Unit 1: Rational Numbers and Exponents

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Course(s): **Math 7 Pre-Algebra**
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Title Section

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Pre-Algebra Grade 7

Rational Numbers and Exponents

Belleville Board of Education

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Unit Overview

Unit 1: Students will use previous knowledge to build a foundation of the language of algebra while exploring operations with integers, rational numbers and exponents

From this unit students will be able to apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers, students will be able to relate multiplication and division to repeated addition/subtraction.. They will use properties of operations to generate equivalent expressions and solve real-life and mathematical problems using numerical and algebraic expressions and equations and identify properties for a closed set of numbers. Students will recognize that the opposite signs of numbers indicate locations on opposite sides of the number line and create models. Students will be ale to approximate irrational numbers on the number line and compare integers with or without a number line. Students will be able to locate, identify and plot points on a coordinate plane, and identify quadrant and/or axis of an ordered pair.

Enduring Understanding

At the completion of this unit students will understand;

The importance of mathematical rules, for example order of operations, and why they are necessary to evaluate expressions.

Numbers can be classified by their characteristics.

Understand that numbers can be rational or irrational.

Know that $\sqrt{2}$ is irrational.

There are many ways to represent a numerical value.

Absolute value is the distance from 0, and that distance is always a positive number.

Use the language of algebra to model and solve problems.

Powers can be used to shorten representation of repeated multiplication.

Understand that multiplication and division is a shorter method of repeated addition and subtraction.

Graph points on a coordinate plane, and recognize it as a vertical and horizontal set of number lines.

Graph algebraic relationships.

Testing solutions against the understanding of the problem or situation.

Essential Questions

At the completion of this unit students will understand;

Why do I need mathematical operations?

Why do we need the order of operations and how does it effect the solution to an equation?

How do I know which mathematical operation to use?

How can I use numbers and symbols to represent mathematical ideas?

Why is it beneficial to be able to write numbers in different ways ?

How are rational and irrational numbers different and/or similar?

How are exponents and roots helpful when representing real-world data?

How does this knowledge assist in careers and in everyday situations?

Exit Skills

At the completion of this unit students will be able to;

Translate verbal phrases into numerical expressions.

Use order of operations to evaluate expressions.

Evaluate expressions.

Simplify algebraic expressions.

Select appropriate strategy to solve problems.

Use numbers and symbols to represent mathematical ideas.

Use ordered pairs to locate points.

Graph points on a coordinate plane.

Graph algebraic relationships.

Compare integers.

Add, subtract, multiply and divide integers.

Find absolute value of an expression.

Convert fractions to decimals.

Compare fractions and decimals.

Write rational numbers as fractions.

Identify and classify rational numbers.

Add, subtract, multiply and divide fractions.

Evaluate algebraic expressions with fractions.

Write expressions using exponents.

Express numbers in scientific notation.

New Jersey Student Learning Standards (NJSLS)

MA.K-12.1	Make sense of problems and persevere in solving them.
MA.K-12.3	Construct viable arguments and critique the reasoning of others.
MA.7.RP.A.2	Recognize and represent proportional relationships between quantities.
MA.7.RP.A.2a	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
MA.8.EE.A	Work with radicals and integer exponents.
MA.K-12.4	Model with mathematics.
MA.8.EE.A.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.
MA.K-12.5	Use appropriate tools strategically.
MA.8.EE.A.2	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.
MA.K-12.6	Attend to precision.
MA.8.EE.A.3	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.
MA.K-12.7	Look for and make use of structure.
MA.7.NS.A.1	Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
MA.7.NS.A.1a	Describe situations in which opposite quantities combine to make 0.
MA.7.NS.A.1b	Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
MA.7.NS.A.1c	Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
MA.7.NS.A.1d	Apply properties of operations as strategies to add and subtract rational numbers.
MA.7.NS.A.2	Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
MA.7.NS.A.2a	Understand that multiplication is extended from fractions to rational numbers by

	requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
MA.7.NS.A.2b	Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number.If p and q are integers, then $–(p/q) = (–p)/q = p/(–q)$. Interpret quotients of rational numbers by describing real-world contexts.
MA.7.NS.A.2c	Apply properties of operations as strategies to multiply and divide rational numbers.
MA.7.NS.A.2d	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
MA.7.EE.A	Use properties of operations to generate equivalent expressions.
MA.7.EE.A.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
MA.7.EE.A.2	Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.
MA.7.EE.B	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
MA.7.EE.B.4	Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Interdisciplinary Connections

STEM/STEAM

Economics

Business

Statistics

Science

Additional resourceas as deemed appropriate for the unit.

