Math Grade 2

Number Sense, Place Value and Estimation	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 2	
Summary and Rationale	
Our number system helps us communicate in a mathematical language.	
Recommended Pacing	
23 Days	
New Jersey Student Learning Standards for Mathematics	
Standard 2.NBT.A Understand place value.	
Standard #	**Standard**
2.NBT.A.1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens – called a hundred. b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (0 tens and 0 ones)
2.NBT.A.3	Read and write numbers to 1,000 using base ten numerals, number names, and expanded form.
2.NBT.A.4	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
Standard 2.OA.C Work with equal groups of objects to gain foundations for multiplication.	
Standard #	**Standard**
2.OA.C.3	Determine whether a group of objects (up to 20) has an odd or even number of members, e.g. by pairing objects or counting them by 2's; write an equation to express an even number as a sum of two equal addends.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Instructional Focus

Unit Enduring Understandings

- The position of a digit in a number determines its value.
- The groupings of ones, tens and hundreds for a given number can be taken apart in different ways.
- Estimation is a strategy for getting as close as possible to an exact answer.

Unit Essential Questions

- How does the position of a digit in a number affect its value?
- In what different ways can numbers be grouped?
- What are strategies to make a reasonable estimate?

Objectives

Students will know:

- Numbers to 1,000
- There is an order to our number system
- Our number system is based on groups of ten
- Numbers can be represented with manipulatives
- A number can be shown in multiple ways using manipulatives
- Numbers can be written in expanded form given a template
- The place and value of each digit in a one, two or three digit number
- An estimate is not an exact answer
- Visualizing groups of ten will help make reasonable estimates
- Even and odd numbers
- Ordinal numbers to the 31st position
- The term about means to estimate
- An estimate can be above or below a number

Students will be able to:

- Construct, identify and compare sets of numbers to 1,000 using manipulatives to show quantity (M)
- Identify the number of ones, tens and hundreds in a two or three digit number and determine the value of each digit (M)
- Read and write words that represent one, two and three digit numbers (M)
- Use groups of tens to estimate quantities to 100 (D)
- Estimate and explain the reasonableness of a sum or difference by the magnitude of the answer (D)
- Round to the nearest group of ten when estimating (D)
- Distinguish between answers that use estimation and those that are exact (D)

- Express two and three digit numbers in expanded form (D)
- Compare and order one, two and three digit numbers applying place value concepts and using the symbols <, >, = (M)
- Identify the ordinal position to 31st (M)
- Identify even and odd in one or two digit numbers using the concept of partners or using the ones place digit (M)
- Show a given whole number in equivalent ways (63, 60 + 3, 57 + 6) (D/M)
- Take apart a whole number as a grouping of ones and tens in different ways (63, 6 tens 3 ones, 5 tens 13 ones) (I/D)
- Use zero to represent a value (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 Second Grade Math* by Allison Peet, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
- *Mathematical Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching* by Jo Boaler
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Algebra	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 2	
Summary and Rationale	
Algebra is a system used to communicate efficiently about patterns, rules, and relationships.	
Recommended Pacing	
10 Days	
New Jersey Student Learning Standards for Mathematics	
Standard 2.OA.A Represent and solve problems involving addition and subtraction.	
Standard #	**Standard**
2.OA.A.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Standard 2.NBT.A Understand place value.	
Standard #	**Standard**
2.NBT.A.2	Count within 1000; skip-count by 5s, 10s, and 100s.
Standard 2.NBT.B Use place value understanding and properties of operations to add and subtract.	
Standard #	**Standard**
2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.NBT.B.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Instructional Focus

Unit Enduring Understandings

- Mathematical relationships that have numbers or objects that repeat can be described and generalized in predictable ways.
- Patterns must repeat in order to be a pattern and not a design.
- Mathematical equations represent relationships among quantities.
- The equal sign means both sides of the equation balance.

Unit Essential Questions

- What is a pattern?
- How is a number sentence like a balance scale?
- How do we use symbols to represent mathematical ideas?

