Grade 7 Accelerated Pre-Algebra (7301)

Grade 6 Advanced Honors Pre-Algebra

Required

Sayreville Middle School

5 Credits

Full Year

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Date Curriculum Approved/ Revised: October 2015

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Statement of Purpose

Summary of the Course: This course of study is focused on four critical areas of mathematics for accelerated learners. They are adding, subtracting, multiplying and dividing numbers; analyzing proportional relationships and using expressions and equations; using sampling to draw inferences about a population; and solving problems involving angle measure, area, surface area and volume. The accelerated Pre-Algebra course is designed to create a solid foundation of skills required to be successful in a subsequent Algebra 1 course as well as future higher level courses in Mathematics.

In order to demonstrate a cohesive and complete implementation plan the following general suggestions are provided:

- The use of various formative assessments are encouraged in order to provide an ongoing method of determining the current level of understanding the students have of the material presented.
- Homework, when assigned should be relevant and reflective of the current teaching taking place in the classroom.
- Organizational strategies should be in place that allow the students the ability to take the information gained in the classroom and put in in terms that are relevant to them.
- Instruction should be differentiated to allow students the best opportunity to learn.
- Assessments should be varied and assess topics of instruction delivered in class.
- Modifications to the curriculum should be included that address students with Individualized Educational Plans (IEP), English Language Learners (ELL), and those requiring other modifications (504 plans).

Educational Technology

Standards

8.1.8.A.1, 8.1.8.A.3, 8.1.8.E.1, 8.2.8.C.8

- **Technology Operations and Concepts**
  - **Demonstrate knowledge of a real world problem using digital tools**

Example: Students can use https://www.mathgames.com/skill/6.24-divide-by-fractions-with-models to reinforce division of fractions.

  - **Use and/or develop a simulation that provides an environment to solve a real world problem or theory.**

Example: Students can go to http://www.mathplayground.com/thinkingblocks.html to reinforce ratios.

- **Research and Information Fluency**
  - **Effectively use a variety of search tools and filters in professional public databases to find information to solve a real world problem.**

Example: Students can search through Learnzillion, and other interactive sites for appropriate instructional videos and/or information pertaining to strategies and modeling.

- **Design**
  - **Develop a proposal for a chosen solution that include models (physical, graphical or mathematical) to communicate the solution to peers.**

Example: Students can use GeoGebra (https://www.geogebra.org/m/KDxuVax6) to create double number lines to model and explain how to find the percent of a number.

Career Ready Practices

Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success.

- **CRP2. Apply appropriate academic and technical skills.**
  Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

  Example: Students will apply prior knowledge when solving real world problems. Students will make sound judgements about the use of specific tools, such as creating tables and using the tools to explore and deepen the understanding of the concept of equivalent ratios.

- **CRP4. Communicate clearly and effectively and with reason.**
  Career-ready individuals communicate thoughts, ideas, and action plans with clarity, whether using written, verbal, and/or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time. They are excellent writers; they master conventions, word choice, and organization, and use effective tone and presentation skills to articulate ideas. They are skilled at interacting with others; they are active listeners and speak clearly and with purpose. Career-ready individuals think about the audience for their communication and prepare accordingly to ensure the desired outcome.

  Example: Students on a daily basis will communicate their reasoning behind their solution paths by making connections to the context and the quantities, using proper vocabulary, along with decontextualizing and/or contextualizing the problem. Students will create representations using objects, drawings, diagrams, and/or actions, such as the number line to compute quotients of fractions. They will also explain the meaning behind the quantities and units involved. Students will also ask probing questions to clarify and improve arguments.

- **CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.**
  Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem. They are aware of problems when they occur and take action quickly to address the problem; they thoughtfully investigate the root cause of the problem prior to introducing solutions. They carefully consider the options to solve the problem. Once a solution is agreed upon, they follow through to ensure the problem is solved, whether through their own actions or the actions of others.

  Example: Throughout their daily lessons, students will understand the meaning of a problem and look for entry points into solving their problems by analyzing the relationships of the quantities, constraints and goals of the task. Plans for solution paths will be made and have meaning. Students will self-monitor, evaluate and critique their process and progress as they are working and make changes as necessary.

- **CRP12. Work productively in teams while using cultural global competence.**
  Career-ready individuals positively contribute to every team, whether formal or informal. They apply an awareness of cultural difference to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings.

  Example: Students will work in collaborative and whole group settings to develop various solutions to math tasks that are presented to them. They will work together to understand the terms of the problem, ask clarifying and challenging questions among each other, and develop agreed upon solutions using a variety of strategies and models. Students will listen to, read and discuss arguments with each other with respect and courtesy at all times and will be willing to assist those that may need assistance. In this unit, students will demonstrate and explain to a peer or small group how to convert measurement units and to transform units appropriately when multiplying or dividing quantities.

Interdisciplinary Connections

Model interdisciplinary thinking to expose students to other disciplines.

Physical Education Connection:

Batting Average **(2.1ABCDE & 2.2ABCDE)**

- Students will determine the batting average of the given player. The teacher can give them other data of current players for them to determine the batting averages. The students can then determine who has the best batting average and why.

Home Economics Connection:

Baking Cookies **(CRP1, CRP2, CRP3, CRP6, CRP8, CRP12)**
Cups of Rice **(CRP1, CRP2, CRP3, CRP6, CRP8, CRP12)**

- Students will look at recipes and determine how many servings the recipes will make. This will allow students to see the importance of following recipes and if they want to make changes to it, or determine how much the ingredients will make.

Art Connection:

Art Murals **(1.3.8.D.3)**

- Students will determine the number of small squares that need to be used to cover the mural. Teachers can explain what a mural is and be shown various murals.

ELA Connection:

Various Tasks: **(RL.6.1 & RI.6.1)**

- Students will be able to read, analyze, and cite informational text to solve problems and explain their reasoning of how the task was solved. Students will also focus on vocabulary, mechanics and grammar in effective writing.

Unit 1: The Language of Algebra

Summary of the Unit: In this unit students will focus on the language of algebra including but not limited to terms, mathematical expressions, variables, etc. and how they form a foundation for mathematical thought. Students will be exposed to a problem solving plan for working through word problems and problem solving situations as well as properties of numbers.

Enduring Understanding: Mathematical symbols, expressions and equations exist throughout the real world and it is the understanding of these concepts that allows people to solve problems, not only in mathematics, but also in life.

Essential Questions:

- How can you use numbers and symbols to represent mathematical ideas?
- When do you use a variable and how do you know which mathematical operation to use?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 1
- Students will demonstrate mastery through various assessment criteria created by teachers throughout the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task (Questions 1 and 2 ONLY).

