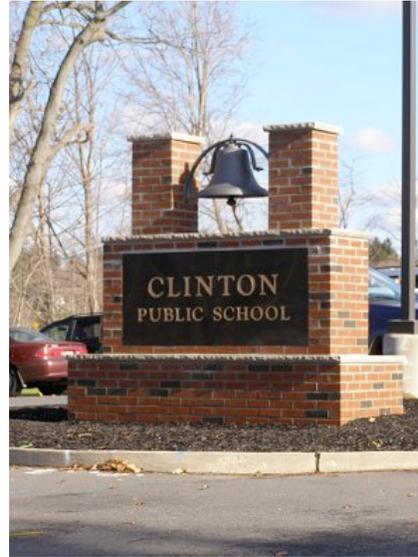


Clinton-Glen Gardner School District



Curriculum Management System

Mathematics

Grades 7

*** For adoption by all regular education programs as specified and for adoption or adaptation by all Special Education Programs in accordance with Board of Education Policy #220**

Board Approved: November 18, 2020

CLINTON-GLEN GARDNER SCHOOL DISTRICT

ADMINISTRATION

Dr. Seth Cohen, Superintendent/Principal
Mrs. Bernadette Wang, Business Administrator
Mrs. Jacqueline Turner, Assistant Principal
Dr. Jenine Kastner, Director of Special Services

BOARD OF EDUCATION

Mr. Brendan McIsaac, President
Craig Sowell, Vice President
Mrs. Lorraine Linfante
Mr. Carl Sabatino
Dr. Ashutosh Tewari

Acknowledgments

Joseph Harris

Clinton-Glen Gardner School District

Mission

The Clinton-Glen Gardner School District, a community who values traditions, nurtures and cultivates each child to be a compassionate, curious, and creative thinker entrusted and empowered to build and lead the future.

Philosophy

The economy in which graduates of our schools will seek employment is more competitive than ever and is rapidly changing in response to advances in technology. To compete in today's global, information-based economy, students must be able to solve real problems, reason effectively, and make logical connections. In this changing world those who have a good understanding of mathematics will have many opportunities and doors open to them throughout their lives. Today's workforce requires mathematical knowledge and skills in areas such as data analysis, problem-solving, pattern recognition, statistics and probability; therefore, our school's curriculum must prepare students for these expectations.

The Clinton-Glen Gardner School is committed to providing all students with the opportunity and the support necessary to learn significant mathematics with depth and understanding. To that end, students will engage in a wide variety of learning activities designed to develop their ability to reason and solve complex problems. Calculators, computers, manipulatives, technology, and the Internet will be used as tools to enhance learning and assist in problem solving. Group work, projects, literature, and interdisciplinary activities will make mathematics more meaningful and aid understanding. Classroom instruction will be designed to meet the learning needs of all children and will reflect a variety of learning styles.

The math curriculum fosters students who:

- Develop computational, conceptual, problem-solving and reasoning skills
- Demonstrate their understanding of mathematical concepts based on higher levels of mathematical thought
- Use technology and other tools as an integral part of solving mathematical problems

New Jersey State Department of Education New Jersey Learning Standards

Intent and Spirit of the New Jersey Mathematics Learning Standards

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

The math standards provide **clarity and specificity** rather than broad general statements. The standards draw on the most important international models for **mathematical practice**, as well as research. They endeavor to follow the design envisioned by William Schmidt and Richard Houang (2002), by not only **stressing conceptual understanding** of key ideas, but also by continually returning to organizing principles (coherence) such as place value and the laws of arithmetic to structure those ideas.

In addition, the “sequence of topics and performances” that is outlined in a body of math standards must respect what is already known about how students learn. As Confrey (2007) points out, developing “sequenced obstacles and challenges for students...absent the insights about meaning that derive from careful study of learning, would be unfortunate and unwise.” Therefore, the development of the standards began with research-based learning progressions detailing what is known today about how students’ mathematical knowledge, skill, and understanding develop over time. The knowledge and skills students need to be prepared for mathematics in college, career, and life are woven throughout the mathematics standards.

Mathematics: Standards for Mathematical Practice Interpreted

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

The Standards for Mathematical Practice are:

1. MAKE SENSE OF PROBLEMS AND PERSEVERE IN SOLVING THEM.

As you look at or read a mathematical problem, think about what it means and what it is asking you to do. Also think about what would be a good way to start solving it. Ask yourself:

- What does the problem tell me?
 - What information is given?
 - What are the relationships among parts of the problem?
 - What is the goal of solving the problem?
 - Have I seen other problems similar to this one?
- What does the problem ask me to find out (solve)?
- How should I start solving the problem?
- Can pictures or a drawing help me to figure out how to solve the problem?
- Does how I'm answering the problem make sense with what the problem is asking?
- What are some other ways to solve the problem?
- Can I use another way to check if my answer is correct?
- Does my answer make sense?

2. REASON ABSTRACTLY AND QUANTITATIVELY.

Understand the relationship of numbers and number problems and represent them using pictures, drawings or symbols. Talk about the parts of number problems using pictures, drawings or symbols as well as how the pictures, drawings or symbols represent and help explain the problem. Show how using different numbers or operations in the same problem changes it.

3. CONSTRUCT VIABLE ARGUMENTS AND CRITIQUE THE REASONING OF OTHERS.

Use objects, drawings, diagrams or actions to construct arguments about math problems with understanding and using appropriate vocabulary to explain the reasoning process. Build a local argument, communicate it with others, justify your reasoning process and respond to the reasoning process someone else uses. Express agreement if both arguments are correct and explain why an argument is flawed if it is.

4. MODEL WITH MATHEMATICS.

Apply mathematical skills to everyday life, society, the workplace and other situations; identify important quantities in practical situations; write an equation to describe a situation; revise solutions; use tools such as diagrams, two-way tables, graphs, flowcharts and formulas to show relationships; analyze relationships to draw conclusions, interpret results in context and reflect on whether the results make sense.

5. USE APPROPRIATE TOOLS STRATEGICALLY.

Identify and make decisions regarding which tool, such as paper and pencil, models, rulers, spreadsheets, etc., to use to help solve mathematical problems as well as know when a tool is not the right one to use. Use technological and other tools to deepen understanding.

6. **ATTEND TO PRECISION.**

Communicate precisely when discussing math incorporating the following:

- Use clear definitions.
- Choose, use and explain symbols correctly, consistently and appropriately.
- Specify units of measure and labels correctly.
- Avoid careless errors.
- Follow formulas to explain thinking to others.

7. **LOOK FOR AND MAKE USE OF STRUCTURE.**

Look for and identify structure and patterns in mathematics (for example, three and seven more is the same amount as seven and three more, or sort shapes according to their number of sides) and see if the pattern or structure changes.

8. **LOOK FOR AND EXPRESS REGULARITY IN REPEATED REASONING.**

Look for repetition in calculations and numeric thinking, such as skip counting. Pay attention to the whole problem and the details and continuously evaluate the accuracy and reasonableness of both intermediate and final answers.

CONNECTING THE STANDARDS FOR MATHEMATICAL PRACTICE TO THE STANDARDS FOR MATHEMATICS CONTENT

The Standards for Mathematical Practice describe ways in which developing student practitioners of the discipline of mathematics increasingly ought to engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle and high school years. Designers of curricula, assessments and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematical instruction. The Standards for Mathematical Content are a balanced combination of procedure and understanding. Expectations that begin with the word “understand” are often especially good opportunities to connect the practices to the content. Students who lack understanding of a topic may rely on procedures too heavily. Without a flexible base from which to work, they may be less likely to consider analogous problems, represent problems coherently, justify conclusions, apply the mathematics to practical situations, use technology mindfully to work with the mathematics, explain the mathematics accurately to other students, step back for an overview or deviate from a known procedure to find a shortcut. In short, a lack of understanding effectively prevents a student from engaging the mathematical practices. In this respect those content standards, which set an expectation of understanding are potential “points of intersection” between the Standards for Mathematical Content and the Standards for Mathematical Practice. These points of intersection are intended to be weighted toward central and generative concepts in the school mathematics curriculum that most merit time, resources, innovative energies and focus necessary to qualitatively improve the curriculum, instruction, assessment, professional development and student achievement in mathematics.

**Grade 7
Mathematics
Scope and Sequence
September through December (approximately 60 days)
Quarter I: 21st Century Skills and Themes**

1. **Creativity & Innovation** Global Awareness
2. **Financial, Economic, Business and Entrepreneurial Literacy**
3. **Civic Literacy**
4. Health Literacy
5. Environmental Literacy

1. **Critical Thinking & Problem Solving**
2. **Communication & Collaboration**
3. Media Literacy
4. Information Literacy
5. Information, Communication & Technology

Topic: The Number System

- I. Operations with Real Numbers
 - a. Integers
 - i. Operations on number line
 - ii. Compare and order
 - iii. Addition, subtraction, multiplication, division
 - iv. Division
 - b. Square root
 - c. Decimal conversion
 - d. Scientific notation

Topic: Ratio and Proportional Relationships

- II. Applications of Ratio, Proportions and Percents
 - a. Simplest form
 - b. Unit rates
 - c. Proportional relationships
 - i. Test for
 - ii. Represent
 - iii. Interpret
 - d. Percents
 - i. Increase/decrease
 - ii. Mark up/discount
 - e. Interest
 - i. Simple
 - ii. Compound

Integrated Accommodations and Modifications

Special Education Students (See appendix)
English Language Learners (See appendix)
Students at Risk (See appendix)
Gifted and Talented Students (See appendix)

Assessments

Formative: • Group Work • Individual Work • Partner Work • Worksheets • Quizzes • Exams • Homework • Oral Questions • Student Participation • Projects

Summative: Teacher observation • Student participation • Tests/Exams • Quizzes • Projects

District Benchmark: [Link-It](#)

Alternative Assessments: Various Performance Assessments designed with student input

Core Instructional Materials and Supplemental Materials

Go Math Reteach Activities

Go Math Enrichment Activities

Go Math Personal Math Trainer Online Activities

Go Math Interactive Whiteboard Activities

Go Math STEM Activities

Go Math *Getting Ready for the NJSLA* Assessments

Text/Resource Books, Internet, Worksheets, Teacher Manual, DVDs, Manipulatives

Word Wall

Interdisciplinary Connections

Science MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

MS-PS1-1 Scale, Proportion, and Quantity ♣ Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.

ELA Anchor Standards for History, Science, and Technical Subjects

Key Ideas and Details

NJLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

RH.6-8.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

RST.6-8.1. Cite specific textual evidence to support analysis of science and technical texts.

RST.6-8.2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

Craft and Structure

RST.6-8.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*.

