VOORHEES TOWNSHIP
PUBLIC SCHOOLS

VOORHEES, NEW JERSEY 08043

Mathematics

Curriculum Guide

Kindergarten through Eighth Grade

Completed:	**April 2009**
Board Approved:	**August 2009**
Implemented:	**September 2009**

VOORHEES TOWNSHIP PUBLIC SCHOOLS
BOARD OF EDUCATION

Richard Wojdon, ***President***

Nancy Seigle, ***Vice President***

Members

Edward Barniskis

Gary Bennett

Geri Borbe

Bruce Karpf

Denise Kirkland

Richard Nelson

John Schmus

New Board Member April 2009: Amy Lynch

Superintendent of Schools

Raymond J. Brosel, Jr.

Assistant Superintendents

Frances Collins

Frank T. DeBerardinis

THE VOORHEES TOWNSHIP MATH CURRICULUM WAS REVISED BY THE FOLLOWING:

Math Textbook Selection and Curriculum Revision Committee
2009

Pat Beck – Signal Hill School
Mary Jane Boianelli – Osage School
Livia Bonk – Osage School
Nancy Bretherick – Hamilton School
Kathie Daily – Osage School
Coleen Foody – Signal Hill School
Robin Foster – Signal Hill School
Kathy Fox – Osage School
Joanne Greer – Hamilton School
Ann Hinck – Osage School
Christine Hoffmann – Hamilton School
Anthony Klock – Kresson School
Beth Latyn – Hamilton School
Dennis Mignone – Hamilton School
Sheri Peirson – Signal Hill School
Sandy Rocco – Kresson School
Robert Rossi – Kresson School
Tracey Rossi – Kresson School
Marty Shimp – Kresson School
Lois Siebert – Signal Hill School
Deborah Springle – Hamilton School
Tammy Thompson – Kresson School
Eileen Yaffa – Voorhees Middle School

Math Supervisors
Bob Cranmer, Assistant Principal, Osage School
Denise Costigan, Assistant Principal, VMS

Director of Program Development
Dan Mattie

Math Consultant
Dr. Janet Caldwell
Rowan University

TABLE OF CONTENTS

Page

PHILOSOPHY

The rapid pace of technological progress necessitates a revised set of priorities for mathematical instruction. Whereas basic math computation remains the vehicle for math expression, the means to compute has moved to calculators and computers. This change has caused the focus of mathematics to be shifted from the instruction of computation to the instruction of concepts and thinking strategies.

Today's students need to understand the mathematical components of a problem, the process required to solve the problem, and the correct way to use the tools given to do the computation. This approach calls for the recognition of a variety of learning styles. Moreover, varied instructional settings are encouraged such as individual explorations, cooperative learning groups, and whole class analysis.

Manipulatives at all grade levels have surfaced as the basis for a support system to develop and apply concepts. The conceptual development leads to the translation of abstract mathematical symbols. This process helps to ensure the understanding of how mathematics works.

In a mathematics environment, math must be instituted as a cohesive body of knowledge rather than segmented entities. All students must have the opportunity to become mathematically literate, to value the subject, to become confident in their math ability, to communicate effectively, to reason critically, and to become effective problem solvers. In fact, the individual, the nation, and the global community will all benefit from a mathematically literate society.

PURPOSE

Mathematical competence is a national resource, as well as a personal asset. Rapid advances in technology prevail on all educators to adjust mathematics content and methodology to meet the needs of the 21st century.

A mathematics-oriented society of the 21st century is dependent upon constituents possessing highly developed conceptual and logical thinking skills. A challenge is before us to motivate learners to succeed in this information age. This view recognizes the teacher as an integral part of a learning community that continually fosters growth in knowledge, stature, and responsibility.

The activities of everyday life are rooted in mathematics. To address this and comply with the demands of being a successful citizen in our current and future society, higher-order thinking skills that involve critical thinking and problem solving become a focus of mathematics instruction. These strategies require using basic thinking processes to resolve and analyze a known or defined problem with understanding.

A nation acclaimed for its capability to develop and use state-of-the-art technology in medicine, engineering, and space, by definition possesses the ability to instruct its citizens well in the study of mathematics.

With regard to the aforementioned statements, we have developed and written the mathematics curriculum.

GOALS

1. The students should be able to use higher-order thinking approaches to investigate and understand mathematical content in a conceptual and computational framework.

2. The students should be able to formulate problems from everyday and mathematical situations and be able to express, verify, and interpret results.

3. The students should be able to develop and apply a variety of strategies to solve problems, with an emphasis on multi-step and non-routine problems.

4. The students should be able to model situations using oral, written, concrete, pictorial, graphical, and algebraic methods.

5. The students should be able to explain and validate their thinking using oral and/or written techniques.

6. The students should be able to use the skills of reading, listening, and viewing to interpret and evaluate mathematical ideas.

7. The students should be able to value the role of mathematics in our culture and society and how mathematical thinking can be used to solve problems in other disciplines.

8. The students should be able to use technology as an additional resource in developing an understanding of mathematics.

9. The students should be able to acquire confidence in using mathematics meaningfully.

10. The students should be able to acquire the knowledge, skills, and understanding that permit him or her to play a satisfying and responsible role as both a producer and consumer.

11. The students should be able to acquire job entry-level skills and to acquire knowledge necessary for further education.

12. The students should be able to learn to enjoy the process of learning and to acquire the skills necessary for a lifetime of continuous learning and adaptations to change.

EVALUATION

The successful attainment of the objectives listed in this guide, by the students, shall be assessed in the following manner:

1. teacher observation
2. teacher constructed tests, projects, and activities
3. where appropriate, results of the district approved standardized test
4. where appropriate, results of the New Jersey Assessment of Skills and Knowledge for Grades 3, 4, 5, 6, 7 and 8
5. students are expected to master a minimum of 85% of the objectives presented

ADAPTABILITY

This course of instruction shall be modified through varying techniques, strategies, materials, etc. to meet the needs of all students. This shall include, but not be limited to, academic enrichment, special education, ESL, bilingual, and basic skills. Programs shall be modified based on IEP's, ISIP's, 504 Plans, etc.

MATHEMATICS
DISTRICT APPROVED TEXTBOOKS

Kindergarten through Fifth Grade

enVision Math, © 2009
Scott Foresman-Addison Wesley

Grade Six

Math Connects Course 1, © 2009
Glencoe/McGraw-Hill

Grade Seven

Pre-Algebra Prentice Hall Mathematics, © 2007 (regular and accelerated classes)
Pearson Prentice Hall

Math Connects Course 2, © 2009 (BSIP and Special Education)
Glencoe/McGraw-Hill

Grade Eight

Glencoe Mathematics Algebra 1, NJ Edition, © 2006 (regular classes)
Glencoe/McGraw-Hill

Prentice Hall Mathematics Algebra 1, NJ Edition, © 2007 (accelerated classes)
Pearson Prentice Hall

Voorhees Township Schools
Mathematics Curriculum Guide
Math Objectives/Core Standard Alignment

Kindergarten

Topic 1 – Sorting and Classifying

NJ Core Standard - 4.4.2 C.1 (Also 4.5 A.1, 4.5 D.2, 4.5 D.3)

1. Identify same and different by the attributes of color, shape, size, and kind
2. Sort objects by one attribute such as color, size, or kind
3. Sort the same set in different ways
4. Use more than one attribute to sort a set of objects
5. Solve problems by thinking logically

Topic 2 – Position and Location

NJ Core Standard - 4.2.2 A.1 (Also 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.3, 4.5 B.4, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.5 E.3)

1. Describe and object as inside or outside a given place
2. Describe and object as over, under, or on a given object
3. Describe the position of an object as top, middle, or bottom
4. Describe and object as left or right of a given object
5. Solve a problem by acting it out
6. Describe and object as before or after a given object

Topic 3 – Patterns

NJ Core Standard - 4.2.2 A.1, (Also 4.2.2 A.4, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 C.1, 4.5 C.2, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Recognize and extend sound and movement patterns
2. Recognize and extend color patterns

3. Recognize and extend shape patterns
4. Compare and identify patterns that are alike or different
5. Solve problems by looking for and using the repeating parts to describe the pattern
6. Identify growing patterns and predict what comes next
7. Create original patterns using concrete objects and pictures

Topic 4 – Zero to Five

NJ Core Standard - 4.1.2 A.1, 4.1.2 C.1, 4.1.2 A.1 (Also 4.5 A.1, 4.5 A.3, 4.5 E.1)

1. Use objects to represent and count the quantities 1, 2, and 3
2. Recognize and write the numerals that describe the quantities 1, 2, and 3
3. Use objects to represent and count the quantities 4 and 5
4. Recognize and write numerals that describe quantities 4 and 5
5. Recognize and write the numeral that describes the quantity 0
6. Use objects to show 4 and 5 in two parts
7. Use one-to-one correspondence to compare objects and decide whether one group has more, fewer, or the same number as the other group
8. Recognize and identify a group of objects that has one more or two more than another group
9. Recognize and identify a group of objects that is one fewer or two fewer than another group
10. Solve problems by making an organized list

Topic 5 – Six to Ten

NJ Core Standard - 4.1.2 A.1, 4.4.2 A.2 (Also 4.4.2 A.1, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 B.2, 4.5 E.2, 4.5 E.3)

1. Use objects to represent and count the quantities of 6 and 7
2. Use objects to show 6 and 7 in parts
3. Recognize and write the numerals that describe the quantities 6 and 7
4. Use objects to represent and count the quantities of 8 and 9

5. Use objects to show 8 in two parts and 9 in two parts
6. Recognize and write numerals that describe the quantities 8 and 9
7. Use objects to represent and count the quantity 10
8. Use objects to show 10 in two parts
9. Recognize and write the numeral that describes the quantity of 10
10. Use a number line to count numbers 0 to 10 in order
11. Solve problems by coloring pictures on a graph

Topic 6 – Comparing Numbers

NJ Core Standard – 4.1.2 C.1, 4.1.2 A.1 (Also 4.5 A.1, 4.5 A.3, 4.5 B.2, 4.5 D.3, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Compare two numbers using sets of objects one-to-one correspondence to determine which number is greater and which is less
2. Given a number from 0 – 5, tell if the number is greater or less than 5
3. Given a number or set from 0 – 12, decide if the number is greater or less than 10
4. Use counting to identify a number that is 1 or 2 more than or 1 or 2 fewer than another number
5. Solve problems by using counters to show 1 more and 2 more

Topic 7 – Geometry

NJ Core Standard – 4.2.2 A.1, 4.2.2 A.2, 4.2.4 A.3, 4.2.2 B.2 (Also 4.2.2 C.1, 4.4.2 C.1, 4.5 A.3, 4.5 C.2, 4.5 C.3, 4.5 C.4, 4.5 D.3, 4.5 E.1, 4.5 E.2)

1. Identify objects that are the same and different
2. Identify and describe circles and triangles
3. Recognize that shapes can be combined to make other shapes
4. Identify and draw figures that are the same size and the same shape
5. Identify shapes that are symmetrical and draw lines of symmetry
6. Identify cubes, cones, cylinders, and spheres and relate them to real-life objects
7. Identify solid figures that roll, stack, or slide on a flat surface
8. Identify three-dimensional figures and describe the shape of a flat surface of each solid figure

9. Solve problems by using objects

Topic 8 – Fractions and Ordinals

NJ Core Standard – 4.1.2 A.1, 4.2.2 A.3 (Also 4.2.2 A.3, 4.5 A.1, 4.5 A.2, 4.5 B.1, 4.5 B.2, 4.5 B.3, 4.5 B.4, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Identify equal parts of a whole
2. Identify halves of a whole
3. Solve problems by acting it out
4. Use words *first* through *fifth* to identify ordinal positions
5. Use words *sixth* through *tenth* to identify ordinal positions
6. Solve problems by drawing pictures

Topic 9 – Measurement

NJ Core Standard – 4.2.2 D.1, 4.2.2 D.3, (Also 4.2.2 D.4, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 A.5, 4.5 B.1, 4.5 B.4, 4.5 C.3, 4.5 C.4, 4.5 D.2, 4.5 D.3, 4.5 D.4,)

1. Compare and order sets of objects by size
2. Compare objects by length
3. Order a set of objects by length
4. Measure the length of objects using non-standard units
5. Solve problems by comparing lengths and revising their answers

Topic 10 – Addition

NJ Core Standard – 4.1.2 B.1, (Also 4.5 A.1, 4.5 B.1, 4.5 C.6, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Act out number stories that involve joining two groups
2. Interpret illustrations that show joining groups and write the corresponding numbers
3. Determine how many there are altogether when two groups are joined

4. Use the plus sign (+) to represent joining groups when recording addition
5. Identify and use the equal sign (=); add and write the sum
6. Write and solve addition sentences to represent joining situations
7. Solve problems by drawing pictures about joining two groups\

Topic 11 – Subtraction

NJ Core Standard – 4.1.2 B.1, (Also 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.5 E.3)

1. Act out number stories that involve separating two groups
2. Determine how many are left when some objects in a group are taken away
3. Compare two groups to find how many more or fewer
4. Will use the minus sign (-) to represent 'take-away" situations when recording subtraction
5. Use the equal sign (=), subtract, and write the difference
6. Write and solve subtraction sentences to represent take-away situations
7. Act out and solve subtraction word problems and record the answers

Topic 12 – Larger Numbers

NJ Core Standard – 4.1.2 A.1, 4.1.2 A.2, 4.1.3 A.3, 4.3.1 A.1, (Also 4.5 A.1, 4.5 A.3, 4.5 C.2, 4.5 C.3, 4.5 C.3, 4.5 C.4, 4.5 E.2)

1. Recognize and write the numerals that describe the quantities 11 and 12
2. Recognize and write the numerals that describe the quantities 13, 14, and 15
3. Recognize and write the numerals that describe the quantities 16 and 17
4. Recognize and write the numerals that describe the quantities 18, 19, and 20
5. Identify numbers as odd or even
6. Count and write numbers to 100 on the hundred chart
7. Count groups of 10, up to 10 tens, and write how many
8. Use a hundred chart to recognize patterns when counting by 2's, 5's, and 10's
9. Use objects to skip count by 2 and 5
10. Solve problems by looking for a pattern

Topic 13 - Money

NJ Core Standard – 4.1.2 A.4, (Also 4.5 A.1, 4.5 A.2, 4.5 B.1, 4.5 B.2, 4.5 B.3, 4.5 B.4, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Recognize and identify the value of a given set of pennies
2. Identify a nickel and its value, and find the value of a nickel and some pennies
3. Identify a dime and its value; find the value of a given set of coins
4. Identify a quarter and its value, and identify a dollar bill
5. Compare the values of individual coins and combinations of coins through 10 cents
6. Sole problems using coins to act out purchasing situations and show prices in different ways

Topic 14 - Time

NJ Core Standard – 4.2.2 D.3, 4.4.2 C.1, 4.1.2 A.3, 4.5 D.2, (Also 4.5.2 D.3, 4.4.2 C.1, 4.5 A.1, 4.5 D.3)

1. Identify which event takes more time or less time
2. Identify the order of the day: morning, afternoon, evening
3. Decide the order in which a sequence of events occurs
4. Recognize the numbers 1-12 on a clock face
5. Tell time to the hour on an analog clock
6. Write the time in another way to show times of everyday events
7. Solve problems by using logical reasoning

Topic 15 - Calendar

NJ Core Standard – 4.2.2 D.3, 4.4.2 C.1, 4.1.2 A.3, (Also 4.4.2 C.1, 4.5 A.1, 4.5 B.1, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Name the months and seasons of the year
2. Identify and order the days of the week
3. Identify the days in relation to each other as yesterday, today, and tomorrow
4. Understand the number pattern and identify numbers on a calendar
5. Identify the different parts of a calendar

6. Identify objects and situations related to hot and cold temperatures
7. Draw pictures to solve problems about seasons and temperature

Topic 16 - Graphing

NJ Core Standard – 4.4 .2 A.2, 4.4.2 A.1, 4.4.2 B.1, (Also 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 B.2, 4.5 E.2, 4.5 E.3)

1. Use one-to-one correspondence to compare two groups and determine whether one group has more, fewer, or as many as the other group
2. Collect and organize data in a graph to answer a question
3. Make and read a real graph
4. Make and read a picture graph
5. Organize data in a bar graph to answer a question
6. Solve problems by performing probability experiments
7. Solve problems by making and reading a bar graph