Resources:

- Glencoe Math Accelerated (© 2014)
- Ixl.com topics aligned with chapter content assigned by teachers as a supplement
- New Jersey Student Learning Standards for Mathematics

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Problem Solving Plan (1.1)	1 day	Students will learn and review a proposed plan for solving problems.	Complete the Getting Started activity	Homework Assigned. Classwork Assigned. Common Core Review.	7.EE.3, 7.EE.5,
Problem Solving Strategies (1.5)	2 days	Students will interpret and apply strategies designed to solve problems.	Exploration into combination of Problem Solving Plan and the	Homework assigned Common Core Review	7.NS.3, 7.EE.3, RST.9-10.2

			Strategies presented. Model questions and activities after grade 6 PARCC PBA questions.	PARCC PBA Sample questions	
Words and Expressions (1.2)	2 days	Students will translate verbal phrases into numerical expressions and evaluate.	Review all terminology related to mathematical operations. Reinforce Order of Operations and provide opportunities for students to evaluate higher level expressions such as: $[6(3+2)^3-7^2(8-5)] / 9$ without a calculator.	Organizational chart where all mathematical operations terms are collected and identified. Homework assigned. Teacher created worksheets with higher level order of operations questions.	7.NS.3
Variables and Expressions (1.3)	2 days	Students will determine a rule for a pattern Students will evaluate algebraic expressions involving variables.	Inquiry Lab (Rules and Expressions)	Mini Quiz based on previous material.	7.NS.3, 7.EE.4
Properties of Numbers (1.4)	1 – 2 days	Students will identify, classify and use the properties of addition and multiplication.	Include Commutative Property, Associative Property, Identity Property, Zero Property.	Mid Chapter Check 21^{st} Century Career Connection (P. 14)	7.EE.1, 7.EE.2, 9.2.8.B.4
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment from online resources (**Questions 1 & 2 only**)	7.NS.3, 7.EE.1, 7.EE.2, 7.EE.3, 7.EE.4, WHST.9-10.2B
TOTAL TIME	11 – 12 Days				

Suggested Modifications for Special Education, English Language Learners and Gifted Students:
*Consistent with individual plans, when appropriate.

- Students will be allowed to submit assignments using additional time per IEP modifications.

- Students will be encouraged to use different size and type of font in order to avoid print confusion.
- LEP students will be allowed to use an internet translator or language glossary in order to translate vocabulary and assignments properly.
- LEP students may be allowed to work with another student who is fluent in their native language.

Suggested Technological Innovations/ Use:

- Instructional technology should be used to present and assess lessons such as; PowerPoint, the Geometer's Sketchpad, GeoGebra, etc.
- Teachers are encouraged to use electronic assessments to determine mastery of concepts taught.
- The use of kahoot or other type of interactive software is encouraged.

Cross Curricular/ 21st Century Connections:

9.1 : All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.2 : All students will be able to identify the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.

Unit 2: Operations with Integers

Summary of the Unit: In this unit students will focus on the analysis and application of operations involving integers and the relationship within real life situations. Students will be exposed to tasks involving multiple operations as the foundation to computation used throughout the course. The emphasis of this unit is on the mastery of operations using integers and computing expressions involving multiple operations including both positive and negative numbers.

Enduring Understanding: Mathematical symbols, expressions and equations exist throughout the real world and it is the understanding of these concepts that allows people to solve problems, not only in mathematics, but also in life.

Essential Questions:

- What happens when you add, subtract, multiply and divide integers?
- How does performing these operations with integers relate to us in real life?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 2
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

- Glencoe Math Accelerated (© 2014)
- Ixl.com topics aligned with chapter content assigned by teachers as a supplement
- Common Core Standards for Mathematics
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Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
The Real Number System (4.7)	1 day	Students will be able to identify, classify and compare numbers in the various number systems.	Use a Venn diagram to instruct all number systems and then provide clarity using various numbers and identify the number system classification. Review evaluation of expressions	Venn diagram. Teacher created homework. Spiral review of order of operations (non-integers).	8.NS.1, 8.NS.2, 8.EE.3

			with exponents.		
Integers and Absolute Value (2.1)	1 day	Students will compare and order integers	Define absolute value. Clarify distance from zero. Define integers.	Use a number line to evaluate student mastery of topic. Be sure to compare, order and evaluate integers.	7.NS.1, 7.NS.1a
Operations with Integers (2.2 – 2.5)	5 – 7 days based on level of mastery	Students will perform the various integer operations and evaluate expressions involving integer operations.	Complete the Inquiry labs used for each topic Following the instruction of all four operations individually, combine operations and reinforce Order of Operations using complex integer expressions with integers.	Mid Chapter Check, 21st Century Career Activity, Integer Unit Quiz, Various homework and classwork assigned, Common Core Quick Check. Teacher created higher level order of operations expressions with integers.	7.NS.1, 7.NS.1a, 7.NS.1b, 7.NS.1c, 7.NS.1d, 7.NS.3, 7.EE.3, 9.2.8.B.4, WHST.9-10.2B
Ordered Pairs and Relations (1.6)	1 day	Students will use ordered pairs to location positions on a coordinate plane.	Reinforce identification of quadrants and ordered pairs. Demonstrate identification and classification of ordered pairs. Discuss and define relations.	Students to identify quadrants and locations of ordered pairs. Students to place ordered pairs into the appropriate quadrants.	7. RP.2a, 7.RP.2b,7.RP.2d, 8. EE.5
Words, Equations, Tables and Graphs (1.7)	1 day	Students will translate among different verbal, tabular, graphical and algebraic representations of relations.	Provide background for relations and determine what make a relation. Instruct domain and range. Use tables to complete patterns and identify relations if they exist.	Teacher created homework and classwork. Common Core review.	7.EE.4, WHST.9-10.2B
Graphing in the Four Quadrants (2.6)	3 days		Be sure to emphasize not only identifying ordered pairs in the quadrants but also being able to properly	Ordered Pairs and graphing quiz,	7.RP.2a, 7.RP.2b, 7.RP.2d, 8.EE.5

			plot the points in the relevant quadrants.		
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test. Completion of End of Unit Journal Activity. Completion of Performance Assessment from the online resources.	8.NS.1, 8.NS.2, 8.EE.3, 7.NS.1, 7.NS.1a, 7.NS.1b, 7.NS.1c, 7.NS.1d, 7.NS.3, 7.EE.3, 7.RP.2a, 7.RP.2b,7.RP.2d, 8.EE.5, 7.EE.4, 9.2.8.B.4, WHST.9-10.2B
TOTAL TIME	15 – 17 days				

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

*Consistent with individual plans, when appropriate.

- Students will be allowed to submit assignments using additional time per IEP modifications.
- Students will be encouraged to use different size and type of font in order to avoid print confusion.
- LEP students will be allowed to use an internet translator or language glossary in order to translate vocabulary and assignmentsproperly.
- LEP students may be allowed to work with another student who is fluent in their native language.

Suggested Technological Innovations/ Use:

- Instructional technology should be used to present and assess lessons such as; PowerPoint, the Geometer's Sketchpad, GeoGebra, etc.
- Teachers are encouraged to use electronic assessments to determine mastery of concepts taught.
- The use of kahoot or other type of interactive software is encouraged.