RST.6-8.5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

RST.6-8.6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

Integration of Knowledge and Ideas

RST.6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

RST.6-8.8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

WHST.6-8.1. Write arguments focused on *discipline-specific content*.

- A. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
- B. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
- C. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
- D. Establish and maintain a formal/academic style, approach, and form.
- E. Provide a concluding statement or section that follows from and supports the argument presented.

Career Education & Financial Literacy Integration of 21st Century Skills (NJSL 9)

9.1.8.C.1 Compare and contrast credit cards and debit cards and the advantages and disadvantages of using each. 9.1.8.C.2 Compare and contrast the financial products and services offered by different types of financial institutions. 9.1.8.C.3 Compare and contrast debt and credit management strategies 9.1.8.D.1 Determine how saving contributes to financial well-being. 9.1.8.D.2 Differentiate among various savings tools and how to use them most effectively. 9.2.8.B.1 Research careers within the 16 Career Clusters® and determine attributes of career success. 9.2.8.B.2 Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.

Model Curriculum – Personal Financial Literacy Lesson Plans

- [Lesson 3: Know the Score: Credit Score Modeling and Impacts](#)
- [Lesson 4: The Impact of Inflation](#)
- [Lesson 5: Monetary Transaction Tools](#)

- **CRP1 - Act as a responsible and contributing citizen and employee.**
- **CRP2 - Apply appropriate academic and technical skills.**
- **CRP4 Communicate clearly and effectively and with reason.**
- **CRP5 Consider the environmental, social and economic impacts of decisions.**
- **CRP6 Demonstrate creativity and innovation.**
- **CRP7 Employ valid and reliable research strategies**
- **CRP8 Utilize critical thinking to make sense of problems and persevere in solving them.**
- **CRP11 Use technology to enhance productivity.**

Technology Standards 8

8.1.8.A.2 Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.

8.1.8.A.3 Use and/or develop a simulation that provides an environment to solve a real world problem or theory.

8.1.8.A.4 Graph and calculate data within a spreadsheet and present a summary of the results

8.1.8.A.5 Create a database query, sort and create a report and describe the process, and explain the report results.

Identify and define authentic problems and significant questions for investigation.

Plan and manage activities to develop a solution or complete a project.

8.2.8.A.1

Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication - smart phone for mobility needs).

8.2.8.A.2

Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.

The relationships among technologies and the connections between technology and other fields of study.

Quarter II: 21st Century Skills and Themes
 Critical thinking and problem solving
 December through March (approximately 60 days)

Topic: Expressions and Equations

- III. Integers and Expressions
 - a. Order of operations
 - b. Algebraic expressions
 - c. Absolute value
 - d. Exponents

Topic: Expressions and Equations

- IV. Equations and Inequalities
 - a. Variables
 - b. Simplifying expressions
 - c. Graphing inequalities

Integrated Accommodations and Modifications

- Special Education Students (See appendix)**
- English Language Learners (See appendix)**
- Students at Risk (See appendix)**
- Gifted and Talented Students (See appendix)**

Assessments

Formative: • Group Work • Individual Work • Partner Work • Worksheets • Quizzes • Exams • Homework • Oral Questions • Student Participation • Projects

Summative: Teacher observation • Student participation • Tests/Exams • Quizzes • Projects

District Benchmark: Link-It

Alternative Assessments: Various Performance Assessments designed with student input

Core Instructional Materials and Supplemental Materials

- Go Math Reteach Activities
- Go Math Enrichment Activities
- Go Math Personal Math Trainer Online Activities
- Go Math Interactive Whiteboard Activities
- Go Math STEM Activities
- Go Math *Getting Ready for the NJSLA Assessments*
- Text/Resource Books, Internet, Worksheets, Teacher Manual, DVDs, Manipulatives
- Word Wall

Interdisciplinary Connections

Science MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

MS-PS1-1 Scale, Proportion, and Quantity ♣ Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.

Interdisciplinary Connections

ELA Anchor Standards for History, Science, and Technical Subjects

Science MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

MS-PS1-1 Scale, Proportion, and Quantity ♣ Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.

ELA Anchor Standards for History, Science, and Technical Subjects

RH.6-8.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

RH.6-8.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

RST.6-8.1. Cite specific textual evidence to support analysis of science and technical texts.

NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

RST.6-8.2. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

RST.6-8.2. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

Craft and Structure

RST.6-8.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*.

RST.6-8.5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

RST.6-8.6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

Integration of Knowledge and Ideas

RST.6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

RST.6-8.8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

WHST.6-8.1. Write arguments focused on *discipline-specific content*.

Quarter III: 21st Century Skills and Themes
March through June (approximately 60 days)

1. **Creativity & Innovation** Global Awareness
2. **Financial, Economic, Business and Entrepreneurial Literacy**
3. **Civic Literacy**
4. Health Literacy
5. Environmental Literacy

Topic: Geometry

- V. Geometry
- a. Angles
 - b. Area/surface area
 - c. Circumference
 - d. Volume
 - e. Scale drawings

Topic: Statistics and Probability

- VI. Statistics and Data Analysis
- a. Measures of central tendency
 - b. Data representations
 - c. Data interpretations

Topic: Statistics and Probability

- VII. Probability
- a. Events
 - i. Simple
 - ii. Compound
 - iii. Dependent
 - iv. Independent
 - b. Probability models
 - c. Theoretical probability
 - d. Experimental probability
 - e. Permutation and combination notation

Integrated Accommodations and Modifications

Special Education Students (See appendix)
English Language Learners (See appendix)
Students at Risk (See appendix)
Gifted and Talented Students (See appendix)

Assessments

Formative: • Group Work • Individual Work • Partner Work • Worksheets • Quizzes • Exams • Homework • Oral Questions • Student Participation • Projects

Summative: Teacher observation • Student participation • Tests/Exams • Quizzes • Projects

District Benchmark: Link-It

Alternative Assessments: Various Performance Assessments designed with student input

Core Instructional Materials and Supplemental Materials

Go Math Reteach Activities

Go Math Enrichment Activities

Go Math Personal Math Trainer Online Activities

Go Math Interactive Whiteboard Activities

Go Math STEM Activities

Go Math *Getting Ready for the NJSLA* Assessments

Text/Resource Books, Internet, Worksheets, Teacher Manual, DVDs, Manipulatives

Word Wall

Interdisciplinary Connections

Science MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

MS-PS1-1 Scale, Proportion, and Quantity ♣ Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small.

ELA Anchor Standards for History, Science, and Technical Subjects**Key Ideas and Details**

NJLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

RH.6-8.2. Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

RST.6-8.1. Cite specific textual evidence to support analysis of science and technical texts.

RST.6-8.2. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

Craft and Structure

RST.6-8.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6-8 texts and topics*.

RST.6-8.5. Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

RST.6-8.6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

Integration of Knowledge and Ideas

RST.6-8.7. Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

RST.6-8.8. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.

WHST.6-8.1. Write arguments focused on *discipline-specific content*.

- A. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.
- B. Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.
- C. Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.
- D. Establish and maintain a formal/academic style, approach, and form.
- E. Provide a concluding statement or section that follows from and supports the argument presented.

Career Education & Financial Literacy Integration of 21st Century Skills (NJSL 9)

9.1.8.C.1 Compare and contrast credit cards and debit cards and the advantages and disadvantages of using each. 9.1.8.C.2 Compare and contrast the financial products and services offered by different types of financial institutions. 9.1.8.C.3 Compare and contrast debt and credit management strategies 9.1.8.D.1 Determine how saving contributes to financial well-being. 9.1.8.D.2 Differentiate among various savings tools and how to use them most effectively. 9.2.8.B.1 Research careers within the 16 Career Clusters® and determine attributes of career success. 9.2.8.B.2 Develop a Personalized Student Learning Plan with the assistance of an adult mentor that includes information about career areas of interest, goals and an educational plan.

Model Curriculum – Personal Financial Literacy Lesson Plans

- [Lesson 3: Know the Score: Credit Score Modeling and Impacts](#)
- [Lesson 4: The Impact of Inflation](#)
- [Lesson 5: Monetary Transaction Tools](#)

- **CRP1 - Act as a responsible and contributing citizen and employee.**
- **CRP2 - Apply appropriate academic and technical skills.**
- **CRP4 Communicate clearly and effectively and with reason.**
- **CRP5 Consider the environmental, social and economic impacts of decisions.**

- **CRP6 Demonstrate creativity and innovation.**
- **CRP7 Employ valid and reliable research strategies**
- **CRP8 Utilize critical thinking to make sense of problems and persevere in solving them.**
- **CRP11 Use technology to enhance productivity.**

Technology Standards 8

8.1.8.A.2 Create a document (e.g. newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.

8.1.8.A.3 Use and/or develop a simulation that provides an environment to solve a real world problem or theory.

8.1.8.A.4 Graph and calculate data within a spreadsheet and present a summary of the results

8.1.8.A.5 Create a database query, sort and create a report and describe the process, and explain the report results.

Identify and define authentic problems and significant questions for investigation.

Plan and manage activities to develop a solution or complete a project.

8.2.8.A.1

Research a product that was designed for a specific demand and identify how the product has changed to meet new demands (i.e. telephone for communication - smart phone for mobility needs).

8.2.8.A.2

Examine a system, consider how each part relates to other parts, and discuss a part to redesign to improve the system.
The relationships among technologies and the connections between technology and other fields of study.

