

Unit 1: Ratios and Proportional Relationships

Key Concept: Relationships

Related Concept: Equivalence, Simplification

Global Context: Globalization and Sustainability (*explored through global issues*)

Common Core:

6.RP.1

6.RP.2

6.RP.3

6.NS.4

Statement of Inquiry:

We use proportional relationships to communicate information.

Inquiry questions:

Factual: How we set up and solve ratios and proportional relationships?

Conceptual: How can we use ratios and proportions to convert between fractions, decimals, and percents?

Debatable: To what extent can we use proportional relationships to understand critical global issues of concern?

Main Content:

- Ratios
- Unit rates
- Proportions
- Converting between fractions, decimals, and percents
- If the world were 100 People

Resources:

Glencoe Math: Built to the Common Core, Math Antics, ALEKS, 100 People: A World Portrait, TED talks

Summative Assessment:

Criteria A (knowing and understanding)

- i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations.
- ii. Apply the selected mathematics successfully when solving problems
- iii. Solve problems correctly in a variety of contexts.

Criteria C (Communicating)

- i. Use appropriate mathematical language in both oral and written explanations
- ii. Use appropriate forms of mathematical representation to present information
- iii. Move between different forms of mathematical representation
- iv. communicate complete, coherent, and concise mathematical lines of reasoning
- v. organize information using a logical structure

ATLs (*goal is how to be a successful student in math class, and explain reasoning for answers*)

Category: Communication **Cluster:** Communication **Skill Indicator:** Reading, writing, and using language to gather and communicate information

Category: Self-management **Cluster:** Organization **Skill Indicator:** managing time and tasks effectively

Category: Thinking **Cluster:** Critical Thinking **Skill Indicator:** Analyzing and evaluating issues and ideas

Unit 2: The Number System

Key Concept: Relationships

Related Concept: Representation, Systems

Global Context: Globalization and Sustainability (*explored through connections to mathematics in the real world*)

Common Core:

6.NS.1

6.NS.2

6.NS.3

6.RP.3

Statement of Inquiry:

We use relationships in the number system to represent real world situations.

Inquiry questions:

Factual: How are fractions and decimals added, subtracted, multiplied, and divided?

Conceptual: How do mathematical operations relate to one another in the number system?

Debatable: Do we need to know how to perform mathematical operations when have calculators available?

Main Content:

- Adding and subtracting decimals
- Estimating products
- Multiplying and dividing decimals
- Multiplying and dividing multi-digit numbers
- Multiplying by powers of 10
- Multiplying and dividing fractions

Resources:

Glencoe Math: Built to the Common Core, Math Antics

Summative Assessment:

Criterion A (knowing and understanding)

- i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations.
- ii. Apply the selected mathematics successfully when solving problems
- iii. Solve problems correctly in a variety of contexts.

Criterion D (applying mathematics in real-life contexts)

- i. Identify relevant elements of authentic real-life situations.
- ii. Select appropriate mathematical strategies when solving authentic real-life situations.
- iii. Apply the selected mathematical strategies successfully to reach a solution.
- iv. Explain the degree of accuracy of the solution.
- v. Describe whether the solution makes sense in the context of the authentic real-life situation.

ATLs (*goal is see the value of having computational math skills and complete each part of the summative task independently*)

Category: Self-Management **Cluster:** Affective **Skill Indicator:** Perseverance

Category: Thinking **Cluster:** Critical Thinking **Skill Indicator:** Use models and simulations

Category: Self-Management **Cluster:** Reflection **Skill Indicator:** Demonstrate flexibility in the selection and use of learning strategies.

Unit 3: Integers and Expressions

Key Concept: Logic

Related Concept: Quantities, Patterns

Global Context: Orientation in Time and Space (explored through real world situations)

Common Core:

6.NS.5	6.EE.2
6.NS.6	6.EE.3
6.NS.7	6.EE.4
6.NS.8	6.EE.6

6.EE.1

Statement of Inquiry:

We identify patterns using logic to determine unknown quantities.

Inquiry questions:

Factual: What are integers and expressions?

Conceptual: How can we model numbers in different ways to represent real world situations?

Debatable: To what extent can we use patterns in other situations?

Main Content:

- Integers (positive and negative numbers)
- Absolute value
- Terminating and repeating decimals
- Rational numbers
- Graphing on a coordinate plane
- Finding Distance on a Coordinate plane
- Powers and Exponents
- Numerical Expressions
- Variables and Expressions
- Writing Expressions
- Distributive Property
- Equivalent expressions

Resources:

Glencoe Math: Built to the Common Core, Math Antics, ALEKS

Summative Assessment:

Criterion A (knowing and understanding)

- i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations.
- ii. Apply the selected mathematics successfully when solving problems
- iii. Solve problems correctly in a variety of contexts.

Criterion B (investigating patterns)

- i. Apply mathematical problem-solving techniques to recognize patterns.
- ii. Describe patterns as relationships or general rules consistent with correct findings.
- iii. Verify whether the pattern works for other examples.

