Math Grade 3

Place Value

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

Our number system helps us communicate in a mathematical language.

Recommended Pacing

25 Days

New Jersey Student Learning Standards for Mathematics

Standard 3.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard #	Standard
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.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.

9.2 Career Awareness, Exploration, and Preparation

Standard #	Standard
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

New Jersey Student Learning Standards for Technology

Standard #	Standard
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Interdisciplinary Connections

Standard #	Standard
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- A quantity can be represented numerically in various ways.
- Number systems have a relationship to the value of its digits. (bases)

Unit Essential Questions

- In what ways can numbers be composed and decomposed?
- How can numbers be expressed, ordered, and compared?
- How do numbers within a system relate to one another?

Objectives

Students will know:

- Place value is based on groupings of numbers (ie. thousands period)
- How to define the digit based on its value in the system
- The position of a digit affects its value
- Base 10 is the universal number system
- The value of zero
- The difference between a digit and a number

Students will be able to:

- Use a variety of strategies to work with numbers to:
  - Round numbers to the nearest 10 and 100 (D)
  - Estimate sets of large quantities (D)
- Read, write and model numbers in standard, expanded, and written form up to 4 digits (M)
- Compare and order whole numbers (thousands period) (D)
- Rename a number by regrouping its value (e.g., rename 15 as 1 ten 5 ones or 15 ones) (M)
- Round numbers to the nearest 10 and 100 (M)
- Identify the value of a digit given its place in a number (M)

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

- Exemplars*, Problem Solving for the 21st Century*
- K-5 Math Teaching Resources
- *Math in Practice: Teaching Third Grade Math* by Cheryl Akers, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
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- *Mindset Mathematics: Visualizing and Investigating Big Ideas, Grade 3* by Jo Boaler, Jen Munson, & Cathy Williams
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Operations: Multiplication

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

Computational fluency includes understanding not only meaning, but also the appropriate use of numerical operations.

Recommended Pacing

32 Days (Multiplication and Division)

New Jersey Student Learning Standards for Mathematics

Standard 3.OA.A Represent and solve problems involving multiplication and division.	
Standard #	**Standard**
3.OA.A.1	Interpret products of whole numbers, e.g., interpret 5 x 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 x 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.
Standard 3.OA.B Understand properties of multiplication and the relationship between multiplication and division.	
3.OA.B.5	Apply properties of operations as strategies to multiply and divide.
Standard 3.OA.C Multiply and divide within 100.	
Standard #	**Standard**
3.OA.C.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
Standard 3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic.	
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]
3.OA.D.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends*.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic and technical skills.

CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.
9.2 Career Awareness, Exploration, and Preparation	
Standard #	**Standard**
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
New Jersey Student Learning Standards for Technology	
Standard #	**Standard**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Interdisciplinary Connections	
Standard #	**Standard**
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.
Instructional Focus	
Unit Enduring Understandings	
• Proficiency with basic facts aids estimation and computation of smaller and larger numbers. • Computation involves taking apart and combining numbers using a variety of approaches. • Flexible methods of computation involve grouping numbers in strategic ways.	
Unit Essential Questions	
• What models can be used to show multiplication? • What are efficient ways to find products? • When do I use multiplication to solve problems? • When is it appropriate to use estimation?	
Objectives	
Students will know: • Multiplication is the same as repeated addition • Multiplication involves equal sets • Multiplication involves patterns • The definition of factor, products, and multiples • Various strategies to find products • Multiplication is the inverse operation of division • That multiplication can be expressed as an array or in groups of (3 × 4 means 3 groups of 4 or 3 rows of 4)	

- × means groups of

Students will be able to:

- Identify multiplication patterns including on a times table (I/D)
- Represent multiplication with objects, diagrams, and arrays (I/D)
- Understand multiplication as repeated addition and joining of equivalent sets (I/D)
- Identify when to use multiplication (I/D)
- Understand multiples (skip counting) and its connection to multiplication (I)
- Recall basic facts for all products of two one-digit numbers
- Multiply one-digit whole numbers by multiples of 10 (example: 9 × 70)
- Multiply a two-digit number by a one-digit number using a variety of strategies (I/D)
- Use strategies to master basic multiplication facts (M)
- Use a variety of strategies to solve multiplication problems (I)
- Construct fact families (I/D)
- Use ballpark estimates to recognize the reasonableness of an answer (D)
- Recognize that the term "about" means to estimate (D)
- Apply properties of operations (commutative, associative, and distributive) to multiply (D)

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

- Exemplars*, Problem Solving for the 21st Century*
- K-5 Math Teaching Resources
- *Math in Practice: Teaching Third Grade Math* by Cheryl Akers, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
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Operations: Division

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

Computational fluency includes understanding not only meaning, but also the appropriate use of numerical operations.

