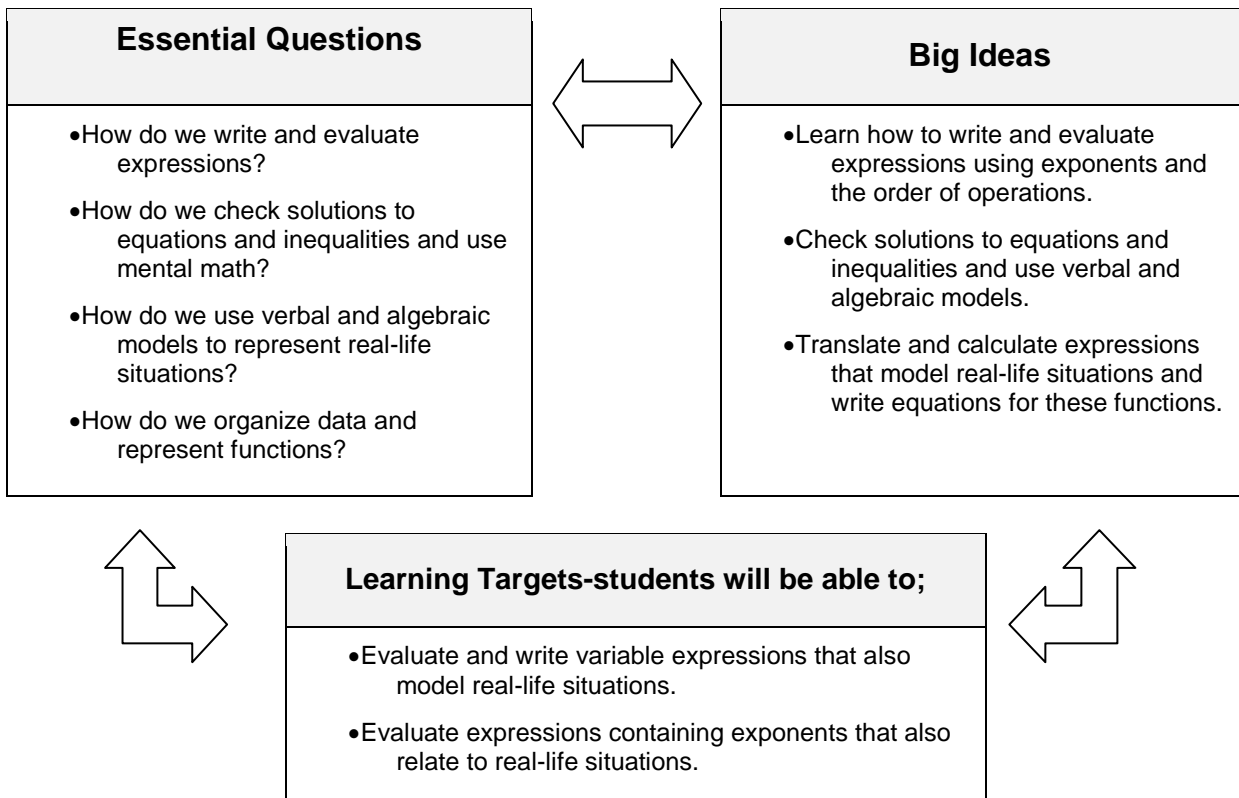


Grade 8 Math

Unit Title	Unit 1: Connections to Algebra
Time frame	4 weeks
21 st Century Themes	<p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT (Information, Communications and Technology) Literacy</p> <p>Flexibility and Adaptability</p> <p>Initiative and Self-Direction</p> <p>Productivity and Accountability</p> <p>Creativity and Innovation</p>
Interdisciplinary focus and technology integration	<p>Phys. Ed.: Finding geometry relations to Olympic sized swimming pools and short pools.</p> <p>History and Math application: Expressing math using symbols instead of words and numbers.</p> <p>Science: Explore money being spent by Federal Government for various U.S. missions. Organize and analyze the data graphically.</p> <p>History: Function activity relating to Paul Revere's ride.</p>

Stage 1: Integrate essential questions, big ideas and learning targets, and ensure it can be differentiated and assessed



- Use Order of Operations to evaluate algebraic expressions.
- Check solutions and solve inequalities and equations and mental math.
- Translate verbal phrases into algebraic expressions and write equations and inequalities to model a real-life situation.
- Use tables and graphs to organize data.
- Identify functions and make input-output tables for the function.

