**COURSE DESCRIPTION**

**Course Title:** Mathematics Grade 7

**Course Number:** 00204

**Course Prerequisites:** Completion of Mathematics Grade 6

**Course Description:** In Mathematics Grade 7, instructional time will focus on 5 critical areas:
(1) Understanding and applying Proportional relationships; (2) Understanding and applying operations to rational numbers; (3) Creating and solving expressions, equations, and inequalities; (4) Describing and implementing geometric relationships in real world applications; (5) Drawing inferences about populations and developing, using, and evaluating probability models. Students will take the Grade 7 PSSA Math Exam. District marking period assessments are required.

**Suggested Grade Level**: Grade 7

**Length of Course:** Two Semesters

**Units of Credit:** 1

**PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:**

CSPG #50 Mathematics (7-12), CSPG #53 Middle Level Mathematics,
CSPG #70 Grades 4-8 (All subjects 4-6, Mathematics 7-8)

To find the CSPG information, go to [CSPG](https://www.education.pa.gov/Educators/Certification/Staffing%20Guidelines/Pages/default.aspx)

**Certification verified by the WCSD Human Resources Department:** [x] Yes [ ] No

**WCSD STUDENT DATA SYSTEM INFORMATION**

**Course Level:** Academic

**Mark Types:** Check all that apply.

[x] F – Final Average [x] MP – Marking Period [x] EXM – Final Exam

**GPA Type**: [ ]  GPAEL-GPA Elementary [x]  GPAML-GPA for Middle Level [ ]  NHS-National Honor Society

[ ]  UGPA-Non-Weighted Grade Point Average [ ]  GPA-Weighted Grade Point Average

**State Course Code**: 02037

To find the State Course Code, go to [State Course Code](https://nces.ed.gov/forum/sced.asp), download the Excel file for *SCED*, click on SCED 6.0 tab, and choose the correct code that corresponds with the course.

**TEXTBOOKS AND SUPPLEMENTAL MATERIALS**

**Board Approved Textbooks, Software, and Materials:**

**Title:**  *enVisionmath 2.0 Grade 7*

**Publisher:** SAVVAS Learning Company LLC.

**ISBN #:**  978-0-328-88094-2

**Copyright Date:** 2017

**WCSD Board Approval Date:** 6/29/2020

**Supplemental Materials:** Kuta Software, Get More Math, SAS pdesas.org, Brainfuse, IXL,
 Calculator: TI-30XIIS, Online Calculator: DESMOS

**Curriculum Document**

**WCSD Board Approval:**

**Date Finalized:** 5/22/2023

**Date Approved:**  6/12/2023

**Date(s) Revised:** 6/10/2024 **Implementation Year:** 2023-2024

**SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS**

The teacher shall make appropriate modifications to instruction and assessment based on a student’s Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

**SCOPE AND SEQUENCE OF CONTENT, AND CONCEPTS**

**Marking Period 1: Integers and Rational Numbers, and Proportional Relationships**

* Integer Representations
* Rational Number Representations
* Integers: Sum, Difference
* Rational Numbers: Sum, Difference
* Products: Integers, Rational Numbers
* Quotients: Integers, Rational Numbers
* Rational Number Problem Solving
* Ratios, Rates, and Unit Rates
* Proportional Relationships: Equivalent Ratios, Constant of Proportionality
* Graphs of Proportional Relationships
* Proportional Problem Solving
* **Marking Period 1 Review and Assessment**

**Marking Period 2: Percent Problems, Expressions, and Equations**

* Percents of Numbers
* Percents and Proportions
* Percent Equation
* Percent Change and Percent Error
* Markup and Markdown
* Simple Interest
* Algebraic Expressions: Write, Evaluate, Equivalence
* Simplification of Expressions
* Expressions: Expansion, Factorization
* Expressions: Sum, Difference
* Problem Solving with Expressions
* Two-Step Equations
* **Marking Period 2 Review and Assessment**

 **Marking Period 3: Inequalities, Statistics, and Probability**

* One-Step Inequalities
* Two-Step Inequalities
* Multi-Step Inequalities
* Populations and Samples
* Inferences from Data
* Comparative Inferences about Populations
* Likelihood and Probability
* Theoretical Probability
* Experimental Probability
* Probability Models
* Compound Events
* **Marking Period 3 Review and Assessment**