Cross Curricular/ 21st Century Connections:

9.1 : All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.2 : All students will be able to identify the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.

Unit 3: Operations with Rational Numbers

Summary of the Unit: In this unit students will focus on operations with fractions and their decimal equivalents. Students will combine their knowledge and understanding of equations, expressions and use of integers in order to evaluate fractional expressions and apply that knowledge to real life situations.

Enduring Understanding: Real numbers can be classified as rational or irrational. A fraction represents the part of a whole while rational numbers have decimal equivalents and can be represented in either form.

Essential Questions:

- What happens when you add, subtract, multiply or divide rational numbers?
- How do the mathematical properties of addition, subtraction, multiplication and division make calculations easier?
- What real world situations can be represented by multiplying or dividing rational numbers?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 3
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task.

Resources:

- Glencoe Math Accelerated (© 2014)
- Ixl.com topics aligned with chapter content assigned by teachers as a supplement
- Common Core Standards for Mathematics
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Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Fractions and Decimals (3.1)	1 day	Students will be able to write and compare fractions as decimals and vice versa	Complete Inquiry Lab on P. 92. Demonstrate equivalency on a number line. Demonstrate conversion of	Common Core Review (Prior to Chapter), classwork and homework exercises.	7.NS.1, 7.NS.2, 7.NS.2d, 7.EE.3, 8.NS.1

			fractions and decimals using calculators and traditional methods.		
Rational Numbers (3.2)	1 day	Students will be able to identify and classify rational numbers.	Review the entire number system (Venn Diagram) Review place value and significant digits. Use Venn diagram to identify and classify numbers and fractions in rational terms. Use table to identify and classify numbers based on integers, rational, irrational, etc.	Classwork and homework exercises	7.NS.2, 7.NS.2d, 7.EE.3, 8.NS.1
Multiply and Divide Rational Numbers (3.3, 3.4)	2 – 3 days	Students will be able to multiply and divide fractions and evaluate expressions with fractions	Review integer rules for products and quotients. Remind students no need for common denominators. Emphasize product rule and simplifying of fractions to simplest terms. Be sure to differentiate between product and quotient procedures. It may help to create the foldable to teach the division concept.	Classwork and Homework exercises. Product and quotient integer rules assessment Mid Chapter Check between product and quotient rules. Complete 21st century Career exploration (p. 113). Quiz.	7.NS.2, 7.NS.2a, 7.NS.2c, 7.NS.3, 7.EE.3, 9.2.8.B4, WHST.9-10.2B
Adding and Subtracting Like Fractions (3.5)	1 day	Students will add and subtract like fractions	Reinforce the term "like fractions". Add numerators and not denominators. Use a graph paper model or overhead/ electronic manipulatives to demonstrate like fractions and how they can be	Teacher created homework and classwork. Use of manipulative both electronic and manual will help reinforce. Common Core Review.	7.NS.1, 7.NS.1d, 7.NS.3, 7.EE.3

			combined. Students can explore using a number line as well. Emphasis in this area must be on signed number fractions.		
Adding and Subtracting Unlike Fractions (3.6)	2 – 3 days	Students will evaluate expressions involving fractions with unlike denominators.	Before performing the operations, assess student's ability to convert fractions to like denominators. Emphasize the need for common denominators for addition and subtraction only. Scaffold examples and include improper fractions and mixed numbers.	Teacher created homework and classwork exercises. Common Core Review. Mini Quiz on addition and subtraction.	7.NS.1, 7.NS.1d, 7.NS.3, 7.EE.3
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment in the online resources.	7.NS.1, 7.NS.2d, 8.NS.1, 7.NS.2, 7.NS.2a, 7.NS.2c, 7.NS.3, 7.EE.3 WHST.9-10.2B
	10 – 12 days				

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

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- Students will be encouraged to use different size and type of font in order to avoid print confusion.
- LEP students will be allowed to use an internet translator or language glossary in order to translate vocabulary and assignments properly.
- LEP students may be allowed to work with another student who is fluent in their native language.

Suggested Technological Innovations/ Use:

- Instructional technology should be used to present and assess lessons such as; PowerPoint, the Geometer's Sketchpad,

GeoGebra, etc.

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- The use of kahoot or other type of interactive software is encouraged.

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9.2 : All students will be able to identify the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.

Unit 4: Rates, Ratios and Proportions

Summary of the Unit: In this unit students will learn to identify and represent proportional relationships. In addition, students will use the properties of proportions to make conversions between units and rates. Finally, students will solve real-world word problems using ratios and proportions using multiple strategies.

Enduring Understanding: A ratio is a comparison of two numbers or measurements while a proportion is a comparison of two ratios. Proportions can be used to evaluate expressions when a missing quantity is part of a comparison.

Essential Questions:

- How can you identify and represent proportional relationships?
- What strategies can be used to determine if quantities are equal in a proportional relationship?
- How can a proportion be set up to answer a question in a real world context?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 4
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

- Glencoe Math Accelerated (© 2014)
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- Common Core Standards for Mathematics
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Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Ratios (5.1)	1 day	Students will write and simplify ratios as fractions including those involved in measurements	Complete Real World Link to open. Reinforce simplified fractions and converting fractions.	Teacher assigned classwork and homework. HOT problems	7.RP.1

Unit Rates (5.2)	1 – 2 days	Students will find, compare and use unit rates.	Define unit rates. Use an advertisement from a newspaper and have students determine the unit rates for food items (price per oz., etc.).	Teacher assigned classwork and homework problems. HOT problems. Newspaper assignment for small project grade.	7.RP.1, WHST.9-10.2B
Complex Fractions and Unit Rates (5.3)	1 – 2 days	Students will simplify complex fractions and find unit rates.	Review fraction computation and rules. Use percents in conversions and ensure denominators that are not 100.	Teacher assigned classwork and homework.	7.RP.1, 7.NS.3
Converting Rates (5.4)	1 – 2 days	Students will convert rates using dimensional analysis and convert between systems of measurement.	Provide measurement conversion table. Have students convert between customary to metric and reverse. Students should be required to convert units of measure using multiple conversion factors in one problem.	Teacher assigned homework and classwork. Teachers should provide real world applications such as conversions on a map or in cooking using cookbooks. Unit Quiz.	7.RP.1, 7.RP.3, WHST.9-10.2B
Proportional Relationships (5.5)	1 – 2 days	Students will identify proportional relationships in tables and graphs.	Define terms. Use a circle with differing diameters. Radii, area and circumference and work backwards to find Pi as the constant of proportionality in all area and circumference situations	Circle investigation. Teacher created homework and classwork. Mid Chapter Check. 21st Century Career exploration in chapter.	7.RP.2, 7.RP.2a, 7.RP.2b, 7.RP.2c, 9.2.8.B.4, WHST.9-10.2B
Graphing Proportional Relationships (5.6)	1 – 2 days	Students will identify and analyze proportional relationships.	Review determining information from tables. Have students model a proportional situation and make an associated graph labeled properly. Based on the graph ask students to	Teacher created classwork and homework. Student models of proportional relationships.	7.RP.2, 7.RP.2a, 7.RP.2b, 7. RP.2d, 8. EE.5