Assessment

- Formal and Informal Teacher Observations
- Formative checks for understanding and summative assessments
- Tests / Quizzes
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks

Differentiation

- Hands-On Activities
- Diagnostic Assessment (based on content /skill pre-tests)
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Computer Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Stage 2: Backward planning: from the assessment to the learning activities through inquiry

Content Standards

OA 5.1
 MD 5.2
 EE 6.1, 6.2 a, c, 6.5, 6.6
 NS 6.2
 NS 6.1, 6.7
 EE 7.1
 F 8.1, 8.2
 MP 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8

Approaches to Learning

In this unit, students will be introduced to many of the terms and goals of algebra. It is essential that these algebraic terms become part of their vocabulary as communication is an essential element of algebra.

Learning Experiences

- Course of study
- Notes and examples
- Practice by homework
- Cumulative review exercises
- Test prep questions
- Hands-on activities and use of manipulatives
- Problem solving activities

Teaching Strategies

- Direct instruction
- Differentiated instruction
- Interdisciplinary activities
- Cooperative learning activities
- Reinforcement and remediation

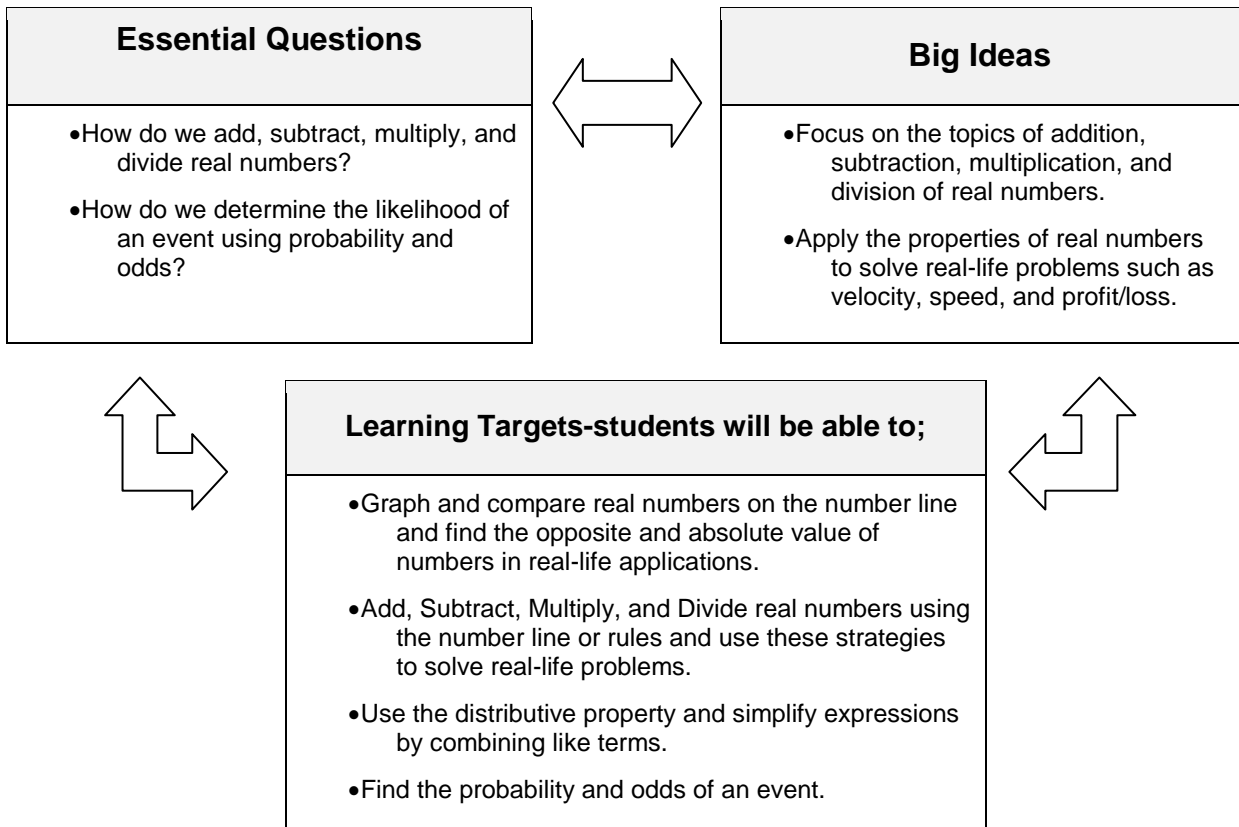
Resources

- Algebra 1 Applications, Equations, Graphs. 2004. McDougal Littell, Inc.
- Calculators: TI 83 Graphing

