Common Core State Standards for Mathematics

PowerZone Algebra/Geometry Series Correlation

- **Grade 8 & High School**

- **Pre-Algebra**
- **Algebra**
- **Algebra 2**
- **Geometry**

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Common Core State Standards for Mathematics PowerZone Algebra/Geometry Series Correlation

The PowerZone Algebra/Geometry Series consists of four Content Set titles for grade eight and high school.

Pre-Algebra   **Algebra 2**
Algebra   **Geometry**

This document represents the correlation of PowerZone Algebra/Geometry Series topics to the Common Core State Standards for Mathematics. Each Content Set has a one-page correlation chart. Following the correlation pages are additional pages with "Pick the Question Mix" screens for each Content Set. The "Pick the Question Mix" screens display the topics for a specific Content Set title.

Prior to using the software in a PowerZone classroom session, teachers have the option to select specific questions by using the "Pick the Question Mix" capability. First, teachers can select any combination of topics and then preview and turn individual questions "off" or back "on". The correlation chart facilitates selection of topics and questions related to the Common Core State Standards.

An optional Toolkit is available, which allows teachers to author and add questions to Content Sets. With the Toolkit, teachers can organize and save their authored questions by Common Core State Standards or by other standards and organizational structures as desired. Authored questions are accessible from the "Bonus Questions" button, during a PowerZone session.

Common Core Math
Grade 8 Overview

The Number System

- Know that there are numbers that are not rational, and approximate them by rational numbers.

Expressions & Equations

- Work with radicals and integer exponents.
- Understand the connections between proportional relationships, lines, and linear equations.
- Analyze and solve linear equations and pairs of simultaneous linear equations.

Functions

- Define, evaluate, and compare functions.
- Use functions to model relationships between quantities.

Geometry

- Understand congruence and similarity using physical models, transparencies, or geometry software.
- Understand and apply the Pythagorean Theorem.
- Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.

Statistics and Probability

- Investigate patterns of association in bivariate data.

PowerZone Algebra/Geometry Series
Grade 8 Correlation

The Number System
PowerZone, Pre-Algebra, Topics: 1, 2, 6, 7*

Expressions & Equations

- PowerZone, Pre-Algebra, Topics: 5, 8
- PowerZone, Pre-Algebra, Topics: 6

Functions

- PowerZone, Pre-Algebra, Topics: 10

Geometry

- PowerZone, Pre-Algebra, Topics: 11

- PowerZone, Pre-Algebra, Topics: 8
- PowerZone, Pre-Algebra, Topics: 9

Statistics and Probability

- PowerZone, Pre-Algebra, Topics: 12

Note: The Pre-Algebra Content Set facilitates review in preparation for high school level Common Core State Standards.

*For PowerZone topic names, see "Pick the Question Mix" screens at the end of this document.

Common Core Math
Number and Quantity Overview

The Real Number System
- Extend the properties of exponents to rational exponents.
- Use properties of rational and irrational numbers.

Quantities
- Reason quantitatively and use units to solve problems.

The Complex Number System
- Perform arithmetic operations with complex numbers.
- Represent complex numbers and their operations on the complex plane.
- Use complex numbers in polynomial identities and equations.

Vector and Matrix Quantities
- Represent and model vector quantities.
- Perform operations on vectors.
- Perform operations on matrices and use matrices in applications.

PowerZone Algebra/Geometry Series
Number and Quantity Correlation

The Real Number System
- PowerZone, Algebra, Topic: 5*
- PowerZone, Algebra, Topic: 11

Quantities

The Complex Number System
- PowerZone, Algebra 2, Topic: 9

Vector and Matrix Quantities

- PowerZone, Algebra 2, Topic: 5

*For PowerZone topic names, see "Pick the Question Mix" screens at the end of this document.

Common Core Math
Algebra Overview

Seeing Structure in Expressions
- Interpret the structure of expressions.

- Write expressions in equivalent forms to solve problems.

Arithmetic with Polynomials and Rational Expressions
- Perform arithmetic operations on polynomials.

- Understand the relationship between zeros and factors of polynomials.
- Use polynomial identities to solve problems.
- Rewrite rational expressions.

Creating Equations
- Create equations that describe numbers or relationships.

Reasoning with Equations and Inequalities
- Understand solving equations as a process of reasoning and explain the reasoning.
- Solve equations and inequalities in one variable.
- Solve systems of equations.

- Represent and solve equations and inequalities graphically.

PowerZone Algebra/Geometry Series
Algebra Correlation

Seeing Structure in Expressions
- PowerZone, Algebra, Topics: 1, 8*; PowerZone Algebra 2, Topics: 1, 3, 7, 11, 12
- PowerZone Algebra 2, Topic: 15

Arithmetic with Polynomials and Rational Expressions
- PowerZone, Algebra, Topics: 2, 5, 6; PowerZone Algebra 2, Topic: 10

Creating Equations
- PowerZone Algebra, Topic: 4

Reasoning with Equations and Inequalities
- PowerZone Algebra 2, Topic: 8

- PowerZone Algebra, Topics: 1 ,2 ,3, 13
- PowerZone Algebra , Topic: 10; Algebra 2, Topic: 4
- PowerZone Algebra 2, Topic: 6, 16

*For PowerZone topic names, see "Pick the Question Mix" screens at the end of this document.