Objectives

Students will know:

- The core of a pattern is the shortest string of elements that repeats
- The core of a pattern must repeat completely
- Letters can be used to represent elements in a pattern (ABC)
- A simple pattern uses each element within the core one time (ABC)
- A complex pattern has at least one element within the core that is used more than once (ABBC)
- How to use a hundreds chart to create and represent patterns
- A number sentence always has an equal sign (4 + 2 = 6 or 7 = 3 + 4)
- A number sentence is like a balance scale
- The order and grouping of numbers does not affect the sum
- The difference between a sorting rule and number relationship rule
- The part, part, whole relationship of quantities and use this terminology

Students will be able to:

- Identify, describe, create and extend simple and complex patterns with pictures /symbols (M)
- Identify, describe, create and extend simple number patterns (2's, 5's, 10's, and 100's) (D) and identify the rule from a visual representation of a pattern (I)
- Skip count by 2's, 5's, 10's, and 100's within 1,000 (M)
- Skip count by 3's, 25's, and other numbers (D)
- Identify missing numbers in a sequence to 999 (M)
- Label simple (M)/complex (D) patterns using letters
- Solve for the unknown variable in an addition or subtraction sentence (I/D)

- Model, represent, and interpret the part, part, whole relationship to solve problems involving addition and subtraction (+, – , =) (D)
- Use the opposite relationship between addition and subtraction to solve problems (D)
- Relate problem situations to number sentences involving addition and subtraction (D)
- Recognize and use symbols to compare two whole number quantities (<, >, =) (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 Second Grade Math* by Allison Peet, Susan O'Connell, & John SanGiovanni
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Operations: Addition

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 2

Summary and Rationale

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

Recommended Pacing

30 Days (Part 1 and Part 2)

New Jersey Student Learning Standards for Mathematics

Standard 2.OA.A Represent and solve problems involving addition and subtraction.	
Standard #	**Standard**
2.OA.A.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Standard 2.OA.B Add and subtract within 20.	
Standard #	**Standard**
2.OA.B.2	Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
Standard 2.OA.C Work with equal groups of objects to gain foundations for multiplication.	
Standard #	**Standard**
2.OA.C.4	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
Standard 2.NBT.B Use place value understandings and properties of operations to add and subtract.	
Standard #	**Standard**
2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.NBT.B.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.
2.NBT.B.7	Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between additions and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
2.NBT.B.8	Mentally add 10 or 100 to a given number 100-900 and mentally subtract 10 or 100 from a given number 100-900.
2.NBT.B.9	Explain why addition and subtraction strategies work using place value and the properties of operations. Explanations may be supported by drawings or objects.
Standard 2.MD.B Relate addition and subtraction to length.	

Standard #	Standard
2.MD.B.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
2.MD.B.6	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2… and represent whole-number sums and differences within 100 on a number line diagram.

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

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Instructional Focus

Unit Enduring Understandings

- Computation involves taking apart and combining numbers using a variety of strategies.
- Sums and differences up to and including 18 provide a foundation for number concepts.
- Flexible methods of computation involve grouping numbers in a variety of ways including regrouping.

Unit Essential Questions

- What happens to a number when another number is added to it?
- What are strategies for automatic recall of the basic addition facts?
- What are the most efficient strategies for adding two or more given numbers?

Objectives

Students will know:

- A variety of strategies to solve basic facts
- How to automatically recall the addition facts to 20
- The part, part, whole relationship of quantities and use this terminology
- The appropriate vocabulary to delineate between addition and subtraction relationships
- The appropriate vocabulary for operations such as plus, equals, sum, and addends
- That addition and subtraction are opposite relationships
- That math problems can be represented in numbers, pictures, and words
- Ten ones equals one ten

Students will be able to:

- Recognize and use the most efficient fact strategies for addition (doubles, double + 1, making tens, tens and extras, counting on, adding zeroes, fact families, fast 9's) (D)
- Use a number line and other models to represent stories for addition facts up to 20 (M)
- Create stories representative of the various meanings of addition (4 + 2 =___ , 4 +____= 6,_____+ 4 = 6) (M)
- Use appropriate vocabulary for addition (plus, equals, sum, addend, part, part, whole) (M)
- Use the opposite relationship between addition and subtraction to solve problems (D)
- Recall basic addition facts to 20 (M)
- Use addition and subtraction strategies to solve one and two step word problems within 100 (D)
- Add up to four two-digit numbers
- Write repeated addition problems as arrays
- Solve 2 and 3-digit addition problems without regrouping (M)
- Develop a variety of methods (pictures, words, numbers, manipulatives) to explain/show how to solve addition problems (M)
- Use manipulatives to solve any 2-digit addition problems with or without regrouping from the ones place to the tens place (M)
- Mentally add 10 or 100 to a given number 100-900 (D)
- Use calculators to perform whole number calculations when appropriate (D)

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

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Operations: Subtraction

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 2

Summary and Rationale

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

Recommended Pacing

30 Days (Part 1 and Part 2)

New Jersey Student Learning Standards for Mathematics

Standard 2.OA .A Represent and solve problems involving addition and subtraction.	
Standard#	**Standard**
2.OA.A.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
Standard 2.OA.B Add and subtract within 20.	
Standard #	**Standard**
2.OA.B.2	Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
Standard 2.NBT.B Use place value understanding and properties of operations to add and subtract.	
Standard #	**Standard**
2.NBT.B.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.NBT.B.7	Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
2.NBT.B.9	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.
2.NBT.B.8	Mentally add 10 or 100 to a given number 100 -900, and mentally subtract 10 or 100 from a given number 100-900.
Standard 2.MD.B Relate addition and subtraction to length.	
Standard #	**Standard**
2.MD.B.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

2.MD.B.6	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2,…, and represent whole-number sums and differences within 100 on a number line diagram.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
Instructional Focus	
Unit Enduring Understandings	
• Computation involves taking apart and combining numbers using a variety of strategies. • Sums and differences up to and including 18 provide a foundation for number concepts. • Flexible methods of computation involve grouping and regrouping numbers in a variety of ways.	
Unit Essential Questions	
• What happens to a quantity when another quantity is subtracted from it? • What are strategies for learning the basic subtraction facts? • What are the most efficient strategies for subtracting two given numbers?	
Objectives	
Students will know: • The basic facts to 20 • A variety of strategies to solve basic facts • The part, part, whole relationship of quantities and use this terminology	

- The appropriate vocabulary to delineate between addition and subtraction relationships and for operations such as minus, equals, and difference
- That addition and subtraction are opposite relationships
- That math problems can be represented in numbers, pictures, and words

Students will be able to:

- Recognize and use the most efficient fact strategies for subtraction (doubles, doubles - 1, counting back, subtracting zeroes, fact families) (D)
- Use a number line and other models to represent stories for subtraction facts up to 18 (D)
- Create stories representative of the various meanings of subtraction. (5 – 2 =____, 5 –____= 3,_____– 2 = 3)(D)
- Find differences in comparison problems (I have 6 books. My friend has 3 less. How many more do I have?) (D)
- Use appropriate vocabulary for subtraction (subtract, equals, difference, part, part, whole) (D)
- Use the opposite relationship between addition and subtraction to solve problems (D)
- Recall basic subtraction facts to 20 (M)
- Mentally subtract 10 or 100 from a given number 100-900 (D)
- Use addition and subtraction strategies to solve 1 and 2 step word problems within 100 (D)
- Use calculators to perform whole number calculations when appropriate (D)
- Solve 2 and 3-digit subtraction problems without regrouping (M)
- Develop a variety of methods (pictures, words, numbers, manipulatives) to explain/show how to solve subtraction problems (D)
- Use manipulatives to solve any 2-digit subtraction problems with regrouping from the ones place to the tens

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

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Money

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 2

Summary and Rationale

Our monetary system assigns a commonly accepted value to coins and notes for the purpose of commerce.