Grade 1

Topic 1 – Numbers to 12

NJ Core Standard – 4.1.2 A.1, (Also 4.5 A.1, 4.5 A.3, 4.5 A.5, 4.5 B.1, 4.5 C.2, 4.5 D.4, 4.5 E.1, 4.5 E.3)

1. Read and write numbers to 5
2. Read and write numbers from 6 through 10
3. Read and write numbers to 12
4. Recognized patterned arrangements of numbers without counting
5. Recognize two-part spatial patterns of numbers
6. Use objects to act out the actions in problems

Topic 2 – Comparing and Ordering Numbers

NJ Core Standard – 4.1.2 A.5, 4.1.2 A.1, 4.1.2 A.3, (Also 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.6, 4.5 E.1, 4.5 E.3)

1. Compare two numbers 1 through 12
2. Compare and order three numbers through 12
3. Order numbers to 12 using a number line
4. Use objects to act out ordering numbers to solve story problems

Topic 3 – Understanding Addition

NJ Core Standard – 4.1.2 B.1, 4.1.2 A.1, 4.3.2 C.2, 4.1.2 B.4, 4.3.2 D.1, (Also 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 A.5, 4.5 A.2, 4.5 A.3, 4.5 A.5, 4.5 C.2, 4.5 C.4, 4.5 D.2, 4.5 E.1, 4.5 E.3)

1. Recognize parts of a number as a strategy for addition
2. Recognize parts of the number 8
3. Recognize parts of the number 9

4. Write addition number sentences to find the whole, given two parts
5. Write addition sentences to solve stories about joining
6. Learn to add in any order
7. Use objects to solve story problems

Topic 4 - Understanding Subtraction

NJ Core Standard – 4.1.2 B1, 4.1.2 A.1, 4.3.2 B 2, 4.1.2 B 8, (Also 4.5 A.1, 4.5 A.5, 4.5 B.4, 4.5 C.4, 4.5 C.6, 4.5 D.2, 4.5 E.3)

1. Solve problems by finding the missing part
2. Find a missing part of 8 when one part is known
3. Use subtraction to find the missing part of 9 when one part is known
4. Write and solve subtraction number sentences
5. Tell and act out stories about separating to find how many are left
6. Subtract to compare two numbers
7. Write related addition and subtraction facts
8. Use counters to act out and solve subtraction problems

Topic 5 - Five and Ten Relationships

NJ Core Standard – 4.1.2 A.1, 4.1.2 B.1, 4.4 A.1 (Also 4.4.2 C.2, 4.5 A.1, 4.5 A.3, 4.5 B.4, 4.5 A.2, 4.5 E.1)

1. Use counters and a ten-frame to model numbers up to 10
2. Learn to recognize numbers on a ten-frame, noting the relationship of those numbers to 5 and 10
3. Show 10 as two parts
4. Use counters and a part-part-whole mat to find missing parts to 10
5. Make tables to solve problems

Topic 6 – Addition Facts to 12

NJ Core Standard – 4.3.2 D.1, 4.1.2 B.3, 4.3.2 C.2, 4.1.2 A.2, (Also 4.1.2 B.1, 4.1.2 B.4, 4.5 A.1, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 D.1, 4.5 E.1)

1. Count on to add, starting with the greater number
2. Recognize doubles as a strategy for remembering sums
3. Use doubles facts to learn near doubles facts
4. Use a ten-frame to write addition facts with 5
5. Use two ten-frames to model addition facts
6. Draw pictures to solve addition story problems

Topic 7 Subtraction Facts to 12

NJ Core Standard – 4.3.2 C.2, 4.1.2 B.1, 4.1.2 B.3, 4.1.2 B.8, (Also 4.1.2 B.4,4.5 A.1, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.6, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Master concepts of 0 less than, 1 less than, and 2 less than when subtracting 0, 1, or 2
2. Learn to use doubles addition facts to master related subtraction facts
3. Understand how addition facts to 8 relate to subtraction facts to 8
4. Write related addition and subtraction facts to 12
5. Draw a picture and write a number sentence to solve subtraction story problems

Topic 8 - Geometry

NJ Core Standard – 4.2.2 A.2, (Also 4.4.2 C.1, 4.4.2 B.2, 4.2.3 B.1, 4.2.2 A.1, 4.2.2 A.3, 4.4.2 A.2, 4.5 A.1,4 5.5 D.2)

1. Identify and name standard plane shapes and recognize them in the environment
2. Sort plane shapes and identify their properties
3. Combine two-dimensional geometric shapes to make new two-dimensional geometric shapes
4. Break apart large shapes t make smaller shapes

5. Learn the difference between a slide, a flip, and a rotation and how each movement changes the position of a shape
6. Identify plane shapes that are the same size and the same shape
7. Understand that a shape shows symmetry if it can be folded into two matching parts
8. Make organized lists to solve problems

Topic 9 - Patterns

NJ Core Standard – 4.3.2 A.1, (Also 4.5 A.1, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.1)

1. Describe elements in repeating patterns and the part of the pattern that repeats
2. Identify the pattern unit in a pattern to predict what comes next
3. Identify the pattern unit in a repeating pattern to extend shape patterns
4. Find a pattern t solve problems

Topic 10 – Counting and Number Patterns to 100

NJ Core Standard – 4.1.2 A.1, 4.1.2 A.2, 4.1.2 B.1, 4.3.2 A.1, 4.1.2 A.3, 4.3.2 B.1, (Also 4.4.2 A.2, 4.5 A.1, 4.5 A.3, 4.5 B.4, 4.5 C.6, 4.5 D.1, 4.5 E.1)

1. Read, count, and write numbers 11 to 20
2. Show numbers 11 to 20 as 1 or 2 more or fewer than another number
3. Count groups of 10, up to 10 tens, and write how many
4. Find and extend skip-counting patterns on a hundred chart
5. Skip count to find the total number of items arranged in sets of 10s, 5s, and 2s
6. Identify numbers as odd and even
7. Use the ordinal numbers first through twentieth to identify position
8. Solve problems by finding patterns in a table of related number pairs
9. Solve problems by finding patterns in a table of related number pairs

Topic 11 – Tens and Ones

NJ Core Standard – 4.1.2 A.2, 4.1.2 A.1, (Also 4.3.2 C.2, 4.4.2 C.2, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 B.2, 4.5 E.1, 4.5 E.3)

1. Read and write two-digit numbers as groups of 10 and some left over
2. Count groups of ten, up to 10 tens, and write how many
3. Use groups of tens and ones to show and write a given two-digit number
4. Model a two-digit number and write its expanded form
5. Break apart a ten to make 10 ones and write new representations in expanded form
6. Solve problems by making a list to show different ways to make a number

Topic 12 – Comparing and Ordering Numbers to 100

NJ Core Standard – 4.1.2 A.5, 4.1.2 B.1, 4.3.2 A.1, 4.1.2 A.1, (Also 4.1.2 A.3, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 B.4, 4.5 D.2)

1. Write the numbers that are 1 more or 1 less and 10 more or 10 less than a two-digit number
2. Use a hundred chart to show the relationships of 1 more than, 1 less than, 10 more than, and 10 less than a given number
3. Compare two-digit numbers using models
4. Find missing numbers on a hundred chart
5. Estimate the positions of numbers on a number line marked only in multiples of 10
6. Use the words *before, after*, and *between* to order numbers up to 99
7. Order numbers from least to greatest, given 3 two-digit numbers
8. Make an organized list showing possible solutions

Topic 13 – Counting Money

NJ Core Standard – 4.1.2 A.4, 4.1.2 A.3, 4.1.2 B.7, 4.1.2 B.1, 4.5 A.1, 4.5 A.2, 4.5 B.2, 4.5 B.4, 4.5 C.3, 4.5 C.4, 4.5 D.3, 4.5 D.6, 4.5 E.1

1. Identify the value of combinations of nickels and pennies
2. Identify the value of combinations of dimes, nickels, and pennies

3. Identify a quarter and find groups of coins that have the same value as a quarter
4. Learn to identify half dollars and dollars and learn their values
5. Count collections of coins that include half dollars, quarters, dimes, nickels, and pennies
6. Solve problems by using the try, check, and revise strategy

Topic 14 - Measurement

NJ Core Standard – 4.2.2 D.1, 4.2.2 D.3, 4.2.2 E.1

1. Estimate, measure, and compare lengths of objects by using a nonstandard unit
2. Estimate, measure, and compare lengths of objects by suing a nonstandard unit
3. Use nonstandard units to measure the length of different objects
4. Estimate and measure the lengths of objects in inches and feet using a ruler
5. Estimate and measure the length of objects in centimeters using a ruler
6. Find the distance around a shape
7. Estimate, measure, and compare the capacities of containers
8. Use cups, pints, and quarts to measure the amounts that containers can hold
9. Use liters to measure the amount a container holds
10. Estimate, measure, and compare the weights of different objects
11. Compare the weights of objects to one pound
12. Select the appropriate unit for measuring, given the choice of grams and kilograms
13. Estimate and compare the temperature of different objects

Topic 15 - Time

NJ Core Standard – 4.2.2 D.3, 4.1.2 A.3, 4.2.2 D.4, 4.2.2 D.1, 4.4.2 A.2, (Also 4.5 A.1, 4.5 A.2, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.3, 4.5 E.3)

1. Identify the hour and minute hands on a clock and tell time to the hour
2. Tell and write time to the hour using digital and analog clocks
3. Show and tell time to the half hour
4. Estimate and order time durations using minutes, hours, and days
5. Read and use a calendar
6. Need and use a schedule

Topic 16 – Addition Facts to 18

NJ Core Standard – 4.1.2 B.3, 4.3.2 C.2, 4.5 A.1, 4.5 A.2, 4.5 E.1, 4.1.2 B.5, 4.4.2 A.1, (Also 4.3.2 A.1, 4.4.2 C.2, 4.5 C.3, 4.5 C.6, 4.5 E.3)

1. Recognize the doubles relationship and use it as a strategy for remembering addition facts with two like addends
2. Master addition facts where the addends are 1 apart
3. Master addition facts where the addends are 2 apart\
4. Solve two-question problems by using the answer to the first question to answer the second question
5. Master addition facts where one addend is 9
6. Master addition facts where one addend is 8
7. Use the associative and commutative properties to add three numbers
8. Make a table to solve problems

Topic 17 – Subtraction Facts to 18

NJ Core Standard – 4.1.2 B.3, 4.1.2 B.8, 4.3.2 C.2, 4.1.2 B.1, (Also 4.5 A.2, 4.5 A.3, 4.5 B.4, 4.5 C.2, 4.5 C.6, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Find subtraction facts to 18 and learn the relationship between addition and subtraction
2. Use a part-part-whole model to find the subtraction facts and addition facts in a fact family
3. Use a related addition fact to find the missing part in a subtraction problem
4. Use related addition facts to solve subtraction problems
5. Draw pictures and write number sentences to solve addition and subtraction story problems

Topic 18 – Data and Graphs

NJ Core Standard – 4.4.2 A.2, 4.1.2 C.1, 4.2.2 C.1, 4.4.2 D.1, 4.4.2 B.1, (Also 4.5 A.3, 4.5 C.2, 4.5 E.2, 4.4.2 A.1)

1. Use a real-object graph to answer questions and draw conclusions
2. Use a picture graph to answer questions and draw conclusions
3. Use a bar graph to answer questions and draw conclusions
4. Describe the location of an object shown on a grid
5. Record data using tally marks
6. Collect a set of data and organize it in a real graph
7. Organize and analyze data using a picture graph
8. Use data in a table to complete a bar graph
9. Describe the likelihood of an event as certain or impossible
10. Describe the likelihood of an event as likely or unlikely

Topic 19 – Fractional Parts

NJ Core Standard – 4.1.2 A.1, 4.4.2 C.1, 4.4.2 A.2, (Also 4.4.2, B.1, 4.5 A.1, 4.5 A.2, 4.5 B.4, 4.5 D.1, 4.5 E.3)

1. Determine whether a shape is divided into equal or unequal parts
2. Describe equal parts of a shape
3. Show parts of a set
4. Describe parts of a set
5. Draw pictures to solve problems related to parts of a group

Topic 20 – Adding and Subtracting with Tens and Ones

NJ Core Standard – 4.1.2 B.4, 4.1.2 A.2, 4.3.2 A.1, 4.1.2 B.5, 4.3.2 C.2, (Also 4.1.2 B.1, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 D.1, 4.5 E.1)

1. Add two multiples of 10 for sums to 100
2. Use a hundred chart to add multiples of 10 to two-digit numbers
3. Add a multiple of 10 to a two-digit number
4. Add one-digit numbers to two-digit numbers with and without regrouping and record the sum in horizontal form
5. Use a hundred chart to subtract multiples of 10 from two-digit numbers
6. Subtract a multiple o 10 from a two-digit number

7. Subtract one-digit numbers from two-digit numbers with and without regrouping and record the difference in horizontal form
8. Solve problems by identifying unnecessary information and writing number sentences

Grade 2

Topic 1 – Writing Addition Number Sentences

NJ Core Standard – 4.1.2B.1, 4.1.2 B.3, 4.5 E.1, 4.5 C.3, 4.1.2 B.8, 4.5 C.6, (Also 4.5 A.1, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 E.3, 4.5 F.1)

1. Join two groups and write addition number sentences to tell how many in all
2. Model joining stories and write an addition number sentence
3. Solve problems by writing subtraction number sentences
4. Write subtraction sentences to solve stories about separating groups
5. Write subtraction sentences to solve stories about comparing groups
6. Write related addition and subtraction facts
7. Use counters to model and solve addition and subtraction problems

Topic 2 – Adding 0, 1, 2

NJ Core Standard – 4.3.2 D.1, 4.1.2 B.3, 4.3.2 C.2, 4.1.2 B.1, 4.5 E.1, (Also 4.5 A.1, 4.5 A.3, 4.5 A.5, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.3, 4.5 C.4)

1. Master addition facts involving 0, 1, or 2
2. Master addition facts in which both addends are the same
3. Master addition facts where the addends are 1 apart
4. Use the commutative property to find sums
5. Find the sum of three addends using any order
6. Find sums by making 10 when adding 9
7. Find sums by making 10 when adding with 8
8. Draw a picture and write an number sentence to solve a story problem

Topic 3 – Subtraction Strategies

NJ Core Standard – 4.1.2 B.3, 4.1.2 B.1, 4.3.2 C.2, 4.5 E.1, 4.5 C.6, (Also 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.5 E.3)

1. Subtract 0, 1, and 2 from a number by applying the concepts of 0 less than, 1 less than, and 2 less than a number
2. Use addition doubles facts to subtract
3. Find differences by using related addition facts to 10
4. Find differences by using related addition facts to 18
5. Subtract by finding missing addends
6. Solve two-question problems by using the answer to the first question to answer the second question

Topic 4 – Place Value: Numbers to 100

NJ Core Standard – 4.1.2 A.2, 4.5 E.2, 4.5 E.3, 4.1.2 A.5, 4.5 E.1, 4.1.2 A.5, 4.3.2 A.1, 4.1.3 A.3, (Also 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 D.2, 4.5 F.1)

1. Represent numbers as groups of 10
2. Group objects into groups of tens and ones to show two-digit numbers
3. Read and write number words for numbers 0-99
4. Compare two-digit numbers using models
5. Compare two-digit numbers using symbols
6. Identify numbers that are one before, one after, or between given numbers
7. Order 3 two-digit numbers from least to greatest or from greatest to least
8. Identify and extend number patterns on a hundred chart
9. Learn to identify even and odd numbers
10. Use data from a chart to solve problems

Topic 5 – Counting Money

NJ Core Standard – 4.1.2 A.4, 4.5 C.3, 4.5 C.4, 4.5 C.6, (Also 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 E.1, 4.5 E.3, 4.5 F.1)

1. Identify the value of a group of dimes, nickels, and pennies through 99 cents
2. Count a group of coins that includes half-dollars, quarters, dimes, nickels, and pennies
3. Count collections of coins that include half-dollars, quarters, dimes, nickels, and pennies