 **Marking Period 4: Geometry, Grade 7 PSSA Preparation and Assessment, Pre-Algebra 8 Preparation, and Mathematics Placement Exam(s) for Honors Algebra 1 Grade 8**

* Scale Drawings
* Drawings of Geometric Figures
* Triangles
* Geometric Problem Solving: Angle Relationships, Circle Circumference and Area
* Cross Sections
* Problem Solving: Surface Area, Volume
* **Grade 7 PSSA Math Preparation and Assessment**
	+ The Number System
	+ Ratios and Proportional Relationships
	+ Expressions and Equations
	+ Geometry
	+ Statistics and Probability
* Pre-Algebra Grade 8 Preparation
	+ Expressions: Rational Numbers (Additional practice and Enrichment)
	+ Equations: (Additional practice and Enrichment)
* Mathematics Placement Exam(s) for Honors Algebra 1 Grade 8

**Standards/Eligible Content and Skills**

| **Performance Indicator** | **PA Core Standard and/or Eligible Content** | **Marking Period Taught**  |
| --- | --- | --- |
| Relate integers and their opposites. | M07.A-N.1.1.1 | MP1 |
| Understand rational numbers. | M07.A-N.1.1.1 | MP1 |
| Add Integers. | M07.A-N.1.1.1 | MP1 |
| Subtract Integers. | M07.A-N.1.1.1 | MP1 |
| Add and subtract rational numbers. | M07.A-N.1.1.1 | MP1 |
| Represent addition and subtraction on a horizontal number line or vertical number line. | M07.A-N.1.1.2 | MP1 |
| Multiply integers. | M07.A-N.1.1.1 | MP1 |
| Multiply rational numbers. | M07.A-N.1.1.3 | MP1 |
| Divide integers. | M07.A-N.1.1.1 | MP1 |
| Divide rational numbers. | M07.A-N.1.1.3 | MP1 |
| Use properties of operations with rational numbers. | M07.A-N.1.1.3 | MP1 |
| Solve real-world and mathematical multi-step problems with rational numbers. | M07.A-N.1.1 | MP1 |
| Determine the reasonableness of answer(s) and interpret the solution(s) in the context of the problem with multi-step problems with rational numbers. | M07.B-E.2.3.1 | MP1 |
| Unit rates: find, use, compare, problem solve. | M07.A-R.1.1.1 | MP1 |
| Find unit rates involving fractions. | M07.A-R.1.1.1 | MP1 |
| Find and apply unit rates involving fractions. | M07.A-R.1.1.1 | MP1 |
| Solve real-world and mathematical problems using unit rates. | M07.A-R.1.1.1 | MP1 |
| Recognize proportional relationships. | M07.A-R.1.1.2 | MP1 |
| Decide whether quantities are proportional. | M07.A-R.1.1.2 | MP1 |
| Solve real-world and mathematical problems with proportions. | M07.A-R.1.1 | MP1 |
| Write equations with a constant of proportionality to represent proportional relationships. | M07.A-R.1.1.3M07.A-R.1.1.4 | MP1 |
| Solve real-world and mathematical problems with proportion equations. | M07.A-R.1.1 | MP1 |
| Graph to recognize proportional relationships. | M07.A-R.1.1.2M07.A-R.1.1.3M07.A-R.1.1.5 | MP1 |
| Interpret graphs of proportional relationships. | M07.A-R.1.1.2M07.A-R.1.1.3M07.A-R.1.1.5M07.B-E.2.3.1 | MP1 |
| Identify graphs of proportional relationships. | M07.A-R.1.1.2M07.A-R.1.1.3M07.A-R.1.1.5 | MP1 |
| Use proportional reasoning to solve problems. | M07.A-R.1.1 | MP1 |
| Recognize when to use proportional reasoning. | M07.A-R.1.1M07.B-E.2.3.1 | MP1 |
| Apply proportional reasoning. | M07.A-R.1.1M07.B-E.2.3.1 | MP1 |
| **Marking Period 1 Review and Assessment** |  | **MP1** |
| * Review and demonstrate knowledge of Integers and Rational Numbers.
 |  | MP1 |
| * Review and demonstrate knowledge of Proportional Relationships.
 |  | MP1 |
| Find the percent of a number. | M07.A-R.1.1.6 | MP2 |