Recommended Pacing

14 Days

New Jersey Student Learning Standards for Mathematics

Standard 2.MD.C Work with time and money.

Standard #	Standard
2.MD.C.8	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and cents symbols appropriately.

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

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
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W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Instructional Focus

Unit Enduring Understandings

- Each coin has a value which can be combined with others to make a new value.
- The exact amount of money does not need to be used to make a purchase.

Unit Essential Questions

- How do we determine the value of a coin or set of coins?
- How do we make change?

Objectives

Students will know:

- How to name, recognize and state the value of a penny, nickel, dime and quarter
- Each coin has a specific value
- The decimal point separates the dollar from the cents
- More than one way to combine coins to make equal amounts
- Ways to make change
- How to represent money amounts

Students will be able to:

- Recognize and name all of the coins (penny, nickel, dime and quarter) (M)
- State the value of all the coins (penny, nickel, dime and quarter)(M)
- Count coin combinations up to one dollar (M)
- Count money starting with coins of greatest value (M)
- Make fair trades with all coins (D/M)
- Show the value using the least amount of coins (I/D)
- Use decimal points and dollar signs, or cents signs when writing money amounts (I/D)
- Make change to a dollar by counting up (I/D)

Resources

Primary Text:

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Time

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 2

Summary and Rationale

The passage of time can be measured and recorded.

Recommended Pacing

15 Days

New Jersey Student Learning Standards for Mathematics

Standard 2.MD.C Work with time and money.

Standard #	Standard
2.MD.C.7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

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

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
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Instructional Focus

Unit Enduring Understandings

- Calendars and clocks are used as tools to document the passage of time.
- Calendars are important to show days, weeks, and months as units of time.
- Clocks are important to show the passage of time in seconds, minutes and hours.
- Time can be measured.
- The hour hand tells the hour and the minute tells the number of minutes before or after the hour.
- The numbers on a clock can represent hours or minutes depending on the hand pointing to it.

Unit Essential Questions

- Why are calendars and clocks important in our daily lives?
- How do we use calendars and clocks to help us organize our lives?
- What units and tools measure the passage of time?

Objectives

Students will know:

- The definition of morning AM and evening PM
- The number of seconds in a minute, minutes in an hour, hours in a day
- There are 7 days in a week and their names, 12 months in a year and their names.
- The first day of the week is Sunday
- The appropriate tools to use for measurement of time (analog and digital clocks and calendars)
- Skip counting by 5's around an analog clock
- Time can be estimated

Students will be able to:

- Estimate and measure the passage of time (D)
- Tell time to the hour, half hour, and quarter hour (M)
- Skip count by 5's to tell time (D)
- Tell time to 5 minute intervals (D)
- Accurately draw the hour hand on the hour or half way between the hours and accurately draw the minute hand to show a given time (D)
- Introduce the concept of elapsed time through demonstration with actual clocks (1 hour, ½ hour before/ 1 hour, ½ hour after) (I)

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

- Exemplars*, Problem Solving for the 21st Century*
- K-5 Math Teaching Resources
- *Math in Practice: Teaching Second Grade Math* by Allison Peet, Susan O'Connell, & John SanGiovanni
- *Math Workshop: Five Steps to Implementing Guided Math, Learning Stations, Reflection, and More* by Jennifer Lempp
- *Mathematical Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching* by Jo Boaler
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Data Analysis and Probability

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 2

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

14 Days

New Jersey Student Learning Standards for Mathematics

Standard 2.MD.D Represent and interpret data.

Standard #	Standard
2.MD.D.9	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
2.MD.D.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

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

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Instructional Focus

Unit Enduring Understandings

- Data can be gathered and displayed in an organized and concise way.

Unit Essential Questions

- What are some ways that data can be gathered, organized and displayed to communicate information?
- What questions can be answered from a graph, glyph, chart or a diagram?