4. Show the same amount of money using different sets of coins
5. Count money amounts greater than one dollar and write the amount with a dollar sign and a decimal point
6. Make an organized list to find different combinations of coins

Topic 6 – Mental Addition

NJ Core Standard – 4.1.2 B.4, 4.5 E.1, 4.3.2 A.1, (Also 4.5 A.1, 4.5 A.3, 4.5 C.3, 4.5 C.4)

1. Mentally add multiples of 10 to a two-digit number
2. Mentally add a two-digit number and a one-digit number
3. Add a two-digit number to a two-digit number using mental math
4. Use a hundred chart to add 2 two-digit numbers
5. Use number patterns to solve problems

Topic 7 – Mental Subtraction

NJ Core Standard – 4.1.2 B.4, 4.5 E.1, 4.1.2 B.8, 4.5 C.6, 4.3.2 C.2

1. Subtract multiples of 10 from two-digit numbers using mental math
2. Find the missing part of 100 by counting up from the given part
3. Find the difference between two-digit numbers less than 100
4. Subtract a two-digit number from a two-digit number mentally or with models
5. Determine whether they can solve problems with missing information or extra information

Topic 8 – Adding Two-digit Numbers

NJ Core Standard – 4.1.2 B.4, 4.1.2 B.5, 4.5 E.1, 4.1.2 B.5 (Also 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.3, 4.5 C.4, 4.5 E.3, 4.5 F.4)

1. Use models to add a one-digit number to a two-digit number

2. Use concrete models to add a one-digit number to a two-digit numbers and decide if regrouping in needed
3. Add a one-digit number to a two-digit number, regroup if necessary, and record the process in a vertical addition frame
4. Use place-value models and the standard algorithm to add 2 two-digit numbers
5. Use the standard algorithm symbolically to add two-digit numbers, with and without regrouping
6. Use paper and pencil to add 3 two-digit numbers
7. Draw pictures and write number sentences to solve addition problems

Topic 9 – Subtracting Two-Digit Numbers

NJ Core Standard – 4.1.2 B.4, 4.1.2 B.5, 4.5 E.1, 4.5 C.6, (Also 4.1.2 B.1, 4.5 A.1, 4.5 C.3, 4.5 C.4)

1. Regroup 1 ten as 10 ones when subtracting
2. Use models to subtract a one-digit number from a two-digit number with or without regrouping
3. Subtract a one-digit number from a two-digit number with and without regrouping using the standard algorithm
4. Use models to subtract two-digit numbers, with and without regrouping
5. Use the standard algorithm to subtract a two-digit number from another two-digit number
6. Relate addition to subtraction by using one operation to check the other
7. Solve two-question problems—select the operation to solve each question

Topic 10 – Using Addition and Subtraction

NJ Core Standard – 4.1.2 A.4, 4.1.2 C.3, 4.1.2 A.5, 4.1.2 B.6, 4.1.2 B.4, 4.1.2 B.5

1. Complete and record addition problems using two-digit coin amounts
2. Estimate the sum of two-digit numbers
3. Use different methods to help them solve addition problems

4. Subtract using two-digit coin amounts
5. Tell if the difference between two numbers is more or less than a given multiple of ten
6. Use different methods to solve two-digit subtraction problems
7. Solve problems involving adding and subtracting money by using the try, check, and revise strategy

Topic 11 – Geometry

NJ Core Standard – 4.2.2 A.2, 4.2.2 B.2, 4.5 E.1, 4.2.2 A.1, 4.2.3 B.1, 4.4.4 A.3, 4.5 D.2, (Also 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 D.3, 4.5 F.1, 4.5 F.5)

1. Identify solid figures by their faces, edges, and vertices
2. Identify the plane shapes that form the flat surfaces of solid figures
3. Recognize and name trapezoids, parallelograms, and hexagons and identify the number of sides and vertices in each shape
4. Cut shapes apart to make new shapes
5. Identify and create figures that are the same size and the same shape
6. Recognize and apply translations, reflections, and rotations to geometric shapes
7. Identify objects that have symmetry and draw lines of symmetry
8. Use clues to solve riddles about plane shapes and solid figures

Topic 12 – Fractions

NJ Core Standard – 4.1.2 A.1, (Also 4.5 A.1, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.5 E.2, 4.5 F.1)

1. Determine whether a shape has been divided into equal or unequal parts—if parts are equal, count the number of parts
2. Identify and show a unit fraction of a region
3. Identify and show any fraction of a region
4. Estimate the fraction for a given part of a region
5. Identify and show fractions of a set
6. Use objects to solve problems finding fractions of a group

Topic 13 – Measurement: Length and Area

NJ Core Standard – 4.2.2 D1, 4.2.2 D.4, 4.4.2 D.3, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.5 E.3, 4.2.2 E.1, 4.2.2 E.2, (Also 4.5 A.1, 4.5 A.3, 4.5 E.2)

1. Describe attributes of objects and ways to measure objects
2. Measure the lengths of objects using nonstandard units
3. Estimate and measure the lengths and heights of objects using nonstandard units
4. Estimate and measure items that are about an inch, foot, and yard
5. Estimate and measure the lengths and heights of objects in centimeters and meters
6. Count units around shapes to find perimeter
7. Find the area of closed figures using same-sized objects to cover the space inside the figure
8. Use objects to find the distance around shapes

Topic 14 – Measurement: Capacity and Weight

NJ Core Standard – 4.2.2 D.1, 4.5 C.3, 4.5 C.4, 4.5 E.3, 4.2.2 D.3, 4.5 E.1, (Also 4.5 A.1, 4.5 B.2, 4.5 B.4)

1. Compare the capacities of containers
2. Estimate and measure capacity using nonstandard units
3. Estimate capacity in cups, pints, and quarts
4. Estimate and measure capacity in liters
5. Compare weights of two objects
6. Compare and estimate the weights of objects in ounces and pounds
7. Measure objects that are more than, less than, or about one gram and one kilogram
8. Use different tools to measure the length, capacity, and weight of objects

Topic 15 – Time and Temperature

NJ Core Standard – 4.2.2 D.3, 4.2.2 D.4, 4.5 E.3, 4.5 e.1, 4.1.2 B.5, (Also 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.3, 4.5 C.4)

1. Learn to associate numerals on an analog clock face with increments of five minutes
2. Read and express time in terms of quarter and half past an hour and before an hour
3. Develop a sense of comparative time durations and the kinds of estimations they can make with them
4. Complete , read, and use a calendar
5. Show, read, and write temperatures shown on Fahrenheit and Celsius thermometers
6. Find and use the answers to hidden questions to solve story problems

Topic 16 – Graphs and Probability

NJ Core Standard – 4.4.2 A.2, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.4.2 A.1, 4.2.3 C.1, 4.4.2 B.1, (Also 4.5 B.4, 4.5 F.2)

1. Represent a set of data in a bar graph
2. Make and use a pictograph to solve problems
3. Use data in a tally chart to make a bar graph and answer questions about the data represented in the bar graph
4. Locate and name points on a coordinate grid
5. Use data to describe events as more likely or less likely
6. Record and analyze data to determine if an event is certain, probable, or impossible
7. Use picture graphs and bar graphs to solve problems

Topic 17 – Numbers and Patterns to 1,000

NJ Core Standard – 4.1.2 A.1, 4.1.2 A.2, 4.5 E.1, 4.5 E.2, 4.5 E.3, 4.5 A.2, 4.1.2 A.5, (Also 4.1.2 A.5, 4.3.2 A.1, 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.1)

1. Count by hundreds to 1,000
2. Use place-value models to show numbers up to 1,000
3. Identify and record three-digit numbers in expanded form, standard form, and number word form
4. Add and subtract multiples of 10 or 100 to and from a three-digit number without regrouping

5. Find, identify and apply number patterns to 1,000
6. Compare numbers up to 1,000 using the symbols <, =, >
7. Identify and write numbers that are one before, one after, or between given three-digit numbers
8. Order 3 three-digit numbers from least to greatest and greatest to least
9. Solve problems by finding number patterns

Topic 18 – Three-Digit Addition and Subtraction

NJ Core Standard – 4.1.2 B.4, 4.1.2 C.3, 4.1.3 B.4, 4.5 E.1, (Also 4.4.2 A.1, 4.5 A.1, 4.5 C.3, 4.5 C.4, 4.5 E.3)

1. Add three-digit numbers mentally without regrouping
2. Choose a method to see if the sum of 2 three-digit numbers is enough to equal or exceed a given number
3. Use place-value blocks to add 2 three-digit numbers with regrouping
4. Use paper and pencil to add 2 three-digit numbers with regrouping
5. Given a quantity and one of its parts, find the missing part by counting on or counting back
6. Use estimation to select two numbers that have a given difference
7. Use models to subtract three-digit numbers with regrouping
8. Subtract three-digit numbers using a standard algorithm
9. Make a bar graph using data from a table

Topic 19 – Multiplication concepts

NJ Core Standard – 4.1.2 B.2, 4.5 C.2, 4.5 E.2, 4.5 E.1, 4.5 A.4, 4.5 C.3, 4.5 C.4, (Also 4.5 A.1, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 E.3, 4.5 F.1)

1. Model multiplication by repeated addition of concrete objects
2. Build arrays to model multiplication situations
3. Use multiplication number sentences to write and solve story problems
4. Write multiplication problems in both horizontal and vertical forms
5. Use arrays to investigate multiplying in any order

6. Draw pictures and write number sentences to solve multiplication problems

Topic 20 – Division Concepts and Facts

NJ Core Standard – 4.1.3 B.1, 4.1.2 B.2, 4.5 A.4, 4.5 C.3, 4.5 C.4, 4.5 E.1, (Also 4.3.2 A.1, 4.5 A.1, 4.5 C.1)

1. Solve division problems by sharing objects equally among groups
2. Solve division problems by using repeated subtraction
3. Use division number sentences to solve story problems
4. Use multiplication to solve related division problems
5. Use tables to solve problems involving number patterns

Grade 3

Topic 1 - Numeration

NJ Core Standard – 4.1.3 A.1, 4.1.3 A.2, 4.1.4 A.5, 4.1.3 A.6, 4.4.3 D.2, 4.1.4 B.6, (Also 4.5 A.1, 4.5 A.3, 4.5 E.1)

1. Read and write numbers in the hundreds
2. Read and write numbers in the thousands
3. Read and write numbers in the ten and hundred thousands
4. Use ordinal numbers to show the order of people or objects—will name numbers in many ways
5. Compare 3-digit and 4-digit whole numbers
6. Order 3-digit and 4-digit whole numbers
7. Find the value of money, including $5 and $1 bills, half dollars, quarters, dimes nickels, and pennies
8. Use coins and bills to figure out the change they should receive after purchasing an item
9. Make an organized list to present information given in a problem

Topic 2 – Adding Whole Numbers

NJ Core Standard – 4.1.3 B.1, 4.2.2 D.1, 4.1.3 B.3, 4.1.2 A.2, 4.1.3 B.4, 4.5 E.1, (Also 4.5 A.1, 4.5 B.1, 4.5 C.3, 4.5 E.2, 4.5 E.3)

1. Use concrete materials and concepts of addition to model the Commutative, Associative, and Identity Properties of Addition
2. Use a hundred chart to add two-digit numbers and develop mental math strategies
3. Solve problems by adding with mental math
4. Round three-digit numbers to the nearest ten or hundred, by comparing to the number halfway between or by using place value
5. Solve problems by estimating sums
6. Add 2-digit numbers using paper-and-pencil methods and use addition to solve problems

7. add 3-digit numbers using place-value blocks or pictures and record the results using the standard addition algorithm
8. Add 3-digit numbers using paper-and-pencil methods and use addition to solve problems
9. Add 3 or more 2- and/or 3-digit numbers using paper-and-pencil methods and sue addition to solve problems
10. Draw a picture to solve a problem

Topic 3 – Subtraction Number Sense

NJ Core Standard – 4.1.3 B.1, 4.1.3 B.3, 4.1.3 C.2, 4.1.3 B.7, (Also 4.5 A.1, 4.5 D.1, 4.5 D.2, 4.5 D.3, 4.5 D.4)

1. Recognize situations when subtraction is used to solve a problem and write number sentences
2. Use a hundred chart to subtract 2-digit numbers and develop mental math strategies
3. Solve problems by subtracting with mental math
4. Solve problems by estimating differences
5. Solve word problems and check their answers for reasonableness

Topic 4 – Subtracting Whole Numbers to Solve Problems

NJ Core Standard – 4.1.3 B.1, 4.1.3 B.4, 4.1.3 B.7, 4.1.3 C.4, 4.5 E.1, (Also 4.5 A.1, 4.5 B.1, 4.5 E.2, 4.5 E.3)

1. Subtract 2-digit numbers using place-value blocks or pictures and record the results using the standard subtraction algorithm
2. Subtract 2-digit numbers using paper-and-pencil methods and use subtraction to solve problems
3. Subtract 3-digit numbers using place-value blocks or pictures and record the results using the standard subtraction algorithm
4. Subtract 3-digit numbers using paper-and pencil methods and use subtraction to solve problems
5. Solve problems by choosing an operation based on a picture they have drawn describing the problem

Topic 5 – Multiplication Meanings and Facts

NJ Core Standard – 4.1.3 B.1, 4.3.3 D.1, 4.1.3 B.2, 4.1.3 B.2, 4.5 B.2, 4.1.3 B.4, 4.5 A.1, 4.5 B.1, 4.5 B.4, 4.3.3 A.1, 4.3.3 D.1, 4.5 A.3, (Also 4.5 A.4, 4.5 C.2, 4.5 E.4)

1. Write multiplication number sentences for given equal group situations using the **×** symbol
2. Write multiplication sentences for arrays, use arrays to find products, and use the Commutative Property of Multiplication
3. Use models and write multiplication sentences to compare amounts
4. Write math stories for given multiplication facts
5. Use objects, words, pictures, numbers, and technology to provide a written explanation reflecting their understanding

Topic 6 – Multiplication Fact Strategies: Use Known Facts

NJ Core Standard – 4.1.3 B.2, 4.3.3 D.1, 4.5 A.3, Also (4.1.3 B.4, 4.5 A.1, 4.5 A.4, 4.5 C.2, 4.5 E.3)

1. Use known facts to find products with 3 as a factor
2. Use known facts and doubles to find products with 4 as a factor
3. Use known facts to find products with 6 and 7 as factors
4. Use known facts and double to find products with 8 as a factor
5. Use patterns to multiply with 11 and 12 as factors
6. Multiply three numbers and us the Associative Property of Multiplication
7. Solve multiple-step problems

Topic 7 – Division Meanings

NJ Core Standard – 4.1.3 B.1, 4.5 E.1, (Also 4.5 A.1, 4.5 A.3, 4.5 D.3, 4.5 E.3)

1. Use models to solve division problems involving sharing and record solutions using division number sentences

2. Learn that when dividing, there may be some left over called a remainder
3. Use models to solve division problems involving repeated subtraction and record solutions using division number sentences
4. Write and solve number stories involving division
5. Solve problems by acting it out and suing a drawing

Topic 8 – Division Facts

NJ Core Standard – 4.1.4 B.10, 4.1.3 B.3, 4.3.3 D.1, 4.5 E.1, (Also 4.1.3 B.4, 4.5 A.1, 4.5 B.1, 4.5 E.2, 4.5 E.3)

1. Give a multiplication fact, state a related division fact and vice versa
2. Give quotients for division facts with divisors of 2, 3, 4, or 5
3. Give quotients for division facts with divisors of 6 and 7
4. Give quotients for division facts with divisors of 8 and 9
5. Use patterns fact families to find answers to division facts with 0 and 1
6. Solve sharing and repeated-subtraction division problems by drawing a picture and writing a number sentence

Topic 9 – Patterns and Relationships

NJ Core Standard – 4.3.2 A.1, 4.3.3 A.1, 4.3.3 B.1, 4.3.5 A.1, 4.3.4 D.2, 4.5 D.2, (Also 4.5 A.1, 4.5 D.3)

1. Identify and extend repeating geometric or repeating number patterns
2. Identify and extend whole-number patterns involving addition and subtraction
3. Extend tables of ordered pairs for situations involving multiplication, addition, or subtraction
4. Find the rule and extend the table, given a table of number pairs
5. Translate words or situations to expressions
6. Extend patterns of cubes or tiles
7. Compare expressions to determine if they are equal or unequal
8. Use the strategies Act It Out and Use Reasoning to solve problems