| Use percent greater than 100%. | M07.A-R.1.1.6 | MP2 |
| Use percent less than 1%. | M07.A-R.1.1.6 | MP2 |
| Use real-world and mathematical problems involving a proportion: to find the percent, to find the part, to find the whole. | M07.A-R.1.1.6 | MP2 |
| Use real-world and mathematical problems involving the percent equation: to find the percent, to find the part, to find the whole. | M07.A-R.1.1.4M07.A-R.1.1.6 | MP2 |
| Determine the reasonableness of answer(s) and interpret the solution(s) in the context of the problem involving a proportion or the percent equation. | M07.B-E.2.3.1 | MP2 |
| Solve percent change and percent error problems. | M07.A-R.1.1.6 | MP2 |
| Find the percent markup. | M07.A-R.1.1.6 | MP2 |
| Find the selling price. | M07.A-R.1.1.6 | MP2 |
| Find markdown and sales tax. | M07.A-R.1.1.6 | MP2 |
| Solve real-world and mathematical problems by applying properties of operations to calculate between numbers in any form. | M07.A-N.1.1M07.A-R.1.1M07.B-E.2.1.1 | MP2 |
| Determine the reasonableness of answer(s) and interpret the solution(s) in the context of the problem applying properties of operations to calculate between numbers in any form. | M07.B-E.2.3.1 | MP2 |
| Apply percent reasoning to solve simple interest problems: simple interest, percent of interest, principal. | M07.A-R.1.1.6M07.B-E.2.1.1M07.B-E.2.3.1 | MP2 |
| Write and evaluate algebraic expressions. | M07.B-E.1.1.1 | MP2 |
| Use properties of operations to write equivalent expressions. | M07.B-E.1.1.1 | MP2 |
| Identify equivalent expressions. | M07.B-E.1.1.1 | MP2 |
| Use properties of operations to simplify expressions. | M07.B-E.1.1.1 | MP2 |
| Expand expressions using the Distributive Property. | M07.B-E.1.1.1 | MP2 |
| Use common factoring and the Distributive Property to factor expressions. | M07.B-E.1.1.1 | MP2 |
| Add and subtract expressions that represent real-world and mathematical problems. | M07.B-E.1.1.1 | MP2 |
| Write equivalent expressions. | M07.B-E.1.1 | MP2 |
| Analyze and interpret equivalent expressions in real-world and mathematical problems. | M07.B-E.1.1M07.B-E.2.3.1 | MP2 |
| Write two-step equations. | M07.B-E.2.2M07.B-E.2.2.1 | MP2 |
| Interpret quantities and operations in two-step equations. | M07.B-E.2.2.1M07.B-E.2.3.1 | MP2 |
| Solve two-step equations. | M07.B-E.2.2.1 | MP2 |
| Solve real-world and mathematical problems with two-step equation. | M07.B-E.2.2.1 | MP2 |
| Solve equations using the Distributive Property. | M07.B-E.2.2.1 | MP2 |
| **Marking Period 2 Review and Assessment** |  | **MP2** |
| * Review and demonstrate knowledge of Percent Problems.
 |  | MP2 |
| * Review and demonstrate knowledge of Expressions.
 |  | MP2 |
| * Review and demonstrate knowledge of Equations.
 |  | MP2 |
| Write, solve, and graph inequalities using addition or subtraction. | M07.B-E.2.2M07.B-E.2.2.2 | MP3 |
| Write, solve, and graph inequalities using multiplication or division. | M07.B-E.2.2M07.B-E.2.2.2 | MP3 |
| Write, solve and graph two-step inequalities. | M07.B-E.2.2M07.B-E.2.2.2 | MP3 |
| Write, solve, and graph multi-step inequalities. | M07.B-E.2.2M07.B-E.2.2.2 | MP3 |
| Solve real-world and mathematical problems with inequalities. | M07.B-E.2.2M07.B-E.2.2.2 | MP3 |
| Understand populations and samples. | M07.D-S.1.1.1M07.D-S.1.1.2 | MP3 |
| Describe a representative sample. | M07.D-S.1.1.1M07.D-S.1.1.2 | MP3 |
| Generate a random or multiple random samples. | M07.D-S.1.1.1M07.D-S.2.1.1 | MP3 |
