



Contemporary Mathematics in Context

A Unified Approach
Course 4
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STANDARDS		PAGE REFERENCES
Standard 1: Number and Operation		
Students in Grade 10 deepen their understanding of real numbers by applying properties of rational numbers and exponents and by identifying exact and approximate roots without simplification. Students use positive and negative numbers, absolute value, fractions, decimals, percentages, and scientific notation. Students use the proper order of operations and perform operations with rational numbers. Students apply number sense to everyday situations and judge reasonableness of answers.		
Goal 1.1: Understand and use numbers.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.1.1.1	Apply properties of rational numbers. (347.01.b)	Student Edition: 165 #4c, 176 #2, 387 #5, 393 #7, 394 #9, 395 #b, 401 #1, 403 #4a, 440 #2a, 442 #7, 454 #2 <i>Checkpoint</i> 168, 395, 443
10.M.1.1.2	Use positive and negative numbers, absolute value, fractions, decimals, percentages, and scientific notation, including application in real world situations. (347.01.a)	Student Edition: 51 #10, 107 #10, 159-163, 164 #1, 165 #4, 239 #9, 257 #10, 299 #10, 353 #10, 641 #10

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10.M.1.1.3	Apply properties of exponents. (347.01.c)	Student Edition: 159-163, 164 #1, 165 #4, 166 #5b, 167 #7, 175 #3 <i>Checkpoint</i> 168 Teacher's Guide: CMT T206, T212; I T201, T207
10.M.1.1.4	Identify exact and approximate roots without simplification.	Student Edition: 21 #10, 157 #10, 179 #10, 183 #5, 209 #10, 239 #9, 269 #10, 469 #4, 470 #6, 493 #10, 545 #10, 570 #3, 627 #10, 641 #10, 665 #10
10.M.1.1.5	Solve problems using number theory concepts (factors, multiples, primes). (347.01.d)	Student Edition: 176 #1, 622 #5e
10.M.1.1.6	Use appropriate vocabulary.	Student Edition: <i>Checkpoint</i> 8, 27, 31, 35, 40, 55, 59, 85, 97, 114, 126, 138, 146, 163, 172
Goal 1.2: Perform computations accurately.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.1.2.1	Use the order of operations and perform operations with rational numbers. (347.02.a)	Student Edition: 20 #2, 50 #2, 51 #9, 106 #2, 156 #2, 196 #1, 238 #4, 256 #1, 268 #2, 570 #2, 640 #2, 664 #1
Goal 1.3: Estimate and judge reasonableness of results.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.1.3.1	Apply number sense to everyday situations and judge reasonableness of results. (347.03.a)	Student Edition: 29 #1, 30 #3, 49 #4, 55 #2, 88 #4, 109 #1e, 153 #5c, 628-639 <i>Checkpoint</i> 35 <i>On Your Own</i> 37
10.M.1.3.2	Identify that error accumulates in a computation when there is rounding. (349.05.b)	Student Edition: 307-310, 311-315 Teacher's Guide: E T5, T365; LO T375

STANDARDS		PAGE REFERENCES
Standard 2: Concepts and Principles of Measurement		
Students in Grade 10, given relative formulas, determine length, distance, area, surface area, capacity, and weight, with appropriate unit labels. Students formulate and use proportions, ratios, and scaling. Students apply concepts of rates and direct and indirect measurements. Students evaluate given measurement formulas for two- and three-dimensional objects.		
Goal 2.1: Understand and use U.S. customary and metric measurements.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.2.1.1	Given the formulas, find the circumference, perimeter, or area of triangles, circles, and quadrilaterals, the volume of spheres, non-oblique prisms, cylinders, and cones, and the surface area of spheres, non-oblique prisms, cylinders, and right square-based pyramids. (349.01.a)	Student Edition: 107 #8, 151 #3, 565 #4, 667 #1, 668 #3
10.M.2.1.2	Solve problems involving circumference, perimeter, or area of triangles, circles, and rectangles.	Student Edition: 107 #8, 151 #3, 565 #4, 667 #1, 668 #3
Goal 2.2: Apply the concepts of rates, ratios, and proportions.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.2.2.1	Use rates, ratios, proportions, map scales, and scale factors (one- and two-dimensional) in problem-solving situations. (349.03.a)	Student Edition: 51 #8, 73 #8, 89 #6, 331 #8, 470 #6, 493 #8, 599 #10, 627 #8, 668 #2c, 669 #2c
10.M.2.2.2	Apply concepts of rates and direct and indirect measurements.	Student Edition: 51 #8, 73 #8, 89 #6, 493 #8
10.M.2.2.3	Construct equivalent units, comparable units, and conversions. (349.02.a)	Student Edition: 2-6, 9-11, 16 #1, 18 #2, 123-126, 127 #1, 130 #2
Goal 2.3: Apply dimensional analysis.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.2.3.1	Use customary and metric units and their relationship to one another and to real world applications involving length, area, capacity, weight, time, and temperature. (349.04.a)	Student Edition: 9 #1, 117 #5, 373 #1, 374 #3, 417 #2, 418 #4, 535 #1, 541 #1, 641 #8 <i>On Your Own</i> 412