LA.RI.7.4	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.
LA.W.7.2.D	Use precise language and domain-specific vocabulary to inform about or explain the topic.
LA.SL.7.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others'

	ideas and expressing their own clearly.
LA.L.7.1	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
LA.L.7.2.B	Spell correctly.
6-8.MS-ESS1-1.2.1	Develop and use a model to describe phenomena.
6-8.MS-ESS1-2.4.1	Models can be used to represent systems and their interactions.
VPA.1.3.8.D.1	Incorporate various art elements and the principles of balance, harmony, unity, emphasis, proportion, and rhythm/movement in the creation of two- and three- dimensional artworks, using a broad array of art media and art mediums to enhance the expression of creative ideas (e.g., perspective, implied space, illusionary depth, value, and pattern).
VPA.1.3.8.D.2	Apply various art media, art mediums, technologies, and processes in the creation of allegorical, theme-based, two- and three-dimensional works of art, using tools and technologies that are appropriate to the theme and goals.

Learning Objectives

At the completion of this unit students will understand;

Translate verbal expressions to numerical expressions.

Apply order of operations to simplify numerical expressions.

Choose an appropriate problem solving strategy.

Identify and apply properties of addition and multiplication.

Graph points on a coordinate plane.

Determine absolute value.

Identify and compare integers.

Explore and apply rules for adding and subtracting integers.

Explore and apply rules for multiplying and dividing integers.

Write fractions as decimals and decimals as fractions.

Multiply and divide rational numbers.

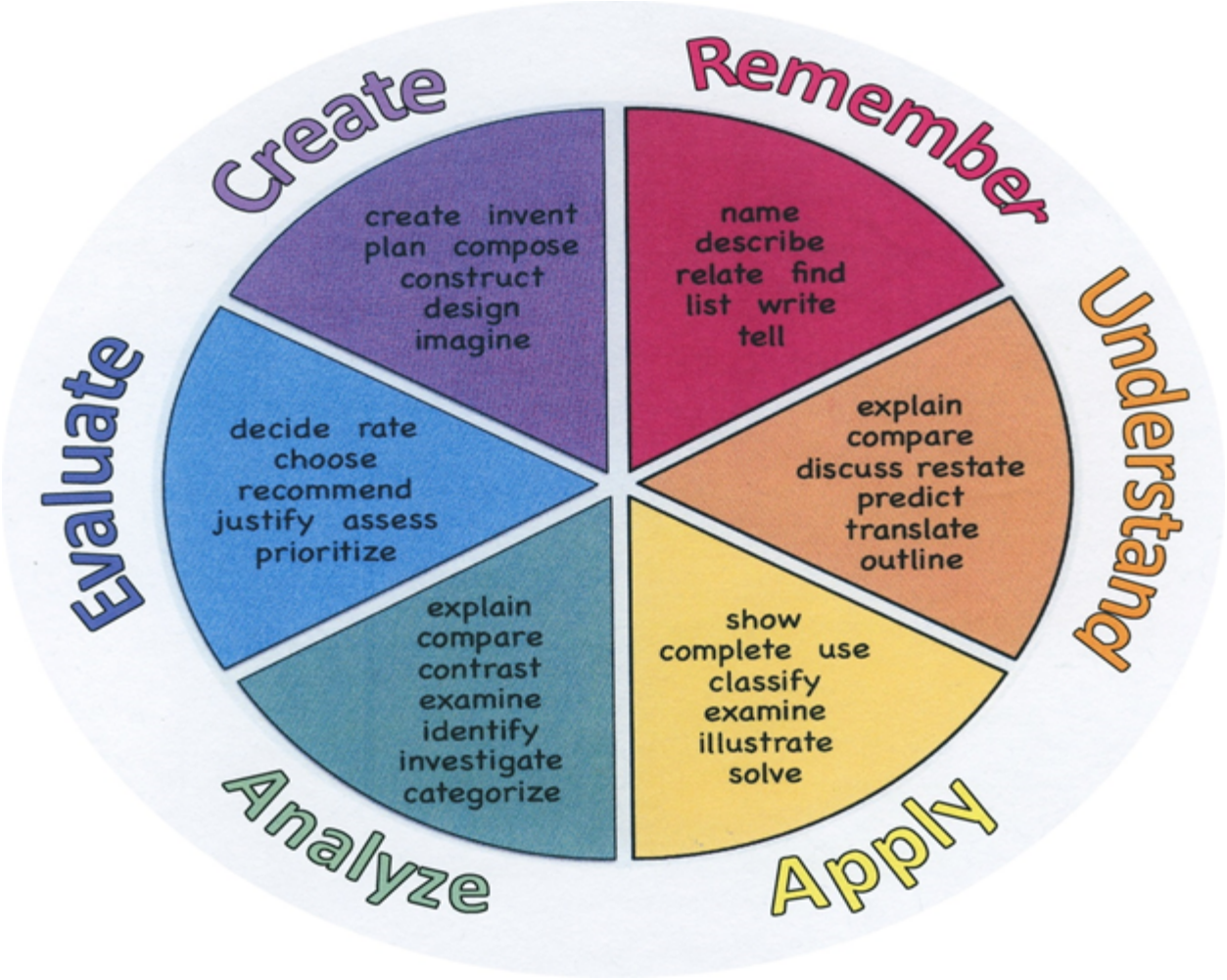
Add and subtract like and unlike fractions.