Topic 10 – Solids and Shapes

NJ Core Standard – 4.2.3 A.2, 4.2.3 A.4, 4.5 D.5, (Also 4.5 A.1, 4.5 D.1, 4.5 D.5)

1. Identify solid figures by name and describe their attributes
2. Identify shapes related to given solids
3. Identify lines and line segments and explore their different relationships
4. Identify and classify angles in relation to right angles
5. Identify and classify polygons
6. Identify and classify triangles
7. Identify and classify quadrilaterals
8. Identify commonalities among objects or situations to make and test generalizations

Topic 11 – Congruence and Symmetry

NJ Core Standard – 4.2.3 B.1, 4.2.3 A.3, 4.2.2 B.2

1. Identify congruent figures and determine whether congruent figures have been created by slides, flips, or turns
2. Identify lines of symmetry in symmetric figures
3. Create a figure with one or more lines of symmetry
4. Use a tangram to solve problems

Topic 12 – Understanding Fractions

NJ Core Standard – 4.1.3 A.1, 4.1.4 A.5, 4.1.5 B.2, 4.4.3 B.1, (Also 4.5 A.2, 4.5 A.3, 4.5 C.4, 4.5 E.1, 4.5 E.3)

1. Identify regions that have been divided into equal-sized parts and divide regions into equal-sized parts
2. Associate the model, symbol, and words used to describe a fractional part of a whole region
3. Associate the model, symbol, and words used to describe a fractional part of a set

4. Use benchmark fractions to estimate fractional parts
5. Use models to find equivalent fractions
6. Use models to compare fractions
7. Find and write fractions and mixed numbers on a number line—compare and order fractions and mixed numbers
8. Add fractions with like denominators, using models
9. Subtract fractions with like denominators, using models
10. Make a table and look for a pattern to solve a problem

Topic 13 – Decimals and Money

NJ Core Standard – 4.1.4 A.5, 4.1.3 A.4, 4.1.4 B.6, 4.5 E.1, 4.1.3 B.4, 4.5 A.1, 4.5 A.2, 4.5 B.1, 4.5 E.2, 4.5 E.3, (Also 4.5 C.4)

1. Write a fraction and an equivalent decimal for a model showing tenths or hundredths
2. Use expanded notation to relate money values to decimal place values and write money amounts to represent $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ of a dollar
3. Add and subtract money given in dollars and cents
4. Draw a picture and write a number sentence to solve a problem

Topic 14 – Customary Measurement

NJ Core Standard – 4.2.3 D.3, 4.2.3 D.2, 4.5 D.2, (Also 4.2.3 E.3, 4.5 A.1, 4.5 D.3)

1. Understand the measurement process and the need for standard units---learn to measure length with nonstandard units and to the nearest inch
2. Measure length to the nearest $\frac{1}{2}$ and $\frac{1}{4}$ inch
3. Choose an appropriate unit, estimate, and measure in feet, yards, and miles---convert units among inches, feet, and yards
4. Choose an appropriate unit and tool, estimate, and measure in cups, pints, quarts, and gallons---identify objects which hold about a cup, a pint, a quart, or a gallon
5. Choose an appropriate unit and tool, estimate and measure in ounces, pounds, and tons---identify objects that weigh about an ounce, a pound, or a ton

6. Solve problems by acting out the information given and by using their reasoning skills

Topic 15 – Metric Measurement

NJ Core Standard – 4.2.3 D.2, 4.2.2 D.3, 4.3.3 A.1, (Also 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 C.2, 4.5 C.3, 4.5 C.4, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Estimate and measure lengths in centimeters
2. Choose an appropriate unit, estimate, and measure in meters and kilometers---convert units among kilometers, meters, centimeters, and millimeters
3. Choose an appropriate unit and tool, estimate, and measure I milliliters and liters---identify objects that hold about a liter or a milliliter
4. Choose an appropriate unit and tool, estimate, and measure in grams and kilograms---identify objects with a mass of about a gram or kilogram
5. Make a table and look for a pattern in order to solve a problem

Topic 16 – Perimeter, Area and Volume

NJ Core Standard – 4.2.3 E.2, 4.5 A.5, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 B.1, 4.5 C.3, 4.5 C.4, 4.5 D.2, 4.5 D.3, 4.5 D.4, 4.2.3 E.1, 4.2.3 E.3, 4.5 A.3, (Also 4.5 C.6, 4.5 E.3)

1. Use standard units to find the perimeter of a shape
2. Match shapes to a given perimeter and learn that different shapes can have the same perimeter
3. Solve a problem through the process of try, check, and revise
4. Use concrete and pictorial models of square units to determine the area of two-dimensional surfaces
5. Find the volume of solid figures constructed of cubes
6. Solve complex problems asking for the area of irregular shapes

Topic 17 – Time and Temperature

NJ Core Standard – 4.2.2 D.3, 4.2.2 D.1, 4.2.4 D.5, 4.5 A.3, (Also 4.5 A.1, 4.5 A.2, 4.5 C.3, 4.5 C.4, 4.5 E.3)

1. Tell time to the nearest half hour and quarter hour using analog and digital clocks, and identify times as A.M. or P.M.
2. Tell time to the nearest minute using analog and digital clocks
3. Perform simple conversions for units of time
4. Find elapsed time in intervals of minutes
5. Read temperatures on Fahrenheit thermometers, and determine appropriate temperatures for given activities
6. Use the strategy work backward to solve problems

Topic 18 – Multiplying Greater Numbers

NJ Core Standard – 4.1.3 B.3, 4.3.3 A.1, 4.1.3 C.2, 4.1.3 C.4, 4.1.3 B.1, 4.1.3 B.4, 4.5 E.1, (Also 4.5 A.1, 4.5 B.1, 4.5 B.4, 4.5 C.6, 4.5 E.2, 4.5 E.3)

1. Use mental math to multiply by multiples of 10, 100, and 1,000
2. Estimate products of 1-digit and 2-digit numbers by using rounding
3. Use an array to multiply 1-digit times 2-digit numbers
4. Use an array and breaking apart to multiply 1-digit times 2-digit numbers
5. Use breaking apart and the expanded algorithm to multiply a 1-digit times a 2-digit number
6. Multiply a 1-digit times a 2-digit number with regrouping
7. Solve word problems by drawing a picture and writing a number sentence

Topic 19 – Dividing with 1-Digit Numbers

NJ Core Standard – 4.1.3 B.3, 4.3.3 A.1, 4.1.3 C.2, 4.1.3 C.4, 4.1.3 B.4, 4.1.3 B.1, 4.5 A.3 (Also 4.5 A.1, 4.5 C.2, 4.5 C.6, 4.5 E.3)

1. Use known multiplication patterns to divide multiples of 10, 100, and 1,000 by a 1-digit number
2. Use compatible numbers to estimate quotients
3. Use place-value blocks and an algorithm to divide 2-digit numbers by 1-digit numbers
4. Divide 2-digit numbers by 1-digit numbers using paper and pencil
5. Use arrays and the division algorithm to divide numbers with a remainder
6. Use previously learned skills to solve multiple-step problems

Topic 20 – Data, Graphs, and Probability

NJ Core Standard – 4.4.3 A.1, 4.4.3 A.2, 4.4.3 B.1, 4.4.3 B.2, (Also 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 A.4, 4.5 B.2, 4.5 E.3, 4.5 E.3)

1. Use tally charts to record and organize survey data
2. Read and interpret data from a pictograph and a bar graph
3. Make a pictograph from a table or tally chart
4. Make a bar graph to represent the data in a table or tally chart
5. Locate points on a coordinate grid and read and use line graphs
6. Describe evens as *likely*, *unlikely*, *impossible* (highly improbable), or certain---compare the likelihood of events using the terms more *likely*, *less likely*, *equally likely*, *most likely, and least likely*
7. Predict the results of a probability experiment, conduct the experiment, and compare the results to the prediction
8. Use a line plot to organize the results of a probability experiment and to predict future events
9. Solve problems by using tables and graphs to draw conclusions

Grade 4

Topic 1 – Numeration

NJ Core Standard – 4.1.4 A.1, 4.1.4 A.6, 4.1.4 C.2, 4.1.4 B.6, 4.4.4 C.2, (Also 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 B.1, 4.5 C.3, 4.5 E.1)

1. Represent numbers with place-value blocks and number lines---write numbers in standard form, expanded form, and word form
2. Represent numbers in the millions using a place-value chart---write numbers in expanded form, using periods to help write numbers in word form
3. Apply their knowledge of place value to compare and order numbers
4. Show how to use place value to round whole numbers
5. Use place-value charts to read, write, and compare decimals in tenths and hundredths using money
6. Convert a collection of coins and bills into a total amount and make change
7. Find and record all possible outcomes for a situation

Topic 2 – Adding and Subtracting Whole Numbers

NJ Core Standard – 4.1.4 B.3, 4.1.4 B.1, 4.3.4 D.1, 4.4.4 D.1, 4.1.4 C.2, 4.1.4 A.2, 4.5 C.3, 4.5 D.2, 4.1.4 A.2, 4.1.4 B.4, 4.1.4 B.10, (Also 4.5 A.3, 4.5 C.3, 4.5 E.1)

1. Apply a variety of methods to add and subtract whole numbers mentally
2. Round whole numbers to estimate sums and differences
3. Identify what information in a problem is not needed or not present
4. Add numbers to hundred thousands with and without regrouping
5. Subtract numbers to thousands with and without regrouping
6. Subtract numbers with zeros to thousands
7. Use a picture or diagram to translate an everyday situation into a number sentence or equation

Topic 3 – Multiplication Meanings and Facts

NJ Core Standard – 4.14 B.1, 4.1.4 B.2, 4.1.4 B.4, 4.4.4 D.1, 4.3.4 A.1, 4.3.4 D.1, (Also 4.5 A.1, 4.5 A.3, 4.5 C.3, 4.5 E.1)

1. Recognize multiplication as repeated addition of equal groups, used in arrays and comparisons
2. Use patterns to find products with factors of 2, 5, and 9
3. Use multiplication properties to simplify computations
4. Use the Distributive Property to simplify multiplication problems by rewriting one of the factors as a sum of two numbers
5. Use the Distributive Property and other regrouping properties to simplify multiplication involving 6s, 7s, and 8s by rewriting one of the factors
6. Use patterns as aids to mastery of facts and multiples of 10, 11, and 12
7. Draw pictures to problem solve multiplication situations and use their pictures to write number sentences

Topic 4 – Division Meanings and Facts

NJ Core Standard – 4.1.4 B.4, 4.1.4 B.2, 4.1.4 B.3, 4.4.4 D.1, 4.1.4 B.10, 4.3.4 D.1, (Also 4.5 A.2, 4.5 A.3, 4.5 C.3, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Use and draw models to solve division problems
2. Use arrays to write and complete multiplication and division fact families
3. Use multiplication facts with 0 and 1 to learn about special division rules with 0 and 1
4. Identify multiplication facts related to division facts in order to solve division problems
5. Draw pictures and write related number sentences to solve problems

Topic 5 – Multiplying by1-Digit Numbers

NJ Core Standard – 4.4.4 D.1, 4.1.4 A.2, 4.1.4 B.2, 4.1.4 B.3, 4.1.4 B.4, 4.3.4 A.1, 4.1.4 B.1, 4.3.4 D.1, 4.1.4 C.2, 4.1.4 B.8, 4.1.4 C.3, 4.1.4 C.3, 4.1.4 C.4,

4.5 A.5, 4.5 D.1, 4.5 D.2, 4.5 D.4, 4.5 D.5, 4.5 D.6, (Also 4.5 A.3, 4.5 B.4, 4.5 C.3, 4.5 E.1)

1. Use basic multiplication facts and number patterns to multiply by multiples of 10 and 100
2. Use compatible numbers with adjustment, breaking apart, and other strategies to multiply numbers mentally
3. Use compatible numbers and rounding to estimate solutions to multiplication problems
4. Check for reasonableness by making sure calculations answer the questions asked and by using estimation to make sure the calculation was performed correctly
5. Record multiplication using an expanded algorithm
6. Multiply 2-digit numbers by 1-digit numbers using paper-and-pencil methods
7. Use the standard algorithm to multiply 3-digit numbers by 1-digit numbers
8. Solve problems using the problem-solving strategies Draw a Picture and Write an Equation

Topic 6 – Patterns and Expressions

NJ Core Standard – 4.3.4 B.1, 4.4.4 D.1, (Also 4.5 A.2, 4.5 D.2, 4.5 D.4, 4.5 D.5, 4.5 E.1)

1. Understand how to work with variables in a table
2. Study completed tables to determine a rule and write an expression
3. Solve problems by using objects to show the action

Topic 7 – Multiplying by 2-Digit Numbers

NJ Core Standard – 4.1.4 B.3, 4.1.4 B.1, 4.1.4 B.2, 4.4.4 D.1, 4.1.4 C.2, 4.1.4 B.4, 4.3.4 D.1, 4.1.4 A.2, (Also 4.5 C.6)

1. Discover and understand patterns used to multiply by 10 and 100---use these patterns to solve problems involving multiples of 10 and 100
2. Use rounding and compatible numbers to estimate solutions to multiplication problems

3. Use arrays and expanded algorithms to multiply 2-digit numbers by 2-digit numbers to find the product
4. Use grids and patterns to multiply 2-digit numbers and multiples of 10
5. Use partial products to multiply 2-digit numbers by 2-digit numbers and find the product
6. Learn to multiply greater numbers
7. Solve two-question problems

Topic 8 – Dividing by 1-Digit Divisors

NJ Core Standard – 4.1.4 B.3, 4.1.4 B.2, 4.4.4 D.1, 4.1.4 C.2, 4.1.4 B.10, 4.1.4 B.1, 4.1.4 B.4, 4.1.4 A.2, 4.1.5 A.5, (Also 4.5 A.2, 4.5 B.1, 4.5 C.6)

1. Use basic facts and patterns of zeros to solve division problems with 3-digit dividends and 1-digit divisors
2. Use compatible numbers and rounding to estimate quotients
3. Divide whole numbers by 1-digit divisors resulting in quotients with remainders
4. Use place value to understand the algorithm of long division
5. Use the standard algorithm to divide a 2-digit number by a 1-digit number
6. Use the standard algorithm to divide 3-digit numbers by 1-digit numbers
7. Use the standard algorithm to divide 3-digit numbers by 1-digit numbers and properly decide where to begin dividing
8. Learn how to factor whole numbers
9. Learn to identify prime numbers and composite numbers
10. Identify the hidden question in a multi-step problem---use the answer to that hidden question to solve the original problem

Topic 9 – Lines, Angles, and Shapes

NJ Core Standard – 4.2.4 A.4, 4.2.5 E.1, 4.2.4 A.2, 4.2.5 A.2, 4.5 D.5 (Also 4.4.4 D.1, 4.5 B.4)

1. Identify and describe points, lines, and planes
2. Learn geometric terms to describe parts of lines and types of angles
3. Be able to measure and draw angles

4. Learn to identify polygons
5. Learn to identify and classify triangles
6. Learn to identify quadrilaterals
7. Solve problems by making and testing generalizations

Topic 10 – Understanding Fractions

NJ Core Standard – 4.1.4 A.1, 4.1.4 A.4, 4.1.4 A.5, 4.1.4 A.6, 4.1.4 C.2, 4.1.5 A.5, 4.3.4 D.2, 4.5 D.2, (Also 4.5 A.2, 4.5 B.1, 4.5 B.4, 4.5 E.2)

1. Identify and draw fractional parts of a region and a set, and divide sets to show fractional parts
2. Describe and compare fractional parts of whole objects and sets
3. Estimate fractional parts of regions and sets---estimate fractions for points on the number line
4. Use models and objects to show equivalent fractions
5. Express equivalent fractions in simplest form
6. Identify and write mixed numbers as improper fractions and improper fractions as mixed numbers
7. Use benchmark fractions to compare fractions with unlike denominators
8. Use common denominators and equivalent fractions to order fractions with unlike denominators
9. Write to explain whether an answer is correct or not

