

Third Grade

Number Sense

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| Mathematics |
| Grade Level: |
| Third |
| Strand: |
| Numbers and Numerical Operations |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand that whole numbers and fractions represent equivalent forms of the same number.
- The learner will understand the one-to-one relationship between an object, a set of objects, or part of a whole object and its numeric symbol.
- The learner will understand the various uses of numbers - labeling, locating, and ordering.

ESSENTIAL QUESTIONS:

1. What is the importance of knowing place value in real life situations?
2. When will you be asked to compare and order whole numbers in real life situations?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to compare whole: cardinal and ordinal numbers.
- The learner will be able to identify and write place value to 100,000's.
- The learner will be able to count money to one dollar. Make change up to ten dollars.
- The learner will be able to solve word problems using addition, subtraction, multiplication, and division.
- The learner will be able to estimate sums, differences, and products to the nearest, tens, and hundreds.

Numerical Operations/Estimation

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| Mathematics |
| Grade Level: |
| Third |
| Strand: |
| Numbers and Numerical Operations |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand and recognize the appropriate use of each numeric operation in problem solving situations
- The learner will understand and develop proficiency with the basic multiplication and division fact using a variety of fact strategies
- The learner will understand how to construct, use and explain procedures for performing whole number calculations and with:
 - Paper and pencil
 - Mental math
 - Calculator
- The learner will understand how to count and perform simple operations with money.
- The learner will understand how to use concrete models to explore addition, subtraction and comparisons of fractions.
- The learner will understand and recognize when estimation is appropriate, and understand the usefulness of an estimate as distinct from an exact answer.

ESSENTIAL QUESTIONS:

1. How would you determine the correct computational strategy for solving a given mathematical problem?
2. When would you use pencil and paper, mental math or calculator as the appropriate computational method in a given situation?
3. How do you recognize when it is appropriate to use estimation?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to identify sums and differences to 18 for basic addition and subtraction facts.
- The learner will be able to use data to solve addition and subtraction facts.
- The learner will be able to use mental math for addition, subtraction, multiplication, and division facts.
- The learner will be able to use multiplication and division facts up to the 12 times tables.
- The learner will be able to count money to one dollar. Make change up to ten dollars.
- The learner will be able to solve two and three digit addition/subtraction problems with and without regrouping.
- The learner will be able to estimate sums, differences, and products to the nearest, tens, and hundreds.
- The learner will be able to find averages of numbers.
- The learner will be able to solve word problems using addition, subtraction, multiplication, and division.
- The learner will be able to solve two times one digit and three times one digit problems.
- The learner will be able to solve long division problems using one-digit divisors and up to 3-digit dividends with and without remainders.
- The learner will be able to add, subtract, and compare fractions with common denominators as small as $\frac{1}{8}$.

CORE ACTIVITIES:

- The teacher will model the concepts being taught.
- The students will utilize mathematical concepts to complete assigned tasks.
- The students and teachers will use appropriate manipulatives to learn and reinforce concepts being taught.

INSTRUCTIONAL RESOURCES:**Student Resources:**

Everyday Mathematics, *Everyday Learning*
Manipulatives

Technology Integrations:

Computer

Literature/Cross Curricular Connections:

Science

Art

Physical Education

APPLICABLE ASSESSMENT:

Demonstration of knowledge of stated achievement standards

Teacher observations

Completed assignments

Tests

RECOMMENDED ACTIVITIES:

SUGGESTED TIME RANGE:

weeks

VOCABULARY:

sums

products

factors

cardinal

ordinal

divisor

fractions

denominators

numerators

remainder

dividend

quotient

Units of Measure

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| Mathematics |
| Grade Level: |
| Third |
| Strand: |
| Geometry and Measurement |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand that measurable attributes allow us to compare and order objects.
- The learner will understand the need for a uniform measurement.
- The learner will understand the importance of selecting and using appropriate standard and non-standard units of measure and standard measurement tools to solve real-life problems.
- The learner will understand when to estimate measures.