Identify properties of rational numbers and use them to simplify numerical expressions.

Rewrite a number using exponents.

Use scientific notation with positive and negative exponents.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise
Point	Restate	Change	Discriminate	Test	Generate
Quote	Rewrite	Classify	Illustrate		Integrate
Recall	Select	Complete	Outline		Prescribe
Recognize	Show	Compute	Point out		Propose
Repeat	Summarize	Discover	Separate		Reconstruct
Reproduce	Tell	Divide			Revise
	Translate	Examine			Rewrite
	Associate	Graph			Transform
	Compute	Interpolate			
	Convert	Manipulate			
	Discuss	Modify			
	Estimate	Operate			
	Extrapolate	Subtract			
	Generalize				
	Predict				



Suggested Activities & Best Practices

Activity 1:

Students will substitute numbers from a given list into an expression with a fractional exponent to discover the connection between rational exponents and radicals and will discover the rule that a fractional exponent is the same as finding a root of a number.

Activity 2:

"I Have; Who Has" cards containing expressions which students must use operations on expressions with radical numbers and exponents.

Activity 3:

Students complete a cut-and-paste activity where they must identify rational and irrational numbers.

Inquiry Labs - Textbook pages 11,52,61,69,92,166

Textbook, eAssessment, supplemental materials:

https://my.mheducation.com/login

AI Assessment and Learning System:

https://www.aleks.com/

Mindset:

https://www.youtube.com/watch?v=3icoSeGqQtY

http://www.youcubed.org/wp-content/uploads/Positive-Classroom-Norms2.pdf

Teaching Strategies for Improving Algebra Knowledge in Middle and High School Students:

https://ies.ed.gov/ncee/wwc/PracticeGuide/20

Coaching Corner:

https://sites.google.com/belleville.k12.nj.us/thecoachingcorner/home

Algebra Tools - Functions:(Refer to problems included in the pre-requisite skills in this document)

https://www.state.nj.us/education/aps/cccs/math/NJISTFunctions.pdf

Algebra Tools - Algebra:(Refer to problems included in the pre-requisite skills in this document)

https://www.state.nj.us/education/aps/cccs/math/NJISTAlgebra.pdf

Misc Mathematics materials:

http://www.mathnstuff.com/

Order of Operations Kahoot:

https://create.kahoot.it/details/order-of-operations/e38e26d8-ee8a-484b-83b9-c22f78f32a61

Scientific Notation Kahoot:

https://create.kahoot.it/details/scientific-notation/4a841be2-d3e0-46ec-b724-09b8921c434a

Assessment Evidence - Checking for Understanding (CFU)

Self Assessment; As an exit ticket. When leaving the room each student receives a small sheet of paper. Student write their name on it an when leaving drop it in one of three boxes or bins labeled with an emoji or other self-descriptor. These can be used to create student groups for the next day.

Exit ticket: Students explain in a few words; How can today's lesson be used in the real world?-formative

assessment

Create a multimedia poster: Students create a poster to demonstrate the use or steps involved in a particular skill.-benchmark assessment

Unit tests-summative assessment

Web-based assessment-alternate assessment

- Admit Tickets
- Anticipation Guide
- Common Benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Learning Center Activities
- Multimedia Reports
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments
- Study Guide
- Surveys
- Teacher Observation Checklist
- Think, Pair, Share
- Top 10 List
- Unit review/Test prep