Common Core Math
Functions Overview

Interpreting Functions
- Understand the concept of a function and use function notation.
- Interpret functions that arise in applications in terms of the context.
- Analyze functions use different representations.

Building Functions
- Build a function that models a relationship between two quantities.
- Build new functions from existing functions.

Linear, Quadratic, and Exponential Models
- Construct and compare linear, quadratic, and exponential models and solve problems.
- Interpret expressions for functions in terms of the situation they model.

Trigonometric Functions
- Extend the domain of trigonometric functions using the unit circle.
- Model periodic phenomena with trigonometric functions.
- Prove and apply trigonometric identities.

PowerZone Algebra/Geometry Series
Functions Correlation

Interpreting Functions
- PowerZone, Algebra 2, Topic: 2, 13, 14*

- PowerZone, Algebra, Topic: 9;
  PowerZone, Algebra 2, Topic: 3

Building Functions

Linear, Quadratic, and Exponential Models
- PowerZone, Algebra, Topics: 9, 13

Trigonometric Functions
- PowerZone, Algebra 2, Topic: 16

- PowerZone, Algebra 2, Topic: 17

*For PowerZone topic names, see "Pick the Question Mix" screens at the end of this document.

Common Core Math
Geometry Overview

Congruence
- Experiment with transformations in the plane.
- Understand congruence in terms of rigid motions.
- Prove geometric theorems.
- Make geometric theorems.

Similarity, Right Triangles, and Trigonometry
- Understand similarity in terms of similarity transformations.
- Prove theorems involving similarity.
- Define trigonometric ratios and solve problems involving right triangles
- Apply trigonometry to general triangles.

Circles
- Understand and apply theorems about circles.
- Find arc length and areas of sectors of circles.

Expressing Geometric Properties with Equations
- Translate between the geometric description and the equation for a conic section.
- Use coordinates to prove simple geometric theorems algebraically.

Geometric Measurement and Dimension
- Explain volume formulas and use them to solve problems.
- Visualize relationships between two-dimensional and three-dimensional objects.

Modeling with Geometry
- Apply geometric concepts in modeling situations.

PowerZone Algebra/Geometry Series
Geometry Correlation

Review
- PowerZone, Algebra, Topic: 11*
- PowerZone, Geometry, Topic: 1

Congruence
- PowerZone, Geometry, Topic: 2

Similarity, Right Triangles, and Trigonometry
- PowerZone, Geometry, Topic: 2, 6, 9
- PowerZone, Geometry, Topic: 3, 4
- PowerZone, Geometry, Topic: 5, 7

- PowerZone, Algebra 2, Topic: 17

Circles
- PowerZone, Geometry, Topic: 10

Expressing Geometric Properties with Equations
- PowerZone, Algebra 2, Topic: 16

Geometric Measurement and Dimension
- PowerZone, Geometry, Topic: 11, 12
- PowerZone, Geometry, Topic: 8

Modeling with Geometry

*For PowerZone topic names, see "Pick the Question Mix" screens at the end of this document.

Common Core Math
Statistics and Probability Overview

Interpreting Categorical and Quantitative Data
- Summarize, represent, and interpret data on a single count or measurement variable.
- Summarize, represent, and interpret data on two categorical and quantitative variables.
- Interpret linear models.

Making Inferences and Justifying Conclusions
- Understand and evaluate random processes underlying statistical experiments.
- Make inferences and justify conclusion from sample surveys, experiments, and observational studies.

Conditional Probability and the Rules of Probability
- Understand independence and conditional probability and use them to interpret data.
- Use the rules of probability to compute probabilities of compound events in a uniform probability model.

Use Probability to Make Decisions
- Calculate expected values and use them to solve problems.
- Use probability to evaluate outcomes of decisions.

PowerZone Algebra/Geometry Series
Statistics and Probability Correlation

Interpreting Categorical and Quantitative Data
- PowerZone, Algebra, Topic: 7*; PowerZone, Algebra 2, Topic: 21
- PowerZone, Algebra 2, Topic: 18

Making Inferences and Justifying Conclusions

Conditional Probability and the Rules of Probability
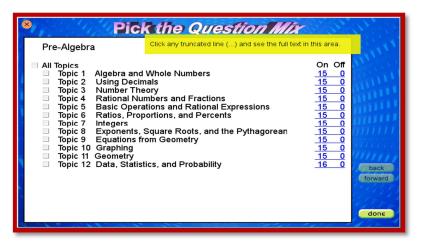- PowerZone, Algebra 2, Topics: 19, 20
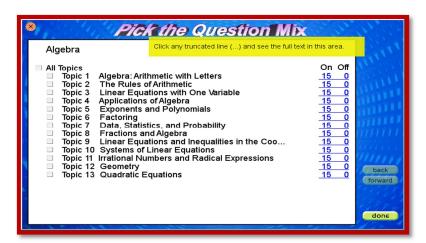- PowerZone, Algebra, Topic: 7

