

Middle School Math Competencies

| Mathematics Classification | Grades 6 - 8 | | | | |
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| | Competency | Competency | Standards | | |
| | | | 6 th Grade | 7 th Grade | 8 th Grade |
| Ratios and Proportional Relationships | Understand and analyze proportional relationships and use them to make sense of and solve problems. | | | | |
| | Express and use ratios and rates in real-world and mathematical problems. | MS 1.1 | 6.RP.1,3a,3c | | |
| | Solve real-world problems involving percentages. | MS 1.2 | 6.RP.3b | | |
| | Use the probability of a chance event to determine the likelihood of the event occurring. | MS 1.3 | | 7.SP.C5,6,7,8 | |
| | Express and use unit rates in real-world and mathematical problems. | MS 1.4 | 6.RP.2 | 7.RP.1,2b,2d | |
| | Solve problems involving proportional relationships. | MS 1.5 | 6.RP.3 | 7.RP.2a,c,3 | |
| | Use proportional reasoning to solve problems involving scale drawings. (Extended) | MS 1.6 | | 7.G.1 | |
| Number Systems | Apply number sense and mathematical operations within number systems to solve problems. | | | | |
| | Solve problems involving division of fractions and interpret the meaning of the quotient as related to the context of the problem. | MS 2.1 | 6.NS.1 | 7.NS.3 | |
| | Fluently (effectively, accurately, and flexibly) divide whole numbers in context. | MS 2.2 | 6.NS.2 | 7.NS.3 | |
| | Fluently (effectively, accurately, and flexibly) add and subtract rational numbers expressed as decimals in context. | MS 2.3 | 6.NS.3 | 7.NS.3 | |
| | Fluently (effectively, accurately, and flexibly) multiply and divide rational numbers expressed as decimals in context. | MS 2.4 | 6.NS.3 | 7.NS.3 | |
| | Extend understanding of the real number system to integers and absolute values. | MS 2.5 | 6.NS.5,6,7,8 | 7.NS.1 | |
| | Add and subtract rational numbers expressed as integers in context. | MS 2.6 | | 7.NS.1,3 | |
| | Multiply and divide rational numbers expressed as integers in context. | MS 2.7 | | 7.NS.2,3 | |
| Identify and use irrational numbers in context. | MS 2.8 | | | 8.NS.1, 2 | |
| Expressions and Equations | Create, interpret, use and analyze patterns of algebraic structures to make sense of problems. | | | | |
| | Write and evaluate numerical and algebraic expressions using rational numbers. | MS 3.1 | 6.EE.1,2a,2c | | |
| | The student can add and subtract algebraic expressions. | MS 3.2 | | 7.EE.1 | |
| | Find the greatest common factor and least common multiple for two whole numbers. | MS 3.3 | 6.NS.4 | | |
| | Use the distributive property to factor and expand algebraic expressions. | MS 3.4 | | 7.EE.1 | |
| | Identify and generate equivalent expressions by applying the properties of operations. | MS 3.5 | 6.EE.2b,3,5 | 7.EE.2 | |
| | Evaluate multi-step expressions to solve mathematical problems. | MS 3.6 | | 7.EE.A.3 | |
| | Write one-variable equations and inequalities for mathematical and real-world problems and determine solutions through substitution and solving. | MS 3.7 | 6.EE.4,6,7 | 7.EE.4b | |
| | Represent and solve equations in real-world and mathematical problems. | MS 3.8 | | 7.EE.4 | 8.EE.7 |
| | Represent and solve inequalities in real-world and mathematical problems. | MS 3.9 | | 7.EE.4 | |
| | Represent and analyze quantitative relationships between dependent and independent variables. | MS 3.10 | 6.EE.8 | | |
| | Understand the connections between proportional relationships, lines and linear equations. | MS 3.11 | | | 8.EE.4, 5,6 |
| Solve equations involving square and cube roots. | MS 3.12 | | | 8.EE.1 | |
| Functions | A successful student can use functions to interpret and analyze a variety of contexts. | | | | |

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| | The student can define and evaluate a function. | MS 4.1 | | | 8.F.1 |
| | The student can recognize and compare linear functions. | MS 4.2 | | | 8.F.2,3 |
| | The student can use functions to model and describe relationships between quantities. | MS 4.3 | | | 8.F.4,5 |
| Geometry | A successful student can prove, understand, and model geometric concepts using appropriate tools and theorems to solve problems and apply logical reasoning. | | | | |
| | The student can solve real-world and mathematical problems involving area of 2-D polygons. | MATH.MS 5.1 | 6.G.1,3 | 7.G.6 | |
| | A student can solve real-world and mathematical problems involving circumference and area of circles. | MATH.MS 5.2 | | 7.G.4,6 | 8.G.10 |
| | A student can solve real-world and mathematical problems involving volume of prisms and cylinders. | MATH.MS 5.3 | 6.G.2 | 7.G.5,6 | |
| | A student can solve real-world and mathematical problems involving volume of pyramids and cones. (Extended) | MS € | | | 8.G.10,11,12 |
| | A student can solve real-world and mathematical problems involving surface area of prisms and cylinders. | MATH.MS 5.4 | 6.G.4 | 7.G.5,6 | 8.G.10,11,12 |
| | A student can solve real-world and mathematical problems involving surface area of pyramids and cones. (Extended) | MS € | 6.G.4 | | 8.G.10,11,12 |
| | The student can apply concepts of angle measurements and angle relationships. | MATH.MS 5.5 | | | 8.G.1,2,3,4,5 |
| | The student can apply properties of triangles to solve problems. | MATH.MS 5.6 | | | 8.G.5,6 |
| | A student can develop and apply the Pythagorean theorem to solve real-world problems. (Extended) | | | | 8.G.7, 8.G.8, 8.G.9 |
| Statistics | A successful student can use a variety of data analysis and statistics strategies to analyze, develop and evaluate inferences based on data. | | | | |
| | The student can apply concepts of statistical measures of center and variability to summarize and describe one-variable data distributions. | MS 6.1 | 6.SP.1,2,3,4,5 | | |
| | The student can use random sampling to draw inferences about a population. | MS 6.2 | | 7.SP.1,2,3,4 | |
| | The student can interpret patterns of association in two-variable data. | MS 6.3 | | | 8.SP.1,2,3 8.F.3,5 |
| MATHEMATICAL PRACTICES Problem Solving, Modeling and Communicating Reasoning | Demonstrate the ability to use the eight mathematical practices fluidly across skills and concepts. <ol style="list-style-type: none"> 1) Make sense of problems and persevere in solving them. 2) Reason abstractly and quantitatively. 3) Construct viable arguments and critique the reasoning of others. 4) Model with Mathematics. 5) Use appropriate tools strategically 6) Attend to precision 7) Look for and make use of structure 8) Look for and express regularity in repeated reasoning. | | | | |