Topic 11 – Adding and Subtracting Fractions

NJ Core Standard – 4.1.4 B.9, 4.5 A.3 (Also 4.5 A.1, 4.5 C.3, 4.5 C.6, 4.5 E.1, 4.5 E.3)

1. Add fractions with like denominators using models and paper and pencil
2. Add fractions with unlike denominators using models and paper and pencil
3. Understand how to subtract fractions with unlike denominators
4. Draw a picture and write an equation to solve a problem

Topic 12 – Understanding Decimals

NJ Core Standard – 4.1.4 A.1, 4.1.4 A.2, 4.1.4 A.5, (Also 4.5 A.2, 4.5 B.2, 4.5 C.2, 4.5 E.1, 4.5 E.3)

1. Use models and place-value charts to represent decimals to hundredths---read and write decimals in expanded, standard, and word form
2. Use models and place-value chards to compare decimals to hundredths---use greater-than and less-than symbols to order decimal numbers
3. Understand how to write fractions as decimals and decimals as fractions
4. Learn to locate and name fractions and decimals on a number line
5. Understand how to graph decimals and mixed numbers on the number line
6. Solve problems using the strategy Draw a Picture

Topic 13 – Operations with Decimals

NJ Core Standard – 4.1.4 C.2, 4.1.4 B.5, 4.1.6 B.2, 4.1.4 B.8, (Also 4.5 A.1, 4.5 A.2, 4.5 A.5, 4.5 D.1, 4.5 D.4, 4.5 D.5)

1. Round two-place decimal numbers to one place or the nearest whole number
2. Round decimal numbers to estimate sums and differences
3. Add and subtract decimals in tenths and hundredths using models
4. Estimate and compute the sum or difference of whole numbers and positive decimals to two places
5. Multiply a decimal number by a whole number
6. Divide a decimal number by a whole number
7. Try a solution, check the solution, and, if not correct, revise the solution, following the same method until the correct solution is determined via checking

Topic 14 – Area and Perimeter

NJ Core Standard – 4.2.4 e.1, 4.2.4 D.2, 4.2.3 E.2, 4.2.5 E.3, 4.3.4 A.1, (Also 4.5 A.1, 4.5 A.3, 4.5 C.1, 4.5 C.4, 4.5 E.1, 4.5 E.3)

1. Measure the area of a figure by counting the number of square units that cover a region
2. Find the area of rectangles by counting square units or by using a formula
3. Find the area of irregular shapes
4. Use the formula for the area of a rectangle in order to find a formula for the area of a parallelogram
5. Use the relationship between triangles and parallelograms to find the area of triangles
6. Find the perimeter of a polygon by adding the lengths of the sides or by using the formula
7. Compare different rectangles with the same perimeter to discover the change in area
8. Compare different rectangles with the same area to discover the change in perimeter
9. Break a problem into smaller, more manageable pieces and find a pattern to fit

Topic 15 – Solids

NJ Core Standard – 4.2.4 A.2, 4.2.6 A.8, 4.2.6 A.6, 4.2.4 D.2, 4.3.4 A.1, (Also 4.5 A.1, 4.5 A.3, 4.5 C.1)

1. Learn to describe and classify solids
2. Use a two-dimensional shape to represent a three-dimensional object
3. Interpret views of solids as seen from different perspectives
4. Measure the volume of a solid either by counting cubic units or by using a formulas
5. Recognize patterns and be able to continue the pattern

Topic 16 – Measurement, Time, and Temperature

NJ Core Standard – 4.2.4 D.4, 4.3.4 D.2, 4.2.4 D.3, 4.2.5 D.2, 4.2.4 D.5, 4.2.2 D.3, 4.5 A.3, (Also 4.5 A.2)

1. Estimate and measure length by choosing the most appropriate unit of length
2. Estimate fluently with customary capacity units (cups, pints, quarts, and gallons)--- compare the relative sizes of capacity measurements
3. Estimate fluently and measure with units of weight
4. Be able to convert between customary units

5. Estimate and measure length to the nearest centimeter, and choose the most appropriate metric unit for measuring length
6. Estimate fluently with milliliters and liters---measure capacity using these metric units
7. Estimate and measure with units of mass—grams and kilograms
8. Be able to convert between metric units
9. Compare several different units of time and freely convert from one unit of time to another
10. Find the difference in time using a beginning and an end time---use elapsed time to find a beginning and an end time
11. Measure temperature in degrees Fahrenheit or degrees Celsius
12. Solve problems that require finding the original times, measurements, or quantities that led to a result that is given

Topic 17 – Data and Graphs

NJ Core Standard – 4.4.4 A.2, 4.2.4 C.1, 4.4.5 A.2, (Also 4.5 A.1, 4.5 A.3, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Design and use a survey with a sample size that allows accurate predictions to be made about a larger population
2. Use bar graphs to display data
3. Learn and understand how to draw line plots, interpret points, and recognize outliers
4. Learn to locate points on a coordinate plane using ordered pairs
5. Use line graphs to see changes in data over time
6. Calculate the mean of a collection of values
7. Identify the mode, median, and range for numerical data sets
8. Use stem-and-leaf plots to organize data by place value
9. Use circle graphs to show parts of a whole
10. Make and use graphs to display data and solve problems

Topic 18 – Equations

NJ Core Standard – 4.3.4 D.2, 4.3.6 D.1, 4.1.4 B.10 (Also 4.5 A.2, 4.5 A.3, 4.5 B.4, 4.5 C.4, 4.5 E.1)

1. Learn and understand the properties of equality
2. Learn and understand how to use addition and subtraction to solve equations
3. Learn and understand how to use multiplication and division to solve equations
4. Solve an inequality by finding all the values that make it true
5. Solve problems that require finding the original times, measurements, or quantities that led to a result that is given

Topic 19 – Transformations, Congruence, and Symmetry

NJ Core Standard – 4.2.4 B.2, 4.2.4 A.3, 4.2.5 A.4, 4.5 E.1, (Also 4.5 A.1, 4.5 A.2, 4.5 C.2, 4.5 E.3

1. Identify translations of plane figures
2. Identify reflections of plane figures
3. Identify rotations of plane figures
4. Use transformations to see if two plane figures are congruent
5. Determine if a plane figure has line symmetry and, if so, how many lines of symmetry it has
6. Identify rotational symmetry and determine an angle measure to describe a rotation
7. Determine when two shapes are similar and use pictures to visualize similarity

Topic 20 – Probability

NJ Core Standard – 4.4.4 C.2, 4.4.4 B.2, 4.4.4 B.1, 4.5 D.2, (Also 4.5 A.2, 4.5 D.3, 4.5 E.1)

1. Use objects and pictures to count combinations of data or objects in a problem
2. Determine the probability of an event and write it as a fraction
3. Use reasoning to solve problems

Grade 5

Topic 1 – Numeration

NJ Core Standard – 4.1.4 A.2, 4.1.5 A.6, 4.3.5 A.1, (Also 4.1.5 B.2, 4.5 A.1, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 C.1, 4.5 E.1

1. Write the standard, expanded, and word forms of whole numbers in the billions and identify the value of digits in whole numbers
2. Compare and order whole numbers through billions
3. Write decimals in standard form, word form, and expanded form through millionths
4. Compare and order decimals through thousandths
5. Look for patterns with decimal-number sets in order to solve problems

Topic 2 – Adding and Subtracting Whole Numbers and Decimals

NJ Core Standard – 4.1.4 B.3, 4.1.5 C.1, 4.3.5 C.1, 4.3.5 D.1, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 E.1, 4.5 E.2, 4.5 E.3, 4.1.5 B.2, (Also 4.1.5 A.2, 4.1.5 C.3, 4.5 A.4)

1. Compute sums and differences mentally using the Commutative and Associative Properties of Addition, compatible numbers, and compensation
2. Round whole numbers through millions and decimals through thousandths
3. Use rounding and compatible numbers to estimate sums and differences of whole numbers and decimals
4. Use pictures and write equations to help them solve problems
5. Compute sums and differences of two large whole numbers
6. Compute sums of decimals involving tenths, hundredths, and thousandths
7. Compute differences of decimals involving tenths, hundredths, and thousandths
8. Use multiple steps to solve a variety of problems

Topic 3 – Multiplying Whole Numbers

NJ Core Standard – 4.1.5 B.6, 4.1.5 B.4, 4.1.5 C.1, 4.1.5 C.2, 4.1.5 C.3, 4.1.5 C.4, 4.1.4 B.3, 4.1.4 B.4, 4.1.6 B.5, 4.3.5 C.1, (Also 4.3.5 D.1, 4.5 A.1, 4.5 A.3, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Identify and apply the Commutative, Associative, Identify, and Zero Properties of Multiplication
2. Mentally compute products of whole numbers using place-value patterns and the properties of multiplication
3. Use rounding or compatible numbers to estimate products of whole numbers
4. Use partial products or the traditional algorithm to multiply multi-digit numbers by a one-digit number
5. Multiply two-digit numbers by two-digit numbers
6. Multiply two-digit numbers by factors with more than two digits
7. Use exponential notation
8. Use diagrams and write equations to solve problems

Topic 4 – Dividing by 1-Digit Divisors

NJ Core Standard – 4.1.4 B.3, 4.1.5 C.1, 4.1.5 B.5, 4.1.5 B.6, 4.5 A.1, 4.5 A.3, 4.5 A.4, 4.5 D.2, 4.5 D.4, 4.5 E.1, 4.5 E.2, 4.1.5 A.5, 4.3.5 C.1, (Also 4.3.5 D.1, 4.5 A.2, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 E.3)

1. Find the quotient of a division problem whose dividend is a multiple of 10, where division involves a basic fact
2. Use rounding and compatible numbers to estimate quotients of whole numbers
3. Check problems for reasonableness by using various methods, including estimation and checking final answers
4. Find quotients using the model of sharing money
5. Divide three-digit whole numbers by one-digit divisors
6. Divide with zeros in the quotient
7. Use divisibility rules to determine if a number is divisible by another and to find factor pairs of a given number
8. Identify numbers as prime or composite and find the prime factorization of a number

9. Use pictures and equations to help them represent remainders in a problem

Topic 5 – Dividing by 2-digit Divisors

NJ Core Standard – 4.1.4 B.3, 4.1.5 C.1, 4.1.5, B.6, 4.1.5 A.2, 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 A.4, 4.5 E.1, 4.5 E.2, 4.5 E.3, (Also 4.1.5 B.6, 4.5 D.2, 4.5 D.3)

1. Find the quotients of division problems whose dividends and divisors are multiples of 10, where the division involves a basic fact
2. Use estimation to find approximate solutions to quotients with two-digit divisors using compatible numbers
3. Find the hidden question or questions to solve multiple-step problems
4. Find quotients with a two-digit divisor that is a multiple of ten
5. Find one-digit quotients where the divisor is a two-digit number
6. Divide a three-digit number by a two-digit number to find a two-digit quotient
7. Solve problems involving division of numbers with 4 or 5 digits by 2-digit divisors with an estimate, or by using a calculator when the exact answer is needed
8. Determine which information is mission and identify extraneous information in problems

Topic Variables and Expressions

NJ Core Standard – 4.3.5 C.1, 4.3.6 D.3, 4.3.6 D.2, 4.5 E.1, (Also 4.1.5 B.6, 4.5 A.1, 4.5 A.3, 4.5 D.2, 4.5 D.4, 4.5 E.2, 4.5 E.3)

1. Translate words into algebraic expressions
2. Use patterns to show relationships and solve algebraic expressions
3. Write and evaluate expressions involving multiplication, addition, and subtraction
4. Use the Distributive Property to simplify expressions and solve equations
5. Use given values for variables to evaluate numerical or algebraic expressions with three or more numbers and two or more operations
6. Solve problems by showing how to act out the problem---use information given in the problem to draw conclusions

Topic 7 – Multiplying and Dividing Decimals

NJ Core Standard – 4.1.6 B.2, 4.1.5 C.1, 4.5 A.3, (Also 4.1.5 B.6, 4.5 A.1, 4.5 A.4, 4.5 B.1, 4.5 B.2, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Mentally multiply decimals by 10, 100, and 1,000
2. Use a standard algorithm to multiply a whole number and a decimal
3. Use rounding and compatible numbers to estimate products of whole numbers and decimals---identify estimates as overestimates or underestimates
4. Use the standard algorithm to multiply decimals by decimals
5. Mentally divide decimals by 10, 100, or 1,000
6. Use the standard algorithm to divide a decimal by a whole number
7. Use compatible numbers to estimate quotients of decimals and whole numbers
8. Use the standard algorithm to divide decimals by decimals
9. Use multiple steps to solve a variety of problems

Topic 8 – Shapes

NJ Core Standard – 4.2.5 A.1, 4.5 D.5, 4.2.5 e.1, 4.2.5 D.1, 4.3.5 A.2, 4.5 D.5, (Also 4.2.5 A.4, 4.5 A.1, 4.5 D.1, 4.5 D.2)

1. Use geometric terms to describe locations and parts of space
2. Measure, draw, and classify angles
3. Identify and classify polygons
4. Identify and classify triangles
5. Identify and classify quadrilaterals
6. Make and test generalizations of patterns in different examples

Topic 9 – Fractions and Decimals

NJ Core Standard – 4.1.5 A.1, 4.1.5 A.4, 4.1.5 A.6, 4.1.6 A.7, 4.5 E.1, (Also 4.5 A.1, 4.5 B.1, 4.5 B.2, 4.5 B.4, 4.5 E.2)

1. Identify and show fractional parts of regions and sets

2. Learn that division can be used to divide objects into equal parts that are fractions of a whole---these fractions can be represented on a number line
3. Express fractions greater than 1 as mixed numbers or improper fractions
4. Identify fractions that are equivalent---find fractions equivalent to a given fraction using computational procedures
5. Determine which of two fractions or mixed numbers is greater or less in order to compare and order fractions and mixed numbers
6. Determine common factors and the greatest common factor of numbers
7. Identify fractions that are in simplest form and find the simplest form of a fraction
8. Represent decimals (tenths and hundredths) as fractions---represent fractions with denominators of 10 and 100 as decimals
9. Represent decimals (thousandths) as fractions and fractions with denominators of 1,000 as decimals
10. Label a point on a number line using a fraction and a decimal---write a fraction and a decimal for a point on a number line
11. Explain how to estimate fractional amounts of objects

Topic 10 – Adding and Subtracting Fractions and Mixed Numbers

NJ Core Standard – 4.1.5 B.2, 4.1.6 A.7, 4.5 A.3, (Also 4.2.5 E.2, 4.5 A.1, 4.5 D.2, 4.5 D.3, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Use models and computational procedures to add and subtract fractions with like denominators
2. Determine common multiples and least common multiples of numbers
3. Use models and computational procedures to add fractions with unlike denominators
4. Use models and computational procedures to subtract fractions with unlike denominators
5. Use models and computational procedures to add mixed numbers
6. Use models and computational procedures to subtract mixed numbers
7. Use three steps—try, check, and revise—in order to solve problems

Topic 11 – Multiplying Fractions and Mixed Numbers

NJ Core Standard – 4.1.6 B.2, 4.1.5 B.6, 4.5 A.3 (Also 4.3.5 C.1, 4.3.5 D.1, 4.5 A.1, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Multiply a fraction by a whole number
2. Give the product of two fractions
3. Multiply mixed numbers
4. Divide whole numbers by fractions
5. Use diagrams and write equations to solve problems

Topic 12 – Perimeter and Area

NJ Core Standard – 4.2.4 D.2, 4.2.5 E.2, 4.2.6 E.2, 4.5 A.3, (Also 4.5 A.1, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Choose the most appropriate units of length and measure to the nearest inch, half inch, quarter inch, or eighth inch
2. Choose the most appropriate metric unit of length and measure to the nearest centimeter and millimeter
3. Find the perimeter of polygons
4. Find the areas of squares and rectangles by using formulas
5. Find the area of a parallelogram by using a formula---find the length of the sides of a parallelogram when the area and one side length are given
6. Find the area of a triangle by using a formula---find a missing length when the area and other dimensions are known
7. Learn the parts of a circle and calculate circumference

Topic 13 – Solids

NJ Core Standard – 4.2.6 A.5, 4.2.6 A.8, 4.2.6 E.3, 4.2.6 A.7, 4.2.5 E.2, 4.5 A.3, (Also 4.3.5 A.1, 4.5 A.1, 4.5 A.4, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Identify solid figures according to faces, edges, and vertices

