 UNIT 6: DATA & GEOMETRY

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

2.MD.D.9

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.D.10

Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

2.G.A.1

Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.¹ Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

2.G.A.2

Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

2.G.A.3

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.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

8.1.2.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Shapes can be described by their sides and angles. Shapes lead to an understanding of area, volume, congruence, similarity, and symmetry.

ESSENTIAL QUESTIONS

- How does decomposing and combining shapes lead to other shapes?
- What are the attributes of particular shapes?

UNIT ASSESSMENT

Unit 6 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- 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.

- Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.
- Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.
- Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
- 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.
- Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
- Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
- Apply knowledge to solve multi-step problems
- Develop math skills by working in groups playing games, doing explorations, or working in centers
- Use digital tools for math to reinforce math concepts

RESOURCES

- Math Textbook
- Shared Google Documents

GRADE 3 MATH UNITS

Unit 1: Numbers and Operations in Base 10

Unit 2: Multiplication

Unit 3: Applications of Multiplication

Unit 4: Division

Unit 5: Fractions

Unit 6: Data

MATH GRADE 3
UNIT 1: NUMBERS AND OPERATIONS IN BASE 10

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

3.NBT.A.1

Use place value understanding to round whole numbers to the nearest 10 or 100.

3.NBT.A.2

Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.NBT.A.3

Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

3.OA.A.4

Determine the unknown whole number in a multiplication or division equation relating three whole numbers

3.OA.D.8

Solve two-step word problems using the four operations. 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.

3.OA.D.9

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.F.1

Promote ethical behavior and accountability

9.2.4.A.4

Understand the role that taxes and employee benefits affect income

9.2.4.E.1

Understand what it means to be a responsible consumer and the factors to consider when making consumer decisions

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.A.4

Understand how to create a simple spreadsheet and interpret information

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

An understanding of place value and properties of operations are necessary to perform

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multi-digit arithmetic.

ESSENTIAL QUESTIONS

- What strategies and algorithms can be used to fluently add and subtract?
- How do you determine unknown whole numbers in a multiplication or division equation?

UNIT ASSESSMENT

Unit 1 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Round a number to any given digit
- Estimate a calculation using knowledge about the base ten number system.
- Use place value understanding to round whole numbers to the nearest 10 or 100.
- Properties of Addition/Subtraction - Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
- Place Value - Multiply one-digit whole numbers by multiples of 10 in the range 10-90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.
- Determine the unknown number in a number sentence.
- Determine the unknown whole number in a multiplication or division equation relating three whole numbers
- Word Problems – Add/subtraction - Solve two-step word problems using the four operations. 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.
- Utilize information given in a line plot to solve a word problem using the four operations.
- Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.
- Solve multi-step problems based on prior knowledge
- Apply math skills to real life problems
- Work in groups to complete tasks

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- Follow the prescribed rules of the math games
- Understand the math skills involved in banking
- Understand how to calculate cost savings when items go on sale
- Use digital math resources for practice and reinforcement
- Create bar graphs and tables to display data

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 3 UNIT 2: MULTIPLICATION

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NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

3.OA.A.1

Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe and/or represent a context in which a total number of objects can be expressed as 5×7 .*

3.OA.A.3

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

3.OA.A.4

Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

3.OA.B.5

Apply properties of operations as strategies to multiply and divide

3.OA.C.7

Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

3.OA.D.8

Solve two-step word problems using the four operations. 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.

3.OA.D.9

Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.A.4

Understand how to create a simple spreadsheet and interpret information

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Multiplication is finding an unknown product and the process can be understood through activities and problems involving equal-sized groups, arrays, and area models.

ESSENTIAL QUESTIONS

- How are visual representations of numbers in a group interpreted as products?
- What is the relationship between multiplication and division?

UNIT ASSESSMENT

Unit 2 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Equal groups/Repeated addition - Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.
- Represent multiplication in a visual representation (i.e. arrays).
- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- Determine the unknown number in a number sentence.
- Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
- Properties of multiplication – Commutative, Associative, and Distributive - Apply properties of operations as strategies to multiply and divide
- Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 / 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
- Factors and multiplication facts
- Solve two-step word problems using the four operations. 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.
- Patterns in multiplication chart - Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations.
- Solve multi-step problems based on prior knowledge
- Apply math skills to real life problems

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- Work in groups to complete tasks
- Follow the prescribed rules of the math games
- Use digital math resources for practice and reinforcement
- Create bar graphs and tables to display data

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 3 UNIT 3: APPLICATIONS OF MULTIPLICATION

NEW JERSEY STUDENT LEARNING STANDARDS

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Mathematical Practices

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

3.OA.A.1

Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe and/or represent a context in which a total number of objects can be expressed as 5×7 .*

3.OA.A.3

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

3.MD.C.5

Recognize area as an attribute of plane figures and understand concepts of area measurement.

3.MD.C.5.A

A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.

3.MD.C.5.B

A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

3.MD.C.6

Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units).

3.MD.C.7

Relate area to the operations of multiplication and addition.

3.MD.C.7.A

Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.

3.MD.C.7.B

Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

3.MD.C.7.C

Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

3.MD.C.7.D

Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. Geometric measurement: recognize perimeter.

3.MD.D.8

Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.A.4

Understand how to create a simple spreadsheet and interpret information

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Area is an attribute of two-dimensional regions.

ESSENTIAL QUESTIONS

- How is area related to multiplication and addition?
- What is the relationship between arrays and multiplication?

UNIT ASSESSMENT

Unit 3 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.
- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- Recognize area as an attribute of plane figures and understand concepts of area measurement.
- A square with side length 1 unit, called "a unit square," is said to have

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"one square unit" of area, and can be used to measure area.