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 7 Mathematics	Topic: Number Systems/Operations with Real Numbers	
		Goal 1: All the numbers we use on a daily basis are real numbers. Formulas that contain real numbers can be used to solve real world problems. It is essential to be able to compare, add, subtract, multiply and divide real numbers in fraction, decimal or percent forms.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
5 wks	<p>1.1. Model operations with integers using a number line. (7.NS.1.b, 7.NS.1.c, 6.NS.6) (revised NJSLS)</p> <p>1.2. Compare and order rational numbers. (7.NS.1.b) (revised NJSLS)</p> <p>1.3. Add and subtract rational numbers applying properties of operations. (7.NS.1, 7.NS.1.d) (revised NJSLS)</p> <p>1.4. Relate addition/subtraction of rational numbers to movement on a number line. (7.NS.1.b, 7.NS.1.c) (revised NJSLS)</p> <p>1.5. Describe circumstances when quantities combine to make 0. (7.NS.1.a) (revised NJSLS)</p>	<p>Essential Questions: How do you compare, add, subtract, multiply and divide real numbers? How can you estimate the square root of a number? What are the rules for adding, subtracting, multiplying, and dividing positive and negative integers? Why is division of "0" undefined?</p> <p>Conceptual Understandings: Zero is the only integer that is its own opposite. It is neither positive nor negative. A number and its opposite have the same absolute value. Understanding and being able to follow the "rules" for mathematical calculations is essential to solving real-world problems. Division by zero is undefined.</p>	<p>Houghton Mifflin GoMath Middle School Grade 7 modules 1, 2, 3</p> <p>Unit Vocabulary: Integer, absolute value, rational numbers, positive, negative, opposite, additive inverse, operation, product, quotient, repeating decimal, terminating decimal</p> <p>Assessment Models: Observation Class discussion Homework Checkpoint for understanding Self-reflection Diagnostic test prior to instruction Unit assessment</p> <p>Opportunities for Differentiation: <u>Enrichment:</u> Multiply and divide powers with the same base Multiply and divide numbers in scientific notation Raise a power to a power $(a^2)^3$ Raise a product to a power $(4abc)^2$</p> <p><u>Remedial</u> Identify prime and composite numbers Find GCF of 2 or more numbers Simplify fractions Write decimals as fractions</p>

Suggested days of Instruction	Curriculum Management System	Topic: Number Systems/Operations with Real Numbers	
	Subject/Grade Level: Grade 7 Mathematics	Goal 1: All the numbers we use on a daily basis are real numbers. Formulas that contain real numbers can be used to solve real world problems. It is essential to be able to compare, add, subtract, multiply and divide real numbers in fraction, decimal or percent forms.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>1.6. Show a number and its opposite have a 0 sum. (7.NS.1.b) (revised NJSLS)</p> <p>1.7. Demonstrate the relationship between addition and subtraction (subtraction=adding the additive inverse). (7.NS.1.c) (revised NJSLS)</p> <p>1.8. Multiply and divide rational numbers. (7.NS.2, 7.NS.2.c)</p> <p>1.9. Apply multiplication knowledge of fractions to rational numbers. (7.NS.2.a)</p> <p>1.10. Recognize that integers cannot be divided by 0. (7.NS.2.b)</p>		<p>Additional Resources: Integer number lines Algebra tiles/counters Cards Bank registers</p> <p>www.brainpop.com</p> <p>www.khanacademy.com</p> <p>www.nlvm.usu.edu</p>

Suggested days of Instruction	Curriculum Management System	Topic: Number Systems/Operations with Real Numbers	
	Subject/Grade Level: Grade 7 Mathematics	Goal 1: All the numbers we use on a daily basis are real numbers. Formulas that contain real numbers can be used to solve real world problems. It is essential to be able to compare, add, subtract, multiply and divide real numbers in fraction, decimal or percent forms.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>1.11. Solve real-world and mathematical problems involving the four operations with rational numbers. (7.NS.3)</p> <p>1.12. Find the square root of numbers. (8.EE.2)</p> <p>1.13. Convert a rational number to a decimal using long division. (7.NS.2.d)</p> <p>1.14. Write and order numbers in standard and in scientific form. (8.EE.4)</p> <p>1.15. Make sense of problems and persevere in solving them. (MP.1)</p> <p>1.16. Model with mathematics. (MP.4)</p>		

Suggested days of Instruction	Curriculum Management System	Topic: Number Systems/Operations with Real Numbers	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics	<u>Goal 1:</u> All the numbers we use on a daily basis are real numbers. Formulas that contain real numbers can be used to solve real world problems. It is essential to be able to compare, add, subtract, multiply and divide real numbers in fraction, decimal or percent forms.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	1.17. Use appropriate tools strategically. (MP.5) 1.18. Attend to precision. (MP.6) 1.19. Look for and make use of structure. (MP.7) 1.20. Determine an individual's responsibility for personal actions and contributions to group activities. (9.1.8.C.1) 1.21. Model leadership skills during classroom and extra-curricular activities. (9.1.8.C.3) 1.22. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Integers and Expressions	
		Goal 2: Understanding variables and being able to simplify and evaluate variable expressions are essential for future algebra concepts. Understanding and being able to follow the “rules” for mathematical calculations is essential to solving real-world problems. In mathematics and every day life, there are many situations where integers are used. Some examples include temperature, sports such as golf and football, and measuring the elevation of points on Earth or the depth below sea level.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
4 wks	<p>2.1. Develop a plan for solving a problem including rewriting an expression in different forms. (7.EE.2, 7.EE.3)</p> <p>2.2. Write and evaluate algebraic expressions. (7.EE.2)</p> <p>2.3. Use order of operations. (7.EE.1, 7.EE.3)</p> <p>2.4. Find the absolute value of an integer. (7.EE.3)</p> <p>2.5. Compare and order integers. (7.EE.3)</p> <p>2.6. Add, subtract, multiply, and divide integers. (7.EE.3)</p> <p>2.7. Write and simplify expressions with exponents. (7.EE.2)</p>	<p>Essential Questions: Why do we use variables and write algebraic expressions? Why is it useful to represent real-life situations algebraically? Why are multiplication/division (and addition/subtraction) evaluated at the same level?</p> <p>Conceptual Understandings: Variables are symbols that take the place of numbers or ranges of numbers. They have different meanings depending on how they are being used.</p> <p>Algebraic expressions can be used to represent real world.</p> <p>Properties are the rules of mathematics.</p> <p>There is an established order in which to perform the various operations (PEMDAS).</p> <p>Zero is the only integer that is its own opposite. It is neither positive nor negative.</p> <p>A number and its opposite have the same absolute value.</p>	<p>Houghton Mifflin GoMath Middle School Grade 7 modules 6, 7</p> <p>Unit Vocabulary: variable, algebraic expression, order of operations (GEMS, PEMDAS), simplify, evaluate, opposites, integers, absolute value, additive inverse, factor, base, exponent, power, Commutative Property, Associative Property, Distributive Property, Identity Property, multiple</p> <p>Assessment Models: Observation Class discussion Homework Checkpoint for understanding Self-reflection Diagnostic test prior to instruction Unit assessment</p> <p>Opportunities for Differentiation: Incorporate all real numbers (ie. fractions, decimals) to increase the complexity of the skill</p> <p>Additional Resources: Algebra tiles Integer number lines Smartboard</p>

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Integers and Expressions	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 2: Understanding variables and being able to simplify and evaluate variable expressions are essential for future algebra concepts. Understanding and being able to follow the “rules” for mathematical calculations is essential to solving real-world problems. In mathematics and every day life, there are many situations where integers are used. Some examples include temperature, sports such as golf and football, and measuring the elevation of points on Earth or the depth below sea level.	Essential Questions, Conceptual Understandings
	2.8. Solve multi-step problems with positive/negative numbers in any form. (7.EE.3) 2.9. Covert between whole numbers, fractions, percents and decimals. (7.EE.3) 2.10. Determine reasonableness of answers using mental math and estimation. (7.EE.3) 2.11. Identify and use commutative, associative, distributive, and identity properties. (6.EE.3) 2.12. Make sense of problems and persevere in solving them. (MP.1) 2.13. Attend to precision. (MP.6)		www.khanacademy.com www.nlvm.usu.edu

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Integers and Expressions	
		Goal 2: Understanding variables and being able to simplify and evaluate variable expressions are essential for future algebra concepts. Understanding and being able to follow the “rules” for mathematical calculations is essential to solving real-world problems. In mathematics and every day life, there are many situations where integers are used. Some examples include temperature, sports such as golf and football, and measuring the elevation of points on Earth or the depth below sea level.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	2.14. Look for and make use of structure. (MP.7) 2.15. Look for and express regularity in repeated reasoning. (MP.8) 2.16. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1) 2.17. Determine an individual’s responsibility for personal actions and contributions to group activities. (9.1.8.C.1) 2.18. Model leadership skills during classroom and extra-curricular activities. (9.1.8.C.3)		

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 7 Mathematics	Topic: Equations and Inequalities	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
6 wks	<p>3.1. Solve one-step equations by adding, subtracting, multiplying and dividing. (7.EE.4)</p> <p>3.2. Use variables to represent quantities when constructing equations and inequalities. (7.EE.4)</p> <p>3.3. Combine like terms. (6.EE.4)</p> <p>3.4. Simplify algebraic expressions. (6.EE.3, 6.EE.4)</p> <p>3.5. Solve equations with variables on both sides. (7.EE.3)</p> <p>3.6. Solve words problems leading to equations of the form $px+q=r$ and $p(x+q)=r$ where p, q and r are rational numbers. (7.EE.4.a)</p>	<p>Essential Questions: How do inverse operations help us to solve equations? Why would you simplify both sides of an equation before solving? Why would you represent a real-world situation using an equation? How is solving an inequality the same as solving an equation? How is it different? How does the order of operations aid us in solving a multi-step equation? (differentiated question for enrichment)</p> <p>Conceptual Understandings: Equations can be used to represent situations and solve real-world problems. Equations must be balanced. This can be maintained by performing inverse operations to both sides of the equation. An inequality can be graphed on a number line using an open dot to show that the specific number is not included and a closed dot to show it is included. Multiplying or dividing by a negative number when solving an inequality necessitates reversing the inequality sign.</p>	<p>Houghton Mifflin GoMath Middle School Grade 7 modules 6, 7</p> <p>Unit Vocabulary: equations, expression, solution, isolate, Inverse Operation, term, like term, inequality, graph of an inequality, compound inequality, terminology for $<$, $>$, \leq, \geq, formulas, function, coordinate plane, x-axis, y-axis, quadrants, origin, ordered pair, x-coordinate, y-coordinate, linear equation, transformations, translations, image, rotation, reflection, line of reflection, symmetry, dilations, scale factor</p> <p>Assessment Models: Observation Class discussion Homework Checkpoint for understanding Self-reflection Diagnostic test prior to instruction Unit assessment Cumulative review</p> <p>Opportunities for Differentiation: Incorporating all real numbers (ie. fractions, decimals) to increase the complexity of the skill Solve 2 step equations Solve equations with variables on both sides Solve and graph equations with 2 variables</p>

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Equations and Inequalities	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 3: An equation is a statement that two expressions are equal. Being able to write a one-step or multi-step equation for a real world situation allows one to apply mathematical principles to finding an unknown value. Unknowns exist throughout many fields. In architecture, one may need to apply many geometric formulas to identify the dimensions for constructing a building. Much information in the various science fields is unknown. In chemistry, balancing equations is commonly done. As research is performed, statistics are used to communicate information about these unknowns. Statistics require a strong understanding of mathematics, including the ability to solve one-step and multi-step equations.	Essential Questions, Conceptual Understandings
	3.7. Compare an algebraic solution to an arithmetic solution. (7.EE.4.a) 3.8. Graph and write inequalities interpreting it in the context of the original problem. (7.EE.4.b) 3.9. Solve one-step inequalities. (7.EE.4.b) 3.10. Solve word problems leading to equations of the form $px+q>r$ or $px+q<r$ where p, q and r are rational numbers. (7.EE.4.b) 3.11. Use formulas to solve problems. (7.EE.3, 7.EE.4.a) 3.12. Reason abstractly and quantitatively. (MP.2)		Solve two-step inequalities Graph translations, reflections and rotations (8.G.3) Additional Resources: Algebra tiles Smartboard www.khanacademy.com www.nlvmsu.edu

