

# Pre-Algebra (8)

Mathematics

Grade(s) 8th, Duration 1 Year, 1 Credit  
Required Course

## Course Overview

Students will develop skills in using variables, evaluating algebraic expressions by the use of the order of operations, solving equations and inequalities, graphing linear equations, functions and linear and linear inequalities, writing linear equations, and using functions. Problem solving skills will be emphasized and developed.

## Scope And Sequence

| Timeframe | Unit   | Instructional Topics  |
|-----------|--|---|
| 26 Day(s) | Unit 1: Rational numbers, percent, real numbers, monomials | 1. Rational Numbers and Percent<br>2. Real Numbers and Monomials  |
| 55 Day(s) | Unit 2: Equations, inequalities, expressions and functions | 1. Equations & Inequalities<br>2. Multi-Step Equations and Inequalities<br>3. Expressions and Functions<br>4. Linear Functions and Systems of Equations |
| 45 Day(s) | Unit 3: Geometry and measurement                           | 1. Two- and Three-Dimensional Geometry<br>2. Triangles and Transformations<br>3. Units of Measure   |
| 44 Day(s) | Unit 4: Data, probability, measurement                     | 1. Data Analysis and Statistics<br>2. Probability and Combinations<br>3. Area and Volume  |

## Materials and Resources

Glencoe McGraw-Hill  
Math Connects  
Course 3

Kuta Software

## Course Details

**Unit:** Unit 1: Rational numbers, percent, real numbers, monomials

**Duration:** 26 Day(s)

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## Unit Overview

Rational Numbers and Percent  
Real Numbers and Monomials

## Materials and Resources

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Math Connects  
Course 3

Kuta Software

## Academic Vocabulary

Rational Number  
Terminating Decimal  
Repeating Decimal  
Like Fractions  
Unlike Fractions  
Dimensional Analysis  
Multiplicative Inverse  
Reciprocals  
Power  
Base  
Exponent  
Monomial  
Percent Proportion  
Percent Equation  
Discount  
Markup  
Interest  
Simple Interest  
Principal  
Compound Interest  
Percent of Change  
Percent of Increase  
Percent of Decrease  
Scientific Notation  
Perfect Square  
Square Root  
Radical Sign  
Perfect Cube  
Cube Root

## Summative Assessment

Chapter Tests

**Topic:** Rational Numbers and Percent

**Duration:** 13 Day(s)

### Topic Overview

Learn how fractions, decimals, and percents are related

### Learning Targets

Section 1-1A

Students will express rational numbers as decimals and decimals as fractions.

Section 1-1B

Students will add and subtract rational numbers.

Section 1-1C

Students will multiply rational numbers.

Section 1-1D

Students will divide rational numbers.

**Topic:** Real Numbers and Monomials

**Duration:** 13 Day(s)

### Topic Overview

Add, subtract, multiply, and divide very large and very small numbers.

### Learning Targets

2-1B

Multiply and Divide Monomials

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2-1C  
Powers of Monomials

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2-1D  
Problem-Solving Investigation: Act it Out

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2-2A  
Negative Exponents

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2-2B  
Scientific Notation

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2-2C  
Compute with Scientific Notation

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2-3A  
Roots

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2-3B  
Explore Roots of Non-Perfect Squares

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2-3C  
Estimate Roots

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2-3D  
Compare Real Numbers

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**Unit:** Unit 2: Equations, inequalities, expressions and functions

**Duration:** 55 Day(s)

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## Unit Overview

Equations and Inequalities  
Multi-Step Equations and Inequalities  
Expressions and Functions  
Linear Functions and Systems of Equations

## Materials and Resources

Glencoe McGraw-Hill  
Math Connects  
Course 3

Kuta Software

## Academic Vocabulary

Equation  
Variable  
Inverse Operations  
Coefficient  
Inequality  
Property  
Counterexample  
Equivalent Expression  
Algebraic Expression  
Coordinate Plane  
Origin  
Quadrant  
Relation  
Domain  
Range  
Linear  
Sequence  
Common Difference  
Geometric Sequence  
Function  
Function Table  
Independent Variable  
Dependent Variable  
Linear Function  
Continuous Data  
Discrete Data  
Cubic Function  
Exponential Function  
Quadratic Function  
Constant Rate of Change  
Slope  
Direct Variation  
Constant of Variation  
Slope-Intercept Form  
Standard Form  
System of Equation  
Substitution

## Summative Assessment

Chapter Tests  
Semester Test

**Topic:** Equations & Inequalities

**Duration:** 14 Day(s)

## Topic Overview

Learn to solve 1 & 2 step equations and inequalities.

## Learning Targets

3-1A  
Problem- Solving Investigation: Work Backward

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3-1C  
Solve Addition and Subtraction Equations

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3-1D  
Solve Multiplication and Division Equations

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3-2A  
Explore Two- Step Equations

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3-2B  
Solve Two-Step Equations

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**Topic:** Multi-Step Equations and Inequalities

**Duration:** 10 Day(s)

## Topic Overview

Students will learn how to solve equations with variables on each side.

## Learning Targets

4-1B  
The Distributive Property

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4-1D  
Problem-Solving Investigation: Solve a Simpler Problem

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4-2A  
Explore Equations with Variables on Each Side

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4-2B  
Solve Equations with Variables on Each Side

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4-2C  
Multi-Step Equations

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**Topic:** Expressions and Functions

**Duration:** 16 Day(s)

## Topic Overview

Students will graph linear and quadratic functions.