- A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.
- Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
- Relate area to the operations of multiplication and addition.
- Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
- Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.
- Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.
- Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.
- Geometric measurement: recognize perimeter.
- Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
- Solve multi-step problems based on prior knowledge
- Apply math skills to real life problems
- Work in groups to complete tasks
- Follow the prescribed rules of the math games
- Use digital math resources for practice and reinforcement
- Create bar graphs and tables to display data

RESOURCES

- Math Textbook

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- Shared Google Documents

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MATH GRADE 3

UNIT 3: DIVISION

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

3.OA.A.2

Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as $56 \div 8$.*

3.OA.A.3

Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

3.OA.A.4

Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

3.OA.B.6

Understand division as an unknown-factor problem.

3.OA.D.8

Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies

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including rounding.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.A.4

Understand how to create a simple spreadsheet and interpret information

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Division is finding an unknown factor and the process can be understood through activities and problems involving equal-sized groups, arrays, and area models.

ESSENTIAL QUESTIONS

- How are whole number quotients interpreted to understand an everyday occurrence?
- What is the relationship between division and multiplication?

UNIT ASSESSMENT

Unit 3 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Represent division in various ways (i.e. arrays, area, equal groups).
- Understand that division is the inverse operation of multiplication.
- Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.
- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- Determine the unknown number in a number sentence.
- Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
- Understand division as an unknown-factor problem.
- Solve two-step word problems using the four operations. 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.
- Solve multi-step problems based on prior knowledge
- Apply math skills to real life problems
- Work in groups to complete tasks
- Follow the prescribed rules of the math games
- Use digital math resources for practice and reinforcement
- Create bar graphs and tables to display data

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 3 UNIT 5: FRACTIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

3.NF.A.1

Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.

3.NF.A.2

Understand a fraction as a number on the number line; represent fractions on a number line diagram.

3.NF.A.2.A

Represent a fraction $1/b$ on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.

3.NF.A.2.B

Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

3.NF.A.3

Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

3.NF.A.3.A

Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.

3.NF.A.3.B

Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.

3.NF.A.3.C

Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.

3.NF.A.3.D

Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

3.G.A.1

Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

3.G.A.2

Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.A.4

Understand how to create a simple spreadsheet and interpret information

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Fractions are built out of unit fractions and represent parts of a whole.

ESSENTIAL QUESTIONS

- How is the size of a fractional part relative to the size of the whole?
- How can fractions represent numbers equal to, less than, or greater than 1?

UNIT ASSESSMENT

Unit 5 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Part of a whole - Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$.
- Fractions using number line - Understand a fraction as a number on the number line; represent fractions on a number line diagram.
- Represent a fraction $1/b$ on a number line diagram by defining the interval from

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0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.

- Represent a fraction a/b on a number line diagram by marking off a length $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
- Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
- Equivalent Fractions - Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
- Recognize and generate simple equivalent fractions, e.g., $1/2 = 2/4$, $4/6 = 2/3$. Explain why the fractions are equivalent, e.g., by using a visual fraction model.
- Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers.
- Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.
- Geometric Shapes & Characteristics - Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
- Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.
- Solve multi-step problems based on prior knowledge
- Apply math skills to real life problems
- Work in groups to complete tasks
- Follow the prescribed rules of the math games
- Use digital math resources for practice and reinforcement
- Create bar graphs and tables to display data

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH GRADE 3

UNIT 6: DATA

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

3.MD.A.1

Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

3.MD.A.2

Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).¹ Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.²

3.MD.B.3

Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.

3.MD.B.4

Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.4

Understand how to create a simple spreadsheet and interpret information

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Standard units of measure are necessary in understanding the type of quantity being measured.

ESSENTIAL QUESTIONS

- How is time, liquid volume, and mass measured?
- How is data represented and interpreted?

UNIT ASSESSMENT (See appendix Unit assessment)

Unit 6 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
- Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).¹ Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
- Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs.
- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
- Solve multi-step problems based on prior knowledge
- Apply math skills to real life problems
- Work in groups to complete tasks
- Follow the prescribed rules of the math games
- Create bar graphs and tables to display data

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH Curriculum K-6
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**MATH
CURRICULUM
GRADE 4**

Unit 1: Application of Operations with Whole Numbers

Unit 2: Place Value

Unit 3: Multi-Digit Operations

Unit 4: Fractions

Unit 5: Extending Fractions

Unit 6: Decimal Notation for Fractions

Unit 7: Geometry

MATH GRADE 4

UNIT 1: APPLICATION OF OPERATIONS WITH WHOLE NUMBERS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

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.

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.

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.

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.

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9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals and greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

9.2.4.A.4

Understand the role that taxes and employee benefits affect income

9.2.4.B.1

Promoting financial responsibility related to prioritizing between wants and needs, financial planning, savings, investment, and charitable giving

9.2.4.E.1

Understanding what it means to be a responsible consumer and the factors to consider when making consumer decisions

8.1.4.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Understanding of mathematical models, place value, and properties of operations are used to compute products and quotients.

ESSENTIAL QUESTIONS

- How are the four operations with whole numbers used to solve problems?
- How does an understanding of place value and properties of operations help to perform multi-digit arithmetic?

UNIT ASSESSMENT

Unit 1 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Four operations with Whole Numbers (properties & terminology)
- Word problems with addition & subtraction (basic & multistep)
- Word problem with multiplication & division (basic & multistep)
- Find all factors of a given number between 1-100.
- Determine if a given number between 1-100 is a multiple of each of its factors.
- Determine if a given number between 1-100 is a multiple of a given one digit number.
- Identify prime and composite numbers between 1-100.
- Make games using math facts
- Work cooperatively in groups to complete tasks
- Use digital tools to create word problems with algorithms and pictures
- Follow rules and play fairly during Math games
- Apply applications of whole numbers to real life events
- Use digital tools for computer testing

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH GRADE 4 UNIT 2: PLACE VALUE

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

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.