ESSENTIAL QUESTIONS:

1. Why do you need a standard unit of measure?
2. When will you estimate measures?
3. How do you select appropriate units of measure?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to measure time using a calendar.
- The learner will be able to tell time to the hour, $\frac{1}{2}$ hour, and $\frac{1}{4}$ hour.
- The learner will be able to calculate elapsed time to $\frac{1}{4}$ hour.
- The learner will be able to estimate and measure objects by standard and metric units of measure of length:
 - Inch
 - Foot
 - Yard
 - Mile
 - Millimeter
 - Centimeter
 - Decimeter

Meter
Kilometer

- The learner will be able to estimate and measure objects by standard and metric units of measure of capacity:
 - Fluid Ounce
 - Cup
 - Pint
 - Quart
 - Gallon
 - liter
 - Milliliter
- The learner will be able to estimate and measure objects by standard and metric units of measure of weight:
 - Pounds
 - Ounces
 - Tons
 - Grams
 - Kilograms
- The learner will be able to estimate, measure, and interpret using standard and metric units of measure for temperature:
 - Fahrenheit
 - Celsius
- The learner will be able to estimate and calculate area, perimeter, and volume using standard and metric units of measure using concrete manipulatives and appropriate formulas.

SUGGESTED METHOD OF INSTRUCTION:

Individual Instruction
Small Group Instruction
Large Group Instruction
Individual Instruction
Hands-On Instruction
Demonstration

CORE ACTIVITIES:

- The teacher will model the concepts being taught.
- The students will utilize mathematical concepts to complete assigned tasks.
- The students and teachers will use appropriate manipulatives to learn and reinforce concepts being taught.

INSTRUCTIONAL RESOURCES:**Student Resources:**

Everyday Mathematics, Everyday Learning
Manipulatives

Technology Integrations:

Computer

Literature/Cross Curricular Connections:

Science
Art
Physical Education

APPLICABLE ASSESSMENT:

Students will demonstrate knowledge of stated achievement standards through observations, completed assignments, and/ or tests.

RECOMMENDED ACTIVITIES:

SUGGESTED TIME RANGE:

weeks

VOCABULARY:

perimeter
area
Celsius
Fahrenheit
volume
capacity

tons
kilograms
fluid ounces
milliliter
millimeter
elapsed time

Geometry

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|--------------------------|
| Mathematics |
| Grade Level: |
| Third |
| Strand: |
| Geometry and Measurement |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Curriculum Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand and use geometric concepts such as area, volume, and perimeter as they relate to measurement in all life situations.
- The learner will understand how to utilize the estimation concept to perform a logical prediction of measurement.
- The learner will understand the proper use of numbers to solve measurement and geometric computation.
- The learner will understand geometric terms.

ESSENTIAL QUESTIONS:

1. How many objects can you identify from a given group of figures?
2. What are the characteristics of a flip, slide, and a turn?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to identify turns, flips, and slides.
- The learner will be able to explore shapes for lines of symmetry.
- The learner will be able to explore properties of two- and three-dimensional shapes using concrete objects and drawings.
- The learner will be able to calculate area, perimeter, and volume.
- The learner will be able to identify lines, line segments, rays, and angles.

SUGGESTED METHOD OF INSTRUCTION:

Small group instruction
Whole group instruction

CORE ACTIVITIES:

- The teacher will demonstrate the concepts being taught.
- The students will utilize mathematical concepts to complete assigned tasks.
- The students and teachers will use appropriate manipulatives to learn and reinforce concepts being taught.

INSTRUCTIONAL RESOURCES:**Student Resources:**

Everyday Mathematics, Everyday Learning

Technology Integrations:**Literature/Cross Curricular Connections:**

APPLICABLE ASSESSMENT:

Demonstration of knowledge of stated achievement standards
Teacher observations
Completed assignments
Tests

RECOMMENDED ACTIVITIES:

SUGGESTED TIME RANGE:

weeks

VOCABULARY:

Patterns and Algebra

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| Mathematics |
| Grade Level: |
| Third |
| Strand: |
| Patterns and Algebra |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Curriculum Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand how to recognize, describe, extend, and create patterns.
- The learner will understand how to use concrete and pictorial models to explore the basic concept of a function
- The learner will understand how to recognize and describe change in quantities

ESSENTIAL QUESTIONS:

1. How would you use various patterns to express mathematical information and data?
2. Why is it important to find patterns in numbers?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to solve problems using data from surveys.
- The learner will be able to solve problems using In/Out Tables.
- The learner will be able to find missing addends, factors, and subtrahends.
- The learner will be able to make graphs using results from tables and graphs to find points on a graph.