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Goal 2.4: Apply appropriate techniques and tools to determine measurements.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.2.4.1	Determine and use appropriate units. (349.01.a)	Student Edition: 9 #1, 117 #5, 373 #1, 374 #3, 417 #2, 418 #4, 535 #1, 541 #1, 641 #8 <i>On Your Own</i> 412
10.M.2.4.2	Approximate error in measurement situations.	Student Edition: 107 #8, 239 #8, 331 #8, 418 #4, 507 #8, 641 #8, 668 #2, 669 #4 <i>Checkpoint</i> 670 <i>On Your Own</i> 412
Standard 3: Concepts and Language of Algebra and Functions		
Students in Grade 10 use appropriate procedures for manipulating and simplifying algebraic expressions involving variables, integers, rational numbers, and for solving multi-step, first-degree equations and inequalities. Students understand the concept and applications of functions and mathematical models. Given graphs, charts, ordered pairs, mappings, or equations, students determine whether a relation is a function. Students evaluate functions written in functional notation and, given a function, students identify domain and range.		
Goal 3.1: Use algebraic symbolism as a tool to represent mathematical relationships.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.3.1.1	Represent mathematical relationships using variables, expressions, linear equations and inequalities. (350.01.a)	Student Edition: 37-40, 407 #1, 410 #5, 413 #2, 421 #5 <i>On Your Own</i> 412 Teacher's Guide: CMT T43; I T472
Goal 3.2: Evaluate algebraic expressions.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.3.2.1	Use appropriate procedures for manipulating and simplifying algebraic expressions involving variables, integers, and rational numbers. (350.02.a)	Student Edition: 361-365, 456 #5, 480-484, 485-486, 487-491 Teacher's Guide: CMT T568, T571; I T563

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Goal 3.3: Solve algebraic equations and inequalities.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.3.3.1	Use appropriate procedures to solve multi-step, first-degree equations and inequalities; such as $3(2x - 5) = 5x + 7$ or $3(2x - 5) > 5x + 7$. (350.03.a)	Student Edition: 361-365, 456 #5, 480-484, 485-486, 487-491 Teacher's Guide: CMT T568, T571; I T563
10.M.3.3.2	Differentiate between linear and non-linear equations and graphs.	Student Edition: 23-29, 159-164, 361-368, 412-416, 437-440, 459-463 Teacher's Guide: LO T417
Goal 3.4: Solve simple linear systems of equations.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.3.4.1	Use appropriate procedures to solve linear systems of equations involving two variables; such as $x + y = 7$ and $2x + 3y = 21$. (350.04.a)	Student Edition: 50 #3, 367 #2-#3, 380 #3, 404 #3, 544 #3, 567 #2, 598 #5, 626 #3, 678 #3, 690 #4
Goal 3.5: Understand the concept of functions.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.3.5.1	Given graphs, charts, ordered pairs, mappings, or equations, determine whether a relation is a function.	Student Edition: 595-596 #3
10.M.3.5.2	Evaluate functions written in functional notation.	Student Edition: 143-147, 148-150, 151-155, 158-164, 181-185, 186-189, 190-195, 198-202, 238 #4 Teacher's Guide: E T183
10.M.3.5.3	Given a function, identify domain and range.	Student Edition: 144 #3, 160-161, 412-414, 595 #2, 627 #7 Teacher's Guide: E T472