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 each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

4.NBT.A.3

Use place value understanding to round multi-digit whole numbers to any place.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals and greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

9.2.4.B.1

Promoting financial responsibility related to prioritizing between wants and needs, financial planning, savings, investment, and charitable giving

8.1.4.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Knowledge of place value can be extended to values like 1,000,000 by understanding the relative sizes of numbers in each place.

ESSENTIAL QUESTIONS

- How can an understanding of place value be generalized to understand the value of multi-digit whole numbers?

UNIT ASSESSMENT

Unit 2 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Understand the Base Ten Number System
- Comparing the value of digits within a multi-digit number
- Compare numbers using less than, greater than, or equal
- Write a numeral in expanded form
- Round multi-digit numbers to any place

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MATH Curriculum K-6

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- Make games using math facts
- Work cooperatively in groups to complete tasks
- Use digital tools to create word problems with algorithms and pictures
- Use digital tools to create word problems with algorithms and pictures
- Follow rules and play fairly during Math games
- Apply applications of whole numbers to real life events
- Use digital tools for computer testing

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 4

UNIT 3: MULTI-DIGIT OPERATIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

NBT.B.4

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 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.

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.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals and greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

9.2.4.B.1

Promoting financial responsibility related to prioritizing between wants and needs, financial planning, savings, investment, and charitable giving

8.1.4.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Understanding of mathematical models, place value, and properties of operations are used to compute products and quotients.

ESSENTIAL QUESTIONS

- How are the four operations with whole numbers used to solve problems?
- How does an understanding of place value and properties of operations help to perform multi-digit arithmetic?

UNIT ASSESSMENT

Unit 3 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Addition of multi-digit numbers (fluency)

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- Subtraction of multi-digit numbers (fluency)
- Multiply up to four digits by one digit (place value & properties of operations)
- Multiply two digits by two digits (place value & properties of operations)
- Divide up to four digit dividends by one digit divisors (place value & properties of operations)
- Apply the area and perimeter formulas for rectangles in real world problems
- Make games using math facts
- Work cooperatively in groups to complete tasks
- Use digital tools to create word problems with algorithms and pictures
- Follow rules and play fairly during Math games
- Apply applications of whole numbers to real life events
- Use digital tools for computer testing

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 4 UNIT 4: FRACTIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

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.

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.

4.NF.B.3

Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.

4.NF.B.3.A

Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

4.NF.B.3.B

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.

4.NF.B.3.C

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.

4.NF.B.3.D

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.

4.MD.B.4

Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals and greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

9.2.4.B.1

Promoting financial responsibility related to prioritizing between wants and needs, financial planning, savings, investment, and charitable giving

8.1.4.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Understanding fractions includes fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions with whole numbers, and decimal notation of fractions.

ESSENTIAL QUESTIONS

- What are equivalent fractions?
- What fractions represent a greater value?
- What are the decimal notations for fractions and how do decimal fractions compare?

UNIT ASSESSMENT

Unit 4 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Understand equivalent fractions
- Compare two fractions with different numerators & different denominators, using $<$, $>$, $=$ (denominators limited to 2, 3, 4, 5, 6, 8, 10, 12, & 100)
- Decompose a fraction as the sum of fraction with the same denominator in more than one way
- Add & subtract mixed numbers with like denominators
- Word problems using addition & subtraction of fractions with like denominators
- Make a line plot to display a data set of measurement in fractions of a unit
- Solve problems involving addition and subtraction of fractions by using information presented in a line plot
- Make games using math facts
- Work cooperatively in groups to complete tasks

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MATH Curriculum K-6

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- Use digital tools to create word problems with algorithms and pictures
- Apply applications of whole numbers to real life events
- Use digital tools for computer testing

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 4 UNIT 5: EXTENDING FRACTIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

4.NF.B.4

Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

4.NF.B.4.A

Understand a fraction a/b as a multiple of $1/b$.

4.NF.B.4.B

Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number.

4.NF.B.4.C

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.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals and greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

9.2.4.B.1

Promoting financial responsibility related to prioritizing between wants and needs, financial planning, savings, investment, and charitable giving

8.1.4.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of multiplication to multiply a fraction by a whole number, and decimal notation of fractions.

ESSENTIAL QUESTIONS

- How can fractions be built from unit fractions by applying and extending previous understandings of operations on whole numbers?

UNIT ASSESSMENT

Unit 5 Assessment

SKILLS & OBJECTIVES

Students will be able to...

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- Understand a fraction as a product of a whole a number and a unit fraction
- Understand a fraction as a product of a whole number and a fraction

- Solve word problems involving multiplication of a fraction by a whole number (visual fraction model, equations)
- Make games using math facts
- Work cooperatively in groups to complete tasks
- Use digital tools to create word problems with algorithms and pictures
- Follow rules and play fairly during Math games
- Apply applications of whole numbers to real life events
- Use digital tools for computer testing

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 4
UNIT 6: DECIMAL NOTATION FOR FRACTIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

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.

4.NF.C.6

Use decimal notation for fractions with denominators 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.

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. *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), ...*

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.