Recommended Pacing

32 Days (Multiplication and Division)

New Jersey Student Learning Standards for Mathematics

Standard 3.OA.A Represent and solve problems involving multiplication and division.

Standard #	Standard
3.OA.A.2	Interpret whole-number quotients of whole numbers, e.g., interpret 56 divided by 8 as the numbers 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 ÷ 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. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 =___÷ 3, 6 × 6 = ?*

Standard 3.OA.B Understand properties of multiplication and the relationship between multiplication and division.

Standard #	Standard
3.OA.B.5	Apply properties of operations as strategies to multiply and divide.[2] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*
3.OA.B.6	Understand division as an unknown-factor problem.

Standard 3.OA.C Multiply and divide within 100.

Standard #	Standard
3.OA.C.7	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations.

Standard 3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Standard #	Standard

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]
3.OA.D.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends*.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.
9.2 Career Awareness, Exploration, and Preparation	
Standard #	**Standard**
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
New Jersey Student Learning Standards for Technology	
Standard #	**Standard**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Interdisciplinary Connections	
Standard #	**Standard**
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.
Instructional Focus	
Unit Enduring Understandings	
• Proficiency with basic facts aids estimation and computation of smaller and larger numbers. • Computation involves taking apart and combining numbers using a variety of approaches. • Flexible methods of computation involve grouping numbers in strategic ways.	
Unit Essential Questions	
• What models can be used to show division? • What are efficient ways to find quotients?	

- When do I use division to solve problems?
- When is it appropriate to use estimation?

Objectives

Students will know:

- The definition of dividend, divisor, quotient
- The division symbols (÷, ⟌ , /)
- Division involves dividing up a group into equal sets
- Various strategies to find quotients
- Division is the inverse operation of multiplication

Students will be able to:

- Separate a group into equal sets (I/D)
- Use models to demonstrate division (I/D)
- Solve division problems without remainders up to 100
- Recall basic facts for division using a variety of strategies
- Solve unknown factor division problems using multiplication (I)
- Determine when to use division in a problem (I/D)
- Use various strategies for division to solve problems (repeated subtraction, manipulatives such as beans & cups) (I)
- Show division as an inverse operation of multiplication (I/D)
- Construct fact families (I/D)
- Solve division problems using pictures, numbers, and words (I/D)

Resources

Primary Text:

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Operations: Addition

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

Computational fluency includes understanding not only meaning, but also the appropriate use of numerical operations.

Recommended Pacing

26 Days (Addition, Subtraction, & Money)

New Jersey Student Learning Standards for Mathematics

Standard 3.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard #	Standard
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.

Standard 3.OAD Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Standard #	Standard
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.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.

9.2 Career Awareness, Exploration, and Preparation

Standard #	Standard
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

New Jersey Student Learning Standards for Technology

Standard #	Standard

8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Interdisciplinary Connections

Standard #	Standard
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- Proficiency with basic facts aids estimation and computation of smaller and larger numbers.
- Computation involves taking apart and combining numbers using a variety of approaches.
- Flexible methods of computation involve grouping numbers in strategic ways.

Unit Essential Questions

- What models can be used to show addition?
- What are efficient ways to find sums?
- When do I use addition to solve problems?
- When is it appropriate to use estimation?

