



Math Teachers Press, Inc.

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NEW YORK STATE LEARNING STANDARDS FOR MATHEMATICS CORRELATED TO *MOVING WITH MATH® EXTENSIONS GRADE 5*

| | | Student Book | Skill Builders |
|---|---|--------------------|----------------|
| PROBLEM SOLVING | | | |
| Students will build new mathematical knowledge through problem solving. | | | |
| 5.PS.1 | Know the difference between relevant and irrelevant information when solving problems | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| 5.PS.2 | Understand that some ways of representing a problem are more efficient than others | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| 5.PS.3 | Interpret information correctly, identify the problem, and generate possible strategies and solutions | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| Students will solve problems that arise in mathematics and in other contexts. | | | |
| 5.PS.4 | Act out or model with manipulatives activities involving mathematical content from literature | | |
| 5.PS.5 | Formulate problems and solutions from everyday situations | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| 5.PS.6 | Translate from a picture/diagram to a numeric expression | 1, 17, 19, 24, 29 | |
| 5.PS.7 | Represent problem situations verbally, numerically, algebraically, and/or graphically | 1 | |
| 5.PS.8 | Select an appropriate representation of a problem | 14 | |
| 5.PS.9 | Understand the basic language of logic in mathematical situations (and, or, not) | | |
| Students will apply and adapt a variety of appropriate strategies to solve problems. | | | |
| 5.PS.10 | Work in collaboration with others to solve problems | 13, 14, 26, 48, 49 | 45-1 to 45-5 |

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| 5.PS.11 | Translate from a picture/diagram to a number or symbolic expression | 1, 17, 19, 24, 29 | |
| 5.PS.12 | Use trial and error and the process of elimination to solve problems | | |
| 5.PS.13 | Model problems with pictures/diagrams or physical objects | 24 | |
| 5.PS.14 | Analyze problems by observing patterns | | 44-1 |
| 5.PS.15 | Make organized lists or charts to solve numerical problems | 14 | |
| | Students will monitor and reflect on the process of mathematical problem solving. | | |
| 5.PS.16 | Discuss with peers to understand a problem situation | | |
| 5.PS.17 | Determine what information is needed to solve problems | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| 5.PS.18 | Determine the efficiency of different representations of a problem | | |
| 5.PS.19 | Differentiate between valid and invalid approaches | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| 5.PS. 20 | Understand valid counterexamples | | |
| 5.PS.21 | Explain the methods and reasoning behind the problem solving strategies used | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| 5.PS.22 | Discuss whether a solution is reasonable in the context of the original problem | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| 5.PS.23 | Verify results of a problem | 13, 14, 26, 48, 49 | 45-1 to 45-5 |
| | REASONING AND PROOF | | |
| | Students will recognize reasoning and proof as fundamental aspects of mathematics. | | |
| 5.RP.1 | Recognize that mathematical ideas can be supported using a variety of strategies | 26 | 45-1 |
| 5.RP.2 | Understand that mathematical statements can be supported, using models, facts, and relationships to explain their thinking | 3-6 | |
| | Students will make and investigate mathematical conjectures. | | |

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| 5.RP.3 | Investigate conjectures, using arguments and appropriate mathematical terms | | |
| 5.RP.4 | Make and evaluate conjectures, using a variety of strategies | | |
| | Students will develop and evaluate mathematical arguments and proofs. | | |
| 5.RP.5 | Justify general claims or conjectures, using manipulatives, models, expressions, and mathematical relationships | | |
| 5.RP.6 | Develop and explain an argument verbally, numerically, and/or graphically | | |
| 5.RP.7 | Verify claims other students make, using examples and counterexamples when appropriate | Journal Prompt p. 18 | |
| | Students will select and use various types of reasoning and methods of proof. | | |
| 5.RP.8 | Support an argument through examples/counterexamples and special cases | | |
| | COMMUNICATION | | |
| | Students will organize and consolidate their mathematical thinking through communication. | | |
| 5.CM.1 | Provide an organized though process that is correct, complete, coherent, and clear | 13 | |
| 5.CM.2 | Explain a rationale for strategy selection | T.G.. p. 26 | |
| 5.CM.3 | Organize and accurately label work | 22 | |
| | Students will communicate their mathematical thinking coherently and clearly to peers, teachers, and others. | | |
| 5.CM.4 | Share organized mathematical ideas through the manipulation of objects, numerical tables, drawings, pictures, charts, graphs, tables, diagrams, models, and symbols in written and verbal form | Throughout | |
| 5.CM.5 | Answer clarifying questions from others | Scripted questions in lesson plans | |