2. Identify a two-dimensional representation (net) of a solid
3. Determine the surface area of rectangular solids
4. Identify different views of a solid
5. Count cubic units and use formulas to find the volume of rectangular prisms
6. Find the areas and volumes of irregular shapes and solids
7. Use objects to act out a n break apart problems into simpler ones in order to reach a solution

Topic 14 – Measurement Units, Time, and Temperature

NJ Core Standard – 4.2.4 D.2, 4.2.5 D.2, 4.2.4 D.5, 4.2.2 D.3, 4.5 A.3, (Also 4.3.5 A.1, 4.5 A.1, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Use a variety of customary units to measure liquid volume
2. Use metric units to measure liquid volume
3. Use units of mass and weight to determine the amount of matter an object has and how heavy or light an object is
4. Convert customary units of measure using multiplication and division
5. Convert metric units of measure using multiplication and division
6. Use models and computational procedures to find elapsed time, start time, or end time involving hours and minutes
7. Use computational procedures to find elapsed time, start time, or end time involving minutes, hours, days, and weeks
8. Use thermometers and computational procedures to find changes in temperature in both Fahrenheit and Celsius units
9. Make and read tables as a way of solving problems

Topic 15 – Solving and Writing Equations and Inequalities

NJ Core Standard – 4.3.5 D.1, 4.3.5 C.1, 4.5 E.1, 4.3.6 D.4, 4.3.5 A.1, 4.3.5 C.1.b, (Also 4.5 A.1, 4.5 A.2, 4.5 A.3, 4.5 E.2, 4.5 E.3)

1. Solve one-step equations involving addition or subtraction
2. Solve one-step equations involving multiplication or division

3. Use a number line to graph solutions of an inequality
4. Complete a table of values for an equation or write an equation to describe the relationship between pairs of numbers in a table
5. Draw diagrams or pictures and write equations to solve problems

Topic 16 – Ratio and Percent

NJ Core Standard – 4.1.5 A.4, 4.3.5 A.1, (Also 4.5 A.1, 4.5 A.3, 4.5 C.2, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Read and write ratios and generate equal ratios
2. Write a percent for a given situation and create situations for given percents
3. Write numbers as fractions, decimals, and percents
4. Find the given percent of a whole number
5. Make tables and find a pattern to solve problems involving percent

Topic 17 – Equations and Graphs

NJ Core Standard – 4.1.4 A.7, 4.2.4 C.1, 4.3.5 B.2, 4.3.5 C.1, 4.5 A.3, (Also 4.1.5 B.6, 4.5 A.1, 4.5 D.2)

1. Read and write integers and represent them on a number line
2. Identify and graph points on a coordinate plane
3. Use number lines and the coordinate plane to find distances involving positive and negative numbers
4. Make a table of *x*- and *y*-values for an equation---use the ordered pairs to graph the equation
5. Work backward to solve a problem

Topic 18 – Graphs and Data

NJ Core Standard – 4.4.5 A.1, 4.4.5 A.3, 4.4.5 A.2, 4.4.6 A.2, (Also 4.5 A.1, 4.5 E.1, 4.5 E.2, 4.5 E.3)

1. Collect data and record data in frequency tables and line plots---interpret the results
2. Make and interpret bar graphs, double-bar graphs, and picture graphs
3. Make a line graph from a set of ordered pairs---read and interpret the line graph
4. Use place value to organize data in a stem-and-leaf plot
5. Make and interpret histograms
6. Complete circle graphs and interpret data given in a circle graphs
7. Find the mean of data sets
8. Find the median, mode, and range data sets
9. Read, interpret, and make various types of graphs to solve problems

Topic 19 – Transformations, Congruence, and Symmetry

NJ Core Standard – 4.2.4 B.2, 4.2.5 B.1, 4.2.5 A.4, 4.5 E.1, (Also 4.5 A.1, 4.5 A.3, 4.5 E.2)

1. Use coordinates to describe a translation of a figure
2. Use coordinates to describe a reflection of a figure
3. Use coordinates to describe and draw a rotation of a figure
4. Determine whether a pair of congruent figures are related by a transformation, reflection, rotation, or some combination of the three
5. Explore figures that have line symmetry and rotational symmetry
6. Use a variety of objects to solve problems

Topic 20 – Probability

NJ Core Standard – 4.4.4 B.1, 4.4.4 B.2, 4.4.5 B.2, 4.5 A.3, (Also 4.3.5 A.1, 4.5 A.1, 4.5 A.4, 4.5 E.1, 4.5 E.2)

1. Find all possible outcomes of a probability experiment by using a tree diagram or by multiplying
2. Use fractions to represent the theoretical probability of an event
3. Use fractions to represent the experimental probability of an event and use the probability to make predictions
4. Break apart word problems into simpler problems in order to find a solution

Grade 6

Chapter 1 – Algebra: Number Patterns and Functions

NJ Core Standard – 4.1.6B, 4.3.6C, 4.3.6D, 4.5A, 4.5C, 4.5D, 4.5F

1. Solve problems using the four-step plan
2. Find the prime factorization of a composite number
3. Use powers and exponents in expressions
4. Find the value of expressions using the order of operations
5. Evaluate algebraic expressions
6. Illustrate functions using technology
7. Complete function tables and find function rules
8. Solve problems by using the guess and check strategy
9. Solve equations by using mental math and the guess and check strategy
10. Use tables of data to generate formulas
11. Find the areas of rectangles and squares

Chapter 2 – Statistics and Graphs

NJ Core Standard – 4.3.6A, 4.3.6B, 4.3.6C, 4.4.6A, 4.5E, 4.5F

1. Solve problems by making a table
2. Display and analyze data using bar graphs and line graphs
3. Use a spreadsheet to make double-line and bar graphs
4. Interpret line graphs
5. Display and analyze data using a stem-and-leaf plot
6. Display, analyze, and interpret data using line plots
7. Find the mean of a data set
8. Use a spreadsheet to find the mean
9. Find and interpret the median, mode, and range of a set of data
10. Select an appropriate display for a set of data
11. Solve a problem by collecting, organizing, displaying, and interpreting data
12. Use integers to represent real-world data

Chapter 3 – Operations with Decimals

NJ Cores Standard – 4.1.6A, 4.1.6B,4.1.6C, 4.3.6D,4.5D

1. Represent decimals in word form, standard form, and expanded form
2. Compare and order decimals
3. Round decimals
4. Estimate sums and differences of decimals
5. Use models to add and subtract decimals
6. Add and subtract decimals
7. Use models to multiply a decimal by a whole number
8. Estimate and find the product of decimals and whole numbers
9. Use decimal models to multiply decimals
10. Multiply decimals by decimals
11. Divide decimals by whole numbers
12. Use models to divide a decimal by a decimal
13. Divide decimals by decimals
14. Determine reasonable answers to solve problems

Chapter 4 – Fractions and Decimals

NJ Core Standard – 4.1.6A, 4.2.6C

1. Find the greatest common factor of two or more numbers
2. Use models to determine a procedure for generating equivalent fractions
3. Express fractions in simplest form
4. Write mixed numbers as improper fractions and vice versa
5. Solve problems by making an organized list
6. Find the least common multiple of two or more numbers
7. Compare and order fractions
8. Write decimals as fractions or mixed numbers in simplest form
9. Write fractions as decimals
10. Use ordered pairs to locate points and organize data

Chapter 5 – Operations with Fractions

NJ Core Standard – 4.1.6B, 4.1.6C, 4.3.6D, 4.5C, 4.5D

1. Use models to round fractions to the nearest half
2. Round fractions and mixed numbers
3. Solve problems by acting them out
4. Add and subtract fractions with like denominators
5. Use models to add and subtract fractions with unlike denominators
6. Add and subtract fractions with unlike denominators
7. Add and subtract mixed numbers
8. Estimate products of fractions using compatible numbers and rounding
9. Multiply fractions using models
10. Multiply fractions
11. Multiply mixed numbers
12. Divide fractions using models
13. Divide fractions
14. Divide mixed numbers

Chapter 6 – Ratio, Proportion, and Functions

NJ Core Standard – 4.3.6A, 4.3.6B, 4.5F

1. Express ratios and rates in fraction form
2. Explore ratios and the relationship between ratio and area
3. Use ratio tables to represent and solve problems involving equivalent ratios
4. Use technology to compare output/input ratios for functions
5. Determine if two ratios are proportional
6. Solve proportions
7. Solve problems by looking for a pattern
8. Extend and describe arithmetic sequences using algebraic expressions
9. Write an equation to describe a proportional situation
10. Graph proportional relationships

Chapter 7 – Percent and Probability

NJ Core Standards – 4.1.6C, 4.4.6A, 4.4.6B, 4.4.6C, 4.4.6D, 4.5C

1. Use models to illustrate the meaning of percents
2. Express percents as fractions and fractions as percents
3. Sketch and analyze circle graphs
4. Express percents as decimals and decimals as percents
5. Find and interpret the probability of a simple event
6. Compare experimental probability with theoretical probability
7. Construct sample spaces using tree diagrams or lists
8. Predict the actions of a larger group using a sample
9. Solve problems by solving a simpler problem
10. Estimate the percent of a number

Chapter 8 – Systems of Measurement

NJ Core Standards – 4.1.6C, 4.2.6D, 4.2.6E, 4.5C

1. Change units of length and measure length in the customary system
2. Change units of capacity and weight in the customary system
3. Measure in metric units
4. Use metric units of length
5. Use metric units of mass and capacity
6. Solve problems using benchmarks
7. Change units within the metric system
8. Add and subtract measures of time
9. Choose and estimate reasonable temperatures
10. Select appropriate units and tools to measure objects or activities

Chapter 9 – Geometry: Angles and Polygons

NJ Core Standards – 4.2.6A, 4.2.6B, 4.2.6E

1. Measure and classify angles
2. Estimate measures of angles and draw angles
3. Classify and apply angle relationships
4. Explore the relationship among the angles of a triangle
5. Classify triangles and find missing angle measures in triangles
6. Explore the relationship among the angles of different quadrilaterals
7. Classify quadrilaterals and find missing angle measures in quadrilaterals
8. Solve problems by drawing a diagram
9. Identify similar and congruent figures
10. Create tessellations using pattern blocks

Chapter 10 – Measurement: Perimeter, Area, and Volume

NJ Core Standards – 4.2.6A, 4.2.6B, 4.2.6D, 4.2.6E, 4.5E

1. Explore changes in area and perimeter of rectangles and squares
2. Find the perimeters of squares and rectangles
3. Describe the relationship between diameter and circumference of a circle
4. Estimate and find the circumference of circles
5. Find the areas of parallelograms
6. Discover the formula for the area of a triangle using the properties of parallelograms and a table of values
7. Find the areas of triangles
8. Solve problems by making a model
9. Find the volume of rectangular prisms
10. Make a two-dimensional pattern for a cube and use it to build another cube
11. Find the surface areas of rectangular prisms
12. Select appropriate units, tools, and formulas to measure objects

Chapter 11 – Integers and Transformations

NJ Core Standards – 4.2.6A, 4.2.6B, 4.3.6D

1. Compare and order integers

2. Use models to understand zero pairs
3. Add integers
4. Subtract integers
5. Multiply integers
6. Solve problems by working backward
7. Divide integers
8. Locate and graph ordered pairs on a coordinate plane
9. Graph translations on a coordinate plane
10. Graph reflections on a coordinate plane
11. Graph rotations on a coordinate plane

Chapter 12 – Algebra: Properties and Equations

NJ Core Standards – 4.1.6B, 4.3.6D, 4.5C, 4.5E

1. Model the Distributive Property
2. Use the Distributive Property to compute multiplication problems mentally
3. Use the Commutative and Associative properties to simplify expressions
4. Solve addition equations using models
5. Solve addition equations
6. Solve subtraction equations using models
7. Solve subtraction equations
8. Use models to solve simple addition and subtraction inequalities
9. Solve multiplication equations
10. Solve problems by choosing the best method of computation

Grade 7 - Prentice Hall Pre-Algebra

Chapter 1 – Algebraic Expressions and Integers

NJ Core Standard – 4.1, 4.3

1. Variables and Expressions
2. The Order of Operations
3. Writing and Evaluating Expressions
4. Integers and Absolute Value
5. Adding Integers
6. Subtracting Integers
7. Inductive Reasoning
8. Look for a Pattern
9. Multiplying and Dividing Integers
10. The Coordinate Plane

Chapter 2 – Solving One-Step Equations and Inequalities

NJ Core Standard – 4.1, 4.3

1. Properties of Numbers
2. The Distributive Property
3. Simplifying Variable Expressions
4. Variables and Equations
5. Solving Equations by Adding or Subtracting
6. Solving Equations by Multiplying or Dividing
7. Guess, Check, and Revise
8. Inequalities and Their Graphs
9. Solving One-Step Inequalities by Adding or Subtracting
10. Solving One-Step Inequalities by Multiplying or Dividing

Chapter 3 – Decimals and Equations

NJ Cores Standard – 4.1, 4.2, 4.3, 4.4

1. Rounding and Estimating

2. Estimating Decimal Products and Quotients
3. Mean, Median, and Mode
4. Using Formulas
5. Solving Equations by Adding or Subtracting Decimals
6. Solving Equations by Multiplying or Dividing Decimals
7. Using the Metric System
8. Act It Out

Chapter 4 – Factors, Fractions, and Exponents

NJ Core Standard – 4.1, 4.3, 4.5

1. Divisibility and Factors
2. Exponents
3. Prime Factorization and Greatest Common Factor
4. Simplifying Fractions
5. Solve a Simpler Problem
6. Rational Numbers
7. Exponents and Multiplication
8. Exponents and Division
9. Scientific Notation

Chapter 5 – Operations with Fractions

NJ Core Standard – 4.1, 4.3

1. Comparing and Ordering Rational Numbers
2. Fractions and Decimals
3. Adding and Subtracting Fractions
4. Multiplying and Dividing Fractions
5. Using Customary Units of Measurement
6. Work Backward
7. Solving Equations by Adding or Subtracting Fractions
8. Solving Equations by Multiplying Fractions
9. Powers of Products and Quotients

Chapter 6 – Ratios, Proportions, and Percents

NJ Core Standard – 4.1, 4.2, 4.4

1. Ratios and Unit Rates
2. Proportions
3. Similar Figures and Scale Drawings
4. Probability
5. Fractions, Decimals, and Percents
6. Proportions and Percents
7. Percents and Equations
8. Percent of Change
9. Markup and Discount
10. Make a Table

Chapter 7 – Solving Equations and Inequalities

NJ Core Standards – 4.3

1. Solving Two-Step Equations
2. Solving Multi-Step Equations
3. Multi-Step Equations With Fractions and Decimals
4. Write an Equation
5. Solving Equations With Variables on Both Sides
6. Solving Two-Step Inequalities
7. Transforming Formulas
8. Simple and Compound Interest

Chapter 8 – Linear Functions and graphing

NJ Core Standards – 4.3, 4.4

1. Relations and Functions
2. Equations With Two Variables
3. Slope and y-intercept

4. Writing Rules for Linear Functions
5. Scatter Plots
6. Solve by Graphing
7. Solving Systems of Linear Equations
8. Graphing Linear Inequalities

Chapter 9 – Spatial Thinking

NJ Core Standards – 4.2

1. Introduction to Geometry: Points, Lines, and Planes
2. Angle Relationships and Parallel Lines
3. Classifying Polygons
4. Draw a Diagram
5. Congruence
6. Circles
7. Constructions
8. Translations
9. Symmetry and Reflections
10. Rotations

Chapter 10 – Area and Volume

NJ Core Standards – 4.2

1. Area: Parallelograms
2. Area: Triangles and Trapezoids
3. Area: Circles
4. Space Figures
5. Surface Area: Prisms and Cylinders
6. Surface Area: Pyramids, Cones, and Spheres
7. Volume: Prisms and Cylinders
8. Make a Model
9. Volume: Pyramids, Cones, and Spheres

Chapter 11 – Right Triangles in Algebra

NJ Core Standards – 4.2, 4.3

1. Square Roots and Irrational Numbers
2. The Pythagorean Theorem
3. Distance and Midpoint Formulas
4. Write a Proportion
5. Special Right Triangles
6. Sine, Cosine, and Tangent Ratios
7. Angles of Elevation and Depression