Objectives

Students will know:

- Definition of addend and sum
- When to regroup in an algorithm
- The most efficient way to solve a problem
- When to use addition to problem solve

Students will be able to:

- Add three-digit numbers with and without regrouping (M)
- Regrouping 1s, 10s, 100s, in multi-digit addition (M)
- Use models to demonstrate addition with and without regrouping (M)
- Solve one and two-step word problems using addition (D)
- Solve addition equations with unknown quantities
- Use calculators to solve various addition problems
- Estimate sums to 100 (use rounding to make appropriate estimations) (M)
- Recognize where estimation is appropriate in a situation (D)
- Use ballpark estimates to recognize the reasonableness of an answer (D)
- Recognize that the term “about” means to estimate (D)

Resources

Primary Text:

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Operations: Subtraction

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

Computational fluency includes understanding not only meaning, but also the appropriate use of numerical operations.

Recommended Pacing

26 Days (Addition, Subtraction, & Money)

New Jersey Student Learning Standards for Mathematics

Standard 3.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard #	Standard
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.

Standard 3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Standard #	Standard
3.OA.D.8	Solve two-step word problems using the four operations.
3.OA.D.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.

9.2 Career Awareness, Exploration, and Preparation

Standard #	Standard
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

New Jersey Student Learning Standards for Technology

Standard #	Standard
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Interdisciplinary Connections

Standard #	Standard
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- Proficiency with basic facts aids estimation and computation of smaller and larger numbers.
- Computation involves taking apart and combining numbers using a variety of approaches.
- Flexible methods of computation involve grouping numbers in strategic ways.

Unit Essential Questions

- What models can be used to show subtraction?
- What are efficient ways to find differences?
- When do I use subtraction to solve problems?
- When is it appropriate to use estimation?

Objectives

Students will know:

- Definition of difference
- Subtraction facts to 20
- When to regroup in an algorithm
- The most efficient way to solve a problem
- When to use subtraction to problem solve
- Subtraction is the inverse of addition
- Importance of estimation

Students will be able to:

- Subtract three digit numbers (including 1,000) with and without regrouping (M)
- Regroup 1s, 10s, 100s, for multi-digit computation (M)
- Subtract across zeros (D)
- Use models to demonstrate subtraction with and without regrouping (D/M)
- Solve subtraction problems using pictures, numbers, and words (D/M)
- Solve one and two-step word problems using subtraction (D)
- Solve subtraction equations with unknown quantities (I/D)
- Use calculators to solve various subtraction problems (D)
- Estimate differences to 100 (using rounding) (M)
- Recognize when estimation is appropriate in a situation (D)
- Use ballpark estimates to recognize the reasonableness of an answer (D)
- Recognize that the term “about” means to estimate (D)

Resources

Primary Text:

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Number Sense: Money	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 3	
Summary and Rationale	
Our monetary system assigns a commonly accepted value to coins and notes for the purpose of commerce.	
Recommended Pacing	
Embedded within the Place Value, Addition & Subtraction Units	
New Jersey Student Learning Standards for Mathematics	
Standard 3.NBT.A Use place value understanding and properties of operations to perform multi-digit arithmetic.	
Standard #	**Standard**
3.NBT.A.1	Use place value understanding to round whole numbers to the nearest 10 or 100.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.
9.2 Career Awareness, Exploration, and Preparation	
Standard #	**Standard**
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
New Jersey Student Learning Standards for Technology	
Standard #	**Standard**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Interdisciplinary Connections	
Standard #	**Standard**
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- Money amounts can be grouped and exchanged to solve problems.
- Decimals are part of our number system and are important for representing money amounts.
- Decimals help us express quantities less than one or a whole unit.

Unit Essential Questions

- What are strategies for calculating with money?
- How do units within a system relate to each other?
- Why is it important to represent money in different ways?

Objectives

Students will know:

- Each coin has a specific value
- A variety of ways to combine coins to make equal amounts
- Ways to make change using fewest amount coins/bills
- How to represent and record money amounts

Students will be able to:

- Name the value of coins (M)
- Identify the value of a combination of coins (M)
- Exchange equal amounts of coins(2 dimes, 1 nickel = 1 quarter) (M)
- Make change using fewest amount of coins/bills for amounts up to $5.00 using counting up (M)
- Use $ and decimal points notations (M)
- Add and subtract money amounts (D/M)
- Show the relationship between penny, nickel, dime, quarter, and dollar (M)
- Count money starting with the greatest value (D/M)

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

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Fractions

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

Numbers are used for multiple purposes in our everyday lives.