			predict the constant of proportionality.		
Constant Rate of Change and Slope (9.3)	1 day	Students will find the constant rate of change for a linear relationship.	Reinforce constant of proportionality and show that can be the slope. Calculate slope and reinforce positive and negative rates of change with slope.	Using pre-made graphs have students find the slope/ rate of change. Teacher created classwork and homework.	7.RP.2, 7.RP.2b, 7. RP.2d, 8. EE.5
Solving Proportions (5.7)	2 days	Students will solve proportions.	Cross product rules are important here. Reinforce that $\frac{aaaa}{bbbb} = \frac{cccc}{dddd}$, where $bbbb\ aaaaaaaaaaa\ aaaa \neq 0$ For instruction provide students with bar and line graphs for graph interpretation and proportional relationships between data samples.	Graph interpretation (mini performance assessment). Teacher created classwork and homework assignments. Problem Solving Page (end of Ch. 5) # 1 – 4.	7.RP.2, 7.RP.2b, 7.RP.2c, 7.RP.3, WHST.9-10.2B
Scale Drawings and Models (5.8)	1 day	Students will use and construct scale drawings	Emphasize the use of a proportion with common units of measure. Use graph paper and an appropriate scale to represent items in a classroom/ room.	Mini-project: Students should use an appropriate scale and sketch a scale drawing of their room in their home with furniture as well as one other room of their choice. Teacher created homework and classwork. Common Core Review questions.	7.G.1
Similar Figures (5.9)	1 – 2 days	Students will find missing measurements for similar figures.	Using varied regular and irregular shapes, have students identify corresponding sides and	Teacher created classwork and homework. Common Core Review	7.RP.2, 7.RP.2c

			angles. Provide measurements and a scale and/ or provide measurements and have students determine the scale.	questions.	
Indirect Measurement (5.10)	1 day	Students will solve indirect measurement problems.	Teachers can use shadows of objects to teach the lesson (example: measure an object and then project the object on the board to determine the measurements). Project a map of Europe and draw a triangle between countries and cities using inverse triangles.	Map questions and measurement of objects. STEM CONNECTION: Teacher can discuss looking at an object through a lens to illustrate similar triangles. Teacher Created classwork and homework. Common Core Review questions.	7.RP.2, 7.RP.2c, WHST.9-10.2B
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment	7.NS.3, 7.RP.1, 7.RP.2, 7.RP.2a, 7.RP.2b, 7. RP.2c, 7.RP.3, 7.G.1, 8. EE.5 WHST.9-10.2B
	15 – 21 days				

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Unit 5: Percents

Summary of the Unit: In this unit students will focus on the use of proportional relationships to solve real-world percent problems. Students will learn to solve problems involving taxes, markups, discounts, percent's of change, and simple as well as complex interest.

Enduring Understanding: A percent is used to describe how many parts of a relationship there are when compared to 100 as well as able to allow a person to make an informed decision in real-world situations when faced with a portion of a total quantity.

Essential Questions:

- How can you use proportional relationships to solve real-world percent problems?
- How can an understanding of percents help consumers?
- How can you determine if a percent change represents an increase or decrease?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 5
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

- Glencoe Math Accelerated (© 2014)
- Ixl.com topics aligned with chapter content assigned by teachers as a supplement
- Common Core Standards for Mathematics

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Using the Percent Proportion (6.1)	1 – 2 days	Students will use and apply the percent proportion to solve problems.	Complete the Inquiry Lab on Percent Models. Reinforce cross products. $\frac{\text{Is}}{\text{Of}} = \frac{\%}{100}$	Teacher created homework and classwork problems. Varied formative assessments.	7.RP.2, 7.RP.2c, 7.RP.3, 7.EE.3

				Common Core Review Problems	
Mental Percents (6.2)	2 days	Students will determine percents of numbers mentally	Copy and/ or provide table of simple percents (p. 256). Reinforce percents with denominators 2, 4, 5, 8 and 10 for simple computations.	Teacher created homework and classwork. Mini Quiz following this section. Common Core Review Questions.	7.RP.3, 7.EE.3
Percent Equation (6.3)	2 days	Students will use the percent equation in real life situations	Provide and explain the percent equation. Demonstrate the difference between this and the proportion. Emphasis on solving word problems with appropriate solutions.	Teacher created homework and classwork. Emphasis on word problems (Teacher encouraged to find/ provide multiple examples). Complete 21st Century Career section (p. 267)	7.RP.2, 7.RP.2c, 7.RP.3, 7.EE.3, WHST.9-10.2b
Percent of Change (6.4)	2 days	Students will determine the percent of change in real life situations	Complete the Inquiry Lab for exploration. Show and break apart the formula. Emphasize the amount of error is the amount of change. This section is all about problem solving. Be sure to provide relevant examples and labels.	Teacher created classwork and homework. Refer to Stock Market stocks and bonds to evaluate change in stock prices (based on comparison of stock price/ percent which is a better buy?)	7.RP.2, 7.EE.2, 7.EE.3, 9.2.8.B.4, WHST.9-10.2B
Discount and Markup (6.5)	2 – 3 days	Students will solve real life problems involving discount and markup.	Discount is a % subtracted, while Markup is a % added. Be sure students understand which price/ value/ number is the original numbers.	Teacher created homework and classwork problems. Varied formative assessments. Common Core Review Problems.	7.RP.3, 7.EE.2, 7.EE.3, 9.2.B.4, WHST.9-10.2b

			Give students a mini project where they are given a specific amount of money to purchase clothes/ supplies/ items. Give students copies of "coupons" to use and determine how they could use these coupons to get the best total deal.	Mini Project.	
Simple and Compound Interest (6.6)	1 – 2 days	Students will compute the simple and compound interest applied to money.	Provide formulas to begin the unit. Contact local banks to see their interest rates. Use these in providing examples of interest applied to bank accounts and loans.	Teacher created homework and classwork problems. Varied formative assessments. Common Core Review Problems	7.RP.3, 9.2.8.B.4
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment	7.RP.2, 7.RP.2c, 7.RP.3, 7.EE.2, 7.EE.3, WHST.9-10.2B
	13 – 16 days				

Suggested Modifications for Special Education, English Language Learners and Gifted Students:

*Consistent with individual plans, when appropriate.

- Students will be allowed to submit assignments using additional time per IEP modifications.
- Students will be encouraged to use different size and type of font in order to avoid print confusion.
- LEP students will be allowed to use an internet translator or language glossary in order to translate vocabulary and assignments properly.
- LEP students may be allowed to work with another student who is fluent in their native language.