Chapter 12 – Data Analysis and Probability

NJ Core Standards – 4.4

1. Frequency Tables, Line Plots, and Histograms
2. Box-and-Whisker Plots
3. Using Graphs to Persuade
4. Counting Outcomes and Theoretical Probability
5. Independent and Dependent Events
6. Permutations and Combinations
7. Experimental Probability
8. Random Samples and Surveys
9. Simulate the Problem

Chapter 13 – Nonlinear Functions and Polynomials

NJ Core Standards – 4.3

1. Patterns and Sequences
2. Graphing Nonlinear Functions
3. Exponential Growth and Decay
4. Polynomials
5. Adding and Subtracting Polynomials

6. Multiplying a Polynomial by a Monomial
7. Multiplying Binomials
8. Use Multiple Strategies

Grade 7 Glencoe Math Connects Course 2

Chapter 1 – Introduction to Algebra and Functions

NJ Core Standard – 4.1.7A, 4.1.7B, 4.3.7A, 4.3.7B, 4.3.7C, 4.3.7D, 4.5A, 4.5B, 4.5C, 4.5D, 4.5E, 4.5F

1. A Plan for Problem Solving
2. Powers and Exponents
3. Squares and Square Roots
4. Order of Operations
5. Problem Solving Investigation: Guess and Check
6. Algebra: Variables and Expressions
7. Algebra: Equations
8. Algebra: Properties
9. Algebra: Arithmetic Sequences
10. Algebra : Equations and Functions

Chapter 2 – Integers

NJ Core Standard – 4.1.7.A, 4.2.7C, 4.3.7D, 4.5A, 4.5B, 4.5E

1. Integers and Absolute Value
2. Comparing and Ordering Integers
3. The Coordinate Plane
4. Adding Integers
5. Subtracting Integers
6. Multiplying Integers
7. Problem Solving Investigation: Look for a Pattern
8. Dividing Integers

Chapter 3 – Algebra: Linear Equations and Functions

NJ Cores Standard – 4.2.7E, 4.3.7B, 4.3.7C, 4.3.7D, 4.2A, 4.5B, 4.5D, 4.5E, 4.5F

1. Writing Expressions and Equations
2. Solving Addition and Subtraction Equations
3. Solving Multiplication Equations
4. Problem Solving Investigation: Work Backward
5. Solving Two-Step Equations
6. Measurement: Perimeter and Area
7. Functions and Graphs

Chapter 4 – Fractions, Decimals, and Percents

NJ Core Standard – 4.1.7A, 4.4.7C, 4.5B

1. Prime Factorization
2. Greatest Common Factor
3. Problem Solving Investigation: Make an Organized List
4. Simplifying Fractions
5. Fractions and Decimals
6. Fractions and Percents
7. Percents and Decimals
8. Least Common Multiple
9. Comparing and Ordering Rational Numbers

Chapter 5 – Applying Fractions

NJ Core Standard – 4.1.7A, 4.1.7B, 4.1.7C, 4.2.7D, 4.5A, 4.5B, 4.5D

1. Estimating with Fractions
2. Adding and Subtracting Fractions
3. Adding and Subtracting Mixed Numbers

4. Problem Solving Investigation: Eliminate Possibilities
5. Multiplying Fractions and Mixed Numbers
6. Algebra: Solving Equations
7. Dividing Fractions and mixed Numbers

Chapter 6 – Ratios and Proportions

NJ Core Standard – 4.1.7A, 4.2.7A, 4.2.7D, 4.4.7D, 4.5A, 4.5B, 4.5C

1. Ratios
2. Rates
3. Rate of Change and Slope
4. Measurement: Changing Customary Units
5. Measurement: Changing Metric Units
6. Algebra: Solving Proportions
7. Problem Solving Investigation: Draw a Diagram
8. Scale Drawings
9. Fractions, Decimals, and Percents

Chapter 7 – Applying Percents

NJ Core Standard – 4.1.7A, 4.1.7C, 4.5B, 4.5C, 4.5D, 4.5E

1. Percent of a Number
2. The Percent Proportion
3. Percents and Estimation
4. Algebra: The Percent Equation
5. Problem Solving Investigation: Determine Reasonable Answers
6. Percent of Change
7. Sales Tax and Discount
8. Simple Interest

Chapter 8 – Statistics: Analyzing Data

NJ Core Standard – 4.4.7A, 4.5A, 4.5B, 4.5D, 4.5E, 4.5F

1. Line Plots
2. Measures of Central Tendency and Range
3. Stem-and-Leaf Plots
4. Bar Graphs and Histograms
5. Problem solving Investigation: Use a Graph
6. Using Graphs to Predict
7. Using Data to Predict
8. Using Sampling to Predict
9. Misleading Statistics

Chapter 9 – Probability

NJ Core Standard – 4.4.7B, 4.4.7C, 4.5B, 4.5C

1. Simple Events
2. Sample Spaces
3. The Fundamental Counting Principle
4. Permutations
5. Combinations
6. Problem Solving Investigation: Act It Out
7. Theoretical and Experimental Probability
8. Compound Events

Chapter 10 – Geometry: Polygons

NJ Core Standard – 4.2.7A, 4.2.7B, 4.2.7C, 4.5A, 4.5D

1. Angle Relationships
2. Complementary and Supplementary Angles
3. Statistics: Display Data in a Circle Graph

4. Triangles
5. Problem Solving Investigation: Use Logical Reasoning
6. Quadrilaterals
7. Similar Figures
8. Polygons and Tessellations
9. Translations
10. Reflections

Chapter 11 – Measurement: Two-and Three-Dimensional Figures

NJ Core Standard – 4.2.7D, 4.2.7E, 4.5A, 4.5C, 4.5D, 4.5E, 4.5F

1. Area of Parallelograms
2. Area of Triangles and Trapezoids
3. Circles and Circumference
4. Area of Circles
5. Problem Solving Investigation: Solve a Simpler Problem
6. Area of complex Figures
7. Three-Dimensional Figures
8. Drawing Three-Dimensional Figures
9. Volume of Prisms
10. Volume of Cylinders

Chapter 12 – Geometry and Measurement

NJ Core Standard – 4.1.7C, 4.2.7D, 4.5A

1. Estimating Square Roots
2. The Pythagorean Theorem
3. Problem Solving Investigation: Make a Model
4. Surface Area of Rectangular Prisms
5. Surface Area of Cylinders

Grade 8 Prentice Hall Algebra 1

Chapter 1 – Variables, Function Patterns, and Graphs

NJ Core Standard – 4.1A, 4.1B, 4.3C.1, 4.4.A.1, 4.4.A.4

1. Using Variables
2. Exponents and Order of Operations
3. Exploring Real Numbers
4. Patterns and Functions
5. Scatter Plots
6. Mean, Median, Mode and Range

Chapter 2 – Rational Numbers 1.A.3

NJ Core Standard – 4.1.A.3, 4.1.B.1, 4.1.B.3, 4.3.C.1, 4.3.D.2, 4.3.D.3, 4.4.B.3, 4.4.B.4, 4.4.B.4, 4.4.B.5, 4.4.B.6

1. Adding Rational Numbers
2. Subtracting Rational Numbers
3. Multiplying and Dividing Rational Numbers
4. The Distributive Property
5. Properties of Numbers
6. Theoretical and Experimental Probability
7. Probability of Compound Events

Chapter 3 – Solving Equations

NJ Cores Standard – 4.1.A.1, 4.1.B.1, 4.1.B.4, 4.1.C.1, 4.2.A.1, 4.2.A.3, 4.2.D.2, 4.2.E.1, 4.3.C.1, 4.3.D.2, 4.3.D.3,

1. Solving Two-Step Equations
2. Solving Multi-Step Equations
3. Equations With Variables on Both Sides
4. Ratio and Proportion

5. Proportions and Similar Figures
6. Equations and Problem Solving
7. Percent of Change
8. Finding and Estimating Square Roots
9. The Pythagorean Theorem

Chapter 4 – Solving Inequalities

NJ Core Standard – 4.3.D.2, 4.3.D.3

1. Inequalities and Their Graphs
2. Solving Inequalities Using Addition and Subtraction
3. Solving Inequalities Using Multiplication and Division
4. Solving Multi-Step Inequalities
5. Compound Inequalities
6. Absolute Value Equations and Inequalities

Chapter 5 – Graphs and Functions

NJ Core Standard – 4.3.A.1, 4.3.A.3, 4.3.B.1, 4.3.C.2, 4.3.C.3

1. Relating Graphs to Events
2. Relations and Functions
3. Function Rules, Tables, and Graphs
4. Writing a Function Rule
5. Direct Variation
6. Inverse Variation
7. Describing Number Patterns

Chapter 6 – Linear Equations and Their Graphs

NJ Core Standard – 4.2.C.1, 4.3.B.1, 4.3.B.2, 4.3.B.3, 4.3.B.4, 4.3.C.14.4.A.1, 4.4.A.2, 4.4.A.4

1. Rate of Change and Slope
2. Slope-Intercept Form
3. Applying Linear Functions
4. Standard Form
5. Point-Slope Form and Writing Linear Equations
6. Parallel and Perpendicular Lines
7. Scatter Plots and Equations of Lines
8. Graphing Absolute Value Equations

Chapter 7 – Systems of Equations and Inequalities

NJ Core Standard – 4.2.C.1,4.3.B.1, 4.3.B.2, 4.3.C.1, 4.3.D.2, 4.3.D.3

1. Solving Systems by Graphing
2. Solving Systems Using Substitution
3. Solving Systems Using Elimination
4. Applications of Linear Systems
5. Linear Inequalities
6. Systems of Linear Inequalities

Chapter 8 – Exponents and Exponential Functions

NJ Core Standard – 4.1.B.2, 4.2.D.1, 4.3.A.1, 4.3.B.1, 4.3.B.4, 4.3.C.1, 4.3.C.3,

1. Zero and Negative Exponents
2. Scientific Notation
3. Multiplication Properties of Exponents
4. More Multiplication Properties of Exponents
5. Division Properties of Exponents
6. Geometric Sequences
7. Exponential Functions
8. Exponential Growth and Decay

Chapter 9 – Polynomials and Factoring

NJ Core Standard – 4.3.D.1, 4.3.D.2

1. Adding and Subtracting Polynomials
2. Multiplying and Factoring
3. Multiplying Binomials
4. Multiplying Special Cases
5. Factoring Trinomials of the Type x^2+bx+c
6. Factoring Trinomials of the Type $ax^2 + bx+c$
7. Factoring Special Cases
8. Factoring by Grouping

Chapter 10 – Quadratic Equations and Functions

NJ Core Standard – 4.3.B.1, 4.3.B.3, 4.3.B.4, 4.3.C.1, 4.3.C.2, 4.3.D.2

1. Exploring Quadratic Graphs
2. Quadratic Functions
3. Solving Quadratic Equations
4. Factoring to Solve Quadratic Equations
5. Completing the Square
6. Using the Quadratic Formula
7. Using the Discriminate
8. Choosing a Linear, Quadratic, or Exponential Model

Chapter 11 – Radical Expressions and Equations

NJ Core Standard – 4.2.A.1, 4.2.A.3, 4.2.C.1, 4.2.E.1, 4.3.B.1. 4.3.B.3, 4.3.B.4, 4.3.C.1

1. Simplifying Radicals
2. Operations With Radical Expressions
3. Solving Radical Equations

4. Graphing Square Root Functions
5. Trigonometric Ratios
6. Angles of Elevation and Depression

Chapter 12 – Rational Expressions and Functions

NJ Core Standard – 4.3.A.2, 4.3.B.1, 4.3.B.4, 4.3.C.1, 4.3.D.1, 4.4.C.1, 4.4.C.2, 4.4.C.3, 4.4.C.4

1. Graphing Rational Functions
2. Simplifying Rational Expressions
3. Multiplying and Dividing Rational Expressions
4. Dividing Polynomials
5. Adding and Subtracting Rational Expressions
6. Solving Rational Equations
7. Counting Methods and Permutations
8. Combinations

Grade 8 Glencoe Algebra 1

Chapter 1 – The Language of Algebra

NJ Core Standard – 4.1A, 4.1B, 4.3C.1, 4.4.A.1, 4.4.A.4

1. Variables and Expressions
2. Order of Operations
3. Open Sentences
4. Identity and Equality Properties
5. The Distributive Property
6. Commutative and Associative Properties
7. Logical Reasoning
8. Graphs and Functions
9. Statistics: Analyzing Data by Using Tables and Graphs

Chapter 2 – Real Numbers

NJ Core Standard – 4.1.A.3, 4.1.B.1, 4.1.B.3, 4.3.C.1, 4.3.D.2, 4.3.D.3, 4.4.B.3, 4.4.B.4, 4.4.B.4, 4.4.B.5, 4.4.B.6

1. Rational Numbers on the Number Line
2. Adding and Subtracting Rational Numbers
3. Multiplying Rational Numbers
4. Dividing Rational Numbers
5. Statistics: Displaying and Analyzing Data
6. Probability: Simple Probability and Odds
7. Square Roots and Real Numbers

Chapter 3 – Solving Linear Equations

NJ Cores Standard – 4.1.A.1, 4.1.B.1, 4.1.B.4, 4.1.C.1, 4.2.A.1, 4.2.A.3, 4.2.D.2, 4.2.E.1, 4.3.C.1, 4.3.D.2, 4.3.D.3,

1. Writing Equations
2. Solving Equations by Using Addition and Subtraction
3. Solving Equations by Using Multiplication and Division
4. Solving Multi-Step Equations
5. Solving Equations with the Variable on Each Side
6. Ratios and Proportions
7. Percent of Change
8. Solving Equations and Formulas
9. Weighted Averages

Chapter 4 – Graphing Relations and Functions

NJ Core Standard – 4.3.D.2, 4.3.D.3

1. The Coordinate Plane

2. Transformations on the Coordinate Plane
3. Relations
4. Equations as Relations
5. Graphing Linear Equations
6. Functions
7. Arithmetic Sequences
8. Writing Equations from Patterns

Chapter 5 – Analyzing Linear Equations

NJ Core Standard – 4.3.A.1, 4.3.A.3, 4.3.B.1, 4.3.C.2, 4.3.C.3

1. Slope
2. Slope and Direct Variation
3. Slope-Intercept Form
4. Writing Equations in Slope-Intercept Form
5. Writing Equations in Point-Slope Form
6. Geometry: Parallel and Perpendicular Lines
7. Statistics: Scatter Plots and Lines of Fit

Chapter 6 – Solving Linear Inequalities

NJ Core Standard – 4.2.C.1, 4.3.B.1, 4.3.B.2, 4.3.B.3, 4.3.B.4, 4.3.C.14.4.A.1, 4.4.A.2, 4.4.A.4

1. Solving Inequalities by Addition and Subtraction
2. Solving Inequalities by Multiplication and Division
3. Solving Multi-Step Inequalities
4. Solving Compound Inequalities
5. Solving Open Sentences Involving Absolute Value
6. Graphing Inequalities in Two Variables

Chapter 7 – Solving Systems of Linear Equations and Inequalities

NJ Core Standard – 4.2.C.1, 4.3.B.1, 4.3.B.2, 4.3.C.1, 4.3.D.2, 4.3.D.3

1. Graphing Systems of Equations
2. Substitution
3. Elimination Using Addition and Subtraction
4. Elimination Using Multiplication
5. Graphing Systems of Inequalities

Chapter 8 – Polynomials

NJ Core Standard – 4.1.B.2, 4.2.D.1, 4.3.A.1, 4.3.B.1, 4.3.B.4, 4.3.C.1, 4.3.C.3,

1. Multiplying Monomials
2. Dividing Monomials
3. Scientific Notation
4. Polynomials
5. Adding and Subtracting Polynomials
6. Multiplying a Polynomial by a Monomial
7. Multiplying Polynomials
8. Special Products

Chapter 9 – Factoring

NJ Core Standard – 4.3.D.1, 4.3.D.2

1. Factors and Greatest Common Factors
2. Factoring Using the Distributive Property
3. Factoring Trinomials : x^2+bx+c
4. Factoring Trinomials: $ax^2 + bx+c$
5. Factoring Differences of Squares
6. Perfect Squares and Factoring

Chapter 10 – Quadratic and Exponential Functions

NJ Core Standard – 4.3.B.1, 4.3.B.3, 4.3.B.4, 4.3.C.1, 4.3.C.2, 4.3.D.2

1. Graphing Quadratic Functions
2. Solving Quadratic Equations by Graphing
3. Solving Quadratic Equations by Completing the Square
4. Solving Quadratic Equations by Using the Quadratic Formula
5. Exponential Functions
6. Growth and Decay
7. Geometric Sequences

Chapter 11 – Radical Expressions and Triangles

NJ Core Standard – 4.2.A.1, 4.2.A.3, 4.2.C.1, 4.2.E.1, 4.3.B.1, 4.3.B.3, 4.3.B.4, 4.3.C.1

1. Simplifying Radical Expressions
2. Operations With Radical Expressions
3. Radical Equations
4. The Pythagorean Theorem
5. The Distance Formula
6. Similar Triangles
7. Trigonometric Ratios

Chapter 12 – Rational Expressions and Equations

NJ Core Standard – 4.3.A.2, 4.3.B.1, 4.3.B.4, 4.3.C.1, 4.3.D.1, 4.4.C.1, 4.4.C.2, 4.4.C.3, 4.4.C.4

1. Inverse Variation
2. Rational Expressions
3. Multiplying Rational Expressions
4. Dividing Rational Expressions
5. Dividing Polynomials

6. Rational Expressions with Like Denominators
7. Rational Expressions with Unlike Denominators
8. Mixed Expressions and Complex Fractions
9. Solving Rational Equations

Chapter 13 – Statistics

NJ Core Standard – 4.4

1. Sampling and Bias
2. Introduction of Matrices
3. Histograms
4. Measures of Variation
5. Box-and-Whisker Plots

Chapter 14 – Probability

NJ Core Standard – 4.4

1. Counting Outcomes
2. Permutations and Combinations
3. Probability of Compound Events
4. Probability Distributions
5. Probability Simulations

Note: The suggested Instructional Sequences included in this curriculum guide were developed at the time the guide was written. It should be noted that due to mandates from the Department of Education, potential changes in the administration date of the NJ state assessment, and other factors that influence instruction, modifications might have to be made.