Use Probability to Make Decisions
- PowerZone, Algebra 2, Topic: 20

*For PowerZone topic names, see "Pick the Question Mix" screens at the end of this document.
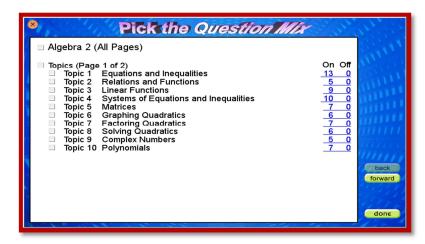
PowerZone Algebra/Geometry Series
Pre-Algebra

Pick the Question Mix

Pre-Algebra

		On	Off
☐ All Topics			
☐ Topic 1	Algebra and Whole Numbers	15	0
☐ Topic 2	Using Decimals	15	0
☐ Topic 3	Number Theory	15	0
☐ Topic 4	Rational Numbers and Fractions	15	0
☐ Topic 5	Basic Operations and Rational Expressions	15	0
☐ Topic 6	Ratios, Proportions, and Percents	15	0
☐ Topic 7	Integers	15	0
☐ Topic 8	Exponents, Square Roots, and the Pythagorean	15	0
☐ Topic 9	Equations from Geometry	15	0
☐ Topic 10	Graphing	15	0
☐ Topic 11	Geometry	15	0
☐ Topic 12	Data, Statistics, and Probability	16	0

back
forward

done

PowerZone Algebra/Geometry Series
Algebra 2 (Screen 1)

Pick the Question Mix

☐ Algebra 2 (All Pages)

		On	Off
☐ Topics (Page 1 of 2)			
☐ Topic 1	Equations and Inequalities	13	0
☐ Topic 2	Relations and Functions	5	0
☐ Topic 3	Linear Functions	9	0
☐ Topic 4	Systems of Equations and Inequalities	10	0
☐ Topic 5	Matrices	7	0
☐ Topic 6	Graphing Quadratics	6	0
☐ Topic 7	Factoring Quadratics	7	0
☐ Topic 8	Solving Quadratics	6	0
☐ Topic 9	Complex Numbers	5	0
☐ Topic 10	Polynomials	7	0

back
forward

done

PowerZone Algebra/Geometry Series
Algebra

Pick the Question Mix

Algebra

		On	Off
☐ All Topics			
☐ Topic 1	Algebra: Arithmetic with Letters	15	0
☐ Topic 2	The Rules of Arithmetic	15	0
☐ Topic 3	Linear Equations with One Variable	15	0
☐ Topic 4	Applications of Algebra	15	0
☐ Topic 5	Exponents and Polynomials	15	0
☐ Topic 6	Factoring	15	0
☐ Topic 7	Data, Statistics, and Probability	15	0
☐ Topic 8	Fractions and Algebra	15	0
☐ Topic 9	Linear Equations and Inequalities in the Coo...	15	0
☐ Topic 10	Systems of Linear Equations	15	0
☐ Topic 11	Irrational Numbers and Radical Expressions	15	0
☐ Topic 12	Geometry	15	0
☐ Topic 13	Quadratic Equations	15	0

back
forward

done

PowerZone Algebra/Geometry Series
Algebra 2 (Screen 2)

Pick the Question Mix

☐ Algebra 2 (All Pages)

		On	Off
☐ Topics (Page 2 of 2)			
☐ Topic 11	Rational Expressions	7	0
☐ Topic 12	Powers and Radicals	11	0
☐ Topic 13	Operations with Functions	8	0
☐ Topic 14	Exponentials and Logarithms	10	0
☐ Topic 15	Completing the Square	6	0
☐ Topic 16	Conic Sections	12	0
☐ Topic 17	Trigonometry	17	0
☐ Topic 18	Sequences and Series	5	0
☐ Topic 19	Counting	6	0
☐ Topic 20	Probability	5	0
☐ Topic 21	Statistics	5	0

back
forward

done

PowerZone Algebra/Geometry Series
Geometry

Pick the Question Mix

Geometry

		On	Off
☐ All Topics			
☐ Topic 1	Prerequisites	25	0
☐ Topic 2	Points, Lines, Planes, and Angles	14	0
☐ Topic 3	Reasoning	22	0
☐ Topic 4	Parallel Lines	30	0
☐ Topic 5	Triangles	22	0
☐ Topic 6	Proportions	14	0
☐ Topic 7	Right Triangles	24	0
☐ Topic 8	Polygons	12	0
☐ Topic 9	Symmetry and Transformations	19	0
☐ Topic 10	Circles	17	0
☐ Topic 11	Area	14	0
☐ Topic 12	3D and Volume	15	0

back

forward

done