Suggested Technological Innovations/ Use:

- Instructional technology should be used to present and assess lessons such as; PowerPoint, the Geometer's Sketchpad, GeoGebra, etc.
- Teachers are encouraged to use electronic assessments to determine mastery of concepts taught.

- The use of kahoot or other type of interactive software is encouraged.

Cross Curricular/ 21st Century Connections:

9.1 : All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.

9.2 : All students will be able to identify the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.

Unit 6: Algebraic Expressions

Summary of the Unit: In this unit students will focus on why algebraic rules are useful. Students will simplify and generate equivalent algebraic expressions to make solving problems more efficient. In addition, students will learn to factor a simple polynomial expression using the greatest common factor.

Enduring Understanding: When solving a complex problem, being able to identify relationships and simplify complex parts of an expression will help make sense of and find solutions for the problem. Real world situations can be modeled and solved algebraically.

Essential Questions:

- Why are algebraic rules useful?
- Why might re-writing an expression be useful in solving a problem?
- How do mathematical properties of multiplication and division make calculations easier?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 6
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

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Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Distributive Property (7.1)	1 day	Students will use the distributive property to manipulate expressions.	Show the general expression a(b+c)= ab + ac and a(b-c) =ab-ac. Use both examples	Teacher created homework and classwork. Common Core Review	7.NS.2, 7.NS.2c, 7.EE.1, 7.EE.2

			involving variables and those involving numerals to prove the statement.	problems.	
Simplify Algebraic Expressions (7.2)	1 – 2 days	Students will combine like terms to simplify algebraic expressions.	Use the inquiry lab to initially present a tactile representation for combining like terms. Emphasize that like terms are those with the same variable and exponent. Provide examples with varying sets of variables and exponents to ensure comprehension of "like terms". Teachers should use geometrical examples for perimeter here.	Inquiry Lab with investigations and analysis questions. Teacher created classwork and homework problems including Common Core Review.	7.EE.1, 7.EE.2
Adding and Subtracting Linear Expressions (7.3, 7.4)	2 – 3 days	Students will add or subtract algebraic expressions using integers rules and combining like terms.	Teachers could continue with the use of algebra tiles to represent the addition or subtraction. Be sure to emphasize the distributive property with negatives and the use of like terms. Continue with perimeter of geometrical figures using binomials and trinomials for sides.	Career Project on P. 309 should be completed and assessed. Teacher created classwork and homework. Common Core Review Questions for both sections. Quiz on previous units.	7.EE.1, WHST 9-10.2B
Factoring Linear Expressions (7.5)	2 days	Students will use the Greatest Common Factor to factor linear expressions.	Use the inquiry lab and algebra tiles to "undo" the expression. Students should be taught that factoring is the inverse of the distributive property. Emphasize the Greatest Common Factor for both numerals and variables.	Inquiry lab with algebra tiles. Teacher created classwork and homework problems. Common Core Review questions.	7.EE.1

Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment	7.NS.2, 7.NS.2c, 7.EE.1, 7.EE.2, WHST.9-10.2B
	9 – 11 days				

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Suggested Technological Innovations/ Use:

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- Teachers are encouraged to use electronic assessments to determine mastery of concepts taught.
- The use of kahoot or other type of interactive software is encouraged.

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Unit 7: Equations and Inequalities

Summary of the Unit: In this unit students will focus on how to solve one-step equations and inequalities, two-step equations and inequalities, multi-step equations, and equations with variables on both sides. In addition, student will learn to graph simple and compound inequalities on a number line. Finally, students will learn how to model a real-world situation with an equation or an inequality, and then solve the resulting equation or inequality.

Enduring Understanding: In mathematics the transition between algebraic reasoning and arithmetic reasoning while solving both real-world and mathematical problems is important to consider. With inequalities it is important to decide if the solution fits into a range of answers, while in an equation, the answer is to be precise.

Essential Questions:

- How are equations and inequalities used to describe and solve multi-step problems?
- How can one tell if a situation requires an equation or inequality?
- How is algebraic reasoning related to arithmetic reasoning when solving word problems?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 7
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

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Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Solve Equations with Rational Coefficients (8.1)	1 day	Students will solve simple equations using the property of equality.	An emphasis on inverse operations is needed here. Scaffold problems ranging	Teacher created classwork and homework. Common	7.EE.4, 8.EE.7, 8.EE.7b

			from simple constant coefficients to fractional and decimal coefficients here. Use of calculator to verify answers is encouraged but not to solve. STRATEGY: For fractional coefficients, clear the denominator.	Core Review Questions.	
Solve 2 Step Equations (8.2)	1 day	Students will solve two step equations using inverse operations.	Be sure to emphasize the movement of the constant term prior to any coefficients. Concentrate on integers for this unit. Inquiry Lab using Algebra tiles here.	Teacher Created Classwork and homework. Common Core Review questions. Complete all problem solving questions.	7.EE.4, 7.EE.4a, 8.EE.7, 8.EE.7b
Solve More 2 Step Equations (8.4)	2 – 3 days	Students will solve 2 step equation involving the form $p(x+q)=r$.	Emphasize the distributive property. IF USING THE CLEARING DENOMINATOR METHOD, have students distribute first and then clear the denominator to avoid confusion. Inquiry Lab using Algebra tiles here.	Teacher Created Classwork and homework. Common Core Review questions. Complete all problem solving questions. Quiz following this section.	7.EE.4, 7.EE.4a, 8.EE.7, 8.EE.7b
Write Equations (8.3)	1 – 2 days	Students will translate phrases into equations and solve.	Review the terms associated with all four operations and the use of parenthesis. Translate phrases into equations and solve. Have students create their own two step equations and give their phrases to the class. See how many students	Teacher created classwork and homework. Common Core Review questions. Complete the 21st Century Career connection.	7.EE.4, 7.EE.4a, 8.EE.7, 8.EE.7b 9.2.8.B4, WHST.9-10.2B

			translate and then solve correctly.		
Solve Equations with Variables on Both Sides (8.5)	1 – 2 days	Students will solve equations with variables on both sides of the equation.	Begin with the inquiry lab and review using Algebra tiles the previously learned concept. Extend to variables on both sides. Emphasize properties of equality and a step by step approach to moving terms across the equal sign.	Teacher created classwork and homework. Common Core Review questions. Mini Quiz to complete equations.	7.EE.4, 7. EE.4a, 8.EE.7, 8. EE.7b
Solving Inequalities (8.6, 8.7)	2 – 3 days	Students will solve and graph solutions to linear inequalities.	Show the parallel between inequality and equality. Emphasize that inequalities have a range of solutions. Demonstrate graphing solutions sets on the number line. Review terms associated with inequalities. Emphasize that multiplying or dividing across the equal sign of a negative coefficient changes the inequality. Show an example and prove why.	Teacher created classwork and homework. Common Core Review questions. All numerical solutions should be graphed.	7.EE.4, 7.EE.4b
Solve Multi-Step Equations and Inequalities (8.8)	2 days	Students will solve and graph solution sets for multi-step inequalities.	Reinforce integer rules and the distributive property in solving. All solutions should be graphed on a number line. Have students choose a solution from their graph and check it in the initial inequality.	Teacher created classwork and homework. Common Core Review questions. Mini Quiz to evaluate inequalities.	7.EE.4, 7. EE.4a, 8.EE.7, 8. EE.7a, 8.EE.7b
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of	7.EE.4, 7. EE.4a, 8.EE.7, 8. EE.7a,

				Performance Assessment	8.EE.7b WHST.9-10.2B
	13 – 17 days				

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Cross Curricular/ 21st Century Connections:

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Unit 8: Linear Functions, Modeling and Linear Relationships

Summary of the Unit: In this unit students will focus on how linear functions are used to model proportional relationships. Students will learn how to graph linear functions given ordered pairs or a slope and y-intercept. In addition students will also be able to determine the slope of a line for a given graph, equation or table. Students will also use direct variation to solve real-world problems. Finally students will analyze and determine properties and measurements of angles within a given situation or applied to a triangle.