4.MD.A.3

Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals and greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

9.2.4.B.1

Promoting financial responsibility related to prioritizing between wants and needs, financial planning, savings, investment, and charitable giving

8.1.4.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Understanding fractions includes fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions with whole numbers, and decimal notation of fractions.

ESSENTIAL QUESTIONS

- How are fractions written in decimal notation?
- What is the ordering of decimal fractions?

UNIT ASSESSMENT (See appendix Unit assessment)

Unit 6 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Express a fraction with denominator 10 as an equivalent fraction with denominator 100
- Add two fractions with respective denominators 10 and 100
- Use decimal notation for fraction with denominators 10 or 100
- Compare two decimals to hundredths, using $<$, $>$, or $=$
- Know relative size of measurement unit within one system of units (standard & metric)
- Use four operations to solve word problems involving measurement (standard & metric)
- Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
- Make games using math facts
- Work cooperatively in groups to complete tasks
- Use digital tools to create word problems with algorithms and pictures
- Follow rules and play fairly during Math games
- Apply applications of whole numbers to real life events
- Use digital tools for computer testing

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 4 UNIT 7: GEOMETRY

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NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

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.

4.MD.C.5.A

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 $\frac{1}{360}$ of a circle is called a "one-degree angle," and can be used to measure angles.

4.MD.C.5.B

An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

4.MD.C.6

Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

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.

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.

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.

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.

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.

9.1.4.A.1

Apply critical thinking and problem solving skills to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals and greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Geometric figures can be analyzed and classified based on their properties such as parallel sides, perpendicular sides, particular angle measures, and symmetry.

ESSENTIAL QUESTIONS

- How can angles be measured and what connotations do those angle measures have?
- How can shapes be classified by properties of their lines and angles?

UNIT ASSESSMENT

Unit 7 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Recognize angles as geometric shapes that are formed when two rays share a common endpoint.
- Recognize an angle as a fraction of a circle.
- Measure an angle in degrees.
- Measure & sketch angles in whole number degrees, using a protractor.
- Recognize that angle measures can be added or subtracted. Solve addition & subtraction problems to find an unknown angle in a diagram.
- Draw and identify points, line segments, lines, angles, rays, parallel lines, and perpendicular lines with appropriate labels.
- Classify two dimensional figures based on parallel and perpendicular characteristics (i.e. recognize right angles and right triangles, recognize parallelograms) 4
- Recognize a line of symmetry for a two dimensional figure.
- 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.

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- Make games using math facts
- Work cooperatively in groups to complete tasks
- Use digital tools to create word problems with algorithms and pictures
- Follow rules and play fairly during Math games
- Apply applications of whole numbers to real life events
- Use digital tools for computer testing

RESOURCES

- Math Textbook
- Shared Google Documents

GRADE 5 MATH UNITS

Unit 1: Understanding the Place Value System

Unit 2: Operations with Decimals

Unit 3: Operations with Fractions

Unit 4: Measurement & Volume

Unit 5: Applications of Fractions

Unit 6: Algebraic Thinking

Unit 7: Data & Geometry

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MATH GRADE 5

UNIT 1: UNDERSTANDING THE PLACE VALUE SYSTEM

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

5.NBT.A.1

Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.

5.NBT.A.2

Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.NBT.A.3

Read, write, and compare decimals to thousandths.

5.NBT.A.3.A

Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (\frac{1}{10}) + 9 \times (\frac{1}{100}) + 2 \times (\frac{1}{1000})$.

5.NBT.A.3.B

Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.D.3

Understand different cultural perspectives to enhance communication

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

A numeral has meaning based upon the place values of its digits.

ESSENTIAL QUESTIONS

How do you compare values of digits within a numeral?

How can powers of 10 be used to represent the value of a digit within a numeral?

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MATH Curriculum K-6

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UNIT ASSESSMENT

Unit 1 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Recognize a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left.
- Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.
- Use whole-number exponents to denote powers of 10.
- Read, write, and compare decimals to thousandths.
- Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.
- Compare two decimals to thousandths ($<$, $=$, $>$).
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize on-line resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH Curriculum K-6
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MATH GRADE 5 UNIT 2: OPERATIONS WITH DECIMALS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

CCSS.MATH.CONTENT.5.NBT.A.4

Use place value understanding to round decimals to any place.

CCSS.MATH.CONTENT.5.NBT.B.5

Fluently multiply multi-digit whole numbers using the standard algorithm.

CONTENT.5.NBT.B.6

Find whole-number quotients of whole numbers with up to four-digit dividends and two-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.

5.NBT.B.7

Add, subtract, multiply, and divide decimals to hundredths, 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 and explain the reasoning used.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and

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MATH Curriculum K-6
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innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.D.3

Understand different cultural perspectives to enhance communication

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Being able to compute fluently means making smart choices about which tools to use and when to use them. Knowing the reasonableness of an answer comes from using good number sense and estimation strategies.

ESSENTIAL QUESTIONS

- What is the most efficient and effective method for adding, subtracting, multiplying, and dividing decimals?
- In multiple ways, how can decimal operations be represented?

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MATH Curriculum K-6
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UNIT ASSESSMENT

Unit 2 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Use place value understanding to round decimals to any place.
- Fluently multiply multi-digit whole numbers using the standard algorithm. Divide whole numbers with up to four-digit dividends and two-digit divisors.
- Illustrate and explain the multiplication or division calculations by using equations, rectangular arrays, and/or area models.
- Add, subtract, multiply, and divide decimals to hundredths, using varied methods.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize online resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 5 UNIT 3: OPERATIONS WITH FRACTIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

5.NF.A.1

Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

5.NF.A.2

Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

5.NF.B.3

Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.NF.B.4

Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

5.NF.B.4.A

Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts;

equivalently, as the result of a sequence of operations $a \times q \div b$.