ATLs (*goal: continue to work more independently, be able to start task without additional guidance*)

Category: Self-Management **Cluster:** Self-motivation **Skill Indicator:** practice positive thinking

Category: Thinking **Cluster:** Creative-thinking **Skill Indicator:** practice visible thinking strategies and techniques

Category: Thinking **Cluster:** Critical-thinking **Skill Indicator:** use models and simulations to explore complex systems and issues.

Unit 4: Equations and Inequalities

Key Concept: Relationships

Related Concept: Patterns, Representations

Global Context: Personal and Cultural Expression explored through graphs, tables, and equations

Common Core:

6.EE.5 6.EE.8

6.EE.6 6.EE.9

6.EE.7

Statement of Inquiry:

The language of Algebra allows us to communicate relationships between numbers.

Inquiry questions:

Factual: What is a pattern?

Conceptual: How are patterns represented?

Debatable: Can we use patterns to model any relationship between numbers?

Main Content:

- Exponents
- Variables
- Expressions
- Distributive property
- 1-step equations
- Functions
- inequalities

Resources:

Glencoe Math: Built to the Common Core, Math Antics, ALEKS

Summative Assessment:

Criterion A (knowing and understanding)

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- iii. Solve problems correctly in a variety of contexts.

Criterion B (investigating patterns)

- i. Apply mathematical problem-solving techniques to recognize patterns.
- ii. Describe patterns as relationships or general rules consistent with correct findings.
- iii. Verify whether the pattern works for other examples.

ATLs (*goal: apply previous learning to new concepts and situations*)

Category: Thinking **Cluster:** Creative thinking **Skill Indicator:** Apply existing knowledge to generate new ideas, products, or processes

Category: Thinking **Cluster:** Transfer **Skill Indicator:** Apply skills and knowledge in unfamiliar situations

Unit 5: Geometry

Key Concept: Form

Related Concept: Measurement, Space

Global Context: Personal and Cultural Expression

Common Core:

6.G.1	6.G.4
6.G.2	6.NS.8
6.G.3	

Statement of Inquiry:

Through form, space and measurement are created.

Inquiry questions:

Factual: How do we measure area and volume?

Conceptual: How is shape important when measuring a figure?

Debatable: To what extent can we use measurement to solve real world problems?

Main Content:

- Area of parallelograms, triangles, trapezoids
- Change in dimensions affect on area and perimeter
- Graphing polygons on coordinate plane
- Area of composite figures
- Volume of rectangular prisms, triangular prisms
- Surface area of rectangular prisms, triangular prisms
- Nets

Resources:

Glencoe Math: Built to the Common Core, Math Antics, ALEKS, Snapshot Math to Talk About, Teachers Pay Teachers

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- i. Select appropriate mathematics when solving problems in both familiar and unfamiliar situations.
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ATLs (*goal: write about math and perform open ended tasks*)

Category: Communication **Cluster:** Communication Skills **Skill Indicator:** Organize and depict information logically

Category: Communication **Cluster:** Communication Skills **Skill Indicator:** Understand and use mathematical notation

Category: Thinking **Cluster:** Transfer **Skill Indicator:** apply skills and knowledge in unfamiliar situations

Category: Self-Management **Cluster:** Affective Skills **Skill Indicator:** Demonstrate persistence and perseverance

Unit 6: Knowledge is Power: A

Statistics and Fake News Interdisciplinary Unit

Key Concept: Power

Related Concept: Representation and Models

Global Context: Fairness and Development

Common Core:

6.SP.1	6.SP.5a
6.SP.2	6.SP.5b
6.SP.3	6.SP.5c
6.SP.4	6.SP.5d

Statement of Inquiry: Statistics are a powerful model for representing information.

Inquiry questions:

Factual: How do you create, read and interpret statistical representations of data?

Conceptual: How does confirmation bias affect interpretation of information?

Debatable: How much responsibility does the media have to present unbiased, information?

Main Content:

- Statistical question
- Measures of central tendency (mean, median, mode)
- Measures of variation (quartiles, range, IQR)
- Mean Absolute Deviation
- Selecting appropriate measures of central tendency
- Represent data in graphs: line plots, histograms, box plots, line graphs
- Shape of Distribution
- Selecting appropriate displays
- Statistical Bias

Resources:

Glencoe Math: Built to the Common Core, Math Antics, ALEKS, It's Okay to Be Smart

Summative Assessment:

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- iii. Solve problems correctly in a variety of contexts.

Criterion D (applying mathematics in real-life contexts)

- i. Identify relevant elements of authentic real-life situations.
- ii. Select appropriate mathematical strategies when solving authentic real-life situations.
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- iv. Explain the degree of accuracy of the solution.
- v. Describe whether the solution makes sense in the context of the authentic real-life situation.

ATLs (*goal: evaluate news sources for bias and false statements*)

Category: Research **Cluster:** Media Literacy **Skill Indicator:** locate, organize, analyze, evaluate, synthesize, and ethically use information

Category: Thinking **Cluster:** Critical Thinking **Skill Indicator:** Recognize unstated assumptions and bias

Category: Self-management **Cluster:** Reflection **Skill Indicator:** Consider personal learning strategies