SUGGESTED METHOD OF INSTRUCTION:

- Individual Instruction
- Small Group Instruction
- Large Group Instruction

Hands-On Instruction
Demonstration

CORE ACTIVITIES:

- The teacher will model the concepts being taught.
- The students will utilize mathematical concepts to complete assigned tasks.
- The students and teachers will use appropriate manipulatives to learn and reinforce concepts being taught.

INSTRUCTIONAL RESOURCES:**Student Resources:**

Everyday Math, Everyday Learning

Technology Integrations:**Literature Connections:**

APPLICABLE ASSESSMENT:

Demonstration of knowledge of stated achievement standards
Teacher observations
Completed assignments
Tests

RECOMMENDED ACTIVITIES:

SUGGESTED TIME RANGE:

Two weeks

VOCABULARY:

variable

coordinate points

Data Analysis

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| Mathematics |
| Grade Level: |
| Third |
| Strand: |
| Data Analysis/Probability/ Discrete Mathematics |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Curriculum Content Standards as indicated in the left-hand column.

NJCCCS

- The learner will understand how to represent and classify data according to attributes, such as shape or color, and relationships.
- The learner will understand how to represent all possibilities for a simple counting situation in an organized way and draw conclusions from this representation.
- The learner will understand how to apply the multiplication principle of counting in simple situations.
- The learner will understand how to follow, devise, and describe practical sets of directions.
- The learner will understand how to play two-person games and devise strategies for winning the games.
- The learner will understand how to find the smallest number of colors needed to color a map or graph.
- The learner will understand how to analyze vertex-edge graphs and tree diagrams.

ESSENTIAL QUESTIONS:

1. How would you determine how many outfits can be made from x-number of pants and y-number of shirts?
2. How would you classify data according to shapes, color, or other relationships?

STUDENT ACHIEVEMENT STANDARDS:

NJCCCS

- The learner will be able to make tree graphs to solve problem.

- The learner will be able to organize lists and charts to solve problems.
- The learner will be able to create and devise rules for games that will guarantee winning results.
- The learner will be able to name integers associated with a point on a graph.

SUGGESTED METHOD OF INSTRUCTION:

Individual Instruction
Small Group Instruction
Large Group Instruction
Individual Instruction
Hands-On Instruction
Demonstration

CORE ACTIVITIES:

- The teacher will model the concepts being taught.
- The students will utilize mathematical concepts to complete assigned tasks.
- The students and teachers will use appropriate manipulatives to learn and reinforce concepts being taught.

INSTRUCTIONAL RESOURCES:**Student Resources:**

Everyday Math, Everyday Learning

Technology Integrations:**Literature Connections:**

APPLICABLE ASSESSMENT:

Demonstration of knowledge of stated achievement standards
Teacher observations
Completed assignments
Tests

RECOMMENDED ACTIVITIES:

SUGGESTED TIME RANGE:

On-going activities

VOCABULARY:

vertex
edge

tree diagram
Venn diagram

Graphing

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| Mathematics |
| Grade Level: |
| Third |
| Strand: |
| Data Analysis/ Probability/ Discrete Mathematics |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Curriculum Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand how to use and understand statistics and probability.
- The learner will understand how to collect, organize and display information using an appropriate graph.
- The learner will understand how to use technology to create graphs.

ESSENTIAL QUESTIONS:

1. How would you display the given data in order to create a visual presentation?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to collect, sort, graph, and interpret data using bar, pie, line, and pictographs.
- The learner will be able to collect, sort, graph, and interpret data using bar, pie, line, and pictographs.

SUGGESTED METHOD OF INSTRUCTION:

Small group instruction
Whole group instruction
Individual instruction
Hands-on instruction
Demonstration

CORE ACTIVITIES:

- The teacher will model concepts being taught.
- Students and teachers will use appropriate manipulatives to learn and reinforce concepts being taught.
- Students will use a computer and appropriate software to create a graph.

INSTRUCTIONAL RESOURCES:**Student Resources:**

Everyday Math, Everyday Learning

Technology Integrations:**Literature/Cross Curricular Connections:**

APPLICABLE ASSESSMENT:

Demonstration of knowledge of stated achievement standards
Teacher observations
Completed assignments
Tests

RECOMMENDED ACTIVITIES:

SUGGESTED TIME RANGE:

weeks

VOCABULARY:

Probability

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| Mathematics |
| Grade Level: |
| Third |
| Strand: |
| Data Analysis and Probability/ Discrete Mathematics |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Curriculum Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand the probability of a chance event taking place.