## Learning Targets

5-1A  
Problem-Solving Investigation: Make a Table

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5-1C  
Ordered Pairs and Relations

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5-2A  
Explore Patterns

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5-2B  
Analyze Tables

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5-2C  
Analyze Graphs

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5-3A  
Explore Relations and Functions

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5-3B  
Functions

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5-3C  
Linear Functions

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5-4A  
Linear and Nonlinear Functions

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5-4B  
Graph Quadratic Functions

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5-4C  
Graphing Technology: Families of Nonlinear Functions

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**Topic:** Linear Functions and Systems of Equations

**Duration:** 15 Day(s)

## Topic Overview

Students will learn slope, slope-intercept form, and how to solve systems of equations.

## Learning Targets

6-1A  
Constant Rate of Change

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6-1B  
Explore Slope and Rate of Change

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6-1C  
Slope

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6-1D  
Explore Proportional and Non proportional Relationship

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6-1E  
Direct Variation

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6-2A  
Slope-Intercept Form

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6-2B  
Graph Functions Using Intercepts

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6-2C  
Extend Graphing Technology Lab: Model Linear Behavior

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6-3A  
Problem-Solving Investigation: Guess, Check, and Revise

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6-3B  
Explore Systems of Equations

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6-3C  
Solve Systems of Equations by Graphing

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6-3D  
Solve Systems of Equations by Substitution

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**Unit:** Unit 3: Geometry and measurement

**Duration:** 45 Day(s)

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Required Course

## Unit Overview

Two- and Three- Dimensional Geometry  
Triangles and Transformations  
Units of Measure

## Materials and Resources

Glencoe McGraw-Hill  
Math Connects  
Course 3

Kuta Software

## Academic Vocabulary

Corresponding Angles  
Transversal  
Interior Angles  
Exterior Angles  
Alternate Interior Angles  
Alternate Exterior Angles  
Equiangular  
Edge  
Face Vertex  
Prism  
Pyramid  
Cylinder  
Cone  
Cross Section  
Similar Polygons  
Scale Factor  
Corresponding Parts  
Leg  
Hypotenuse  
Pythagorean Theorem  
Converse  
Distance Formula  
Transformation  
Translation  
Reflection  
Line of Reflection  
Line of Symmetry  
Rotational Symmetry  
Angle of Rotation  
Center of Rotation  
Rotation  
Literal Equation

## Summative Assessment

Chapter Tests

**Topic:** Two- and Three-Dimensional Geometry

**Duration:** 17 Day(s)

### Topic Overview

Students will explore properties of two- and three-dimensional figures.

### Learning Targets

7-1D

Problem-Solving Investigation: Use Logical Reasoning

7-2A

Explore Parallel Lines

7-2B

Lines

7-3A

Explore Triangles

**Topic:** Triangles and Transformations

**Duration:** 20 Day(s)

### Topic Overview

Students will learn properties of triangles, the Pythagorean Theorem, and transformations.

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Grade(s) 8th, Duration 1 Year, 1 Credit  
Required Course

## Learning Targets

8-1A

Problem-Solving Investigation: Draw a Diagram

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8-1B

Similar Polygons

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8-1C

Extend- Similar Triangles

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8-2A

Explore Right Triangle Relationships

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8-2B

The Pythagorean Theorem

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8-2C

Use The Pythagorean Theorem

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8-2D

Distance on the Coordinate Plane

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8-2E

Extend- Slope Triangles

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8-2F

Special Right Triangles

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8-3A

Translations

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8-3B

Reflections

---

8-3C

Explore- Rotational Symmetry

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8-3D

Rotations

---

8-3E

Dilations

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8-3F

Extend- Compositions of Transformations

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**Topic:** Units of Measure

**Duration:** 8 Day(s)

## Topic Overview

Students will learn about literal equations.

## Learning Targets

9-1A

Literal Equations

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9-1C

Problem-Solving Investigation: Determine Reasonable Answers

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9-2B

Extend- Accuracy and Precision

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**Unit:** Unit 4: Data, probability, measurement

**Duration:** 44 Day(s)



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Required Course

## Unit Overview

Data Analysis and Statistics  
Probability and Combinations  
Area and Volume

## Materials and Resources

Glencoe McGraw-Hill  
Math Connects  
Course 3

Kuta Software

## Academic Vocabulary

Scatter Plot  
Line of Best Fit  
Composite Figure  
Volume  
Composite Solid  
Sphere  
Regular Pyramid  
Slant Height  
Lateral Face  
Net

## Summative Assessment

Chapter Tests  
Semester Test

**Topic:** Data Analysis and Statistics

**Duration:** 16 Day(s)

### Topic Overview

Students will learn about scatter plots and lines of best fit.

### Learning Targets

10-3A

Problem-Solving Investigation: Use a Graph

10-3B

Explore- Scatter Plots

10-3C

Scatter Plots

10-3D

Explore- Lines of Best Fit

10-3 E

Lines of Best Fit

10-3F

Extend Graphing Technology: Scatter Plots

10-3G

Select an Appropriate Display

**Topic:** Probability and Combinations

**Duration:** 15 Day(s)

### Topic Overview

Students will learn probability and combinations.

### Learning Targets

11-2D

Extend- Geometric Probability

11-3A

Problem-Solving Investigation: Act it Out

11-3E

Extend- Collect Data

**Topic:** Area and Volume

**Duration:** 13 Day(s)

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## Topic Overview

Students will review area and find the volume of three-dimensional figures.

## Learning Targets

12-1D

Problem-Solving Investigation: Make a Model

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12-2A

Volume of Prisms and Cylinders

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12-2B

Volume of Pyramids, Cones, and Spheres

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