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| | Students will analyze and evaluate the mathematical thinking and strategies of others. | | |
| 5.CM.6 | Understand mathematical solutions shared by other students | T.G. p. 26 | |
| 5.CM.7 | Raise questions that elicit, extend, or challenge others' thinking | Scripted questions in lesson plans. | |
| 5.CM.8 | Consider strategies used and solutions found by others in relation to their own work | 13, 26 Cooperative group activities | |
| | | | |
| | Students will use the language of mathematics to express mathematical ideas precisely. | | |
| 5.CM.9 | Increase their use of mathematical vocabulary and language when communicating with others | Glossary (Masters 15a - 15c) | |
| 5.CM.10 | Use appropriate vocabulary when describing objects, relationships, mathematical solutions, and rationale | Glossary (Masters 15a-15c) | |
| 5.CM.11 | Decode and comprehend mathematical visuals and symbols to construct meaning | 28 | 11-1 |
| | | | |
| | CONNECTIONS | | |
| | Students will recognize and use connections among mathematical ideas. | | |
| 5.CN.1 | Understand and make connections and conjectures in their everyday experiences to mathematical ideas | 4, 13, 21 | 46-1 |
| 5.CN.2 | Explore and explain the relationship between mathematical ideas | 1-6, 14 | 3-1, 3-2 |
| 5.CN.3 | Connect and apply mathematical information to solve problems | 42-45 | 23-1, 26-1 |
| | | | |
| | Students will understand how mathematical ideas interconnect and build on one another to produce a coherent whole. | | |
| 5.CN.4 | Understand multiple representations and how they are related | 1, 63 | 47-2 |
| 5.CN.5 | Model situations with objects and representations and be able to draw conclusions | Throughout | |
| | | | |

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| | Students will recognize and apply mathematics in contexts outside of mathematics. | | |
| 5.CN.6 | Recognize and provide examples of the presence of mathematics in their daily lives | 4, 13, 21, 40 | 46-1 |
| 5.CN.7 | Apply mathematics to problem situations that develop outside of mathematics | 4, 13, 21, 40 | 46-1 |
| 5.CN.8 | Investigate the presence of mathematics in careers and areas of interest | | |
| 5.CN.9 | Recognize and apply mathematics to other disciplines and areas of interest | 3 | |
| | | | |
| | REPRESENTATION | | |
| | Students will create and use representations to organize, record, and communicate mathematical ideas. | | |
| 5.R.1 | Use physical objects, drawings, charts, tables, graphs, symbols, equations, or objects created using technology as representations | | |
| 5.R.2 | Explain, describe, and defend mathematical ideas using representations | 63 | |
| 5.R.3 | Read, interpret, and extend external models | | |
| 5.R.4 | Use standard and nonstandard representations with accuracy and detail | | |
| | | | |
| | Students will select, apply, and translate among mathematical representations to solve problems | | |
| 5.R.5 | Use representations to explore problem situations | 63 | 47-2 |
| 5.R.6 | Investigate relationships between different representations and their impact on a given problem | | |
| | | | |
| | Students will use representations to model and interpret physical, social, and mathematical phenomena. | | |
| 5.R.7 | Use mathematics to show and understand physical phenomena (e.g., determine the perimeter of a bulletin board) | Throughout | |
| 5.R.8 | Use mathematics to show and understand social phenomena (e.g., construct tables to organize data showing book sales) | T.G. p. 48 | |