ESSENTIAL QUESTIONS:

1. Given a certain set of events, what are the chances of a particular event taking place?
2. Are chances equally likely?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to generate and analyze data obtained using chance device such as a spinner and dice
- The learner will be able to make predictions and test data.
- The learner will be able to determine the probability of a simple event given equally likely outcomes.

SUGGESTED METHOD OF INSTRUCTION:

- Individual instruction
- Small group instruction
- Large group instruction
- Hands-on
- Demonstrations

CORE ACTIVITIES:

- Students and teachers will use appropriate manipulatives to learn and reinforce concepts being taught.
- Teacher will model concepts being taught.
- Students will utilize mathematical concepts to complete assigned tasks.

INSTRUCTIONAL RESOURCES:**Student Resources:**

Everyday Mathematics, *Everyday Learning*
Manipulatives

Technology Integrations:

Calculators

Literature Connections:

Science
Physical Education

APPLICABLE ASSESSMENT:

Demonstration of knowledge of stated achievement standards
Teacher observations
Completed assignments
Tests

RECOMMENDED ACTIVITIES:

SUGGESTED TIME RANGE:

1 week

VOCABULARY:

probability
odds

dice/die
chance

Fourth Grade

Number Sense

Mathematics

Grade Level:

Fourth

Strand:

Numbers and
Numerical Operations

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Curriculum Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand that whole numbers, fraction and decimals are used to represent equivalent forms of the same number.
- The learner will understand the one-to-one relationship between an object, a set of objects, or part of an object and its numeric symbol.
- The learner will understand the various uses of numbers, labeling, locating and ordering.

ESSENTIAL QUESTIONS:

1. What is the importance of knowing place value in real life situations?
2. When will you be asked to compare and order fractions, decimals and whole numbers?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to solve word problems using multiple steps.
- The learner will be able to find missing addends.
- The learner will be able to identify and write place value through 100,000.
- The learner will be able to identify and write place value through 1,000,000.
- The learner will be able to solve problems using order of operations and parentheses.
- The learner will be able to use mental math to add and subtract.
- The learner will be able to compare and order numbers up to 1,000,000.

SUGGESTED METHOD OF INSTRUCTION:

Teacher directed small and large group instruction
Teacher directed individual instruction
Whole group instruction
Hands-on activities and manipulatives

CORE ACTIVITIES:

- For each student achievement standard, the teacher will introduce and demonstrate the concept. Then each student will participate in guided practice before independent and/or cooperative or hands-on activities.

INSTRUCTIONAL RESOURCES:**Student Resources:**

Everyday Mathematics, Everyday Learning
Manipulatives

Technology Integrations:

www.quia.com
calculators

Literature/Cross Curricular Connections:

Physical Education
Social Studies
Science

APPLICABLE ASSESSMENT:

Teacher made test
Teacher observation
Completion of classroom activities

RECOMMENDED ACTIVITIES:

- Dice game for placing digits on designated values

- Around the World Game

SUGGESTED TIME RANGE:

weeks

VOCABULARY:

place value
counting
ordering
labeling

locating
addend
cardinal
ordinal

Numerical Operations

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|-------------------------------------|
| Mathematics |
| Grade Level: |
| Fourth |
| Strand: |
| Numbers and Numerical Operations |

ESSENTIAL UNDERSTANDINGS:

The following understandings are aligned with the New Jersey Core Curriculum Content Standards as indicated in the left-hand column.

NJCCS

- The learner will understand and recognize the appropriate use of each arithmetic operation in problem situations.
- The learner will develop an understanding of the meanings of the four basic arithmetic operations by modeling and discussing a large variety of problems.
- The learner will understand and develop proficiency with basic multiplication and division number facts using a variety of fact strategies and commit them to memory.
- The learner will understand how to select pencil-and-paper, mental math, or a calculator as the appropriate computational method in a given situation depending on the context and numbers.

ESSENTIAL QUESTIONS:

1. How would you determine the correct computational strategy for solving given problems?
2. When would you use pencil-and-paper, mental math or a calculator as the appropriate computational method to solve a problem in a given situation?
3. How do you recognize when it is appropriate to use estimation?

STUDENT ACHIEVEMENT STANDARDS:

NJCCS

- The learner will be able to add and subtract up to five digits with multiple regrouping.
- The learner will be able to exhibit a knowledge of multiplication facts up to 12.