Grade 8 Math

Unit Title	Unit 2: Properties of Real Numbers
Time frame	4 weeks
21 st Century Themes	<p>Critical Thinking and Problem Solving</p> <p>Communication and Collaboration</p> <p>ICT (Information, Communications and Technology) Literacy</p> <p>Flexibility and Adaptability</p> <p>Initiative and Self-Direction</p> <p>Productivity and Accountability</p> <p>Financial, Economic, Business and Entrepreneurial Literacy</p> <p>Creativity and Innovation</p>
Interdisciplinary focus and technology integration	<p>History: Organize historical events on a number line chronologically and answer questions relating to the data.</p> <p>Geography: Exploring elevations of different countries.</p> <p>Language Arts: Use data on time to read a novel and answer statistical questions relating to the data.</p> <p>History: Voting rights of people in different age categories. Find probability and odds.</p>

Stage 1: Integrate essential questions, big ideas and learning targets, and ensure it can be differentiated and assessed



Assessment

- Formal and Informal Teacher Observations
- Formative checks for understanding and summative assessments
- Tests / Quizzes
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks

Differentiation

- Hands-On Activities
- Diagnostic Assessment (based on content /skill pre-tests)
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Computer Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Stage 2: Backward planning: from the assessment to the learning activities through inquiry

Content Standards

EE 6.3, 6.4
NS 6.5, 6.6 a, c, 6.7 a, b, c, d
SP 6.1, 6.2, 6.3, 6.5
NS 7.1 a, b, c, d, 7.2 a, c
MP 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8

Approaches to Learning

In this unit, students will acquire the knowledge for adding, subtracting, multiplying, and dividing with both positive and negative numbers.

Learning Experiences

- Course of study
- Notes and examples
- Practice by homework
- Cumulative review exercises
- Test prep questions
- Hands-on activities and use of manipulatives
- Problem solving activities

Teaching Strategies

- Direct instruction
- Differentiated instruction
- Interdisciplinary activities
- Cooperative learning activities
- Reinforcement and remediation

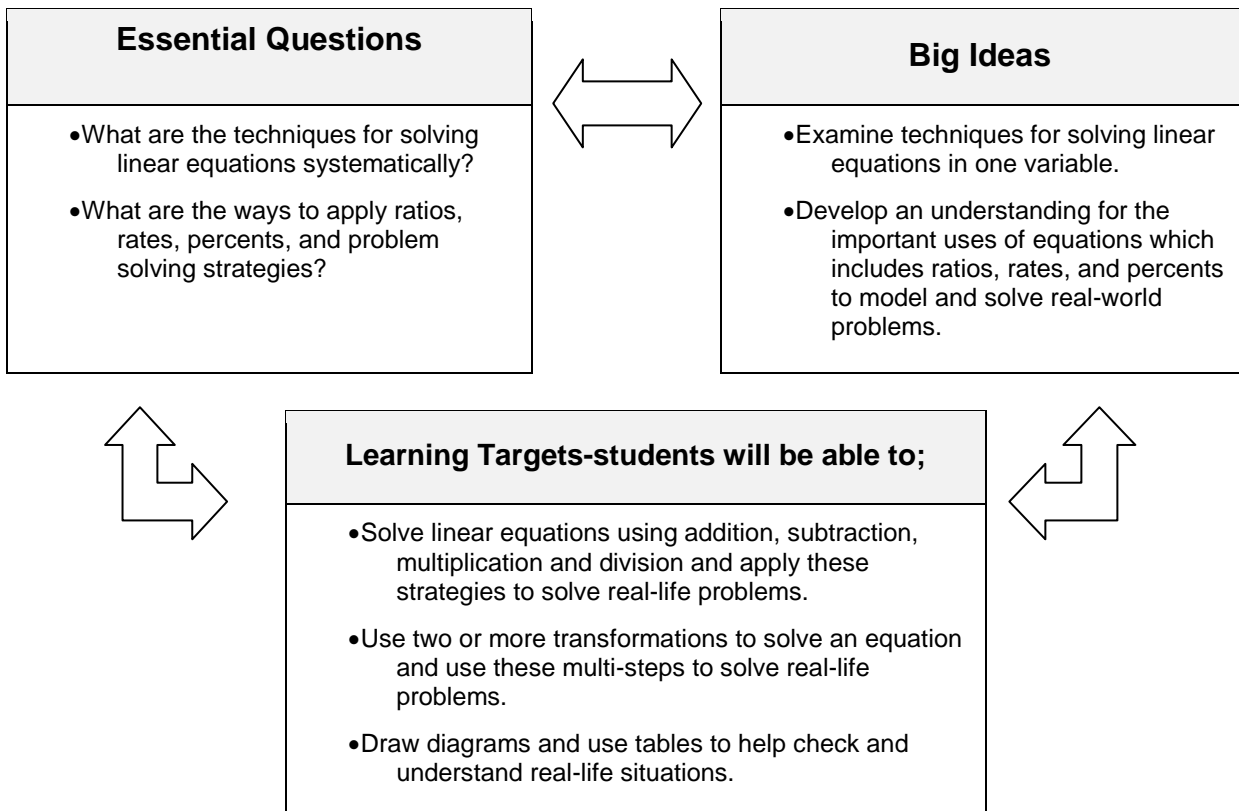
Resources

- Algebra 1 Applications, Equations, Graphs. 2004. McDougal Littell, Inc.
- Calculators: TI 83 Graphing