Recommended Pacing

24 Days

New Jersey Student Learning Standards for Mathematics

Standard 3.NF.A Develop understanding of fractions as numbers

Standard #	Standard
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. 2a. Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and portioning it into *b* equal parts. Recognize that each part has the size 1/*b* and the endpoint of the part based at 0 locates the number 1/*b* on the number line. 2b. 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. 3a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. 3b. Recognize and generate simple equivalent fractions, e.g., ½ = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model. 3c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram. 3d. 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.

Standard 3.G.A Reason with shapes and their attributes.

Standard #	Standard
3.G.A.2	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard

CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.
9.2 Career Awareness, Exploration, and Preparation	
Standard #	**Standard**
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
New Jersey Student Learning Standards for Technology	
Standard #	**Standard**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Interdisciplinary Connections	
Standard #	**Standard**
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.
Instructional Focus	
Unit Enduring Understandings	
• Parts of a whole can be represented using fractions and decimals. • Fractions can be compared using a variety of models. • Fractions are related to real-life situations.	
Unit Essential Questions	
• How can parts of a whole be represented? • How can fractions be modeled, compared and ordered? • How can fractions be modeled using sets and a number line? • How are fractions used in everyday life?	
Objectives	
Students will know: • A whole or set can be divided into equal parts represented by fractions • Fractions can be used to represent quantities that are less than or equal to 1 • Fractions are equivalent (equal) if they are the same size, or the same point on a number line • That the numerator and denominator have meaning **Students will be able to:**	

- Identify fractions as part of a whole, part of a set, part of an area, and location on a number line (I)
- Identify fraction locations on a number line (I/D/M)
- Represent a fraction on a number line (I/D/M)
- Use pictures, models, and numbers to identify and record fractions (halves, thirds, fourths, sixths, and eighths (D)
- Compare and order fractions with like denominators using models or pictures (I)
- Recognize and generate simple equivalent fractions (1/2 = 2/4, 4/6 =2 /3) and explain why the fractions are equivalent using models and pictures
- Express whole numbers as fractions (3 = 3/1, 4/4 = 1) and recognize fractions that are equivalent to whole numbers (I)
- Compare two fractions with the same numerator or the same size denominator with a visual model or picture Record using <, >, =, and justify with a visual model
- Recognize two fractions as equivalent if they are the same size, or the same point on a number line (I/D/M)

Resources

Primary Text:
enVision Math

Instructional & Professional Resources:

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Geometry: Attributes of 1, 2, and 3 Dimensional Shapes

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

Children interpret the physical world with geometric ideas - shapes, orientation, and spatial relations.

Recommended Pacing

18 Days

New Jersey Student Learning Standards for Mathematics

Standard 3.G.A Reason with shapes and their attributes.

Standard #	Standard
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.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.

9.2 Career Awareness, Exploration, and Preparation

Standard #	Standard
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

New Jersey Student Learning Standards for Technology

Standard #	Standard
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Interdisciplinary Connections

Standard #	Standard
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- One, two, and three dimensional shapes can be described and compared using their geometric attributes.
- Changing the position of an object does not affect its attributes.

Unit Essential Questions

- How are one, two, and three dimensional shapes described and classified?
- How are geometric figures constructed?
- What strategies can be used to verify congruence?
- How will a shape look when rotated, reflected or translated?

Objectives

Students will know:

- The meaning of one dimensional figures: points, endpoints, lines, line segments, rays, intersecting lines, parallel lines, and perpendicular lines
- How to define the attributes of two-dimensional shapes: quadrilaterals, parallelograms, rhombi, trapezoids, pentagons, hexagons, and octagons (Second grade - circles, triangles, quadrilaterals, squares, rectangles, pentagons, and hexagons)
- How to define the attributes of three-dimensional solids: faces, edges, vertices, and bases, in cubes, prisms, pyramids, cones, cylinders, and spheres
- The definitions of similarity, congruence, symmetry, and tessellations
- That sliding, flipping and turning 2-dimensional shapes will not affect their attributes
- How to define right, obtuse, and acute angles

Students will be able to:

- Draw and name points (I/D), end points (I/D), lines (I/D), line segments (I/D), rays (I), intersecting lines (I/D), parallel lines (I/D), and perpendicular lines (I)
- Identify, classify, create and describe: quadrilaterals (including quadrilaterals that are not squares, rectangles, or rhombuses), parallelograms, rhombi, trapezoids, pentagons, hexagons, and octagons (M)
- Identify the number of faces (D), edges (D), bases (I) and vertices (I) (using manipulatives and pictorial representations) of cubes, prisms, pyramids, cones, cylinders, and spheres
- Identify, classify, and describe: cubes, prisms, pyramids, cones, cylinders, and spheres (M)
- Identify and classify right angles, obtuse angles, and acute angles (I/D)
- Investigate geometric shapes from different perspectives (I)
- Explore, identify, and compare congruent shapes
- Explore, identify, and compare slides, flips, and turns of simple geometric shapes

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

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Geometric Measurement: Perimeter and Area

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

Everyday objects have a variety of attributes each of which can be measured in many ways.

Recommended Pacing

10 Days

New Jersey Student Learning Standards for Mathematics

Standard 3. MD.C Geometric measurement: understand concepts of area and relate area to multiplication and to addition.

Standard #	Standard
3.MD.C.5	Recognize area as an attribute of plane figures and understand concepts of area measurement. 5a 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. 5b 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 division. 7a 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. 7b 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. 7c 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. 7d 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

Standard 3.MD.D Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.

Standard #	Standard
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.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard

CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.
9.2 Career Awareness, Exploration, and Preparation	
Standard #	**Standard**
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
New Jersey Student Learning Standards for Technology	
Standard #	**Standard**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Interdisciplinary Connections	
Standard #	**Standard**
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.
Instructional Focus	
Unit Enduring Understandings	
• Perimeter and area are measurable attributes.	
Unit Essential Questions	
• What do perimeter and area measure? • How are perimeter and area different?	
Objectives	
Students will know: • The definition of area and perimeter • The difference between area and perimeter • Perimeter is labeled with units and area with square units • How to find the perimeter of polygons given the side lengths (I/D) • How to find the length of an unknown side of a polygon given the perimeter and other side lengths • How to use a variety of strategies to find area **Students will be able to:** • Define area and perimeter. • Find the perimeter of any given polygon by adding the sides with standard units (M)	

- Find an unknown side length given the perimeter and other side lengths
- Find area of rectangles using manipulatives by creating arrays (D)
- Find area by counting unit squares
- Describe and identify rectangles with the same perimeter and different areas or with the same area and different perimeters
- Understand and apply multiplication and addition to determine areas of rectangles
- Decompose shapes to find area using the distributive property
- Model area and perimeter using concrete materials (D)
- Estimate, count and use appropriate units to find perimeter and area of figures and real world objects (D)

Resources

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Geometry: Coordinate Geometry	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 3	
Summary and Rationale	
Children interpret the physical world with geometric ideas - shape, orientation, and spatial relations.	
Recommended Pacing	
15 Days (Shared with Data Analysis & Probability)	
New Jersey Student Learning Standards for Mathematics	
Standard 3.MD.B Represent and interpret data.	
Standard #	**Standard**
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.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.
9.2 Career Awareness, Exploration, and Preparation	
Standard #	**Standard**
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
New Jersey Student Learning Standards for Technology	
Standard #	**Standard**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Interdisciplinary Connections	
Standard #	**Standard**
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- Ordered pairs show an exact location on a coordinate plane.

Unit Essential Questions

- How is the location of a point on a grid described?
- How is it useful?

Objectives

Students will know:

- How to locate points on a simple grid using ordered pairs
- How to use coordinate points to describe paths

Students will be able to:

- Identify coordinate points on grids and maps using ordered pairs (M)
- Find and record coordinate points on a grid (M)
- Relate coordinate grids to mapping skills (M)
- Identify a path to a specific location on a grid (M)

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

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Measurement: Linear, Weight, Temperature, Capacity, and Time

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

There are some attributes of objects that are measurable and can be quantified using nonstandard and standard units.

Recommended Pacing

15 Days

New Jersey Student Learning Standards for Mathematics

Standard 3.MD.A Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

Standard #	Standard
3.MD.A.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). 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.

Standard 3.MD.B Represent and interpret data.

Standard #	Standard
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.

Standard 3.MD.A Solve problems involving measurement and estimation.

