

Unit 1: Integers Around Me

Ch. 1 Language of Algebra and Ch. 2 Operations with Integers

Key Concept: Logic

Related Concepts: Change, Generalizations

Global Context: Orientation in Space and Time (integers allow us to track positive and negative movement)

Statement of Inquiry:

Using logical generalizations about integers we can track change over space and time.

Inquiry Questions

Factual: How do we compute with integers? How do we make generalizations about integers?

Conceptual: How do mathematical rules help make generalizations to solve problems?

Debatable: Why do we need negative numbers?

Content:

Common Core: 7.NS.1 7.NS.1a 7.NS.1b 7.NS.1c 7.NS.1d 7.NS.2 7.NS.2a
7.NS.2b 7.NS.2c 7.NS.3 7.EE.1 7.EE.2 7.EE.3 7.EE.4

Problem-solving strategies; variables and expressions; represent information using words, equations, tables, and graphs; absolute value; integer operations, 4 quadrant graphing

Summative Tasks

Criterion A Ch.1 test, Ch. 2 test

Criterion C and D My Life as an Integer Timeline

Approaches to Learning (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: Rationalize powers and roots

Ch. 3 Operations with Rational Numbers and Ch. 4 Powers and Roots

Key Concept: relationships

Related Concepts: equivalence; simplification

Global Context: scientific and technical innovation (processes)

Statement of Inquiry:

Understanding the relationship and the processes of equivalence and simplification allows for problem solving.

Inquiry Questions

Factual: What is equality?

Conceptual: How can the answer be the same if the process is different?

Debatable: Why would a scientist use scientific notation today?

Content: operations with fractions, decimals, rational numbers; positive and negative exponents, monomials, scientific notation, square roots, cube roots, real numbers

Common Core: 7.NS.1 7.NS.2 7.NS.3 8.NS.1 7.EE.3 8.NS.1 8.NS.2 8.EE.1
8.EE.2 8.EE.3 8.EE.4

Summative Tasks

Criterion A Ch.3 Test, Ch. 4 Test

Criterion B Multiplying and Dividing Monomials Challenge

Approaches to Learning (ATLs):

(Goal: demonstrate resilience from struggle, learning completing new material)

Category: Communication **Cluster:** Communication **Skill Indicator:** understand and use mathematical notation

Category: Self-management **Cluster:** Affective Skills **Skill Indicator:** Managing state of mind: mindfulness, perseverance, emotional management, self motivation, and resilience

Unit 3: Dollars and Sense

Ch. 5 Ratio, Proportion, and Similar Figures and Ch. 6 Percents

Key Concept: Relationships

Related Concepts: Equivalence, Quantity

Global Context: Identities and Relationships

Statement of Inquiry:

Equivalent Values can be used to describe and calculate the relationship between quantities and rates.

Inquiry Questions

Factual: How do we calculate rates, simple interest, discounts, and tips?

Conceptual: How do changes in interest rate, time, and principal influence total cost?

Debatable: When is borrowing a good investment? What are the risks of borrowing?

Content:

Ratios; unit rates, proportions, similar figures; indirect measurement; percents, percent of change; discount and markup; simple and compound interest; financial literacy

Summative Tasks

Criterion A Ch. 5 and 6 test

Criterion C and D, Game of Life project

Criterion B Ratio and Scale Factor investigation

Approaches to Learning (ATLs):

Unit 4: Solving the Unknown

Ch. 7 Algebraic Expressions, Ch. 8 Equations and Inequalities, Ch. 9 Linear Functions

Key Concept: Logic

Related Concepts: Systems, Representation

Global Context: Scientific and Technical Innovation

Statement of Inquiry:

Algebra follows a logical system of reasoning using variables to represent the unknown, supporting science and technical innovation.

Inquiry Questions:

Factual: What is a variable?

Conceptual: Why is there a logical system to simplify mathematical expressions?

Debatable: Do you have to simplify an equation before solving it?

Content

like terms, constant, coefficient, exponent, variable, index notation, distributive property, factoring, expanding, simplifying

Summative Assessment Tasks

_____ (Criteria B, C)

Unit Exam (Criterion A)

Approaches to Learning (ATLs):

Unit 5: What are the Odds?

Ch. 10 Statistics and Probability

Key Concept: Logic

Related Concept: Justification

Global Context: Fairness and Development (Civic responsibility and the public sphere)

Statement of Inquiry: Logic allows us to calculate probabilities and evaluate statistics to help make informed decisions in our daily lives.

Inquiry Questions:

Factual: How do we calculate probability? How do we calculate mean, median and mode?

Conceptual: How much data do you need to make a statistically relevant statement?

Debatable: Statistically, gambling always enriches the house at the expense of the individual. Knowing this, should gambling be legalized in Washington?

Content

Mean, median, mode, range, outlier, tree diagrams, complementary events

Summative Assessment Tasks

Probability Carnival Game (Crit. C, D)

Unit Exam, Ch. 10 (Crit. A)

Approaches to Learning (ATLs):

Unit 6: Picture This

Ch. 11 Congruence, Similarity, and Transformations; Ch. 12 Volume and Surface Area

Key Concept: Form

Related Concept: Model

Global Context: Orientation in Space and Time (Graphing, Mapping, Scale)

Statement of Inquiry: Graphs provide form and visual structure to data, helping us to orient mathematical information in space and time.

Inquiry Questions:

Factual: How can we display data in non-linear graphs? How do we measure and portray slope?

Conceptual: What are some of the advantages and disadvantages of different types of graphs?

Debatable: How can two graphs both portray accurate information, but be used to tell opposing stories?

Content: angle/line relationships, triangles, polygons, transformations, dilations, similarity, circles, area, volume, surface area of prisms (triangle, pyramid, spheres, cone, cylinder)

Summative Assessment Tasks

A and D

Approaches to Learning (ATLs):