Grade 8 Math

Unit Title	Unit 3: Solving Linear Equations
Time frame	6 weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability Civic Literacy Global Awareness Financial, Economic, Business and Entrepreneurial Literacy Creativity and Innovation
Interdisciplinary focus and technology integration	History: Pony Express activity and solving multiplication and division questions. Biology: Using formulas to answer questions about Crickets.

Stage 1: Integrate essential questions, big ideas and learning targets, and ensure it can be differentiated and assessed



- Use ratios, rates, and percents to model and solve real-life problems.
- Solve a formula or literal equation for one of its variables.

Assessment

- Formal and Informal Teacher Observations
- Formative checks for understanding and summative assessments
- Tests / Quizzes
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks

Differentiation

- Hands-On Activities
- Diagnostic Assessment (based on content /skill pre-tests)
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Computer Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Stage 2: Backward planning: from the assessment to the learning activities through inquiry

Content Standards

EE 7.1, 7.2, 7.3, 7.4 a, b
 NS 7.3
 MP 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8

Approaches to Learning

In this unit, students learn the systematic equation-solving techniques that allow them to solve more complicated equations. These techniques are based on the rules studied in previous units.

Learning Experiences

- Course of study
- Notes and examples
- Practice by homework

Teaching Strategies

- Direct instruction
- Differentiated instruction
- Interdisciplinary activities

- Cumulative review exercises
- Test prep questions
- Hands-on activities and use of manipulatives
- Problem solving activities