5.NF.B.4.B

Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.NF.B.6

Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Being able to compute fluently means making smart choices about which tools to use and when to use them. Knowing the reasonableness of an answer comes from using good number sense and estimation strategies.

ESSENTIAL QUESTIONS

- What is the most efficient and effective method for adding, subtracting, multiplying, and dividing fractions?
- In multiple ways, how can operations with fractions be represented?

UNIT ASSESSMENT

Unit 3 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Add and subtract fractions with unlike denominators (not including mixed numbers)
- Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators.
- Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$).
- Solve word problems involving division of whole numbers leading to answers in the form of fractions.
- Multiply a fraction or whole number by a fraction.
 - Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$.
 - Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- Solve real world problems involving operations with fractions.

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MATH Curriculum K-6

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- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize on-line resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 5
UNIT 4: MEASUREMENT & VOLUME

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

5.MD.C.3

Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

5.MD.C.3.A

A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.

5.MD.C.3.B

A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

5.MD.C.4

Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and non-

standard units.

5.MD.C.5

Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

5.MD.C.5.A

Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

5.MD.C.5.B

Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

5.MD.C.5.C

Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

The volume of a rectangular prisms can be found utilizing the formula. However, composite solid figures may require deconstructing the figure into manageable parts.

ESSENTIAL QUESTIONS

- What methods can be utilized to find the volume of rectangular prisms? Figures composed of rectangular figures?
- How can finding the volume of rectangular prisms aide in solving real world problems?

UNIT ASSESSMENT

Unit 4 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
 - A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.

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MATH Curriculum K-6
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- o A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
- Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
 - o Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
 - o Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.
 - o Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize on-line resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 5
UNIT 5: APPLICATIONS OF FRACTIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

5.NF.A.1

Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

5.NF.A.2

Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.

5.NF.B.5

Interpret multiplication as scaling (resizing), by:

5.NF.B.5.A

Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

5.NF.B.5.B

Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

5.NF.B.6

Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.NF.B.7

Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.¹

5.NF.B.7.A

Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.*

5.NF.B.7.B

Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.*

5.NF.B.7.C

Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.D.3

Understand different cultural perspectives to enhance communication

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

An understanding of fractions and fraction models can be used to represent the addition and subtraction of fractions with unlike denominators as equivalent fractions with like denominators.

ESSENTIAL QUESTIONS

- How can the strategy of equivalent fractions be used to add and

- subtract fractions?
- How can an understanding of multiplication and division be extended to multiply and divide fractions?

UNIT ASSESSMENT

Unit 5 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Add and subtract mixed numbers with unlike denominators.
- Solve word problems involving addition and subtraction of mixed numbers, including cases of unlike denominators.
- Interpret multiplication as scaling (resizing), by:
 - Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
 - Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number; explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
- Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
 - Interpret division of a unit fraction by a non-zero whole number, and compute such quotients.
 - Interpret division of a whole number by a unit fraction, and compute such quotients.
 - Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize on-line resources

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MATH Curriculum K-6
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- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH GRADE 5
UNIT 6: ALGEBRAIC THINKING

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

5.G.A.1

Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond.

5.G.A.2

Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

5.OA.A.1

Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.A.2

Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

5.OA.B.3

Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

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MATH Curriculum K-6
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ENDURING UNDERSTANDINGS

Algebraic thinking means generalizing arithmetic operations and operating on unknown quantities. It involves recognizing and analyzing patterns and developing generalizations about these patterns.

ESSENTIAL QUESTIONS

- How are numerical expressions written and evaluated?
- How are relationships between numbers viewed, graphed, and interpreted?

UNIT ASSESSMENT

Unit 6 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Understand the parts of a coordinate plane (axes, origin, coordinates).
- Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
- Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
- Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize on-line resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

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- Shared Google Documents

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MATH Curriculum K-6
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MATH GRADE 5
UNIT 7: DATA & GEOMETRY

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

5.MD.A.1

Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
Represent and interpret data.

5.MD.B.2

Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots.

5.G.B.3

Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

5.G.B.4

Classify two-dimensional figures in a hierarchy based on properties.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.D.3

Understand different cultural perspectives to enhance communication

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Everything can be measured. Attributes belonging to a category of two dimensional figures also belong to all subcategories of that category.

ESSENTIAL QUESTIONS

- What unit of measure should be used?

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- How is the unit constructed, compared, and converted?
- How are geometrical figures related?

UNIT ASSESSMENT

Unit 7 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
- Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots.
- Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
- Classify two-dimensional figures in a hierarchy based on properties.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize online resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

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GRADE 6 MATH UNITS

Unit 1: Ratios & Percents

Unit 2: Rational Numbers

Unit 3: Introduction to Expressions & Equations

Unit 4: Two- & Three-Dimensional Geometry

Unit 5: Operations with Decimals

Unit 6: Extension of Expressions & Equations

Unit 7: Statistics

MATH GRADE 6 UNIT 1: RATIOS AND PERCENTS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

6.RP.A.1

Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

6.RP.A.2

Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship.

6.RP.A.3

Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

6.RP.A.3.A

Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

6.RP.A.3.B

Solve unit rate problems including those involving unit pricing and constant speed.

6.RP.A.3.C

Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.

6.RP.A.3.D

Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

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ENDURING UNDERSTANDINGS

The connection between ratios and rates to whole number multiplication and division allows students to solve real world problems using algebra.

ESSENTIAL QUESTIONS

- What is the difference between a ratio and a unit rate?
- How can ratios be utilized to solve real world problems?