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Equations and Inequalities	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 3: An equation is a statement that two expressions are equal. Being able to write a one-step or multi-step equation for a real world situation allows one to apply mathematical principles to finding an unknown value. Unknowns exist throughout many fields. In architecture, one may need to apply many geometric formulas to identify the dimensions for constructing a building. Much information in the various science fields is unknown. In chemistry, balancing equations is commonly done. As research is performed, statistics are used to communicate information about these unknowns. Statistics require a strong understanding of mathematics, including the ability to solve one-step and multi-step equations.	Essential Questions, Conceptual Understandings
	3.13. Construct viable arguments and critique the reasoning of others. (MP.3) 3.14. Look for and make use of structure. (MP.7) 3.15. Determine an individual's responsibility for personal actions and contributions to group activities. (9.1.8.C.1) 3.16. Model leadership skills during classroom and extra-curricular activities. (9.1.8.C.3) 3.17. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)		

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 7 Mathematics	Topic: Applications of Ratios, Proportions and Percents	
		Goal 4: Comparing and applying rates and proportional reasoning are essential real-world skills. Understanding of ratios and proportions is fundamental to higher levels of math. The application of percent of a number is applied to discount, commission, tax, tip, interest, and mark-up which are skills used in daily life, business, and other academic disciplines. Some examples are the social sciences, population increase, understanding the census, bacterial growth and decay, changing recipes, and building scale models in architecture and construction as well as making predictions based on the results of a sample.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
7 wks	<p>4.1. Write and express ratios in simplest form. (6.RP.3.a)</p> <p>4.2. Find unit rates associated with ratios of fractions. (7.RP.1)</p> <p>4.3. Identify unit rates in a variety of forms (tables, graphs, equations, diagrams, etc.) (7.RP.2.b)</p> <p>4.4. Recognize and represent proportional relationships between quantities. (7.RP.2)</p> <p>4.5. Determine proportional relationships by testing for equivalent ratios or graphing on a coordinate plane. (7.RP.2.a)</p>	<p>Essential Questions: How can unit rates help us compare costs? Why is it important to understand the difference between a ratio or a rate?</p> <p>Conceptual Understandings: Proportionality involves a relationship in which the ratio of two quantities remains constant as the corresponding values of the quantities change. Unit rates are a way of comparing costs. Discount, tax, tip, commission, interest, and mark-ups require understanding of percentages.</p>	<p>Houghton Mifflin GoMath Middle School Grade 7 modules 4, 5</p> <p>Unit Vocabulary: rate, ratio, unit rate, conversion factor, dimensional analysis, cross products, percent of change, percent of increase/mark up, percent of decrease/mark down, percent error, proportion, percent proportion, discount, simple interest, compound interest, tax, tip/gratuity, commission, scale, similar figures, constant, proportionality, mortgage, installment loans</p> <p>Assessment Models: Observation Class discussion Homework Checkpoint for understanding Self-reflection Diagnostic test prior to instruction Hands-on assessment (ie. retail project) Unit assessment Quizzes</p> <p>Opportunities for Differentiation: Use Pythagorean Theorem to find a missing length of a right triangle (8.G.7)</p>

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 7 Mathematics	Topic: Applications of Ratios, Proportions and Percents		
		<u>Goal 4:</u> Comparing and applying rates and proportional reasoning are essential real-world skills. Understanding of ratios and proportions is fundamental to higher levels of math. The application of percent of a number is applied to discount, commission, tax, tip, interest, and mark-up which are skills used in daily life, business, and other academic disciplines. Some examples are the social sciences, population increase, understanding the census, bacterial growth and decay, changing recipes, and building scale models in architecture and construction as well as making predictions based on the results of a sample.		
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model	
	4.6. Use equations to represent proportional relationships. (7.RP.2.c) 4.7. Interpret and explain a graph point of a proportional relationship in terms of the situation. (7.RP.2.d) 4.8. Use dimensional analysis. (7.RP.3) 4.9. Use proportions to solve ratio and percent problems. (7RP.3) 4.10. Measure indirectly using similar triangles. (7.RP.3) 4.11. Identify similar figures. 4.12. Find unknown lengths in similar figures.		Additional Resources: Smartboard Graph paper www.khanacademy.com www.nlvm.usu.edu	

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Applications of Ratios, Proportions and Percents	
		Goal 4: Comparing and applying rates and proportional reasoning are essential real-world skills. Understanding of ratios and proportions is fundamental to higher levels of math. The application of percent of a number is applied to discount, commission, tax, tip, interest, and mark-up which are skills used in daily life, business, and other academic disciplines. Some examples are the social sciences, population increase, understanding the census, bacterial growth and decay, changing recipes, and building scale models in architecture and construction as well as making predictions based on the results of a sample.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	4.13. Locate dilation images. (8.G.3) 4.14. Find the scale factor of dilation. (8.G.3) 4.15. Use proportions to find a part of a whole. (6.RP.3.c) 4.16. Use proportions to find a whole amount or a percent. (6.RP.3.c) 4.17. Find percent of increase and percent of decrease. (7.RP.3) 4.18. Solve problems involving mark-up and discount. (7.RP.3) 4.19. Compute simple and compound interest. (7.RP.3)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Applications of Ratios, Proportions and Percents	
		Goal 4: Comparing and applying rates and proportional reasoning are essential real-world skills. Understanding of ratios and proportions is fundamental to higher levels of math. The application of percent of a number is applied to discount, commission, tax, tip, interest, and mark-up which are skills used in daily life, business, and other academic disciplines. Some examples are the social sciences, population increase, understanding the census, bacterial growth and decay, changing recipes, and building scale models in architecture and construction as well as making predictions based on the results of a sample.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	4.20. Construct viable arguments and critique the reasoning of others. (MP.3) 4.21. Model with mathematics. (MP.4) 4.22. Look for and express regularity in repeated reasoning. (MP.8) 4.23. Determine an individual's responsibility for personal actions and contributions to group activities. (9.1.8.C.1) 4.24. Model leadership skills during classroom and extra-curricular activities (9.1.8.C.3)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Applications of Ratios, Proportions and Percents	
		Goal 4: Comparing and applying rates and proportional reasoning are essential real-world skills. Understanding of ratios and proportions is fundamental to higher levels of math. The application of percent of a number is applied to discount, commission, tax, tip, interest, and mark-up which are skills used in daily life, business, and other academic disciplines. Some examples are the social sciences, population increase, understanding the census, bacterial growth and decay, changing recipes, and building scale models in architecture and construction as well as making predictions based on the results of a sample.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	4.25. Demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages) and compare the interest rates associated with each. (9.2.8.C.3) 4.26. Calculate the cost of borrowing various amounts of money using different types of credit (e.g., credit cards, installment loans, mortgages). (9.2.8.C.4) 4.27. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)		

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 7 Mathematics	Topic: Applications of Ratios, Proportions and Percents	
		<u>Goal 4:</u> Comparing and applying rates and proportional reasoning are essential real-world skills. Understanding of ratios and proportions is fundamental to higher levels of math. The application of percent of a number is applied to discount, commission, tax, tip, interest, and mark-up which are skills used in daily life, business, and other academic disciplines. Some examples are the social sciences, population increase, understanding the census, bacterial growth and decay, changing recipes, and building scale models in architecture and construction as well as making predictions based on the results of a sample.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Geometry	
		Goal 5: It is important for students to understand the relationships between lines and the angles that their intersections create. Additionally, the properties of 2 and 3 dimensional figures and the calculations of their area and volume are important in order to solve real world problems. The applications of geometry are utilized in fields such as surveying, navigation (aviation and nautical), and engineering.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
5 wks	<p>5.1. Use adjacent, vertical, complementary, supplementary, alternate interior and corresponding angles in solving problems and equations. (7.G.5)</p> <p>5.2. Identify congruent figures. (8.G.2)</p> <p>5.3. Construct triangles given their angles or side measurements. (7.G.2) (revised NJSLS)</p> <p>5.4. Find the interior angle measures of a polygon (ie. dividing polygon into triangles). (7.G.2) (revised NJSLS)</p> <p>5.5. Find the areas of polygons (triangle, rectangle, square, trapezoid, parallelogram). (7.G.6)</p>	<p>Essential Questions: What do the relationships between angles and sides tell us about polygons and other figures? What methods can be used to find similarity between two geometric figures? How can we apply calculating area and/or volume of a figure to a real-world problem?</p> <p>Conceptual Understandings: There are appropriate units of measurement for measuring length, volume, area, angles, temperature, etc. Area, volume, and surface area relate and connect to everyday experiences (ie. what is largest amount of area for a garden, finding the volume to fill a swimming pool, etc).</p>	<p>Houghton Mifflin GoMath Middle School Grade 7 modules 8, 9</p> <p>Unit Vocabulary: vertical angle, supplementary angle, complementary angle, alternate interior angle, alternate exterior angle, corresponding angle, adjacent angle, bisectors, trisectors, congruent, similar, three-dimensional figures (cylinder, cube, prism, pyramid, cone), nets, n-agon, radius, diameter, chord, circumference, pi, surface area, volume, area, ratio, parallel lines, perpendicular lines, intersecting lines, transversal, Pythagorean Theorem, hypotenuse</p> <p>Assessment Models: Observation Class discussion Homework Checkpoint for understanding Self-reflection Diagnostic test prior to instruction Hands-on assessment/stations Unit assessment Quizzes</p> <p>Opportunities for Differentiation: Use Pythagorean Theorem to find a missing length of a right triangle (8.G.7)</p>

Suggested days of Instruction	Curriculum Management System	Topic: Geometry	
	Subject/Grade Level: Grade 7 Mathematics	<u>Goal 5:</u> It is important for students to understand the relationships between lines and the angles that their intersections create. Additionally, the properties of 2 and 3 dimensional figures and the calculations of their area and volume are important in order to solve real world problems. The applications of geometry are utilized in fields such as surveying, navigation (aviation and nautical), and engineering.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	5.6. Find the area and circumference of a circle. (7.G.4) 5.7. Understand the meaning of pi (as a ratio). (7.RP.2.a) 5.8. Construct congruent segments, angles and bisectors. (7.G.2) (revised NJSLS) 5.9. Identify solids and compute surface area and volume of two- and three-dimensional objects. (7.G.6) 5.10. Identify the plane sections that result from slicing three-dimensional figures. (7.G.3) 5.11. Draw top, front and right views of solids. (7.G.2) (revised NJSLS)		Additional Resources: Protractors Nets Geometric solids Measuring tapes Rulers Compasses Centimeter cubes Unifix blocks www.khanacademy.com www.nlvm.usu.edu