- Cooperative learning activities
- Reinforcement and remediation

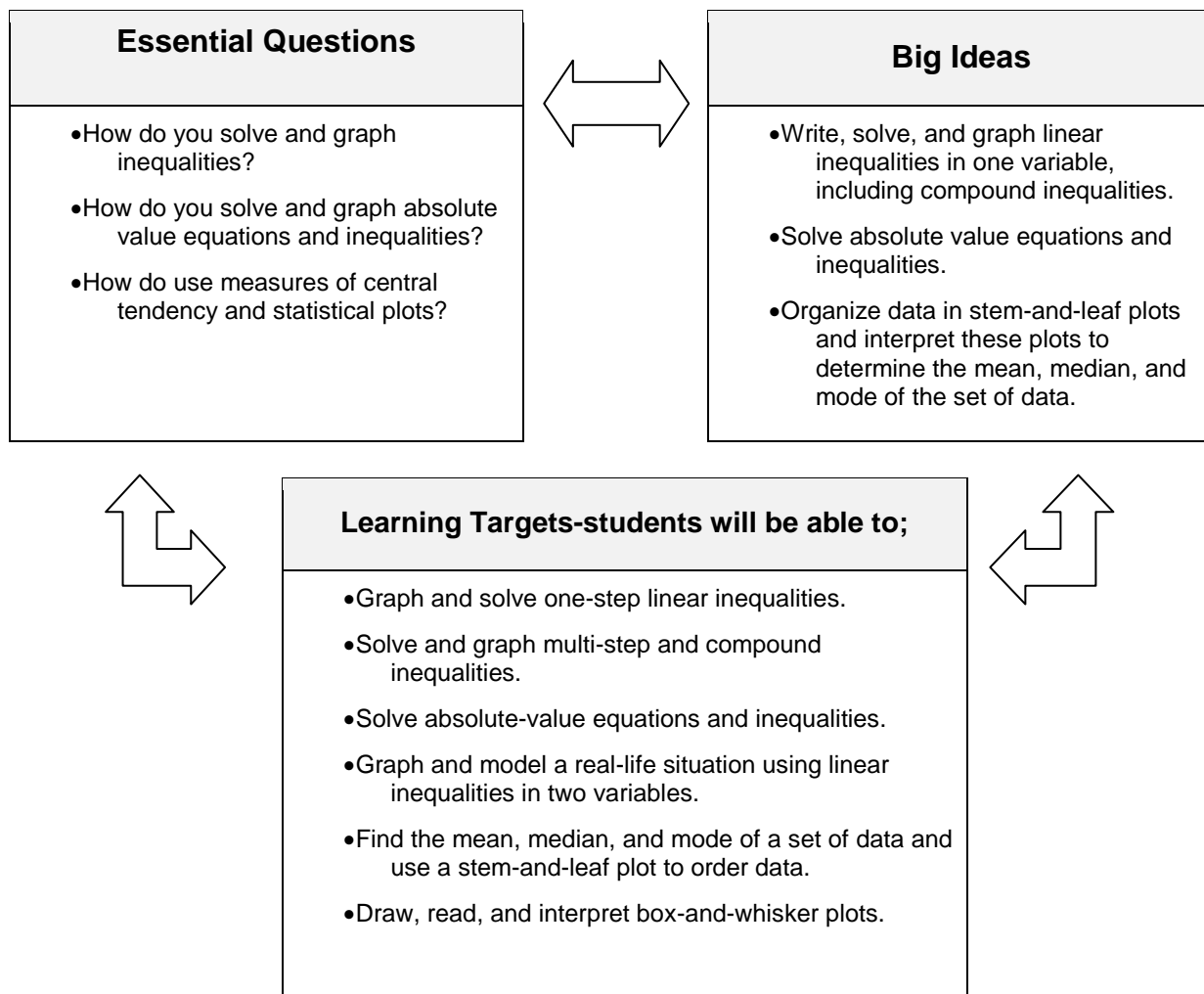
Resources

- Algebra 1 Applications, Equations, Graphs. 2004. McDougal Littell, Inc.
- Calculators: TI 83 Graphing

Grade 8 Math

Unit Title	Unit 4: Solving and Graphing Linear Inequalities
Time frame	7 weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability Creativity and Innovation
Interdisciplinary focus and technology integration	Social Studies: People in flight activity. Physical Education: Pulse activity.

Stage 1: Integrate essential questions, big ideas and learning targets, and ensure it can be differentiated and assessed



Assessment

- Formal and Informal Teacher Observations
- Formative checks for understanding and summative assessments
- Tests / Quizzes
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks

Differentiation

- Hands-On Activities
- Diagnostic Assessment (based on content /skill pre-tests)
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Computer Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Stage 2: Backward planning: from the assessment to the learning activities through inquiry

Content Standards

SP 6.3, 6.5c

MP 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8

Approaches to Learning

In this unit, students will acquire the knowledge to solve and graph linear inequalities in one or two variables and absolute-value inequalities. Many real-life situations can be described with phrases like “at most” or “less than,” which can be modeled using inequalities.

Students will also acquire the knowledge to organize data using stem-and-leaf plots, measures of central tendency, and box-and-whisker plots.

Learning Experiences

- Course of study
- Notes and examples
- Practice by homework
- Cumulative review exercises
- Test prep questions
- Hands-on activities and use of manipulatives
- Problem solving activities