- Unit tests
- Web-Based Assessments

Primary Resources & Materials

Math Accelerated-A Pre-Algebra Program 2017 - McGraw-Hill

Math Accelerated-A Pre-Algebra Program 2017 - Digital Resources - McGraw-Hill

Ancillary Resources

Glencoe McGraw-Hill Algebra 1 2014

Additional teacher created materials

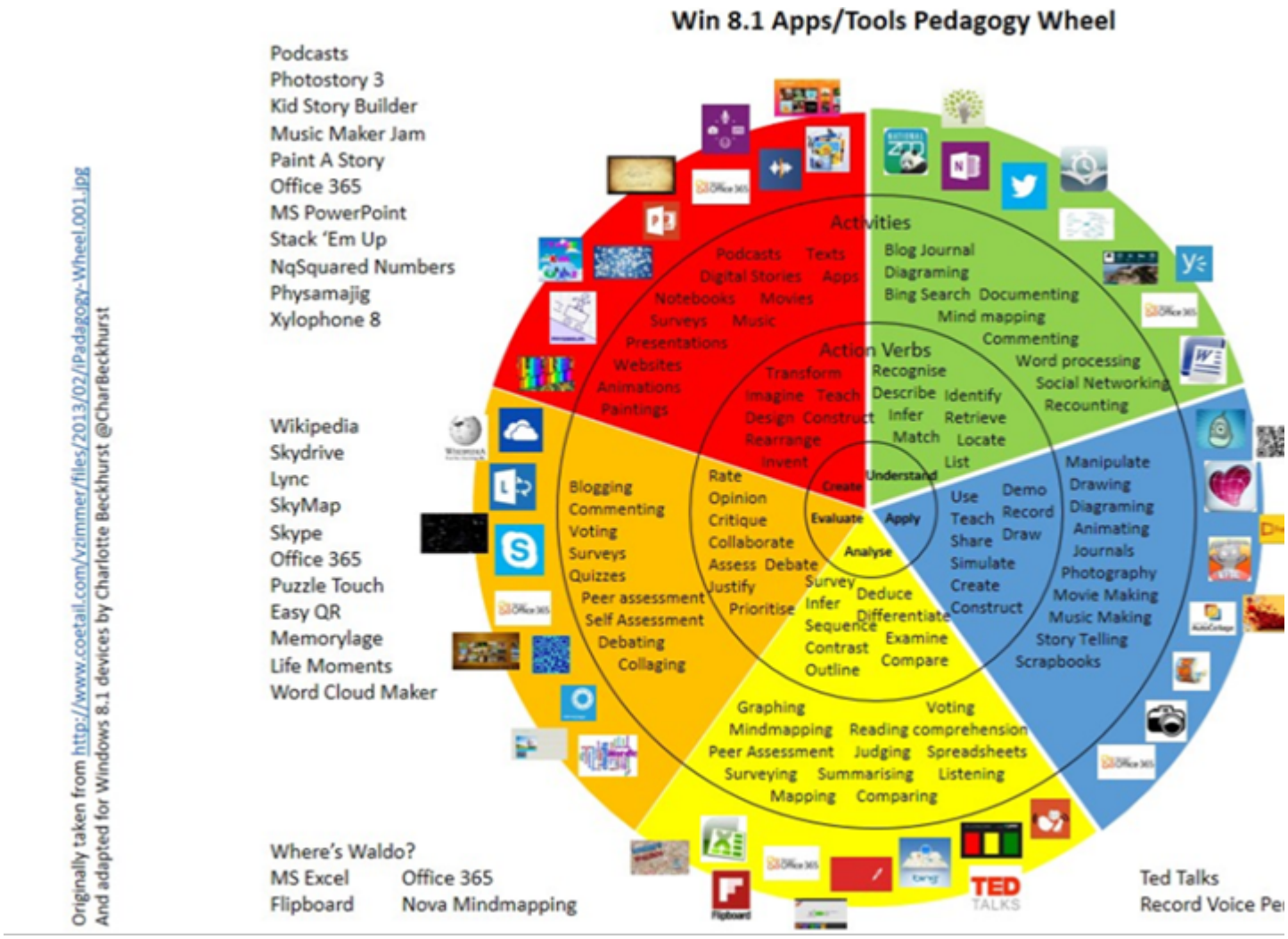
Technology Infusion

Activity:

Students use the Internet to collect numerical data on a topic which supports linear expressions with rational coefficients in a problem solving scenario. Data will be displayed using a MS excel graph.