Voorhees Township Schools
Suggested Scope and Sequence
Kindergarten – Fifth Grade Math

(Begin on the Following Page)

Voorhees Township Schools
Suggested Instructional Sequence
Kindergarten – Fifth Grade Math

(Begin on the Following Page)

Voorhees Township Schools
Suggested Instructional Sequence
Sixth-Grade Math

Topic	Number of Weeks
Statistics	4
Probability	2-3
Estimation/Mental Math	1
Exponents	1
Order of Operations-Inc. Alg. Expressions	1-2
Patterns	1
Equations	2-3
Decimals (add and subtract)	1
Geometry of Polygons, Planes, etc.	6
Number Theory	2-3
Decimals (multiply and divide)	1
Fractions (add and subtract)	2
Fractions (multiply and divide)	2
Ratio, Proportion, Percents	2-3
Integers and Coordinate Planes (includes translation, reflection, and rotation)	2-3

Voorhees Township Schools
Sixth-Grade Math
Textbook Pacing Guide
Math Connects – Course 1

Chapter 1 - Algebra - Variables & Expressions	14 Days
Chapter 2 - Graphs & Statistics (Measures of Central Tendency)	14 Days
Chapter 3 – Operations with Decimals	13 Days
Chapter 4- Number Theory	13 Days
Chapter 5- Operations with Fractions	14 Days
Chapter 6 – Ratios, Proportions, & Functions	11 Days
Chapter 7 – Percents & Probability	12 Days
Chapter 8 – Systems of Measurement	11 Days
Chapter 9 – Geometry- Angles & Polygons	12 Days
Chapter 10 – Measurement – Perimeter, Area, & Volume	14 Days
Chapter 11 – Integers & Transformations	13 Days
Chapter 12 – Properties & Solving Equations	9 Days

Voorhees Township Schools
Suggested Instructional Sequence
Seventh-Grade Math
Pre-Algebra

Topic	Number of Weeks
Chapter 1 – Algebraic Expressions and Integers	3
Chapter 1 – 1-Step Equations and Inequalities	2
Chapter 3 – Decimals and Equations	1 ½
Vertex Edge Graphs	1
Chapter 4 – Factors, Fractions, and Exponents	2
Chapter 5 – Operations with Fractions	2 ½
Chapter 6 – Ratio, Proportion, and Percent	3
Chapter 12 – Data and Probability	3
Chapter 9 – Spatial Thinking	3 ½
Chapter 10 – Area	2
Chapter 7 – Equations and Inequalities	2 ½
Chapter 10 – Area and Volume	2
Chapter 8 – Linear Functions	1
Chapter 13 – Nonlinear Functions	1 ½

Voorhees Township Schools
Suggested Instructional Sequence
Eighth-Grade Math
Introduction to Algebra

UNIT 1

Chapter 1 The Language of Algebra (23 days) **(CCCS)**

1-1 Variables and Expressions (4.3)
1-2 Order of Operations (4.1)
1-3 Open Sentences (4.1)
1-4 Identity and Equality Properties (4.3)
1-5 The Distributive Property (4.3)

Mid-chapter Test (1.1 – 1.5)

1-6 Commutative and Associative Properties (4.3)
1-7 Logical Reasoning (4.5)
1-8 Graphs and Functions (4.3) move to beginning of Chap 4
1-9 Statistics: Analyzing Data by Using Tables and Graphs (4.4)

Test Chapter 1

Chapter 1 Standardized Test Practice

Chapter 2 Real Numbers (25 days)

2-1 Rational Numbers on the Number Line (4.3)
2-2 Adding and Subtracting Rational Numbers (4.3)
2-3 Multiplying Rational Numbers (4.3)
2-4 Dividing Rational Numbers (4.3)

Mid-chapter Test (2.1 – 2.4) 14 days

END OF FIRST MARKING PERIOD

2-5 Statistics: Displaying and Analyzing Data (4.4)
2-6 Probability: Simple Probability and Odds (4.4)
2-7 Square Roots and Real Numbers (4.1)

Test Chapter 2 (2.5 – 2.7) 10 days
Standardized Test practice

Chapter 3 Solving Linear Equations (35 days)

3-1 Writing Equations (4.3)
3-2 Solving Equations by Using Addition and Subtraction (4.3)
3-3 Solving Equations by Using Multiplication and Division (4.3)
3-4 Solving Multi-step Equations (4.3)
3-5 Solving Equations with the Variable on Each Side (4.3)

Mid-chapter Test (3.1 – 3.5) 21 days

3-6 Ratios and Proportions (4.3)
3-7 Percent of Change (4.3)
Percent Word Problem Packet
3-8 Solving Equations and Formulas (4.3)
3-9 Weighted Averages (4.3) optional

Test Chapter 3 (3.6 – 3.9) 20 days

Standardized Test practice

END OF SECOND MARKING PERIOD

Computer Technology Project (4 days)

Chapter 14 Probability (14 days)

14-1 Counting Outcomes (4.4)
14-2 Permutations and Combinations (4.4)
14-3 Probability of Compound Events (4.4)
14-4 Probability of Distributions (4.4) (Skip)
14-5 Probability Simulations (4.4)

Test Chapter 14

Chapter 13 Statistics (13 days)

5-7 Statistics: Scatter Plots and Lines of Fit (4.4)
13-1 Sampling and Bias (4.3)

13-2 Introduction to Matrices (4.3)
13-3 Histograms (4.3)
13-4 Measures of Variation (4.3)
13-5 Box and Whisker Plots (4.3)

Test Chapter 13

UNIT 2

Chapter 4 Graphing Relations and Functions (18 days)

1-8 Graphs and Functions (4.3)
4-1 The Coordinate Plane (4.2)
4-2 Transformations on the Coordinate Plane (4.2)

4-3 Relations (4.3)
4-4 Equations as Relations (4.3)
4-5 Graphing Linear Equations (4.3)
4-6 Functions (4.3)
4-7 Arithmetic Sequences (4.3)
4-8 Writing Equations from Patterns (4.3) optional

Chapter 4 Test

Standardized Test practice

END OF THIRD MARKING PERIOD

Chapter 5 Analyzing Linear Equations (21 days)

5-1 Slope (4.3)
5-2 Slope and Direct Variation (4.3)
5-3 Slope-Intercept Form (4.3)

Mid-chapter Test

NJASK ADMINISTRATION

5-4 Writing Equations in Slope-Intercept Form (4.3)
5-5 Writing Equations in Point-Slope Form (4.3)

5-6 Geometry: Parallel and Perpendicular Lines (4.2)
5-7 Statistics: Scatter Plots and Lines of Fit (4.4) move to before Chap 13

Chapter 5 Test

Standardized Test practice

Chapter 6 Solving Linear Inequalities (10 days)

6-1 Solving Inequalities by Addition and Subtraction (4.3)
6-2 Solving Inequalities by Multiplications and Division (4.3)
6-3 Solving Multi-Step Inequalities (4.3)

Final Exam Ch 1-5, 13, 14

END OF FOURTH MARKING PERIOD

Note: Additional Modification Will Be Needed

Mid-chapter Test

6-4 Solving Compound Inequalities (4.3)
6-5 Solving Open Sentences Involving Absolute Value (4.3)
6-6 Graphing Inequalities in two variables (4.3)

Chapter 6 Test

If Time Permits:

Chapter 7 Solving Systems of Linear Equations and Inequalities (? days)

7-1 Graphing Systems of Equations (4.3)
7-2 Substitution (4.3)
7-3 Elimination Using Addition and Subtraction (4.3)

Mid-chapter Test

7-4 Elimination Using Multiplication (4.3)
7-5 Graphing systems of Inequalities (4.3)
Chapter 7 Test

Chapter 8 Polynomials (? days)

8-1 Multiplying Monomials (4.3)
8-2 Dividing Monomials (4.3)
8-3 Scientific Notation (4.3)
8-4 Polynomials (4.3)
8-5 Adding and Subtracting Polynomials (4.3)

Mid-chapter Test

8-6 Multiplying a Polynomial by a Monomial (4.3)
8-7 Multiplying Polynomials (4.3)
8-8 Special Products (4.3)

Chapter 8 Test

Voorhees Township Schools
Suggested Instructional Sequence
Eighth-Grade Math
Algebra I

Chapter 1 (15 days) Variables, Function Patterns, and Graphs

1-1 Using Variables (4.3)
1-2 Exponents & Order of Operations (4.3)
1-3 Exploring Real Numbers (4.3)
1-4 Patterns and Functions (4.3)
1-5 Scatterplots (4.3)
1-6 Mean, Median, Mode, and Range (4.3)

Chapter 2 (13 days) Rational Numbers

2-1 Adding Rational Numbers (4.3)
2-2 Subtracting Rational Numbers (4.3)
2-3 Multiplying and Dividing Rational Numbers (4.3)
2-4 The Distributive Property (4.3)
2-5 Properties of Numbers (4.3)
2-6 Theoretical and Experimental Probability (4.4)
2-7 Probability of Compound Events (4.4)

Chapter 3 (18 days) Solving Equations

3-1 Solving Two-Step Equations (4.3)
3-2 Solving Multi-Step Equations (4.3)
3-3 Equations with Variables on Both Sides (4.3)
3-4 Ratio and Proportion (4.3)
3-5 Proportions and Similar Figures (4.3)
3-6 Equations and Problem Solving (4.5)
3-7 Percent of Change (4.3)
3-8 Finding and Estimating Square Roots (skip and review only) (4.1)
3-9 The Pythagorean Theorem (skip and review only) (4.3)

END OF FIRST MARKING PERIOD

Review Percents using word problems packet
Chapter 4 (13 days) Solving Inequalities

4-1 Inequalities and Their Graphs (4.3)
4-2 Solving Inequalities Using Addition and Subtraction (4.3)
4-3 Solving Inequalities Using Multiplication and Division (4.3)
4-4 Solving Multi-step Inequalities (4.3)
4-5 Compound Inequalities (4.3)
4-6 Absolute Value Equations and Inequalities (4.4)

Chapter 5 (11 days) Graphs & Functions

5-1 Relating Graphs to Events (4.3)
5-2 Relations & Functions (4.3)
5-3 Function Rules, Tables, & Graphs (4.3)
5-4 Writing a Function Rule (4.3)
5-5 Direct Variation (4.3)
5-6 Inverse Variation (4.3)
5-7 Describing Number Patterns (4.3)

Chapter 6 (14 days) Linear Equations & Their Graphs

6-1 Rate of Change and Slope (4.3)
6-2 Slope-Intercept Form (4.3)
6-3 Applying Linear Functions (4.3)
6-4 Standard Form (4.3)
6-5 Point-Slope Form and Writing Linear Equations (4.3)
6-6 Parallel and Perpendicular Lines (4.3)
6-7 Scatter Plots and Equations of Lines (4.3)
6-8 Graphing Absolute Value Equations (4.3)

END OF SECOND MARKING PERIOD

- **Mid-Term** (Chapter 1-6) grade counts on 3rd marking period

Chapter 7 (15 days) Systems of Equations & Inequalities

7-1 Solving Systems by Graphing (4.2)

7-2 Solving Systems Using Substitution (4.3)
7-3 (2 days) Solving Systems Using Elimination (4.3)
7-4 (2 days) Applications of Linear Systems (4.3)
7-5 Linear Inequalities (4.3)
7-6 (2 days) Systems of Linear Inequalities (4.3)

Chapter 8 (14 days) Exponents & Exponential Functions

8-1 Zero & Negative Exponents (4.3)
8-2 Scientific Notation (4.3)
8-3 (2 days) Multiplication Properties of Exponents (4.3)
8-4 (2 days) More Multiplication Properties of Exponents (4.3)
8-5 Division Property of Exponents (4.3)
8-6 Geometric Sequences (4.3)
8-7 Exponential Functions (4.3)
8-8 Exponential Growth & Decay (4.3)

Chapter 9 (19 days) Polynomials & Factoring

9-1 Add/Subtract Polynomials (4.1)
9-2 Multiplying & Factoring (4.3)
9-3 Multiplying Binomials (4.3)
9-4 Multiplying Special Cases (4.3)
9-5 (2 days) Factoring Trinomials $x^2 + bx + c$ (4.3)
9-6 (2 days) Factoring Trinomials $ax^2 + bx + c$ (4.3)
9-7 (2 days) Factoring Special Cases (4.3)
9-8 (2 days) Factoring by Grouping (4.3)

END OF THIRD MARKING PERIOD

Chapter 9 Arbor Day Project

Chapter 10 (16 days) Quadratic Equations & Functions

10-1 Exploring Quadratic Graphs (4.3)
10-2 Quadratic Functions (4.3)
10-3 Solving Quadratic Equations (4.3)
10-4 Factoring to Solve Quadratic Equations (4.3)
10-5 Completing the Square (4.3)

10-6 Using the Quadratic Formula (4.3)
10-7 Using the Discriminant (4.3)
10-8 Choosing a Linear, Quadratic, or Exponential Model (4.3)

Chapter 11 (9 days) Radical Expressions & Equations
11-1 (2 days) Simplifying Radicals (4.3)
11-2 Operations with Radical Expressions (4.3)
11-3 Solving Radical Equations (4.3)
11-4 Graphing Square Root Functions (4.3)

Final Exam (PH is cumulative Ch 7-11)

END OF 4TH MARKING PERIOD

If Time Permits:

11-5 Trigonometric Ratios (skip)
11-6 Angles of Elevation and Depression (skip)

Chapter 12 Rational Expressions & Functions

12-1 Graphing Rational Functions (4.2)
12-2 Simplifying Rational Expressions (4.3)
12-3 Multiplying & Dividing Rational Expressions (4.3)
12-4 Dividing Polynomials (Only divide by a monomial) (4.3)
12-5 Adding and Subtracting Rational Expressions (4.3)
12-6 Solving Rational Equations (4.3)
12-7 Counting Methods & Permutations (4.3)
12-8 Combinations (4.3)

Appendix A

2008
New Jersey Core Curriculum Content Standards
for
Mathematics

To view the 2008 standards online, visit:

http://www.nj.gov/education/cccs/s4_math.pdf