UNIT ASSESSMENT

Unit 1 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- Understand the concept of a unit rate a/b , associated with a ratio $a:b$.
- Use rate language in context of ratio relationship.
- Use ratio and rate reasoning to solve real world problems.
 - Make tables of equivalent ratios, relating quantities with whole number measurements.
 - Solve unit rate problems, including unit pricing and constant speed.
- Find the percent of a quantity as a rate per 100.
- Solve problems involving part, whole, and percent.
- Use ratio reasoning to convert measurement units.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize online resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

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MATH GRADE 6 UNIT 2: RATIONAL NUMBERS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

6.NS.A.1

Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

6.NS.B.4

Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

6.NS.C.5

Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.C.6

Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the

line and in the plane with negative number coordinates.

6.NS.C.6.A

Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$, and that 0 is its own opposite.

6.NS.C.6.B

Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

6.NS.C.6.C

Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.C.7

Understand ordering and absolute value of rational numbers.

6.NS.C.7.A

Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.

6.NS.C.7.B

Write, interpret, and explain statements of order for rational numbers in real-world contexts.

6.NS.C.7.C

Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

6.NS.C.7.D

Distinguish comparisons of absolute value from statements about order.

6.NS.C.8

Solve real-world and mathematical problems by graphing points in all four quadrants of

the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.D.3

Understand different cultural perspectives to enhance communication

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Rational numbers include both positive and negative fractions and decimals, which are necessary to model real world situations.

ESSENTIAL QUESTIONS

- What is the most effective and efficient methods when performing operations with rational numbers?
- How can operations with rational numbers help solve real world problems?

UNIT ASSESSMENT

Unit 2 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Find the greatest common factor of two whole numbers less than or equal to 100.
- Find the least common multiple of two whole numbers less than or equal to 12.
- Use the distributive property to express a sum of two whole numbers (1-100) with a common factor as a multiple of a sum of two whole numbers with no common factor.
- Understand positive and negative numbers as having opposite directions or values.
- Understand a rational number as a point on the number line. Extend number line and coordinate axes to include negative numbers.
 - Recognize opposite signs of numbers indicate locations on opposite sides of 0.
 - Understand signs of numbers in the ordered pairs as indicating locations in quadrants on the coordinate plane.
 - Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
 - Find and position integers and other rational numbers on a horizontal or vertical line diagram.
 - Find and position pairs of integers or other rational numbers on a coordinate plane.
- Solve real world problems by graphing points in all four quadrants of the coordinate plane.
- Solve real world problem involving division of fractions.
- Solve real world problems involving all operation with fractions.
- Understand ordering and absolute of rational numbers.

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- o Interpret statements of inequality as statements about the relative position of two numbers on the number line.
 - o Write, interpret, and explain statements of order for rational numbers in real world contexts.
 - o Understand the absolute value of a rational number as its distance from 0 on the number line.
 - o Distinguish comparisons of absolute value from statements about order.
-
- Apply knowledge to solve multi-step word problems
 - Use math knowledge for S.T.E.M. projects
 - Honor multiple ways to solve problems
 - Utilize online resources
 - Follow the rules of the math games
 - Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 6
UNIT 3: INTRODUCTION TO EXPRESSIONS & EQUATIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

6.EE.A.1

Write and evaluate numerical expressions involving whole-number exponents.

6.EE.A.2

Write, read, and evaluate expressions in which letters stand for numbers.

6.EE.A.2.A

Write expressions that record operations with numbers and with letters standing for numbers.

6.EE.A.2.B

Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.

6.EE.A.2.C

Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

6.EE.A.3

Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression $3(2 + x)$ to produce the equivalent*

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MATH Curriculum K-6

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expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6(4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$.

6.EE.A.4

Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

6.EE.B.6

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

6.EE.C.9

Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Expressions contain numbers, variables, and operations. Expressions are evaluated or simplified. Equations set two expressions equal to one another and are solved.

ESSENTIAL QUESTIONS

- How are the properties of numeric and algebraic operations utilized to evaluate or simplify an expression?
- How are the properties of equality utilized to solve an equation?
- How can expressions and equations help solve real world problems?

UNIT ASSESSMENT

Unit 3 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Write & evaluate numerical expressions involving whole number exponents.
- Write, read, and evaluate expressions in which letters stand for numbers.
 - Convert between verbal expressions and algebraic expressions.
 - Identify parts of an expression using mathematical terms.
 - Evaluate expressions involving variables, using the Order of Operations.
- Apply properties of operations to generate equivalent expressions.
- Identify when two expressions are equivalent.
- Use variables to represent number and write expressions when solving real world problems.

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MATH Curriculum K-6
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- Use variables to represent two quantities in a real world problem that change in relationship to one another.
 - Understand and apply definition of independent and dependent variable in an equation.

- Solve real world problems involving operations with fractions.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize online resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 6
UNIT 4: TWO- & THREE-DIMENSIONAL GEOMETRY

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

6.G.A.1

Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.

6.G.A.2

Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

6.G.A.3

Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

6.G.A.4

Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Two- and three-dimensional objects in the real world can be represented and analyzed through geometry. A two-dimensional object has length and width, while a three-dimensional object has length, width, and height.

ESSENTIAL QUESTIONS

- What methods can be utilized to find the area of an irregular figure?

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- What methods can be utilized to find the volume of rectangular prisms?

UNIT ASSESSMENT

Unit 4 Assessment

SKILLS & OBJECTIVES

Students will be able to....

- Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes.
- Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths.
- Show that the volume of a rectangular prism is the same as would be found by multiplying the edge lengths of the prism.
- Apply the formulas $V=lwh$ and $V=Bh$ to find volumes of right rectangular prisms with fractional edge length.
- Draw polygons in the coordinate plane given coordinates for the vertices.
- Use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate.
- Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize online resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

MATH GRADE 6
UNIT 5: OPERATIONS WITH DECIMALS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

6.NS.B.2

Fluently divide multi-digit numbers using the standard algorithm.

6.NS.B.3

Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

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MATH Curriculum K-6

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8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Numbers can be represented in multiple ways, including decimals. Operations with decimals can facilitate solving real world problems.

ESSENTIAL QUESTIONS

What is the most effective and efficient method to perform operations with decimals?
How do you know if your answer to a problem is reasonable?

UNIT ASSESSMENT

Unit 5 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Fluently divide multi-digit numbers using the standard algorithm.
- Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize online resources
- Follow the rules of the math games
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RESOURCES

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MATH Curriculum K-6
RE BOE Approved (7/26/17)
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MATH GRADE 6
UNIT 6: EXTENSION OF EXPRESSIONS & EQUATIONS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

6.EE.B.5

Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

6.EE.B.6

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

6.EE.B.7

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers.

6.EE.C.9

Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times,

and write the equation $d = 65t$ to represent the relationship between distance and time.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

Variables in algebraic equations and inequalities represent a quantity. This quantity can be identified by using the properties of equality and inequality to solve the problem.

ESSENTIAL QUESTIONS

- Given an equation or inequality, what value(s) for the variable make the equation or inequality true?
- How are equations and inequalities utilized to solve real world problems?

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MATH Curriculum K-6

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UNIT ASSESSMENT

Unit 6 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Understand solving an equation or inequality as a process of answering a question (what makes the equation true?).
- Use variables to represent numbers and write expressions when solving real world problems.
- Solve real world problem using one step equations.
- Use variables to represent two quantities in a real world problem that change in relationship to one another.
- Understand and apply definition of independent and dependent variable in an equation.
- Use graph and tables to analyze relationship between an independent and dependent variable; and relate these to an equation.
- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize online resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

Oradell and River Edge Public School Districts
MATH Curriculum K-6
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MATH GRADE 6 UNIT 7: STATISTICS

NEW JERSEY STUDENT LEARNING STANDARDS

Mathematical Practices

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

6.SP.A.1

Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.

6.SP.A.2

Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

6.SP.A.3

Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

6.SP.B.4

Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

6.SP.B.5

Summarize numerical data sets in relation to their context, such as by:

6.SP.B.5.A

Reporting the number of observations.

6.SP.B.5.B

Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

6.SP.B.5.C

Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

6.SP.B.5.D

Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

9.1.4.A.1

Apply critical thinking and problem solving to solve problems

9.1.4.B.1

Gather and evaluate knowledge from a variety of sources that fosters creativity and innovative thinking

9.1.4.C.1

Collaborate in teams that allows groups to achieve common goals with greater efficiency

9.1.4.E.1

Integrate digital media to enhance communication

9.1.4.F.1

Promote ethical behavior and accountability

8.1.4.A.1

Understand how to use digital tools for appropriate applications

8.1.4.D.1

Practice cyber safety

BIG IDEAS/COMMON THREADS

All students will understand the meaning of numbers, how they may be represented and the relationships among them. They will perform computations and acquire knowledge of the physical world from the point of view of quantitative relationships.

ENDURING UNDERSTANDINGS

The question to be answered determines the data to be collected and how best to collect it. Basic statistical techniques can be used to analyze data in the workplace.

ESSENTIAL QUESTIONS

- What is average?
- What makes a data representation useful?
- How does my sample affect confidence in my predication?

UNIT ASSESSMENT

Unit 7 Assessment

SKILLS & OBJECTIVES

Students will be able to...

- Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- Understand data has a distribution which can be described by it's center, spread, and overall shape.
- Recognize that a measure of center describes a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
- Display numerical data and plots on a number line, including dot plots, histograms, and box plots.
- Summarize numerical data sets in relation to their context, such as by:
 - Reporting the number of observations.
 - Describing the nature of the attributes under investigations, including how it was measured and its units of measurement.
 - Giving quantitative measure of center (median and/or mean) and variability (interquartile range and/or mean absolute

deviation.

- o Relating the choice of measures of center and variability to the shape of the data distribution and the context.

- Apply knowledge to solve multi-step word problems
- Use math knowledge for S.T.E.M. projects
- Honor multiple ways to solve problems
- Utilize online resources
- Follow the rules of the math games
- Apply technology to enhance meaning, communication and productivity in accordance to the Acceptable Use Policy

RESOURCES

- Math Textbook
- Shared Google Documents

Differentiation

Differentiation is a process teachers use to increase achievement by improving the match between the learner's unique characteristics: prior knowledge, cognitive level, learning style, motivation, strength or interest and various curriculum components: Nature of the objective, teaching activities, learning activities, resources and products.

This broad notion applies to learners from a diverse range of abilities, including: Gifted and Talented, English Language Learners, Students with Disabilities, and Students at Risk of School Failure. This addendum reveals pathways for differentiation specific to four distinct student populations.