| Draw qualitative inferences from data. | M07.D-S.1.1.1M07.D-S.2.1.1 | MP3 |
| Compare inferences based on different samples. | M07.D-S.2.1.1 | MP3 |
| Make an estimate from sample data. | M07.D-S.1.1.2 | MP3 |
| Use box-and-whisker plots to compare populations. | M07.D-S.2.1.1 | MP3 |
| Draw inferences and compare using median and interquartile range. | M07.D-S.2.1.1 | MP3 |
| Draw inferences and compare using measures of center and variability. | M07.D-S.2.1.1 | MP3 |
| Use dot plots to compare populations. | M07.D-S.2.1.1 | MP3 |
| Use measures of center and variability to compare populations. | M07.D-S.2.1.1 | MP3 |
| Use statistical measures to make predictions. | M07.D-S.1.1.2 | MP3 |
| Use probability to describe chance. | M07.D-S.3.1.1 | MP3 |
| Use probability and likelihood to describe situations. | M07.D-S.3.1.1 | MP3 |
| Use probabilities to examine fairness. | M07.D-S.3.1.1 | MP3 |
| Determine the theoretical probability of an event to make predictions. | M07.D-S.3.2.1M07.D-S.3.2.2 | MP3 |
| Determine the experimental probability of an event to make predictions. | M07.D-S.3.2.1M07.D-S.3.2.2 | MP3 |
| Compare theoretical and experimental probability. | M07.D-S.3.2.1 | MP3 |
| Explain the differences between theoretical and experimental probability. | M07.D-S.3.2.1 | MP3 |
| Use probability models to find probabilities of events to evaluate and estimate situations. | M07.D-S.3.2.1CC.2.4.7.B.E | MP3 |
| Find all possible outcomes. | M07.D-S.3.2 | MP3 |
| Use a table and organized lists to represent sample spaces. | M07.D-S.3.2.3 | MP3 |
| Find the probability of compound events: using tables, using a tree diagram, using an organized list. | M07.D-S.3.2.3 | MP3 |
| Simulate a compound event to approximate its probability. | M07.D-S.3.2.3 | MP3 |
| **Marking Period 3 Review and Assessment** |  | **MP3** |
| * Review and demonstrate knowledge of Inequalities.
 |  | MP3 |
| * Review and demonstrate knowledge of Statistics.
 |  | MP3 |
| * Review and demonstrate knowledge of Probability.
 |  | MP3 |
| Find actual lengths using scale drawings. | M07.C-G.1.1.1 | MP4 |
| Use scale factor to solve real-world and mathematical area problems. | M07.C-G.1.1.1 | MP4 |
| Draw geometric figures with given conditions. | M07.C-G.1.1.1 | MP4 |
| Draw a geometric figure to solve a real-world and mathematical problem. | M07.C-G.1.1.1 | MP4 |
| Draw triangles when given information about their side lengths and angle measures. | M07.C-G.1.1.2 | MP4 |
| Use and apply the Triangle Inequality Theorem: The sum of any 2 sides of a triangle must be greater than the measure of the third side. | M07.C-G.1.1.3 | MP4 |
| Identify and describe properties of all types of triangles based on angle and side measures: acute, right, obtuse, equiangular, scalene, isosceles, equilateral. | M07.C-G.1.1.2 | MP4 |
| Identify and use properties of adjacent, vertical, complementary, and supplementary angles in multi-step problems to write and solve simple equations for an unknown angle in a figure. | M07.C-G.2.1.1 | MP4 |
| Solve real-world and mathematical problems involving adjacent and vertical angles. | M07.C-G.2.1.1 | MP4 |
| Solve real-world and mathematical problems involving complementary and supplementary angles. | M07.C-G.2.1.1 | MP4 |
| Identify and use properties of angles formed when two parallel lines are cut by a transversal: alternate interior, alternate exterior, vertical, corresponding. | M07.C-G.2.1.2 | MP4 |