Suggested days of Instruction	Curriculum Management System	Topic: Geometry	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics	<u>Goal 5:</u> It is important for students to understand the relationships between lines and the angles that their intersections create. Additionally, the properties of 2 and 3 dimensional figures and the calculations of their area and volume are important in order to solve real world problems. The applications of geometry are utilized in fields such as surveying, navigation (aviation and nautical), and engineering.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	5.12. Identify nets of solids. (6.G.4) 5.13. Solve problems involving scale drawings of geometric shapes including calculating lengths and areas from drawings. (7.G.1) 5.14. Make sense of problems and persevere in solving them. (MP.1) 5.15. Use appropriate tools strategically. (MP.5) 5.16. Attend to precision. (MP.6) 5.17. Determine an individual's responsibility for personal actions and contributions to group activities. (9.1.8.C.1)		

Suggested days of Instruction	Curriculum Management System	Topic: Geometry	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics	Goal 5: It is important for students to understand the relationships between lines and the angles that their intersections create. Additionally, the properties of 2 and 3 dimensional figures and the calculations of their area and volume are important in order to solve real world problems. The applications of geometry are utilized in fields such as surveying, navigation (aviation and nautical), and engineering.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	5.18. Model leadership skills during classroom and extra-curricular activities. (9.1.8.C.3) 5.19. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)		

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 7 Mathematics	Topic: Statistics and Data Analysis	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
5 wks	<p>6.1. Find measures of central tendency including mean, median, mode and range through different types of graphs. (7.SP.4)</p> <p>6.2. Make and assess the degree of visual overlap for frequency tables, histograms, line plots, stem and leaf plots, box and whisker plots, and scatter plots. (7.SP.3)</p> <p>6.3. Create various graphs (bar, line, circle, histogram, stem and leaf plots, box and whisker, scatterplot, Venn) and generalize correlations between two sets of data. (7.SP.1)</p> <p>6.4. Draw inferences and conclusions about a population based on the data displayed. (7.SP.2)</p>	<p>Essential Questions: What do you do to analyze sets of data? What displays can you make to interpret data? Why is data collected and analyzed? How do people use data to influence others? How can data be used to influence the decisions we make in our every day lives? How can predictions be made based on data?</p> <p>Conceptual Understandings: There are different methods by which data can be organized and represented.</p> <p>When you present data, the type of data and your purpose influence the type of graph you choose.</p>	<p>Houghton Mifflin GoMath Middle School Grade 7 modules 10, 11</p> <p>Unit Vocabulary: frequency, frequency table, mean, median, mode, range, measures of central tendency, outlier, histogram, stem-and-leaf plot, box-and-whisker plot, quartile, scatterplot, positive correlation/trend, negative correlation/trend, line of best fit/trend, line, circle graph, central angle, distribution</p> <p>Assessment Models: Observation Class discussion Homework Checkpoint for understanding Self-reflection Diagnostic test prior to instruction Unit Assessment</p> <p>Opportunities for Differentiation: Level of interpretation for various graphs to increase the complexity of the skill</p> <p>Additional Resources: Graph paper Compasses Protractors Rulers Venn diagram charts</p>

Suggested days of Instruction	Curriculum Management System	Topic: Statistics and Data Analysis	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics	Goal 6: In today's information-based world, students need to be able to read, understand, and interpret data in order to make informed decisions. Students should be involved in collecting and organizing data, and present it using tables, charts, and graphs. They should gather data using sampling, and should increasingly be expected to analyze and make inferences from data, as well as to analyze data and inferences made by others.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>6.5. Construct viable arguments and critique the reasoning of others. (MP.3)</p> <p>6.6. Use appropriate tools strategically. (MP.5)</p> <p>6.7. Look for and make use of structure. (MP.7)</p> <p>6.8. Assess data gathered to solve a problem for which there are varying perspectives (e.g., cross-cultural, gender-specific, generational), and determine how the data can best be used to design multiple solutions. (9.1.8.B.2)</p> <p>6.9. Determine an individual's responsibility for personal actions and contributions to group activities. (9.1.8.C.1)</p>		<p>www.brainpop.com</p> <p>www.khanacademy.com</p>

Suggested days of Instruction	Curriculum Management System	Topic: Statistics and Data Analysis	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics	Goal 6: In today's information-based world, students need to be able to read, understand, and interpret data in order to make informed decisions. Students should be involved in collecting and organizing data, and present it using tables, charts, and graphs. They should gather data using sampling, and should increasingly be expected to analyze and make inferences from data, as well as to analyze data and inferences made by others.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>6.10. Model leadership skills during classroom and extra-curricular activities (9.1.8.C.3)</p> <p>6.11. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)</p>		

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 7 Mathematics	Topic: Probability	
		Goal 7: This unit prepares the students for understanding and finding probabilities of simple and compound events. The study of probability plays an important role in real-world applications by helping us make predictions in sports, weather, business, etc. It helps us avoid unfair games of chance, and make informed decisions about medical treatments whose success rate is provided in terms of percentages. Understanding chance makes consumers informed about choices for insurance and rates. Determining whether it's cost effective to purchase extended protection plans on new products relates the chance of the product breaking down to the cost of the plan and the replacement cost.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
4 wks	<p>7.1. Understand that the probability of a chance event lies between 0 and 1. (7.SP.5)</p> <p>7.2. Approximate the probability of a chance event by collecting data. (7.SP.6)</p> <p>7.3. Develop and utilize probability models. (7.SP.7)</p> <p>7.4. Develop and utilize uniform probability models assigning equal probability to all outcomes. (7.SP.7.a)</p> <p>7.5. Observe frequencies of data generated from a chance process. (7.SP.7.b)</p>	<p>Essential Questions: What is a sample space and how do you find one? How do you find the probabilities of simple and compound events? How and when do you use the counting principle? When do you apply a permutation versus a combination formula?</p> <p>Conceptual Understandings: The probability of an event's occurrence can be predicted with varying degrees of confidence. You can select a random sample to accurately represent the entire population. A survey question should not influence responses by making one answer appear more attractive.</p>	<p>Houghton Mifflin GoMath Middle School Grade 7 modules 12, 13</p> <p>Unit Vocabulary: outcome, event, probability, sample space, tree diagram, theoretical probability, experimental probability, counting principle, permutation, factorial, combination, independent event, dependent event, compliment of an event, odds in favor of/against, population, sample, random sample, biased question(s)</p> <p>Assessment Models: Observation Class discussion Homework Checkpoint for understanding Self-reflection Diagnostic test prior to instruction Unit assessment</p> <p>Opportunities for Differentiation: Tiered stations Use permutation and combination notation Use the counting principle</p> <p>Additional Resources:</p>

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Probability	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 7: This unit prepares the students for understanding and finding probabilities of simple and compound events. The study of probability plays an important role in real-world applications by helping us make predictions in sports, weather, business, etc. It helps us avoid unfair games of chance, and make informed decisions about medical treatments whose success rate is provided in terms of percentages. Understanding chance makes consumers informed about choices for insurance and rates. Determining whether it's cost effective to purchase extended protection plans on new products relates the chance of the product breaking down to the cost of the plan and the replacement cost.	Essential Questions, Conceptual Understandings
	7.6. Use tree diagrams to represent sample spaces for compound events. (7.SP.8.b) 7.7. Analyze theoretical and experimental probability (7.SP.7.a, 7.SP.7.b) 7.8. Find the probability of dependent and independent events. (7.SP.8) 7.9. Define the probability of simple and compound events. (7.SP.8.a) 7.10. Calculate and design a simulation for a simple and compound event. (7.SP.8.a,7.SP.8.b,7.SP.8.c) 7.11. Find permutations. (7.SP.8)		Spinners Dice Coins Manipulatives for data collection www.brainpop.com www.khanacademy.com

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Probability	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 7: This unit prepares the students for understanding and finding probabilities of simple and compound events. The study of probability plays an important role in real-world applications by helping us make predictions in sports, weather, business, etc. It helps us avoid unfair games of chance, and make informed decisions about medical treatments whose success rate is provided in terms of percentages. Understanding chance makes consumers informed about choices for insurance and rates. Determining whether it's cost effective to purchase extended protection plans on new products relates the chance of the product breaking down to the cost of the plan and the replacement cost.	Essential Questions, Conceptual Understandings
	7.12. Find combinations. (7.SP.8) 7.13. Use permutation and combination notation. (7.SP.8) 7.14. Use the counting principle. (7.SP.8) 7.15. Understand the meaning of factorial and how to apply it. (7.SP.8) 7.16. Construct viable arguments and critique the reasoning of others. (MP.3) 7.17. Model with mathematics. (MP.4) 7.18. Determine an individual's responsibility for personal actions and contributions to group activities. (9.1.8.C.1)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics	Topic: Probability	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 7: This unit prepares the students for understanding and finding probabilities of simple and compound events. The study of probability plays an important role in real-world applications by helping us make predictions in sports, weather, business, etc. It helps us avoid unfair games of chance, and make informed decisions about medical treatments whose success rate is provided in terms of percentages. Understanding chance makes consumers informed about choices for insurance and rates. Determining whether it's cost effective to purchase extended protection plans on new products relates the chance of the product breaking down to the cost of the plan and the replacement cost.	Essential Questions, Conceptual Understandings
	7.19. Model leadership skills during classroom and extra-curricular activities. (9.1.8.C.3) 7.20. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)		

**Grade 7
Mathematics – Pre Algebra**

Scope and Sequence

Quarter I	
<p>Topic: The Number System</p> <ul style="list-style-type: none">I. The Real Number System<ul style="list-style-type: none">a. Rational and irrational numbersb. Classifying numbersc. Decimal expansiond. Integer operationse. Absolute value	<p>Topic: Expressions and Equations</p> <ul style="list-style-type: none">II. Evaluating Expressions and Writing/Solving Equations<ul style="list-style-type: none">a. One-step linear equations<ul style="list-style-type: none">i. Single solutionii. Infinite solutionsiii. No solutionb. Multi-step linear equations<ul style="list-style-type: none">i. Rational number coefficientii. Expanding expressionsc. Substitutiond. Combining like terms
Quarter II	
<p>Topic: Expressions and Equations</p> <ul style="list-style-type: none">III. Powers, Roots and Scientific Notation<ul style="list-style-type: none">a. Exponents<ul style="list-style-type: none">i. Comparisonsii. Conversionsiii. Negativesiv. Square and cube roots	<p>Topic: Expressions and Equations</p> <ul style="list-style-type: none">IV. Systems of Linear Equations<ul style="list-style-type: none">a. Simultaneous linear equations<ul style="list-style-type: none">i. Points of intersectionii. Graphingb. Substitutionc. Elimination