Standard #	Standard
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.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.

9.2 Career Awareness, Exploration, and Preparation

Standard #	Standard
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

New Jersey Student Learning Standards for Technology

Standard #	Standard
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Interdisciplinary Connections

Standard #	Standard
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- The choice of measurement tool depends on the measurable attribute and the degree of precision desired.
- Standard units provide common language for communicating measurements.
- Standard units provide common language for communicating about time.

Unit Essential Questions

- What determines the choice of a measurement tool?
- What estimation strategies are used in measurement?
- How do units within a system relate to each other?
- How do people express time?

Objectives

Students will know:

- Weight is measured in ounces and pounds (customary) and grams and kilograms (metric)
- Temperature is measured in degrees Fahrenheit
- Distance is measured using U.S. customary (inches, feet, yards) and metric (centimeters, meters) units
- Liquids (capacity) are measured in U.S. customary (cups, pints, quarts, gallons) and metric (milliliters, liters) units
- The relationship between seconds, minutes, hours, days, weeks, months, and years
- Different ways to read and express time on a clock (digital and analog)

Students will be able to:

- Weight (D)
  - Estimate ounces, pounds, grams and kilograms
  - Measure ounces, pounds, grams and kilograms
  - Compare and order ounces, pounds, grams and kilograms
- Temperature (D)
  - Estimate degrees in Fahrenheit
  - Measure degrees in Fahrenheit
  - Compare and order degrees in Fahrenheit
- Distance/Linear (D)

- Estimate half-inches, quarter inches, inches, foot, yards, centimeters, meters
- Measure half-inches, quarter inches, inches, foot, yards, centimeters, meters
- Compare half-inches, quarter inches, inches, foot, yards, centimeters, meters

*Display data from measuring lengths with rulers with ½ and ¼ of an inch. Use a line plot where the horizontal scale is marked off in whole numbers, halves, and fourths.

- Solve one-step problems with the same unit of measurement
- Capacity/liquid (I/D)
  - Estimate cups, pints, quarts, gallons, milliliters, liters
  - Measure cups, pints, quarts, gallons, milliliters, liters
- Compare and order cups, pints, quarts, gallons, milliliters, liters
- Choose appropriate units of measurement to solve real life problems
- Express time using quarter after, quarter of, half past, before and after, A.M. and P.M. (D)
- Tell time to the minutes before and after the hour (D)
- Calculate elapsed time within an hour and over more than an hour (D)
- Accurately draw the hands on a clock for a given time (M)
- Solve word problems involving addition and subtraction of time intervals in minutes (e.g. by representing the problem on a number line diagram)
- Identify equivalent periods of units within a system (M)
- 60 seconds in a minutes
- 60 minutes in an hour
- 24 hours in a day
- 7 days in a week
- 12 months in a year
- 365 days in a year

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

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Data Analysis, Graphing, and Probability

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

There are efficient mathematical ways to collect, organize, record, display, and communicate data. This helps us analyze, draw conclusions, and make predictions about real world events.

Recommended Pacing

15 Days (shared with Coordinate Geometry)

New Jersey Student Learning Standards for Mathematics

Standard 3.MD.B Represent and interpret data.

Standard #	Standard
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 the 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.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.

9.2 Career Awareness, Exploration, and Preparation

Standard #	Standard
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

New Jersey Student Learning Standards for Technology

Standard #	Standard
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Interdisciplinary Connections

Standard #	Standard
RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.

SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- Graphs, charts and tables convey data in a concise way.
- The quality of the question used impacts the data collected and the validity of the results.
- Reading, understanding, interpreting, and communicating data are critical in modeling a variety of real-world situations.
- Ordered pairs show an exact location on a coordinate plane.
- The likelihood of an event depends on the possible outcomes.
- Probability quantifies the likelihood that something will happen and enables us to make predictions and informed decisions.

Unit Essential Questions

- How can data information be gathered, recorded and organized?
- How does the type of data influence the choice of graph and/or chart used to display the data?
- What aspects of a graph help people understand and interpret the data easily?
- How is the location of a point on a grid described?
- How are coordinates helpful?
- How is the probability of an event determined and described?