Teachers can differentiate

- **Content** What we teach and how we give students access to the information and ideas that matter
- **Process** How students come to understand and “own” the knowledge, understanding, and skills essential to a topic
- **Product** How a student demonstrates what he or she has come to know, understand and be able to do as a result of a segment of study

According to students'

- **Readiness** The current knowledge, understanding, and skill level a student has related to a particular sequence of learning
- **Interest** What a student enjoys learning about, thinking about, and doing
- **Learning Style** A student's preferred mode of learning. It is influenced by learning style, intelligence preference, gender and culture

MODIFICATIONS

- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies).
- Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences).
- Structure the learning around explaining or solving a social or community-based issue.
- Provide ELL students with multiple literacy strategies.
- Collaborate with after-school programs or clubs to extend learning opportunities.
- Restructure lesson using UDL principles

http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA

Gifted and Talented (*content, process, product and learning environment*)

N.J.A.C. 6A:8---3.1 Curriculum and instruction

District boards of education shall develop appropriate curricular and instructional modifications used for gifted and talented students indicating content, process, products, and learning environment.

Sample Differentiation Strategies and Techniques

Learning Agendas/Contracts

A learning contract is an agreement established between a student and the teacher; it sometimes involves the student's parents. The contract specifies concrete learning and/or behavioral objectives for the student that all parties agree need to be achieved. The contract also specifies:

- the goals of the contract
- the obligations of each party to the contract
- the time frame within which the terms of the learning contract are to be fulfilled
- the basis on which it will be determined that the conditions of the contract were met

Self-Directed Learning Specific ongoing activities in which students work independently

Curriculum Compacting Curriculum Compacting is an instructional technique that is specifically designed to make appropriate curricular adjustments for students in any curricular area and at any grade level.

Sample resource: <http://www.gifted.uconn.edu/sem/semart08.html>

Flexible Grouping Flexible grouping is a range of grouping students together for delivering instruction. This can be as a whole class, a small group, or with a partner. Flexible grouping creates temporary groups that can last an hour, a week, or even a month.

Jigsaw Activities Jigsaw is a strategy that emphasizes cooperative learning by providing students an opportunity to actively help each other build comprehension. Use this technique to assign students to reading groups composed of varying skill levels. Each group member is responsible for becoming an "expert" on one section of the assigned material and then "teaching" it to the other members of the team.

Students at Risk of School Failure

Districts are required to administer grade level benchmark and/or interim assessments in content areas. After each administration, districts should analyze the data to identify which students are at-risk in this content area. Any of the strategies outlined in the other differentiation/modification categories may be used to address the needs of these students who may be at risk.

English Language Learners

The purpose of adapting content lessons for LEP students is to lower the language barrier and make the English used in such lessons as comprehensible as possible. LEP students' capacity to learn can be greatly inhibited by the academic vocabulary and, sometimes, lack of cultural experience living in the United States for short periods of time. Every student deserves an education that culturally relevant and meaningful to his/her present and future lives.

Educators provide various grouping strategies such as flexible grouping and/or paired learning being sensitive to the language proficiency level of the LEP students. A student's capacity to become fluent in English will be greatly enhanced by activities in oral and written language that connect one's own life in meaningful and engaging ways.

Instructional Supports:

Hands-on materials

- Bilingual dictionaries
- Visual aids
- Teacher made adaptations, outlines, study guides
- Varied leveled texts of the same content

Preparing students for the lesson:

- *Building Background Information* Done through brainstorming, semantic webbing, use of visual aids and other comprehension strategies.
- *Simplifying Language for Presentation* Using speech that is appropriate to students' language proficiency level. Avoid jargon and idiomatic speech.
- *Developing Content Area Vocabulary* Done through the use of word walls and labeling classroom objects. Students encounter new academic vocabulary.
- *Concept Development* Enduring understanding requires thorough and contextualized study of subjects across grades and courses.
- *Giving Directions* Stated clearly and distinctly and delivered in both written and oral forms to ensure that LEP students understand the task. In addition, students should be provided with/or have access to directional words such as: circle, write, draw, cut, underline, etc.

Presenting the Lesson:

- Use multiple strategies and varied instructional tools to increase the

opportunities for students to develop meaningful connections between content and the language used in instruction.

- Provide students with opportunities to express new knowledge and learning using written, verbal, and nonverbal communication.
- Provide students with opportunities to participate in numerous discussions to increase ELLs competency and confidence in verbal discourse; frame classroom conversations on subjects of interest and cultural relevance.

WIDA --- <https://www.wida.us/>

Students with Disabilities (appropriate accommodations, instructional adaptations, and modifications as determined by the IEP or 504 team)

Instructional adaptations for students with disabilities include, but are not limited to, the below approaches. These general suggestions are particularly resonant with students in classroom settings, grades K--12. The primary aim of education is cultivating active and informed citizens. For students with disabilities, self--determination and interdependence are two core principles citizenship education that applies directly to their educational needs and interests.

Student Motivation Expanding student motivation to learn content can occur through: activity choice, appeal to diverse learning styles, choice to work with others or alone, hands--on activities and multimodal activities.

Instructional Presentations The primary purpose of these adaptations is to provide special education students with teacher--- initiated and teacher-directed interventions that prepare students for learning and engage students in the learning process (Instructional Preparation); structure and organize information to aid comprehension and recall (Instructional Prompts); and foster understanding of new concepts and processes (Instructional Application) e.g. relating to personal experiences, advance organizers, pre---teaching vocabulary and/or strategies; visual demonstrations, illustrations, models.

Instructional Monitoring Instruction should include opportunities for students to engage in group setting, work with rubrics and checklists, reward systems, conferences.

Classroom Organization The primary purpose of these classroom organization adaptations is to maximize student attention, participation, independence, mobility, and comfort; to promote peer and adult communication and interaction; and to provide accessibility to information, materials and equipment.

Student Response The primary purpose of student performance responses is to provide students with disabilities a means of demonstrating progress toward lesson/unit objectives.