Teaching Strategies

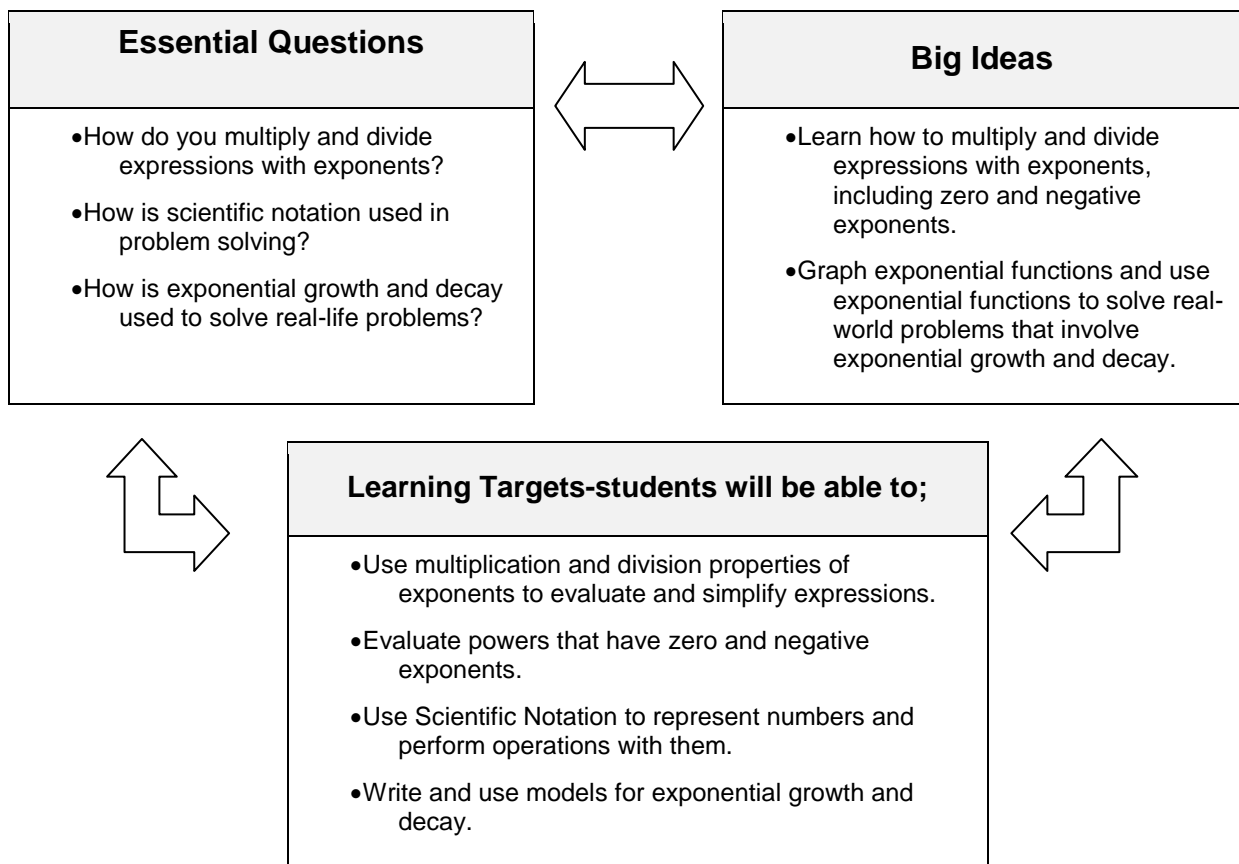
- Direct instruction
- Differentiated instruction
- Interdisciplinary activities
- Cooperative learning activities
- Reinforcement and remediation

Resources

- Algebra 1 Applications, Equations, Graphs. 2004. McDougal Littell, Inc.
- Calculators: TI 83 Graphing

Unit Title	Unit 5: Exponents and Exponential Functions
Time frame	5 weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability Global Awareness Civic Literacy
Interdisciplinary focus and technology integration	Geography: Sahara Desert scientific notation project.

Stage 1: Integrate essential questions, big ideas and learning targets, and ensure it can be differentiated and assessed



Assessment

- Formal and Informal Teacher Observations
- Formative checks for understanding and summative assessments
- Tests / Quizzes
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks

Differentiation

- Hands-On Activities
- Diagnostic Assessment (based on content /skill pre-tests)
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Computer Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Stage 2: Backward planning: from the assessment to the learning activities through inquiry

Content Standards

EE 8.1, 8.3

MP 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8

Approaches to Learning

In this unit, students will learn how to use the properties of exponents and scientific notation to solve exponential functions. This knowledge will be necessary when solving quadratic equations and polynomial equations later in the course.

Learning Experiences

- Course of study
- Notes and examples
- Practice by homework
- Cumulative review exercises
- Test prep questions
- Hands-on activities and use of manipulatives
- Problem solving activities

Teaching Strategies

- Direct instruction
- Differentiated instruction
- Interdisciplinary activities
- Cooperative learning activities
- Reinforcement and remediation