Objectives

Students will know:

- How data is represented in bar graphs, pictographs, glyphs, charts, Venn diagrams, and line plots
- The parts of data representations (title, labels, data, key/legend)
- The title informs them what data is being represented and the category labels inform them of the choices represented
- The meaning of possible, impossible, fair, unfair, most likely, equally likely, and least likely

Students will be able to:

- Gather data through a survey or observation (D)
- Organize and display data in more than one way (D)
- Interpret data from tally charts, glyphs, Venn diagrams, pictographs, bar graphs, and line plots in terms of most, least, more, less and equal (M)
- Solve simple put together, take apart, and compare problems using information from a bar graph and a pictograph (M)
- Understand and interpret different types of scales (I)
- Show measurement data by making a line plot, where the horizontal scale is in whole number units
- Create the above using a template which requires the title and the data collected to be shown (M)
- Use vocabulary such as possible, impossible, fair, unfair, most likely, equally likely and least likely in relation to games, charts, and graphs (M)

Resources

Primary Text:

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Geometry	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 2	
Summary and Rationale	
Children interpret the physical world with geometric ideas-shape, orientation and spatial relations.	
Recommended Pacing	
10 Days	
New Jersey Student Learning Standards for Mathematics	
Standard 2.G.A Reason with shapes and their attributes.	
Standard #	**Standard**
2.G.A.1	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
Instructional Focus	

Unit Enduring Understandings

- Geometric shapes can be classified by their attributes.

Unit Essential Questions

- What are the attributes of a shape?
- What are ways shapes can be sorted?
- How are plane shapes different from solids?
- What makes a shape symmetrical?
- What makes shapes congruent?
- What makes shapes similar?

Objectives

Students will know:

- The line of symmetry in figures and objects with symmetry
- That a shape remains the same even if you flip, turn or slide it
- The meaning of edges, vertices, and faces
- What the "attributes" of a shape are

Students will be able to:

- Identify, describe, and compare plane and solid geometric shapes (circle, triangle, square, rectangle, quadrilaterals, trapezoid, rhombus, pentagon, hexagon, sphere, pyramid, cube, and rectangular prism) (M)
- Classify solid figures according to such attributes as the shape of faces (D), edges and vertices (I) (including cubes, rectangular prisms, spheres, cylinders, cones, and pyramids.)
- Put shapes together and take them apart to form other shapes (D/M)
- Identify and model symmetry with concrete materials and drawings (M)
- Identify and model congruence/similarity with concrete materials and drawings (M)
- Identify a flip, slide, or turn (M)
- Use flips, slides, or turns to solve problems (D)
- Identify shapes as open or closed (M)
- Draw a representation of a circle, triangle, square, and rectangle (M)

Resources

Primary Text:

enVision Math

Instructional & Professional Resources:

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Fractions	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 2	
Summary and Rationale	
Numbers are used for multiple purposes in our everyday lives.	
Recommended Pacing	
10 Days	
New Jersey Student Learning Standards for Mathematics	
Standard 2.G.A Reason with shapes and their attributes.	
Standard #	**Standard**
2.G.A.3	Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.

SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Instructional Focus

Unit Enduring Understandings

- Fractions are related to real-life situations.
- A whole can be divided into equal sized parts in different ways.
- A set can be divided into equal sized parts in different ways.
- A fraction describes the division of a whole into equal parts.

Unit Essential Questions

- How can fractions be used in everyday life?
- How can parts of a whole be represented?
- Can a whole be divided in different ways?
- How can a set be divided into equal sized parts?
- How can fractions be modeled and compared?

Objectives

Students will know:

- A whole can be divided into equal parts or fair shares
- Fractions can be used to represent numbers that are less than or equal to one whole
- Fractions can be represented with different concrete models and pictures
- Sets can be divided into equal parts or fair shares
- That equal shares of identical wholes need not have the same shape

Students will be able to:

- Use concrete models and pictures to represent fractions including number lines (M)
- Develop an understanding of how numbers are used to represent fractions (I/D)
- Separate a whole into two, three, or four equal parts and describe the parts using the words; halves, thirds, half of, a third of, etc. (M)
- Describe a whole as two halves, three thirds, or four fourths
- Separate a set into equal parts using manipulatives or pictures (M)
- Compare fractional parts using concrete models (D)
- Use vocabulary such as: part, whole, equal parts, fair shares, one out of_____(M)
- Write the proper notation for halves, thirds, and fourths (I/D)