Enduring Understanding: Ratios can be used to show a relationship between changing quantities such as a vertical and horizontal change. Tables, graphs and diagrams can be used to represent and/ or analyze a proportional relationship in addition to the degree of variation.

Essential Questions:

- How are linear functions used to model proportional relationships?
- What does the slope of a line indicate about the line?
- What types of real-world situations can be represented by direct variation?
- How does the orientation of lines with a transversal determine the measurement of angles?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 8
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

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-

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Functions (9.1)	1 day	Students will classify terms,	Use graph paper and sketch	Teacher created	7.EE.4

		graphs and tables as functions or relations.	various lines, parabolas and hyperbolas to introduce the vertical line test. Differentiate between repeated x and repeated y values for functions and relations.	classwork and homework. Common Core Review questions.	
Representing Linear Functions (9.2)	1 day	Students will evaluate linear equations in two variables.	Emphasize the change in x and change in y values. Provide students linear equations and solve for intercepts. Allow students to pair and share solutions to linear equations.	Teacher created classwork and homework. Common Core Review questions.	7.EE.4
Direct Variation (9.4)	1 – 2 days	Students will identify and use direct variation.	Review slope and the formula for slope. SmartBoard: Using a graphing utility such as Geometer's Sketchpad, project linear equations and manipulate the line to show the relationship between x and y values. Have students identify the constant of variation (slope).	Formatively assess Geometer's Sketchpad exploration. Teacher created classwork and homework. Common Core Review questions. 21st Century Career Section.	7.RP.2, 7.RP.2a, 7.RP.2b, 8.EE.5, 9.2.8.B4, WHST.9-10.2B
Slope-Intercept Form (9.5)	2 – 3 days	Students will find and use the slope of an equation to graph it.	Provide introductory examples to manipulate variables into slope-intercept form. Use graph paper in groups to solve and graph linear equations. Solutions can be represented on whiteboards, communicators or other presentation media such as Smart Boards. Ensure	Teacher Created classwork and homework. Common Core Review questions. Quiz following this section. Inquiry lab for exploration and prediction.	7.EE.4

			students use both intercept method for graphing as well as tabular method. Inquiry Lab to be completed following this section comparing linear equations.		
Angle and Line Relationships (11.1)	1 day	Students will examine relationships between lines and transversals.	Use lines and transversals to illustrate angle-pair relationships. Emphasize parallel lines. Discuss all relevant terms and angle measurements.	Teacher created classwork and homework. Common Core Review questions.	7.G.5, 8.G.5
Triangles (11.2)	2 days	Students will use properties of triangles to solve and classify them.	Complete Inquiry lab (Triangles) to introduce concept (can be completed as whole class on SmartBoard or in small groups). Provide examples of triangles for classification by sides and angles. Following unit complete Inquiry lab (Create Triangles) using geometry software or smartboard. Students to work collaboratively and create the triangles.	Teacher created classwork and homework. Common Core Review questions. Inquiry lab (Triangles) and Inquiry lab (Create Triangles).	8.G.5
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment	7.RP.2, 7.RP.2a, 7.RP.2b, 8.EE.5 7.EE.4, 7.G.5, 8.G.5 WHST.9-10.2B
	11 – 13 days				
Suggested Modifications for Special Education, English Language Learners and Gifted Students: *Consistent with individual plans, when appropriate.					

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Suggested Technological Innovations/ Use:

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Cross Curricular/ 21st Century Connections:

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Unit 9: Statistics and Probability

Summary of the Unit: In this unit students will learn statistics to draw inferences about and compare populations. Students will use the measures of central tendency and measures of variability to make conclusions about one or more populations. Students will also learn how random sampling can be used to make valid inferences about a population without having to sample an entire population. Finally, students will learn to determine probabilities of both simple and compound events, and why the theoretically calculated probability does not always equal the actual experimental probability.

Enduring Understanding: The use of random sampling is important to determining valid or invalid inferences about a population. Limitations in statistical analysis exist in many forms and it is incumbent on the individual to minimize these limitations based on the comparison being used. Different inferences can be made about the same set of data based on what is being looked for.

Essential Questions:

- How are statistics used to draw inferences about and compare populations?
- How can measures of central tendency and variability be used to compare populations?
- Why experimentally do you not always get what you theoretically thought you should?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 9
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

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Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Measures of Center (10.1)	1 day	Students will use the measures of central	Define terms and have students give examples of	Teacher created classwork and	7.SP.4

		tendency to evaluate data.	when they are the most appropriate representation. Be sure to address missing value. Have students predict a score needed on a 6^{th} test to achieve a particular average.	homework. Common Core Review Questions.	
Measures of Variability (10.2)	2 days	Students will use measures of variability to evaluate data.	Use dot plots and tables to teach the unit. Have the class create a table and dot graph of information such as hours per week of television, or hours per week of sports, etc. Use this to find the measures of variability. Terminology is important in this unit. Discuss an outlier.	Teacher created classwork and homework. Common Core Review questions (do not do systems of equations questions).	7.SP.4
Mean Absolute Deviation (10.3)	2 – 3 days	Students will find and compare absolute mean deviations for sets of data.	Use data sets and graphs from the previous day to determine the average mean deviation. Emphasize the use of absolute value in the computation. Complete the Inquiry lab to discover the visual overlap of data distributions	Teacher created classwork and homework. Common Core Review questions. Inquiry Lab. Quiz following these sections.	7.SP.4
Compare Populations (10.4)	2 days	Students will compare two populations using the measures of central tendency and variability.	Introduce Box plots and double box plots. Review terms associated. Teacher should bring in various sets of data that can be compared to allow students to draw conclusions. Cooperative groups to be used.	Project: Have students create a survey question they can ask two different populations. They should create a double box plot for the data and then interpret the results.	7.SP.4