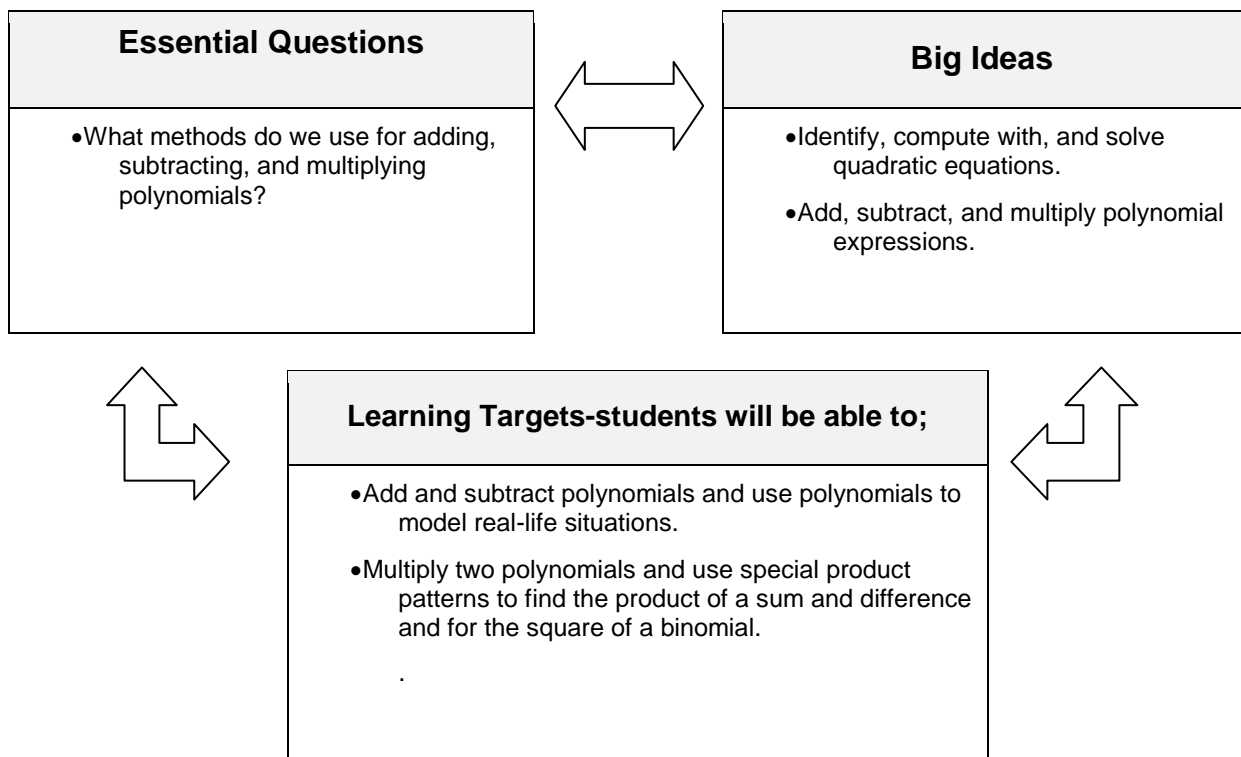
Resources

- Algebra 1 Application, Equations, Graphs. 2004. McDougal Littell, Inc.
- Calculators: TI 83 Graphing

Grade 8 Math

Unit Title	Unit 6: Polynomials and Factoring
Time frame	5 weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability Financial, Economic, Business and Entrepreneurial Literacy Creativity and Innovation
Interdisciplinary focus and technology integration	Art: Stained glass activity. Music: Marching band.

Stage 1: Integrate essential questions, big ideas and learning targets, and ensure it can be differentiated and assessed



Assessment

- Formal and Informal Teacher Observations
- Formative checks for understanding and summative assessments
- Tests / Quizzes
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks

Differentiation

- Hands-On Activities
- Diagnostic Assessment (based on content /skill pre-tests)
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Computer Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Stage 2: Backward planning: from the assessment to the learning activities through inquiry

Content Standards

APR A.1, A.3

SSE A.1 a, A.2, A.3 a

MP 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8

Approaches to Learning

In this unit, students acquire the knowledge to add, subtract, and multiply polynomials. Students also learn how to “undo” multiplication by a process called factoring.

Learning Experiences

- Course of study
- Notes and examples
- Practice by homework
- Cumulative review exercises
- Test prep questions
- Hands-on activities and use of manipulatives
- Problem solving activities

Teaching Strategies

- Direct instruction
- Differentiated instruction
- Interdisciplinary activities
- Cooperative learning activities
- Reinforcement and remediation