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| 5.R.9 | Use mathematics to show and understand mathematical phenomena (e.g., find the missing value that makes the equation true: $(3 + 4) + 5 = 3 + (4 + \underline{\quad})$) | 8 | 5-1, 5-2 |
| NUMBER SENSE AND OPERATIONS | | | |
| Students will understand numbers, multiple ways of representing numbers, relationships among numbers, and number systems. | | | |
| 5.N.1 | Read and write whole numbers to millions | 1, 2 | 1-1 |
| 5.N.2 | Compare and order numbers to millions | 3 | 2-1 |
| 5.N.3 | Understand the place value structure of the base ten number system | | |
| | • 10 ones = 1 ten | 1, 2 | 1-1 |
| | • 10 tens = 1 hundred | 1, 2 | 1-1 |
| | • 10 hundreds = 1 thousand | 1, 2 | 1-1 |
| | • 10 thousands = 1 ten thousands | 2 | 1-1 |
| | • 10 ten thousands = 1 hundred thousand | 2 | 1-1 |
| | • 10 hundred thousands = 1 million | 2 | 1-1 |
| 5.N.4 | Create equivalent fractions, given a fraction | 28-31, 33 | 11-1, 11-2, 12-1 to 12-3 |
| 5.N.5 | Compare and order fractions including unlike denominators (with and without the use of a number line) <i>Note: Commonly used fractions such as those that might be indicated on ruler, measuring cup, etc.</i> | 32 | 13-1 |
| 5.N.6 | Understand the concept of ratio | T.G. p. 32 30 | |
| 5.N.7 | Express ratios in different forms | 30, 32 | |
| 5.N.8 | Read, write, and order decimals to thousandths | 40-43, 45 | 21-1, 22-1, 23-1, 25-1 |
| 5.N.9 | Compare fractions using $<$, $>$, or $=$ | 32 | 13-1 |
| 5.N.10 | Compare decimals using $<$, $>$, or $=$ | 44 | |
| 5.N.11 | Understand that percent means part of 100, and write percents as fractions and decimals | | |
| 5.N.12 | Recognize that some numbers are only divisible by one and themselves (prime) and others have multiple divisors (composite) | | 4-1 |

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| 5.N.13 | Calculate multiples of a whole number and the least common multiple of two numbers | 36 | |
| 5.N.14 | Identify the factors of a given number | 7 | 4-1 |
| 5.N.15 | Find the common factors and the greatest common factor of two numbers | 7 | 4-1 |
| | | | |
| | Students will understand meanings of operations and procedures, and how they relate to one another. | | |
| 5.N.16 | Use a variety of strategies to multiply three-digit by three-digit numbers <i>Note: Multiplication by anything greater than a three-digit multiplier/multiplicand should be done using technology.</i> | 15-17 | 8-1 to 8-3 |
| 5.N.17 | Use a variety of strategies to divide three-digit numbers by one- and two-digit numbers <i>Note: Division by anything greater than a two-digit divisor should be done using technology.</i> | 19, 20, 23-25 | 9-1, 10-1 to 10-3 |
| 5.N.18 | Evaluate an arithmetic expression using order of operations including multiplication, division, addition, subtraction and parentheses | | |
| 5.N.19 | Simplify fractions to lowest terms | 31 | 12-2 |
| 5.N.20 | Convert improper fractions to mixed numbers, and mixed numbers to improper fractions | | 14-1, 15-1 |
| 5.N.21 | Use a variety of strategies to add and subtract fractions with like denominators | 33, 34, 37, 38 | 14-1, 15-1 to 15-3, 17-1 to 17-4 |
| 5.N.22 | Add and subtract mixed numbers with like denominators | 35 | 16-1 |
| 5.N.23 | Use a variety of strategies to add, subtract, multiply, and divide decimals to thousandths | 46, 47 | 26-1 |
| | | | |
| | Students will compute accurately and make reasonable estimates. | | |
| 5.N.24 | Round numbers to the nearest hundredth and up to 10,000 | 4-6 | 3-1, 3-2 |
| 5.N.25 | Estimate sums and differences of fractions with like denominators | | |
| 5.N.26 | Estimate sums differences, products, and quotients of decimals | 18 | 50-1 |
| 5.N.27 | Justify the reasonableness of answers using estimation | 12 | 49-2 |