			Complete 21st Century Career section.	Teacher created homework and classwork. Common Core Review questions.	
Sampling for Predictions (10.5)	1 day	Students will identify sample techniques used to gather data.	Have students determine the most appropriate sampling techniques and write reasons in support of their position and explain why the others are not appropriate. Complete Inquiry lab following this section.	Inquiry lab (Multiple samples of data) Teacher created homework and classwork. Common Core Review questions.	7.SP.1, 7.SP.2, WHST 9-10.2B
Probability of Simple Events (10.6)	1 day	Students will determine the probability of a single event occurring.	Using cards, a coin or a die, compute the various probabilities that are possible. Use a dart board to show probability. Refer students to spinners like those at the Boardwalk for a chance of winning.	Use the internet to find spinners and use them to illustrate simple probability. Teacher created homework and classwork. Common Core Review questions.	7.SP.5
Theoretical and Experimental Probability (10.7)	2 days	Students will compare theoretical and experimental probabilities.	Complete the inquiry lab to introduce the topic. Explain and demonstrate differences between theoretical and experimental probability. Use a coin, cards, and dice to demonstrate the differences.	Inquiry Lab to begin the section. Teacher created classwork and homework. Common Core Review questions.	7.SP.7, 7.SP.7a, 7.SP.7b
Probability of Compound Events (10.8)	3 – 4 days	Students will determine the probability of a compound event.	Reinforce simple probability and differences between theoretical and experimental probability. Complete Probability Lab Investigation.	Probability Lab Investigation. Provide students a list of probability activities to complete. Students should	7.SP.8, 7.SP.8a, 7.SP.8b, WHST 9-10.2B

			Complete Inquiry Lab.	calculate the theoretical probability of the events and then actually complete the events to determine the experimental probability. Students should then evaluate their activity and draw inferences about the activities.	
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment	7.SP.4 7.SP.1, 7.SP.2 7.SP.5 7.SP.7, 7.SP.7a, 7.SP.7b 7.SP.8, 7.SP.8a, 7.SP.8b WHST.9-10.2B
	17 – 19 days				

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Unit 10: Volume and Surface Area

Summary of the Unit: In this unit students will focus on the use of two-dimensional figures to solve problems involving three-dimensional figures. Students will find the surface area and volume of prisms, pyramids, cylinders, cones and spheres. In addition, students will solve real-world problems that involve surface area and volume.

Enduring Understanding: A cross section of a three-dimensional object is two-dimensional. By analyzing these cross sections we can better understand the properties of the figure. Finding the area of the faces of three-dimensional figures determines the surface area. The area of the base of a three-dimensional object is integral in determining its volume.

Essential Questions:

- How are two-dimensional figures used to solve problems involving three-dimensional figures?
- When might circumference and area measurements be useful in real-world situations?
- Why is it important to calculate area, volume and surface area of two- and three-dimensional objects?
- How are the area, volume and surface area similar? How are they different?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 10
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

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- Common Core Standards for Mathematics
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Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Circles and Circumference (12.1)	2 days	Students will use circumference to solve problems involving circles.	Inquiry Lab on circles. Use circular cut outs to demonstrate location of all	Inquiry Lab on Circles Teacher created	7.G.4

			terminology associated with circles. Emphasize circumference is outside the circle. C = ·	classwork and homework. Common Core Review questions.	
Area of Circles (12.2)	2 days	Students will use area to solve problems involving circles.	Use graph paper to illustrate that it is impossible to find the area of a circle by adding squares. Emphasize area is inside the circle. A = ^{2}· r Extend the lesson to include finding the area of sectors and/ or partial area such as hemispheres.	Teacher created classwork and homework. Common Core Review questions.	7.G.4
Area of Composite Figures (12.3)	2 – 3 days	Students will solve problems involving the area of composite figures.	Reinforce individual area. Use graph paper to demonstrate composite area. Include various figures including circles and polygons. Students should be able to combine figures and use multiple methods to derive the area desired.	Pair and share with partners. Cooperative learning activity would be for students to create their own set of composite figures with solutions and have classmates solve them. Teacher created classwork and homework. Common Core Review questions. Quiz following this section.	7.G.6
Three-Dimensional Figures (12.4)	1 day	Students will identify, draw and determine the shapes for cross sections of three dimensional objects.	Using a table allow students to differentiate between pyramids and prisms. Have students list all attributes for each figure to illustrate the similarities and differences.	Teacher created classwork and homework. Common Core Review questions.	7.G.3

Volume of Prisms and Cylinders (12.5, 12.6)	2 – 3 days	Students will find the volume for varied prisms, cylinders and composite three-dimensional objects.	Extend the unit to include the volume of pentagonal prisms, hexagonal prisms, etc. Complete the 21st Century Career Connection.	Teacher created classwork and homework. Common Core Review questions.21st Century Career Connection. Quiz following this section.	7.G.6, 8.G.9, WHST.9-10.2B, 9.2.8.B4
Volume of Pyramids, Cones and Spheres (12.7)	2 – 3 days	Students will determine the volume of pyramids, cones and spheres.	NOTE: Covering the volume of spheres is not needed. Using solids, demonstrate that the volume of pyramids and cones are 1/3 that of the prism/ cylinder. Inquiry Lab to begin this section.	Teacher created classwork and homework. Common Core Review questions. Inquiry lab Quiz following this section.	8.G.9
Surface Area of Prisms and Cylinders (12.8, 12.9)	2 – 3 days	Students will determine the lateral surface area of a prism	Emphasis here should be on the nets that make up the figure. Use both of the Inquiry labs to investigate the nets.	Inquiry labs to begin. Teacher created classwork and homework. Common Core Review questions.	7.G.6, 7.G.4
Surface Area of Pyramids and Cones (12.10)	2 days	Students will find the surface area of pyramids and cones.	Using nets for pyramids show students the lateral sides are triangles. Emphasize differences between pyramid height and slant height. Use nets to also show the cone is a portion of a circle.	Teacher created classwork and homework. Common Core Review questions.	7.G.6
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment	7.G.3, 7.G.6 8.G.9, 8.G.9 7.G.4 WHST.9-10.2B
	18 – 22 days				

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- Students will be encouraged to use different size and type of font in order to avoid print confusion.
- LEP students will be allowed to use an internet translator or language glossary in order to translate vocabulary and assignments properly.
- LEP students may be allowed to work with another student who is fluent in their native language.

Suggested Technological Innovations/ Use:

- Instructional technology should be used to present and assess lessons such as; PowerPoint, the Geometer's Sketchpad, GeoGebra, etc.
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- The use of kahoot or other type of interactive software is encouraged.

Cross Curricular/ 21st Century Connections:

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Unit 11: Congruence, Similarity and Transformations

Summary of the Unit: In this unit students will focus on how to determine congruence and similarity. Students will use the properties that exist in and between lines, triangles and polygons to solve problems. Finally students will use transformations to describe the relationships between objects and use them to determine if figures are similar or congruent.