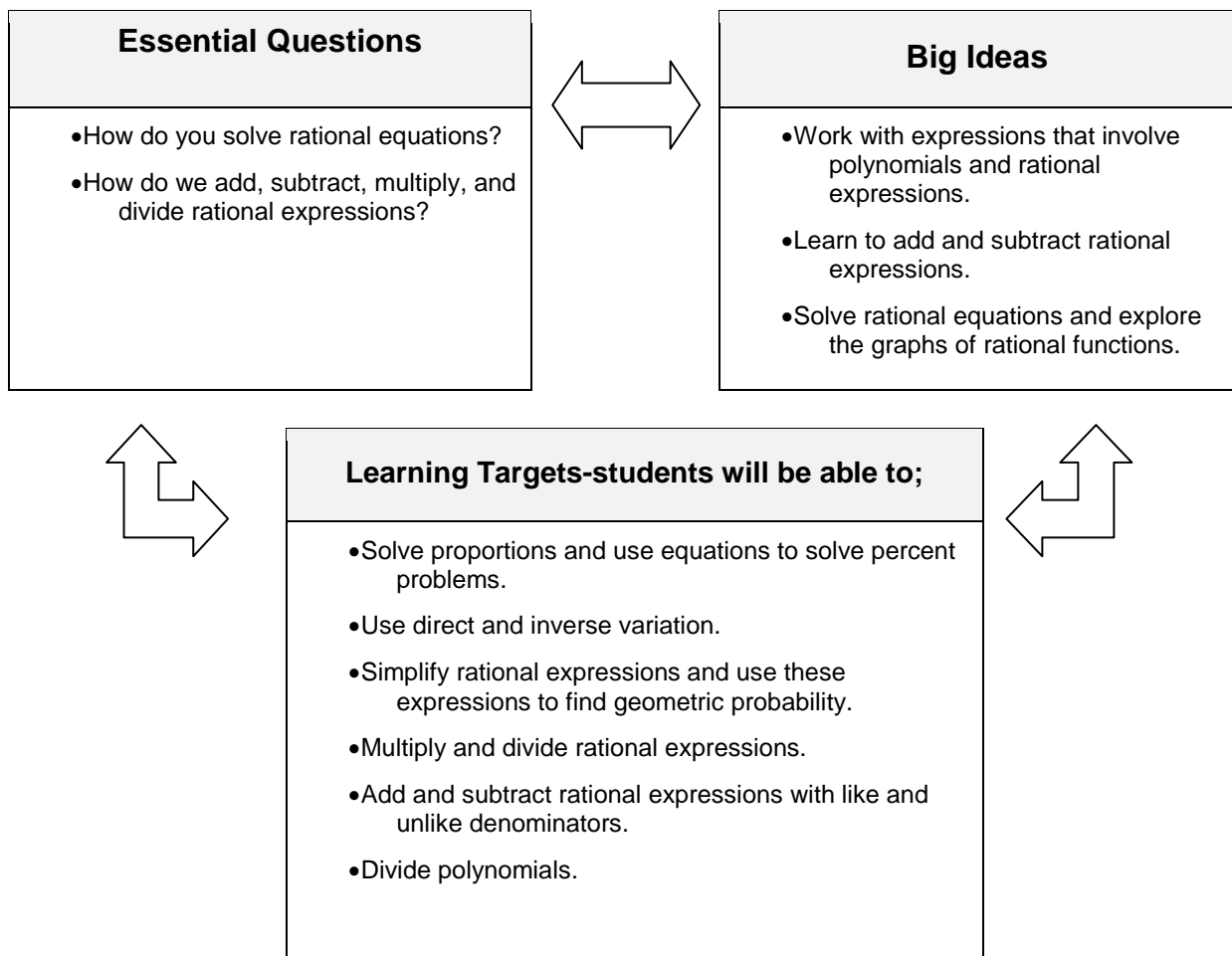
Resources

- Algebra 1 Applications, Equations, Graphs. 2004. McDougal Littell, Inc.
- Calculators: TI 83 Graphing

Grade 8 Math

Unit Title	Unit 7: Rational Equations and Functions
Time frame	3 weeks
21 st Century Themes	Critical Thinking and Problem Solving Communication and Collaboration ICT (Information, Communications and Technology) Literacy Flexibility and Adaptability Initiative and Self-Direction Productivity and Accountability
Interdisciplinary focus and technology integration	Economics: Mark-up and Cost.

Stage 1: Integrate essential questions, big ideas and learning targets, and ensure it can be differentiated and assessed



Assessment

- Formal and Informal Teacher Observations
- Formative checks for understanding and summative assessments
- Tests / Quizzes
- Study Island Assignments
- Supplemental NJ ASK Practice Questions from NJ ASK Workbooks

Differentiation

- Hands-On Activities
- Diagnostic Assessment (based on content /skill pre-tests)
- Kinesthetic Activities
- Re-teach and Enrichment Activities
- Computer Activities
- Cooperative Learning (Flexible Grouping)
- Peer Tutoring
- Tiered Activities

Stage 2: Backward planning: from the assessment to the learning activities through inquiry

Content Standards

RP 7.1, 7.2 a, b, c, d, 7.3
EE 7.2, 7.3
F 8.4
MP 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8

Approaches to Learning

In this unit, students acquire the knowledge to work with rational expressions – fractions whose numerators and denominators are polynomials. Rational expressions occur frequently in real life as proportions, percents, probabilities, and variations. Understanding these will enable students to model and solve a variety of real-life problems.

Learning Experiences

- Course of study
- Notes and examples
- Practice by homework
- Cumulative review exercises
- Test prep questions
- Hands-on activities and use of manipulatives
- Problem solving activities

Teaching Strategies

- Direct instruction
- Differentiated instruction
- Interdisciplinary activities
- Cooperative learning activities
- Reinforcement and remediation

Resources

- Algebra 1 Applications, Equations, Graphs. 2004. McDougal Littell, Inc.
- Calculators: TI 83 Graphing