| Describe parts of a circle. | M07.C-G.1.1M07.C-G.2.2.1 | MP4 |
| Find and use the circumference of a circle to solve real-world and mathematical problems. | M07.C-G.2.2.1 | MP4 |
| Find and use the area of a circle to solve real-world and mathematical problems. | M07.C-G.2.2.1 | MP4 |
| Use the circumference of a circle to find the area. | M07.C-G.2.2.1 | MP4 |
| Determine what the cross section (two-dimensional figure) looks like when a three-dimensional figure is sliced. | M07.C-G.1.1.4 | MP4 |
| Find the area of two-dimensional composite shapes.  | M07.C-G.2.2.2 | MP4 |
| Find the surface area of three-dimensional prisms. | M07.C-G.2.2.2 | MP4 |
| Solve real-world and mathematical problems involving surface area. | M07.C-G.2.2.2 | MP4 |
| Use the area of the base of a three-dimensional figure to find the volume. | M07.C-G.2.2.2 | MP4 |
| Find volumes of composite figures. | M07.C-G.2.2.2 | MP4 |
| Solve real-world and mathematical problems involving volume. | M07.C-G.2.2.2 | MP4 |
| **Grade 7 PSSA Math Preparation and Assessment** |  | **MP4** |
| * Review and demonstrate knowledge of the Number System.
 | M07.A-N.1.1 | MP4 |
| * Review and demonstrate knowledge of Ratios and Proportional Relationships.
 | M07.A-R.1.1 | MP4 |
| * Review and demonstrate knowledge of Expressions and Equations.
 | M07.B-E.1.1M07.B-E.2.1M07.B-E.2.2M07.B-E.2.3 | MP4 |
| * Review and demonstrate knowledge of Geometry.
 | M07.C-G.1.1M07.C-G.2.1M07.C-G.2.2 | MP4 |
| * Review and demonstrate knowledge of Statistics and Probability.
 | M07.D-S.1.1M07.D-S.2.1M07.D-S.3.1M07.D-S.3.2 | MP4 |
| Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients(Additional practice and Enrichment) | MO7.A-N.1.1.1MO7.B-3.1.1.1 | MP4 |
| Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers. (Additional practice and Enrichment) | MO7.A-N.1.1M07.B-E.2.1M07.B-E.2.3 | MP4 |
| Solve two-step equations. (Additional practice and Enrichment) | M07.B-E.2.1M07.B-E.2.2M07.B-E.2.3 | MP4 |
| Solve equations using the Distributive Property.(Additional practice and Enrichment) | M07.B-E.2.1M07.B-E.2.2M07.B-E.2.3 | MP4 |
| Solve real-world and mathematical problems with two-step equations and using the Distributive Property. (Additional practice and Enrichment) | M07.B-E.2.1M07.B-E.2.2M07.B-E.2.3 | MP4 |
| **Mathematics Placement Exam: Honors Algebra 1 Grade 8** |  | **MP4** |

**ASSESSMENTS**

**PDE Academic Standards, Assessment Anchors, and Eligible Content:** The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

**Formative Assessments:** The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

**Effective formative assessments for this course include:
Suggested but not limited to:**

* Pre-assessments of prior knowledge (e.g., Entrance cards or KWL chart)
* Bellringers/Problems of the Day (PODs)
* Discussions
* Exit ticket
* Teacher observations/Questioning
* Graphic organizers (e.g., Venn Diagrams, word mapping, webbing, KWL chart, etc.)
* Outlining
* Cooperative learning
* Written work
* Quizzes
* Oral response
* Self-evaluation
* Homework
* Summarizing
* Note-taking

**Summative Assessments:** The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

**Effective summative assessments for this course include:
Suggested but not limited to:**

* Performance assessment
* Chapter/unit tests
* Quizzes
* Marking period assessments
* Projects
* Student presentations