Quarter III

Topic: Functions

- V. Functions
 - a. Create and analyze
 - b. Rate of change
 - c. Initial value
 - d. Graphing

Topic: Ratios, Rates, Proportions, and Percents

- VI. Ratios, Rates, Proportions, and Percents
 - a. Ratios
 - b. Rates and proportional reasoning
 - c. Similar figures
 - d. Maps/scale drawings
 - e. Percents, fractions and decimals
 - f. Percent change

Quarter IV

Topic: Statistics and Probability

- VII. Probability
 - g. Events
 - i. Simple
 - ii. Compound
 - iii. Dependent
 - iv. Independent
 - h. Probability models
 - i. Theoretical probability
 - j. Experimental probability
 - k. Permutation and combination notation

Topic: Statistics and Probability

- VIII. Bivariate Data
 - a. Linear functions
 - i. Slope
 - ii. Graph
 - b. Data patterns
 - i. Clusters
 - ii. Outliers
 - iii. Linear/nonlinear
 - i. Correlations

Topic: Geometry

- IX. Geometry
 - a. Pythagorean Theorem
 - i. Unknown sides
 - ii. Right triangles
 - iii. Coordinate systems
 - b. Angle relationships
 - ii. Supplementary
 - iii. Complementary
 - iv. Vertical
 - v. Adjacent
 - vi. Corresponding
 - vii. Alternate interior/exterior

Topic: Geometry

- X. Transformations
 - a. Rotations, reflections and translations
 - i. Properties
 - ii. Effects
 - b. Congruency

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Topic: The Real Number System	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
4 wks	Review Order of Operations (7.EE.1) 1.1. Know and understand that there are rational and irrational numbers. (8.NS.1) 1.2. Use the real number system to classify numbers as real, rational, irrational, whole, integer, and/or natural/counting. (8.NS.1) 1.3. Show that the decimal expansion of a rational number repeats. (8.NS.1) 1.4. Convert a decimal expansion into a rational number. (8.NS.1)	Essential Questions: How does the use of real world relationships help you understand integers? Can you use rational approximations to model irrational numbers accurately? Conceptual Understandings: There are different types of numbers that are not “pretty positives.” Integers, as part of a real number system, allow us to represent positive and negative whole numbers. An integer and its opposite have the same absolute value.	Prentice Hall Accelerated Grade 7 Math chapter 1 Unit Vocabulary: rational number, irrational number, integer, absolute value, rational approximation, whole numbers, counting/natural numbers, operations Assessment Models: Teacher observations DO NOWs Word problems Integer operations quiz Math journals Unit test Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based Modified and multiple tests Amount of problems to complete for homework or classwork Peer instruction Active learning Modeling Time allotment Additional Resources: Textbook Smartboard lessons

Suggested days of Instruction	Curriculum Management System		Topic: The Real Number System	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra		Goal 1: This unit is the introduction of the real number system as well as the review of all four integer operations and application of real-life problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model	
	<p>1.5. Perform all four integer operations (including solutions that are undefined by division). (7.NS.1, 7.NS.1.a, 7.NS.1.b, 7.NS.1.c, 7.NS.1.d, 7.NS.2, 7.NS.2.a, 7.NS.2.b, 7.NS.7.c) (revised NJSLS)</p> <p>1.6. Solve real-world problems involving the four operations with integers. (7.NS.3)</p> <p>1.7. Determine absolute value of given numbers. (7.NS.1.b, 7.NS.1.c, 6.NS.7.c) (revised NJSLS)</p> <p>1.8. Compare and order integers. (6.NS.6.a, 6.NS.7)</p> <p>1.9. Use rational approximations of irrational numbers to compare and graph on a number line and to estimate value of expressions. (8.NS.2)</p>		<p>Calculator Teacher-made materials Interactive number lines (SmartBoard gallery)</p> <p>www.khanacademy.org</p> <p>www.studyisland.com</p> <p>www.aaamath.com</p>	

Suggested days of Instruction	Curriculum Management System	Topic: The Real Number System	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 1: This unit is the introduction of the real number system as well as the review of all four integer operations and application of real-life problems.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	1.10. Reason abstractly and quantitatively. (MP.2) 1.11. Model with mathematics. (MP.4) 1.12. Use appropriate tools. (MP.5) 1.13. Look for and make use of structure. (MP.7)		

Suggested days of Instruction	Curriculum Management System	Topic: Evaluating Expressions, and Writing and Solving Equations	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 2: Solve and translate real-life situations into mathematical problems using numerical and algebraic expressions and equations.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
5 wks	<p>Review fraction operations and LCM. (5.NF.1, 5.NF.4.a, 6.NS.1, 6.NS.4)</p> <p>Review conversions (fraction, decimal, percent). (7.NS.2.d)</p> <p>2.1. Solve one-step linear equations in one variable with all four operations. (8.EE.7)</p> <p>2.2. Use variables to represent quantities when constructing equations. (7.EE.4)</p> <p>2.3. Create linear equations in one variable with a single solution, infinite solutions and no solution. (8.EE.7.a)</p> <p>2.4. Solve multi-step equations (variables on both sides, proportions, fractional equations, distributive property, etc.). (8.EE.7.b, 6.EE.3)</p>	<p>Essential Questions: How can you use an equation to represent and solve a real life problem?</p> <p>Conceptual Understandings: The process of solving an equation requires balance; any action taken on one side of the equation must also occur on the other side.</p>	<p>Prentice Hall Accelerated Grade 7 Math chapters 2, 3, 4</p> <p>Unit Vocabulary: coefficient, term, constant, evaluate, expression, equation, inverse, inverse operation, opposite, base, exponent, distributing, simplify, translate</p> <p>Assessment Models: Pre-assessment Teacher observations DO NOWs/daily warm-ups Word problems Math journals Unit Test</p> <p>Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based Modified and multiple tests Amount of problems to complete for homework or classwork Peer instruction Active learning Modeling Time allotment</p> <p>Additional Resources:</p>

Suggested days of Instruction	Curriculum Management System	Topic: Evaluating Expressions, and Writing and Solving Equations	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 2: Solve and translate real-life situations into mathematical problems using numerical and algebraic expressions and equations.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>2.5. Solve linear equations with rational number coefficients whose solutions require expanding expressions. (8.EE.7.b)</p> <p>2.6. Translate statements in algebraic expressions or equations. (6.EE.2.a)</p> <p>2.7. Translate algebraic equations and then solve. (6.EE.2.a)</p> <p>2.8. Use equations to solve real life word problems. (7.EE.3)</p> <p>2.9. Evaluate expressions using substitution. (6.EE.2.c)</p> <p>2.10. Rewrite expressions in various forms in solving problems. (7.EE.2)</p>		<p>Textbook Smartboard lessons Calculator Teacher-made materials</p> <p>www.khanacademy.org</p> <p>www.studyisland.com</p> <p>www.aaamath.com</p>

Suggested days of Instruction	Curriculum Management System	Topic: Evaluating Expressions, and Writing and Solving Equations	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 2: Solve and translate real-life situations into mathematical problems using numerical and algebraic expressions and equations.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>2.11. Combine like terms to simplify the equation. (7.EE.1. 6.EE.3)</p> <p>2.12. Reason abstractly and quantitatively. (MP.2)</p> <p>2.13. Use appropriate tools strategically. (MP.5)</p> <p>2.14. Attend to precision. (MP.6)</p> <p>2.15. Look for and make use of structure. (MP.7)</p>		

Suggested days of Instruction	Curriculum Management System <u>Subject/Grade Level:</u> Grade 7 Mathematics – Pre Algebra	Topic: Geometry	
		Goal 3: Being that every algebra course needs a review, as well as application of those previously taught geometric concepts, this unit is designed to reflect as well as apply those topics needed before Algebra 1. Pythagorean Theorem, angle relationships, polygons, formulas with 2 and 3D figures, and congruent/ similar polygons using ratios are included. Review classification/hierarchy of quadrilaterals.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
6 wks	<p>Review ratios/proportions. (7.RP.3)</p> <p>3.1. Solve the Pythagorean Theorem for one of the missing side lengths, given the other two lengths. (7.G.2, 8.G.6)</p> <p>3.2. Use the Pythagorean Theorem to determine unknown side lengths in right triangles. (8.G.7)</p> <p>3.3. Use the Pythagorean Theorem to solve real-life problems in 2-dimensions and 3 dimensions. (8.G.7)</p> <p>3.4. Use Pythagorean Theorem to determine if a given triangle is a right triangle. (8.G.7)</p>	<p>Essential Questions: How can the Pythagorean Theorem be used to find the missing side length in a right triangle and the distance between two points? What do the relationships between angles and sides tell us about polygons and other figures? What methods can be used to find similarity between two geometric figures? How can we apply calculating the volume of a figure to a real-world problem?</p> <p>Conceptual Understandings: The shortest distance between two points is a straight line. The Pythagorean Theorem can be used to calculate it.</p> <p>Angle relationships can aid understanding of congruence and similarity.</p> <p>General formulas and basic geometric principles can be applied to any polygon.</p> <p>Volume can be found for 3-dimensional figures in real-world problem using the appropriate formula.</p>	<p>Ratio/Proportion - Prentice Hall Accelerated Grade 7 Math chapters 5, 6</p> <p>Prentice Hall Accelerated Grade 7 Math chapters 10, 11, 12</p> <p>Unit Vocabulary: hypotenuse, legs, transversal, complementary, supplementary, alternate exterior, alternate interior, adjacent, vertical, corresponding, acute angle, obtuse angle, right angle, straight angle, similar, congruence, cone, cylinder, sphere polygon: triangle, quadrilateral thru decagon quadrilaterals - parallelogram, rhombus, trapezoid, square, rectangle,</p> <p>Assessment Models: Pre-assessment Teacher observations DO NOWs/daily warm-ups Word problems Math journals Unit Test</p> <p>Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based</p>

Suggested days of Instruction	Curriculum Management System	Topic: Geometry	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics – Pre Algebra	<u>Goal 3:</u> Being that every algebra course needs a review, as well as application of those previously taught geometric concepts, this unit is designed to reflect as well as apply those topics needed before Algebra 1. Pythagorean Theorem, angle relationships, polygons, formulas with 2 and 3D figures, and congruent/ similar polygons using ratios are included. Review classification/hierarchy of quadrilaterals.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>3.5. Explain proof of Pythagorean Theorem and its converse using if, then statements. (8.G.6)</p> <p>3.6. Use Pythagorean Theorem to calculate distance between two points in a coordinate system. (8.G.8)</p> <p>3.7. Write and solve simple equations for angle relationships on a transversal diagram or in a figure such as a polygon. (8.G.5, 7.G.5)</p> <p>3.8. Identify the following angle relationships: supplementary, complementary, vertical, adjacent, corresponding, alternate interior, alternate exterior. (8.G.5, 7.G.5)</p>		<p>Modified and multiple tests Amount of problems to complete for homework or classwork Peer instruction Active learning Modeling Time allotment</p> <p>Additional Resources: Textbook Smartboard lessons Calculator Teacher-made materials</p> <p>www.khanacademy.org</p> <p>www.studyisland.com</p> <p>www.aaamath.com</p>