Enduring Understanding: Geometric shapes have specific attributes that are used to describe and solve problems about the shape. A transformation maps an original figure onto a new figure by sliding (translation), flipping (reflection), or turning (rotation) it. Congruency of figures can be determined by performing a series of transformations.

Essential Questions:

- How can knowing the properties of polygons help us find relevant missing measurements?
- How can you determine congruence and similarity?
- What tools could best be used to draw and represent geometric shapes?
- How can a coordinate plane be used to solve problems about transformations?

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 11
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

- Glencoe Math Accelerated (© 2014)
- Ixl.com topics aligned with chapter content assigned by teachers as a supplement
- Common Core Standards for Mathematics
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Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Polygons (11.3)	1 day	Students will classify and measure all interior angles for polygons.	Explore properties of polygons. Derive the formula for interior angles	Teacher created classwork and homework. Common	8.G.5

			using triangles. Demonstrate exterior angles for any polygon = 360º	Core Review questions.	
Translations and Reflections (11.4)	1 – 2 days	Students will identify and complete translations and reflections on a coordinate plane.	Use the Inquiry lab on transformations to begin. Translation is a slide and orientation does not change. Reflection is a flip and changes the orientation. Use dynamic geometry software to illustrate the concept. Have pairs of students explore with transformations using ordered pairs and figures.	Teacher created classwork and homework. Common Core Review questions. Complete 21st Century Career connection.	8.G.3, 9.2.8.B4, WHST.9-10.2B
Rotations (11.5)	2 days	Students will define, draw and complete rotations on the coordinate plane.	Rotation is a turn and the orientation changes. Use dynamic geometry software to illustrate the concept. Emphasize the point of rotation which can change. Have pairs of students explore with rotations using ordered pairs and figures.	Teacher created classwork and homework. Common Core Review questions. Quiz following this section.	8.G.3, WHST.9-10.2B
Congruence and Transformations (11.6)	1 day	Students will use multiple transformations to identify congruent figures.	Using geometry software allow students to explore this unit. Students should first find the steps for the transformation and then indicate through proof whether the shapes are congruent.	Teacher created classwork and homework. Common Core Review questions.	8.G.2
Dilations on the Coordinate Plans (11.7)	1 – 2 days	Students will graph dilations on a coordinate plane.	First have students determine if a particular scale makes the figure	Teacher created classwork and homework. Common	8.G.3

			larger or smaller. Students should complete both dilations to create a figure and analysis of two figures to determine if it is a dilation and then by what scale factor.	Core Review questions.	
Similarity and Transformations (11.8)	1 – 2 days	Students will use a series of transformations to identify and create similar figures.	Review the dilations and review proportional relationships. Following translations students will find the proportional relationship to determine if figures are similar. Teacher should create some examples of those that are similar and those that appear similar but are not through the proportion. Students will use graph paper to explore	Teacher created classwork and homework. Common Core Review questions.	8.G.4
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment	8.G.2, 8.G.3 8.G.4, 8.G.5 WHST.9-10.2B
	10 – 13 days				

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Unit 12: Powers and Roots (Optional Unit)

Summary of the Unit: In this unit students will focus on the application of powers and roots to various mathematical situations. Students will explore the use of a power, both positive and negative and how that affects the value of the base. Students will also determine the value of a term written in scientific notation as well as be able to convert a number into scientific notation. Finally, students will evaluate square and cube roots of a number through both actual value and estimation strategies.

Enduring Understanding: Powers and exponents exists for both large and small numbers. Positive exponents are similar to repeated multiplication while negative exponents require the extra step of moving its location. Scientific notation uses exponential notation to represent significantly large or small numbers in a simpler form.

Essential Questions:

- Why is it useful to represent large numbers in different ways?
- How do positive and negative exponents affect the final value of a number?
- What are the differences between a power and a root? What are the similarities?
- How does writing numbers in scientific notation make solving real-world problems simpler?
-

Summative Assessment and/ or Summative Criteria to demonstrate mastery of the Unit.

- Students will take a test to review concepts learned in Unit 12
- Students will demonstrate mastery through various assessment criteria included the unit.
- Students will complete and respond to the journal activity as assessed by the rubric. The Journal Entries will be combined for a quarterly assessment grade.
- Students will demonstrate mastery on the end of unit Performance Task

Resources:

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-

Topic/ Selection	Suggested Timeline per topic	General Objectives	Instructional Activities	Suggested Benchmarks/ Assessments	New Jersey Student Learning Standards
Powers and Exponents (4.1)	1 day	Students will write and evaluate expressions with	Demonstrate this unit as repeated multiplication.	Teacher created classwork and	8.EE.1

		exponents.	Show fractions that decrease in value as a result of the exponent. Differentiate between a power outside and inside parentheses.	homework. Common Core Review questions.	
Negative Exponents (4.2)	2 days	Students will write and evaluate expressions with negative exponents.	Key concept is that negative exponents change the location (numerator and denominator) of the term it is touching. Use powers of 10 in decreasing order to demonstrate the decreasing value. Unless asked, students will represent their solutions with positive exponents.	Teacher created classwork and homework. Common Core Review questions.	8.EE.1
Multiply and Divide Monomials (4.3)	2 days	Students will use basic exponential laws to multiply and divide monomials.	Show power rules and be sure to differentiate between power rules and power to power rules. For division, set up as a fraction.	Teacher created classwork and homework. Common Core Review questions. Quiz following this unit.	8.EE.1
Scientific Notation (4.4)	1 day	Students will use scientific notation to write and compare large numbers.	Instruct with key concept box and emphasize that $0 \leq a < 10$. Area of misconception is when $a<0$ or $a>10$. Show students the process to change "a" and relationship to the exponent.	Teacher created classwork and homework. Common Core Review questions.	8.EE.1, 8.EE.3, 8.EE.4
Problem Solving with Scientific Notation (4.5)	1 – 2 days	Students will solve real life problems by using and evaluating numbers in scientific notation.	Complete the 21st century career section here. Discuss application of scientific notation. Review commutative property of multiplication and show	21st century career section. Teacher created classwork and homework. Common Core Review	8.EE.1, 8.EE.3, 8.EE.4, 9.2.8.B4, WHST.9-10.2B

			students how they can separate like terms for computation.	questions.	
Square Roots and Cube Roots (4.6)	1 – 2 days	Students will evaluate terms involving square and cube roots.	Complete the inquiry lab for instruction. Use an overhead graphing calculator or class set of graphing calculators to evaluate. Emphasis here is on guess and check to determine the cube roots.	Inquiry Lab using graphing calculators. Teacher created classwork and homework. Common Core Review questions.	8.NS.2, 8.EE.2
Review and Assess	3 Days	Students demonstrate mastery of topics and concepts presented	Chapter review using varied teacher created/ chosen materials and tasks	End of Unit Test Completion of End of Unit Journal Activity. Completion of Performance Assessment	8.EE.1, 8.EE.3, 8.EE.4 8.NS.2, 8.EE.2 WHST.9-10.2B
	11 – 13 days				

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