Objectives

Students will know:

- Data is collected and represented through different types of graphs
- The purpose of different graphs
- How to collect data and represent the data in an appropriate graph
- How to locate points on a simple grid using ordered pairs
- How to use coordinate points to describe paths
- The probability of an event is the chance that an event will occur
- It takes many trials to generate reliable data when working with probability experiments
- The meaning of probability, event, and outcome
- The meaning of certain, likely, unlikely, impossible and equally likely
- What a line plot is and how it is used

Students will be able to:

- Gather, organize and interpret data from a variety of sources (D)
- Discuss data collected and determine appropriate ways to display data (D)
- Organize, create and display data using bar graphs(M), charts/table (D), line graphs(I), pictographs (M), Venn diagrams (D) and line plots (I/D)
- Display data from measuring lengths with rulers with halves and fourths of an inch. Use a line plot where the horizontal scale is marked off in whole numbers, halves, and quarters (I/D)
- Read and write parts of a graph: title (M), labels on *x*- and *y*-axis (I/D/M)
- Understand and interpret different types of scales (D)

- Create and interpret keys/legends (M)
- Design an investigation to address pertinent questions or problems and organize data into a graph (D)
- Solve one and two-step problems using information from bar graphs, charts/tables, pictographs, Venn diagrams, and line plots (D)
- Analyze data collected and predict likelihood using vocabulary words; likely, less likely, equally likely, impossible, fair, and unfair (D)
- Identify coordinate points on grids and maps using ordered pairs (I/D)
- Find and record coordinate points on a grid (I/D)
- Relate coordinate grids to mapping skills (I/D)
- Identify a path to a specific location on a grid (I/D)
- Analyze data generated by chance devices (spinner, dice, etc.) (D)
- List the possible outcomes for a simple event (M)
- Make a prediction about the likelihood of an event occurring (certain, likely, etc.) (M)
- Express the outcome of an event happening as_____out of_____(I)
- Make a prediction about the probability of an outcome occurring (I/D)

Resources

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Algebraic Thinking and Patterns	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 3	
Summary and Rationale	
Algebra is a system used to communicate efficiently about patterns, rules, and relationships.	
Recommended Pacing	
Embedded throughout the year.	
New Jersey Student Learning Standards for Mathematics	
Standard 3.OA.A Represent and solve problems involving multiplication and division.	
Standard #	**Standard**
3.OA.A.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
Standard 3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic.	
Standard #	**Standard**
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.
3.OA.D.9	Identify arithmetic patterns (including patterns in the addition table or multiplication table and explain them using properties of operations.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.
9.2 Career Awareness, Exploration, and Preparation	
Standard #	**Standard**
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
New Jersey Student Learning Standards for Technology	
Standard #	**Standard**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Interdisciplinary Connections	
Standard #	**Standard**

RI.3.1	Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers
W.3.8	Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
SL.3.3	Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
SL.3.4	Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- Mathematical relationships can be represented using symbols.
- Patterns must repeat and can be found in many forms.

Unit Essential Questions

- How are symbols used to represent mathematical relationships including operations, equality and inequality?
- How can patterns be used as tools to best describe and help explain real-life situations?
- How is a number sentence like a balance scale?

Objectives

Students will know:

- Equal means both sides of the number model have equivalent value
- Appropriate operational (+, –, ×, ÷) and relational symbols (<, >, =) express relationships
- Variables can represent a quantity
- The core of a pattern is the shortest string of elements that repeats
- Patterns can repeat or extend following a specific rule
- How to use the hundreds chart to create and represent patterns
- Strategies can be used to continue a sequence

Students will be able to:

- Represent relationships of quantities in the form of mathematical expressions, equations, or inequalities (+, –, ×, ÷, <, >, =) (D)
- Solve for the unknown variable using a variety of strategies and simple operations (drawing a picture, counting up, etc.) (D)
- Solve problems so that both sides of the number model have equal value (D)
- Interpret operational and relational symbols to solve problems (+, –, ×, ÷, <, >, =) (D)
- Create, describe, and confirm generalizations based on tables and functions (D)
- Explore, describe and record patterns and sequences using pictures and numbers (D)
- Label complex patterns using letter representation (AABCAABC) (M)
- Express patterns as a rule (D)
- Use a rule to determine unknowns in patterns (D)
- Identify and continue numerical patterns on the 100s chart (M)