Suggested days of Instruction	Curriculum Management System	Topic: Geometry	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics – Pre Algebra	Goal 3: Being that every algebra course needs a review, as well as application of those previously taught geometric concepts, this unit is designed to reflect as well as apply those topics needed before Algebra 1. Pythagorean Theorem, angle relationships, polygons, formulas with 2 and 3D figures, and congruent/ similar polygons using ratios are included. Review classification/hierarchy of quadrilaterals.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	3.9. Determine polygon interior angle sum using the formula $(n-2)180^\circ$. (8.G.5) 3.10. Determine sum of exterior angles in a polygon. (8.G.5) 3.11. Determine missing interior and exterior angles of in a polygon. (8.G.5) 3.12. Use hierarchy chart for quadrilaterals to answer true/ false and sometimes, always, never statements. (5.G.4) 3.13. Determine if given figures are similar, congruent, or neither. (8.G.5, 7.G.1) 3.14. Find missing sides of similar figures using proportions. (8.G.5, 7.G.1)		

Suggested days of Instruction	Curriculum Management System	Topic: Geometry	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics – Pre Algebra	Goal 3: Being that every algebra course needs a review, as well as application of those previously taught geometric concepts, this unit is designed to reflect as well as apply those topics needed before Algebra 1. Pythagorean Theorem, angle relationships, polygons, formulas with 2 and 3D figures, and congruent/ similar polygons using ratios are included. Review classification/hierarchy of quadrilaterals.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>3.15. Use the angle-angle criterion for similarity of triangles to determine if figures are similar given two angle measurements. (Use Smartboard, software to manipulate objects.) (8.G.5, 7.G.1)</p> <p>3.16. Know and use formulas for area and circumference of a circle in solving problems. (7.G.4)</p> <p>3.17. Know and be able to use the formulas for volumes of cones, cylinders, and spheres. (Use reference sheet for formulas.) (8.G.9)</p> <p>3.18. Apply formulas for area, volume and surface area of two- and three-dimensional objects. (7.EE.6)</p> <p>3.19. Make sense of problems and persevere in solving them. (MP.1)</p>		

Suggested days of Instruction	Curriculum Management System	Topic: Geometry	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics – Pre Algebra	Goal 3: Being that every algebra course needs a review, as well as application of those previously taught geometric concepts, this unit is designed to reflect as well as apply those topics needed before Algebra 1. Pythagorean Theorem, angle relationships, polygons, formulas with 2 and 3D figures, and congruent/ similar polygons using ratios are included. Review classification/hierarchy of quadrilaterals.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	3.20. 8.MP.2. Reason abstractly and quantitatively. (MP.2) 3.21. 8.MP.3. Construct viable arguments and critique the reasoning of others. (MP.3)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Topic: Transformations	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	Goal 4: This unit extends knowledge of the coordinate system using a sequence of transformations and algebraic notation.		
4 wks	<p>Review identifying and graphing points on a rectangular coordinate system.</p> <p>4.1. Verify properties of rotations, reflections, and translations. (8.G.1, 8.G.1.a, 8.G.1.b, 8.G.1.c)</p> <p>4.2. Determine image coordinates and how they change as a result of a transformation (translation, reflection, rotation, dilation). (8.G.3)</p> <p>4.3. Identify a transformation as a translation, reflection, rotation or dilation. (8.G.1, 8.G.2) (revised NJSLS)</p> <p>4.4. Describe the transformation(s) utilized to demonstrate congruence between two figures. (8.G.2) (revised NJSLS)</p>	<p>Essential Questions: How does performing one/multiple transformations impact the ordered pairs for each vertex? Given an image and a pre-image, can you identify the sequence of transformations?</p> <p>Conceptual Understandings: Using models on a coordinate plane can aid understanding of congruence and similarity.</p>	<p>Prentice Hall Accelerated Grade 7 Math chapter 13</p> <p>Unit Vocabulary: translation, reflection, rotation, dilation, vertex, image, preimage, congruence, similarity, rectangular coordinate system, ordered pairs, x-coordinate, y-coordinate, x-axis, y-axis, scale factor</p> <p>Assessment Models: Pre-assessment Teacher observations DO NOWs/daily warm-ups Word problems Math journals Unit Test</p> <p>Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based Modified and multiple tests Amount of problems to complete for homework or classwork Peer instruction Active learning Modeling Time allotment</p>

Suggested days of Instruction	Curriculum Management System	Topic: Transformations	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 4: This unit extends knowledge of the coordinate system using a sequence of transformations and algebraic notation.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>4.5. Given two similar figures, describe the transformation(s) utilized to get from figure one to figure two. Ex: $(x, y) \rightarrow (x + 3, y + 3)$ (8.G.4)</p> <p>4.6. Model with mathematics. (MP.4)</p> <p>4.7. Use appropriate tools strategically. (MP.5)</p> <p>4.8. Attend to precision. (MP.6)</p> <p>4.9. Look for and make use of structure. (MP.7)</p>		<p>Additional Resources: Textbook Smartboard lessons Calculator Teacher-made materials</p> <p>www.khanacademy.org</p> <p>www.studyisland.com</p> <p>www.aaamath.com</p>

Suggested days of Instruction	Curriculum Management System	Topic: Functions	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 5: Functions represent/describe something in the real-world. Certain relationships are described in linear functions.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
4 wks	5.1. Determine if a relation is a function. (8.F.1) 5.2. Identify the domain and range of a relation. (8.F.1) 5.3. Use the vertical line test to determine if a relation is a function. 5.4. Complete input/output table to represent a relation. (8.F.2) (revised NJSLS) 5.5. Evaluate a function. (8.F.2) (revised NJSLS) 5.6. Determine the pattern in an input/output chart. (8.F.2, MP.7) (revised NJSLS)	Essential Questions: What is a function? By analyzing a function, what can we determine about the relationship between the two quantities? Conceptual Understandings: Functions represent/describe something in the real-world. Certain relationships are described in linear functions.	Prentice Hall Accelerated Grade 7 Math chapter 7 Unit Vocabulary: relation, function, domain, range, input, output, increasing/decreasing -positive/negative correlation, linear function Assessment Models: Pre-assessment Teacher observations DO NOWs/daily warm-ups Word problems Math journals Unit Test Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based Modified and multiple tests Amount of problems to complete for homework or classwork Peer instruction Active learning Modeling Time allotment Additional Resources: Textbook

Suggested days of Instruction	Curriculum Management System	Topic: Functions	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 5: Functions represent/describe something in the real-world. Certain relationships are described in linear functions.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	5.7. Utilize the equation $y=mx+b$ to describe a linear function. (8.F.3) 5.8. Create examples of nonlinear functions. (8.F.3) 5.9. Graph a function. (8.F.4, 8.F.5) 5.10. Model a linear relationship by constructing a function. (8.F.4) 5.11. Determine a function to represent a real life problem. (8.F.4) 5.12. Construct a function graph based on a real life situation. (8.F.3) 5.13. Determine when a function is increasing, decreasing - positive/negative correlation. (8.F.5)		Smartboard lessons Coordinate and easel/paper Graph paper/mini white boards Calculator Teacher-made materials www.khanacademy.org www.studyisland.com www.aaamath.com

Suggested days of Instruction	Curriculum Management System	Topic: Functions	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics – Pre Algebra	<u>Goal 5:</u> Functions represent/describe something in the real-world. Certain relationships are described in linear functions.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	5.14. Determine rate of change and initial value in a function. (8.F.2, 8.F.4, 8.F.5) (revised NJSLS) 5.15. Interpret rate of change and initial value of a linear function. (8.F.4) 5.16. Reason abstractly and quantitatively. (MP.2) 5.17. Construct viable arguments and critique the reasoning of others. (MP.3) 5.18. Model with mathematics. (MP.4) 5.19. Look for and make use of structure. (MP.7)		

Suggested days of Instruction	Curriculum Management System	Topic: Functions	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 5: Functions represent/describe something in the real-world. Certain relationships are described in linear functions.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model

Suggested	Curriculum Management System	Topic: Bivariate Data
	Subject/Grade Level:	

	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
6 wks	<p>Review measures of central tendency. (7.SP.4)</p> <p>6.1. Define a linear function in the form $y = mx + b$ (8.F.3)</p> <p>6.2. Determine rate of change (slope). (8. F.4)</p> <p>6.3. Determine the equation of a line. (8.F.4)</p> <p>6.4. Sketch a graph that exhibits certain qualitative features, including proportional relationships. (7.RP.2, 8.F.5, 8.EE.5)</p> <p>6.5. Determine the existence of proportional relationships by graphing. (7.RP.2.a)</p> <p>6.6. Identify the constant of proportionality in a graph. (7.RP.2.b)</p>	<p>Goal 6: The student will be able to connect and investigate patterns of association between proportional relationships in bivariate data.</p> <p>Essential Questions: How does slope help us determine the relation between two quantities?</p> <p>Conceptual Understandings: There are two types of relationships - linear and nonlinear. A relationship between two quantitative variables can be represented in various ways - equation, graph, table.</p>	<p>Prentice Hall Accelerated Grade 7 Math chapter 8</p> <p>Unit Vocabulary: linear function, slope, coordinate plane, clusters, outliers, scatterplot and positive/negative correlation, linear and nonlinear relationships, equation</p> <p>Assessment Models: Pre-assessment Teacher observations DO NOWs/daily warm-ups Word problems Math journals Unit Test</p> <p>Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based Modified and multiple tests Amount of problems to complete for homework or classwork Peer instruction Active learning Modeling Time allotment</p> <p>Additional Resources: Textbook Smartboard lessons Coordinate and easel/paper Graph paper/mini white boards</p>

Suggested days of Instruction	Curriculum Management System	Topic: Bivariate Data	
	<u>Subject/Grade Level:</u> Grade 7 Mathematics – Pre Algebra	<u>Goal 6:</u> The student will be able to connect and investigate patterns of association between proportional relationships in bivariate data.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>6.7. Explain what a point on a graph of proportional relationship means. (7.SP.2.d)</p> <p>6.8. Assess degree of visual overlap of two numerical data distributions. (7.SP.3)</p> <p>6.9. Explain why slope is same between any two distinct points given two similar figures on coordinate plane. (8.EE.6)</p> <p>6.10. Construct and investigate patterns of association between two quantities - clusters, outliers, linear/nonlinear (scatterplot), pos/neg correlation. (8.SP.1, 8.SP.2) (revised NJSLS)</p> <p>6.11. Utilize straight lines to model relationships between two quantitative variables. (8.SP.2) (revised NJSLS)</p>		<p>Ti-83/Ti-83 Plus Graphing Calculators Teacher-made materials Geometer's Sketchpad</p> <p>www.khanacademy.org</p> <p>www.studyisland.com</p> <p>www.aaamath.com</p>