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| ALGEBRA | | | |
| | Students will represent and analyze algebraically a wide variety of problem solving situations. | | |
| 5.A.1 | Define and use appropriate terminology when referring to constants, variables, and algebraic expressions | | |
| 5.A.2 | Translate simple verbal expressions into algebraic expressions | | |
| | Students will perform algebraic procedures accurately. | | |
| 5.A.3 | Substitute assigned values into variable expressions and evaluate using order of operations | | |
| 5.A.4 | Solve simple one-step equations using basic whole-number facts | | |
| 5.A.5 | Solve and explain simple one-step equations using inverse operations involving whole numbers | | 45-5 |
| 5.A.6 | Evaluate the perimeter formula for given input values | | |
| | Students will recognize, use, and represent algebraically patterns, relations, and functions. | | |
| 5.A.7 | Create and explain patterns and algebraic relationships (e.g., 2, 4, 6, 8,...) algebraically: $2n$ (doubling) | 27 | 44-1 |
| 5.A.8 | Create algebraic or geometric patterns using concrete objects or visual drawings (e.g., rotate and shape geometric shapes) | | |
| GEOMETRY | | | |
| | Students will use visualization and spatial reasoning to analyze characteristics and properties of geometric shapes. | | |
| 5.G.1 | Calculate the perimeter of regular and irregular polygons | 57 | 38-1 |
| | Students will identify and justify geometric relationships, formally and informally. | | |
| 5.G.2 | Identify pairs of similar triangles | | |

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| 5.G.3 | Identify the ratio of corresponding sides of similar triangles | | |
| 5.G.4 | Classify quadrilaterals by properties of their angles and sides | | |
| 5.G.5 | Know that the sum of the interior angles of a quadrilateral is 360 degrees | | |
| 5.G.6 | Classify triangles by properties of their angles and sides | | |
| 5.G.7 | Know that the sum of the interior angles of a triangle is 180 degrees | | |
| 5.G.8 | Find a missing angle when given two angles of a triangle | | 32-2 |
| 5.G.9 | Identify pairs of congruent triangles | | |
| 5.G.10 | Identify corresponding parts of congruent triangles | | |
| | Students will apply transformations and symmetry to analyze problem solving situations. | | |
| 5.G.11 | Identify and draw lines of symmetry of basic geometric shapes | | |
| | Students will apply coordinate geometry to analyze problem solving situations. | | |
| 5.G.12 | Identify and plot points in the first quadrant | | 44-2 |
| 5.G.13 | Plot points to form basic geometric shapes (identify and classify) | | |
| 5.G.14 | Calculate perimeter of basic geometric shapes drawn on a coordinate plane (rectangles and shapes composed of rectangles having sides with integer lengths and parallel to the axes) | | |
| | MEASUREMENT | | |
| | Students will determine what can be measured and how, using appropriate methods and formulas. | | |
| 5.M.1 | Use a ruler to measure to the nearest inch, $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ inch | 56 | |
| 5.M.2 | Identify customary equivalent units of length | 55, 56 | 36-1 |
| 5.M.3 | Measure to the nearest centimeter | | |

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| 5.M.4 | Identify equivalent metric units of length | | |
| 5.M.5 | Convert measurement within a given system | 55, 56, 61, 62 | 36-1, 41-1, 42-1 |
| 5.M.6 | Determine the tool and technique to measure with an appropriate level of precision: lengths and angles | 55, 56 | 36-1 |
| | Students will use units to give meaning to measurements. | | |
| 5.M.7 | Calculate elapsed time in hours and minutes | 60 | 40-1 |
| 5.M.8 | Measure and draw angles using a protractor | | |
| | Students will develop strategies for estimating measurements. | | |
| 5.M.9 | Determine personal references for customary units of length (e.g., your pace is approximately 63 feet, your height is approximately 5 feet, etc.) | T.G. p. 56 | |
| 5.M.10 | Determine personal references for metric units of length | | |
| 5.M.11 | Justify the reasonableness of estimates | 26 | 4-5 |
| | STATISTICS AND PROBABILITY | | |
| | Students will collect, organize, display, and analyze data. | | |
| 5.S.1 | Collect and record data from a variety of sources (e.g., newspapers, magazines, polls, charts, and surveys) | 22, 63, 64 | 47-1, 47-2, 48-1 |
| 5.S.2 | Display data in a line graph to show an increase or decrease over time | | 48-1 |
| 5.S.3 | Calculate the mean for a given set of data and use to describe a set of data | 21 | 46-1, 46-2 |
| | Students will make predictions that are based upon data analysis. | | |
| 5.S.4 | Formulate conclusions and make predictions from graphs | 63 | 47-2 |
| | Students will understand and apply concepts of probability. | | |

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| 5.S.5 | List the possible outcomes for a single-event experiment | | 47-2 |
| 5.S.6 | Record experiment results using fractions/ratios | | 47-2 |
| 5.S.7 | Create a sample space and determine the probability of a single event, given a simple experiment (e.g., rolling a number cube) | | 47-2 |