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Problem Solving	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 3	
Summary and Rationale	
Problem solving involves examining mathematical situations, describing situations mathematically, formulating appropriate mathematical questions and using a variety of strategies to find solutions.	
Recommended Pacing	
Embedded throughout the year	
New Jersey Student Learning Standards for Mathematics	
Standard 3.OA.A Represent and solve problems involving multiplication and division.	
Standard #	**Standard**
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.
Standard 3.OA.D Solve problems involving the four operations, and identify and explain patterns in arithmetic.	
Standard #	**Standard**
3.OA.D.8	Solve two-step word problems using the four operations.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP6.	Demonstrate creativity and innovation.
CRP8.	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11.	Use technology to enhance productivity.
9.2 Career Awareness, Exploration, and Preparation	
Standard #	**Standard**
9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
New Jersey Student Learning Standards for Technology	
Standard #	**Standard**
8.1	All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
Interdisciplinary Connections	
Standard #	**Standard**

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Instructional Focus

Unit Enduring Understandings

- A variety of strategies are used to solve problems.
- Build new mathematical knowledge through problem solving.

Unit Essential Questions

- How can I use what I know to solve a problem?
- What strategy do I need to use to solve a problem?

Objectives

Students will know:

- Problems are solved using a variety of strategies
- There is a process to go through to solve a problem

Students will be able to:

- Use the problem solving process to identify: (D)
  - What are the facts
  - What is the question
  - What can we eliminate
  - Choose a strategy and solve
  - Does the answer make sense
- Choose a strategy to solve a problem: (D)
  - Choose an operation
  - Draw a picture or diagram
  - Work backwards
  - Guess and Check
  - Act it out
  - Make a table or an organized list
  - Use logical reasoning
  - Look for a Pattern
- Communicate mathematical thinking through oral and written language and explain and justify answers (D)

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Standards for Mathematical Practice

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 3

Summary and Rationale

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education. The first of these are the NCTM process standards of problem solving, reasoning and proof, communication, representation, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report *Adding It Up*: adaptive reasoning, strategic competence, conceptual understanding (comprehension of mathematical concepts, operations and relations), procedural fluency (skill in carrying out procedures flexibly, accurately, efficiently and appropriately), and productive disposition (habitual inclination to see mathematics as sensible, useful, and worthwhile, coupled with a belief in diligence and one's own efficacy).

Recommended Pacing

Embedded throughout the year

New Jersey Student Learning Standards for Mathematics

Standards for Mathematical Practice

Standard #	Standard
MP1	Make sense of problems and persevere in solving them.
MP2	Reason abstractly and quantitatively.
MP3	Construct viable arguments and critique the reasoning of others.
MP4	Model with mathematics.
MP5	Use appropriate tools strategically.
MP6	Attend to precision.
MP7	Look for and make use of structure.
MP8	Look for and express regularity in repeated reasoning.

New Jersey Student Learning Standards for 21st Century Life and Careers

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic and technical skills.
CRP4.	Communicate clearly and effectively and with reason.
CRP6.	Demonstrate creativity and innovation.
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CRP11.	Use technology to enhance productivity.

9.2 Career Awareness, Exploration, and Preparation

Standard #	Standard
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SL.3.5	Use multimedia to demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.

Instructional Focus

Unit Enduring Understandings

- Mathematicians problem solve by collaborating, analyzing, communicating and critiquing arguments, model, think strategically, and persevering when faced with a challenge.

Unit Essential Questions

- What are the essential practices and processes through which mathematicians learn to create and communicate knowledge?

Objectives

Students will be able to:

- Explain the meaning of problems, looking for multiple entry points to solve problems and use different methods to check their solutions.
- Make sense of quantities and their relationships in problem solving situations.
- Construct arguments using concrete referents such as objects, drawings, diagrams, and actions.
- Apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.
- Consider the available tools when solving a mathematical problem.
    - Identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems.
    - Use technological tools to explore and deepen their understanding of concepts.
- Communicate precisely to each other including the use of units of measure, and express numerical answers with a degree of precision appropriate for the context.
- Look closely to discern a pattern or structure.
- Notice if calculations are repeated, and look both for general methods and for more efficient methods of solving problems.

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