Suggested days of Instruction	Curriculum Management System	Topic: Bivariate Data	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 6: The student will be able to connect and investigate patterns of association between proportional relationships in bivariate data.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	6.12. Read and interpret bivariate data. (8.SP.3, 8.SP.4) 6.13. Use equation of a linear model to solve problems related to bivariate data. (7.RP.2.c, 8.SP.3) 6.14. Look for and make use of structure. (MP.7) 6.15. Look for and express regularity in repeated reasoning. (MP.8)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Topic: Probability	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
4 wks	<p>7.1. Understand that the probability of a chance event lies between 0 and 1. (7.SP.5)</p> <p>7.2. Approximate the probability of a chance event by collecting data. (7.SP.6)</p> <p>7.3. Develop and utilize probability models. (7.SP.7)</p> <p>7.4. Develop and utilize uniform probability models assigning equal probability to all outcomes. (7.SP.7.a)</p> <p>7.5. Observe frequencies of data generated from a chance process. (7.SP.7.b)</p>	<p>Essential Questions: What is a sample space and how do you find one? How do you find the probabilities of simple and compound events? How and when do you use the counting principle? When do you apply a permutation versus a combination formula?</p> <p>Conceptual Understandings: The probability of an event's occurrence can be predicted with varying degrees of confidence.</p> <p>You can select a random sample to accurately represent the entire population.</p> <p>A survey question should not influence responses by making one answer appear more attractive.</p>	<p>Prentice Hall Accelerated Grade 7 Math chapter 9</p> <p>Unit Vocabulary: outcome, event, probability, sample space, tree diagram, theoretical probability, experimental probability, counting principle, permutation, factorial, combination, independent event, dependent event, compliment of an event, odds in favor of/against, population, sample, random sample, biased question(s)</p> <p>Assessment Models: Pre-assessment Teacher observations DO NOWs/daily warm-ups Word problems Math journals Unit Test</p> <p>Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based Modified and multiple tests Amount of problems to complete for homework or classwork</p>

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Topic: Probability	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 7: This unit prepares the students for understanding and finding probabilities of simple and compound events. The study of probability plays an important role in real-world applications by helping us make predictions in sports, weather, business, etc. It helps us avoid unfair games of chance, and make informed decisions about medical treatments whose success rate is provided in terms of percentages. Understanding chance makes consumers informed about choices for insurance and rates. Determining whether it's cost effective to purchase extended protection plans on new products relates the chance of the product breaking down to the cost of the plan and the replacement cost.	Essential Questions, Conceptual Understandings
	7.6. Use tree diagrams to represent sample spaces for compound events. (7.SP.8.b) 7.7. Draw inferences and conclusions about a population based on the data displayed. (7.SP.2) 7.8. Analyze theoretical and experimental probability (7.SP.7.a, 7.SP.7.b) 7.9. Find the probability of dependent and independent events. (7.SP.8) 7.10. Define the probability of simple and compound events. (7.SP.8.a)		Peer instruction Active learning Modeling Time allotment Additional Resources: Textbook Smartboard lessons Calculators Teacher-made materials www.khanacademy.org www.studyisland.com www.aaamath.com

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Topic: Probability	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 7: This unit prepares the students for understanding and finding probabilities of simple and compound events. The study of probability plays an important role in real-world applications by helping us make predictions in sports, weather, business, etc. It helps us avoid unfair games of chance, and make informed decisions about medical treatments whose success rate is provided in terms of percentages. Understanding chance makes consumers informed about choices for insurance and rates. Determining whether it's cost effective to purchase extended protection plans on new products relates the chance of the product breaking down to the cost of the plan and the replacement cost.	Essential Questions, Conceptual Understandings
	7.11. Calculate and design a simulation for a simple and compound event. (7.SP.8.a,7.SP.8.b,7.SP.8.c) 7.12. Find permutations. (7.SP.8) 7.13. Find combinations. (7.SP.8) 7.14. Use permutation and combination notation. (7.SP.8) 7.15. Use the counting principle. (7.SP.8) 7.16. Understand the meaning of factorial and how to apply it. (7.SP.8) 7.17. Construct viable arguments and critique the reasoning of others. (MP.3)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Topic: Probability	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Goal 7: This unit prepares the students for understanding and finding probabilities of simple and compound events. The study of probability plays an important role in real-world applications by helping us make predictions in sports, weather, business, etc. It helps us avoid unfair games of chance, and make informed decisions about medical treatments whose success rate is provided in terms of percentages. Understanding chance makes consumers informed about choices for insurance and rates. Determining whether it's cost effective to purchase extended protection plans on new products relates the chance of the product breaking down to the cost of the plan and the replacement cost.	Essential Questions, Conceptual Understandings
	7.18. Model with mathematics. (MP.4) 7.19. Determine an individual's responsibility for personal actions and contributions to group activities. (9.1.8.C.1) 7.20. Model leadership skills during classroom and extra-curricular activities. (9.1.8.C.3) 7.21. Develop strategies to reinforce positive attitudes and productive behaviors that impact critical thinking and problem-solving skills. (9.1.8.A.1)		

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Topic: Systems of Linear Equations	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
3 wks	<p>8.1. Solve a system of linear equations and determine if there is a point of intersection and if so, how many. (8.EE.8, 8.EE.8.a)</p> <p>8.2. Solve systems of linear equations by graphing the equations. (8.EE.8.b, 8.EE.8.c)</p> <p>8.3. Solve systems of linear equations by substitution. (8.EE.8.b, 8.EE.8.c)</p> <p>8.4. Solve systems of linear equations by elimination. (8.EE.8.b, 8.EE.8.c)</p> <p>8.5. Reason abstractly and quantitatively. (MP.2)</p> <p>8.6. Look for and make use of structure. (MP.7)</p>	<p>Essential Questions: What methods can be used to solve systems of linear equations?</p> <p>Conceptual Understandings: The algebraic solution(s) to systems of equations can be used to represent and solve real-world problems. The solution of a system is any ordered pair that satisfies all equations in the system.</p>	<p>Prentice Hall Accelerated Grade 7 Math chapters 3, 4</p> <p>Unit Vocabulary: linear equation, systems of linear equations, substitution method, graphing method, elimination (with multiplication), point of intersection</p> <p>Assessment Models: Pre-assessment Teacher observations DO NOWs/daily warm-ups Word problems Math journals Unit Test</p> <p>Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based Modified and multiple tests Amount of problems to complete for homework or classwork Peer instruction Active learning Modeling Time allotment</p> <p>Additional Resources:</p>

Suggested days of Instruction	Curriculum Management System	Topic: Systems of Linear Equations	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 8: During this unit, students will solve a system of linear equations by graphing, using the substitution method, and using elimination method.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
			Textbook Smartboard lessons Calculators Teacher-made materials www.khanacademy.org www.studyisland.com www.aaamath.com

Suggested days of Instruction	Curriculum Management System	Topic: Powers/Roots & Scientific Notation	
	Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Goal 9: Very small or very large numbers can be written using exponents. We can also convert between standard form without exponents to scientific form that utilizes exponents.	
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
4 wks	<p>9.1. Write powers in simplest exponential form. (8.EE.1)</p> <p>9.2. Use powers and exponents in expressions and equations. (8.EE.1)</p> <p>9.3. Apply properties of integer exponents to generate equivalent numerical expressions. (8.EE.1)</p> <p>9.4. Evaluate square roots, cube roots, radicals, and approximate roots with other root indexes. (8.EE.2)</p> <p>9.5. Approximate roots.</p> <p>9.6. Identify and simplify monomials.</p> <p>9.7. Evaluate monomials.</p>	<p>Essential Questions: How is scientific notation used to write very large or very small numbers? How do you find decimal approximations of square roots that are irrational?</p> <p>Conceptual Understandings: Square roots and cube root symbols represent rational solutions to equations using variables with exponents (equations). Exponents can be used to represent very small/large quantities in real life.</p>	<p>Prentice Hall Accelerated Grade 7 Math chapter 2</p> <p>Unit Vocabulary: power, exponent, base, exponential form, root, cube root, fourth root (etc.), radicand, root index, monomials, scientific notation, standard form expression vs. equation</p> <p>Assessment Models: Pre-assessment Teacher observations DO NOWs/daily warm-ups Word problems Math journals Unit Test</p> <p>Opportunities for Differentiation: Remediation/enrichment Whole group instruction/Small group instruction Cooperative learning groups or partner activities Hand on materials – manipulative Project based Modified and multiple tests Amount of problems to complete for homework or classwork Peer instruction Active learning Modeling Time allotment</p> <p>Additional Resources:</p>

Suggested days of Instruction	Curriculum Management System Subject/Grade Level: Grade 7 Mathematics – Pre Algebra	Topic: Powers/Roots & Scientific Notation		
		Goal 9: Very small or very large numbers can be written using exponents. We can also convert between standard form without exponents to scientific form that utilizes exponents.		
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model	
	9.8. Simplify negative exponents. (8.EE.1) 9.9. Use scientific notation to write very large or very small numbers and to express relation to another quantity. (8.EE.3) 9.10. Convert numbers from standard form to scientific notation and vice versa. (8.EE.3) 9.11. Perform operations on numbers written in scientific notation. (8.EE.4) 9.12. Compare numbers written in scientific notation. (8.EE.3) 9.13. Reason abstractly and quantitatively. (MP.2)		Textbook Smartboard lessons Calculators Teacher-made materials www.khanacademy.org www.studyisland.com www.aaamath.com	

Suggested days of Instruction	Curriculum Management System	Topic: Powers/Roots & Scientific Notation	
	Subject/Grade Level: Grade 7	Goal 9: Very small or very large numbers can be written using exponents. We can also convert between standard form without exponents to scientific form that utilizes exponents.	
	Mathematics – Pre Algebra		
	Objectives / Cluster Concepts / Cumulative Progress Indicators (CPI's) The student will be able to:	Essential Questions, Conceptual Understandings	Instructional Tools / Materials / Technology / Resources / Learning Activities / Interdisciplinary Activities / Assessment Model
	<p>9.14. Use appropriate tools strategically. (MP.5)</p> <p>9.15. Attend to precision. (MP.6)</p> <p>9.16. Look for and make use of structure. (MP.7)</p>		