Resources

Primary Text:

enVision Math

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Measurement	
Content Area: Mathematics	
Course & Grade Level: Mathematics, Grade 2	
Summary and Rationale	
Everyday objects have a variety of attributes, each of which can be measured in many ways.	
Recommended Pacing	
13 Days	
New Jersey Student Learning Standards for Mathematics	
Standard 2.MD.A Measure and estimate lengths in standard units.	
Standard #	**Standard**
2.MD.A.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2.MD.A.2	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
2.MD.A.3	Estimate lengths using units of inches, feet, centimeters, and meters.
2.MD.A.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
Standard 2.G.A Reason with shapes and their attributes.	
Standard #	**Standard**
2.G.A.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
Standard 2.MD.B Relate addition and subtraction to length.	
Standard #	**Standard**
2.MD.B.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
New Jersey Student Learning Standards for 21st Century Life and Careers	
Career Ready Practices	
Standard #	**Standard**
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.
W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Instructional Focus

Unit Enduring Understandings

- Specific tools measure specific attributes.
- A measurement must contain a number and a unit.

Unit Essential Questions

- What units and tools measure the different attributes?
- Why are standard units of measurement used?
- Why are units used in measuring?
- How are perimeter and area different?
- How does estimation help us with measurement?

Objectives

Students will know:

- The number of inches in a foot and feet in a yard
- The appropriate tools to use for measurement (rulers, thermometers, and scales)
- The meaning of estimate versus exact measurement
- That perimeter is measuring the outside and area is measuring the inside of a shape
- Rounding can be helpful when measuring objects

Students will be able to:

- Compare lengths to determine the difference in length (M)
- Compare two different measurements taken with different measurement units (D)
- Identify and describe measurable attributes including length, weight, and temperature (D)
- Determine the area (D) and perimeter (D) of squares and rectangles using manipulatives or representative drawings
- Choose and use measurement tools appropriately (D)
- Measure in nonstandard and standard units (half inches, inches, feet, yards, centimeters, meters, pounds, and degrees Fahrenheit) (D)
- Estimate and measure length, weight, and temperature (D)

Resources

Primary Text:
enVision Math

Instructional & Professional Resources:

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Problem Solving

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 2

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

2.OA.A Represent and solve problems involving addition and subtraction.

Standard #	Standard
2.OA.A.1	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

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

Career Ready Practices

Standard #	Standard
CRP2.	Apply appropriate academic technical skills.
CRP4.	Communicate clearly and effectively 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
RI.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
W.2.6	With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers.

W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Instructional Focus

Unit Enduring Understandings

- Problem solving requires persistence, patience, risk taking and cooperation.
- Mathematical knowledge and processes help us to solve problems.
- A variety of problem solving strategies can be used when solving problems.

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 can sometimes be different solutions to a problem
- There is a process to go through to solve a problem
- Some strategies are more efficient than others when solving a problem

Students will be able to:

- Use the problem solving process: What are the facts? What are the questions? What can be eliminated? Choose a strategy and solve. Reflect on what you've done. Decide if your answer makes sense (D)
- Choose a strategy to solve the problem or operation (D): Draw a picture or diagram (D), act it out (D), work backwards (I), guess and check (I), use a fact strategy (D), make a table or an organized list (D), look for a pattern (D), or use logical reasoning (D)
- Explain how they solve a problem orally and in writing (I/D)
- Use strategies to determine the reasonableness of a solution (I)

Resources

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Standards for Mathematical Practice

Content Area: Mathematics

Course & Grade Level: Mathematics, Grade 2

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.
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.2.1	Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
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W.2.8	Recall information from experiences or gather information from provided sources to answer a question.
SL.2.5	Use multimedia; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

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.

Resources

Primary Text:

enVision Math

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