-
- ALEKS
- Calculator/Graphing calculator
- Google Classroom
- McGraw-Hill Education
- Desmos.com
- geogebra.org
- Youtube
- Khan academy
- MS Excel
- Office 365
- MS Word
- PodCasts
- MS Powerpoint
- Wikipedia
- Skype
- Twitter
- Ted Talks

- Flipgrid



Alignment to 21st Century Skills & Technology

- STEM/STEAM
- English, Language Arts
- World languages
- Arts

- Statistics
- Economics
- Science
- Geography
- Social Studies
- Computer Science

CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP2.1	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.
CRP.K-12.CRP3.1	Career-ready individuals understand the relationship between personal health, workplace performance and personal well-being; they act on that understanding to regularly practice healthy diet, exercise and mental health activities. Career-ready individuals also take regular action to contribute to their personal financial well-being, understanding that personal financial security provides the peace of mind required to contribute more fully to their own career success.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP4.1	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.
CRP.K-12.CRP5.1	Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organization, and the environment. They are aware of and utilize new technologies, understandings, procedures, materials, and regulations affecting the nature of their work as it relates to the impact on the social condition, the environment and the profitability of the organization.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP6.1	Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization. They can consider unconventional ideas and suggestions as solutions to issues, tasks or problems, and they discern which ideas and suggestions will add greatest

	value. They seek new methods, practices, and ideas from a variety of sources and seek to apply those ideas to their own workplace. They take action on their ideas and understand how to bring innovation to an organization.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP7.1	Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies. They use reliable research process to search for new information. They evaluate the validity of sources when considering the use and adoption of external information or practices in their workplace situation.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP10	Plan education and career paths aligned to personal goals.
CAEP.9.2.8.B.1	Research careers within the 16 Career Clusters ® and determine attributes of career success.
CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
CAEP.9.2.8.B.6	Demonstrate understanding of the necessary preparation and legal requirements to enter the workforce.
TECH.8.1.8.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.8.A.1	Demonstrate knowledge of a real world problem using digital tools.
TECH.8.1.8.A.3	Use and/or develop a simulation that provides an environment to solve a real world problem or theory.
TECH.8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results.
TECH.8.1.8.A.CS1	Understand and use technology systems.
TECH.8.1.8.A.CS2	Select and use applications effectively and productively.
TECH.8.1.8.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.

21st Century Skills/Interdisciplinary Themes

- STEM/STEAM
- English, Language Arts
- World languages
- Arts
- Statistics
- Economics
- Science
- Geography
- Social Studies
- Computer Science

21st Century Skills

STEM/STEAM

Global and Environmental Awareness

Problem Solving Skills

Personal Literacy

Business

Differentiation

Activity: Use of manipulatives, demonstrating variables and expressions with cups and counters.

Differentiations available as per the particular needs of individual students as per teacher assessment:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Choice boards
- Games and tournaments
- Group investigations
- Flexible Grouping
- Leveled rubrics
- McGraw-Hill digital Resources including but not linited to Virtual maniplatives,tutor providing real-world examples, word wall,

- Multiple texts
- Project-based learning
- Think-Tac-Toes
- Varying organizers for instruction

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Flexible grouping
- Goal setting with students
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Varied journal prompts
- Varied supplemental materials

Special Education Learning (IEP's & 504's)

Activity #1: Use an algebraic equation to simulate the amount of a paycheck.

Activity #2: Graph the information from the previous activity using an excel spreadsheet.

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multi-sensory presentation
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- Provide modifications as dictated in the student's IEP/504 plan
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet
- Use open book, study guides, test prototypes

English Language Learning (ELL)

Activity: Use of Frayer Model for vocabulary; modified on index cards.

- teaching key aspects of a topic. Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes

- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

At Risk

Activity; Students create a spreadsheet and locate data on the Internet to determine the number of calories burned after playing a favorite sports activity.

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Talented and Gifted Learning (T&G)

Activity: "The Raja's Rice, A Mathematical Folktake from India" Students explore the powers of exponents. Before determining what will happen students should make a prediction of how much rice they think she will have at the end.

Possible options available as per the particular needs of individual students as per teacher assessment:

- Above grade level placement option for qualified students
- Advanced problem-solving
- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results
- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery
- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

Sample Lesson

Unit Name: Rational Numbers and Exponents

Order of Operations Relay Race

NJSLS: MA.7.7.EE.B.3

Interdisciplinary Connection: Computer Programming, Finance

Statement of Objective: Apply the order of operations with equations of increasing difficulty levels in a competitive team situation.

Anticipatory Set/Do Now:

What is the order of operations? Why do we need the order of operations? What would happen if we did not have the order of operations?

Learning Activity:video

https://www.youtube.com/watch?v=dAgfnK528RA

Order of operations Team Relay Race

Solve a problem once working left to right and again using the order of operations. Compare solutions.

Students will work in teams under a time constraint to compeat solving problems involving the order of operations.

Student Assessment/CFU's:Questions and Answers, Oral Response, Board work ,Observation, Self-Assessment

Materials: worksheets, calculator, timer

21st Century Themes and Skills: Global Awareness,Financial,Economic,Business and Entrepreneurial Literacy.

Differentiation/Modifications: small group instruction, repeat directions

Integration of Technology: video

MA.7.EE.B.3	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.