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Goal 3.6: Apply functions to a variety of problems.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.3.6.1	Model and solve real-world phenomena using multi-step, first degree, single variable equations and inequalities, linear equations, and two-variable linear systems of equations. (353.01.a)	Student Edition: 24 #4, 25 #9, 26 #11, 124 #2, 128 #5, 130 #2, 132 #4, 166 #5, 171 #4
10.M.3.6.2	Use graphs and sequences to represent and solve problems. (347.02.b)	Student Edition: 259-267, 648-652, 653-656, 657-660, 666-670, 689 #2 <i>Think About This Situation</i> 258 Teacher's Guide: A T786; LO T781; SS T786
Standard 4: Concepts and Principles of Geometry		
Students in Grade 10 recognize congruency and similarity of two-dimensional figures. Students identify and use similarity as it relates to size variations in two- and three-dimensional objects. Given the Pythagorean Theorem, students calculate missing side lengths of right triangles without simplifying radicals. Students represent linear relationships using tables, graphs, and mathematical symbols. Students interpret attributes of linear relationships such as slope, rate of change, and intercepts. Students use logic to make and evaluate mathematical arguments.		
Goal 4.1: Apply concepts of size, shape, and spatial relationships.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.4.1.1	Recognize and apply congruency and similarity of two-dimensional figures. (351.01.a)	Student Edition: 668 #3
10.M.4.1.2	Recognize and use similarity as it relates to size variations in two- and three-dimensional objects. (351.01.b)	Student Edition: 668 #3
Goal 4.2: Apply the geometry of right triangles.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.4.2.1	Given the Pythagorean Theorem, calculate missing side lengths of right triangles without simplifying radicals. (351.02.c)	Student Edition: 464 #1, 467, 470 #6, 549 #2a

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Goal 4.3: Apply graphing in two dimensions.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.4.3.1	Identify attributes of the Cartesian Coordinate System, such as quadrants, origin, and axes. (351.03.a)	Student Edition: 375 #2
10.M.4.3.2	Graph scatter plots and identify informal trend lines (e.g., eyeball fit lines).	Student Edition: 180-185, 202-203 #1, 212 #8 Teacher's Guide: I T232; N T232
10.M.4.3.3	Identify positive and negative correlations.	Student Edition: 180-185, 202-203 #1, 212 #8 Teacher's Guide: I T232; N T232
Goal 4.4: Represent and graph linear relationships.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.4.4.1	Create graphs and equations for linear relationships.	Student Edition: 29 #1, 39 #2a Teacher's Guide: E T30
10.M.4.4.2	Represent linear relationships using tables, graphs, and mathematical symbols.	Student Edition: 29 #1, 39 #2a Teacher's Guide: E T30
10.M.4.4.3	Interpret attributes of linear relationships such as slope, rate of change, and intercepts.	Student Edition: 23 #1, 29 #1, 39 #2a, 41 #2, 238 #3
Goal 4.5: Use reasoning skills.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.4.5.1	Use logic to make and evaluate mathematical arguments. (348.02.b)	Student Edition: 258, 259-263, 264-267, 272 #4 Teacher's Guide: CMT T312

STANDARDS		PAGE REFERENCES
Standard 5: Data Analysis, Probability, and Statistics		
Students in Grade 10 read, interpret, and use tables, charts, and graphs, including scatter plots, multiple broken line graphs, and box-and-whisker plots. Students interpret and use basic statistical concepts including mean, median, mode, range, and distribution of data, including outliers. Students make predictions and draw conclusions based on statistical measures and students make predictions based on randomness, chance, equally likely events, and probability. Students find probabilities based on dependent, independent, and compound events and students make predictions based on randomness, chance, equally likely events, and probability.		
Goal 5.1: Represent data with a variety of formats.		
Objective(s): By the end of Grade 10, the student will be able to:		
9.M.5.1.1	Analyze and interpret tables, charts, and graphs, including scatter plots, broken line graphs, and box-and-whisker plots. (352.01.a)	Student Edition: 205 #1, 307-310, 319-322, 323-325, 326-329
Goal 5.2: Collect, organize, and display data.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.5.2.1	Collect, organize, and display data in tables, charts, and graphs. (352.02.a)	Student Edition: 277 #1, 324 #3, 326 #1-#2, 334 #3, 335 #5, 348 #1 <i>On Your Own</i> 325 <i>Think About This Situation</i> 318
Goal 5.3: Apply simple statistical measurements.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.5.3.1	Interpret and use basic statistical concepts, including mean, median, mode, range, and distribution of data, including outliers. (352.03.a)	Student Edition: 301-310, 311-315
10.M.5.3.2	Make predictions and draw conclusions based on statistical measures. (352.05.a)	Student Edition: 180-185, 202-203 #1, 212 #8 Teacher's Guide: I T232; N T232
Goal 5.4: Understand basic concepts of probability.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.5.4.1	Find probabilities based on dependent, independent, and compound events.	Student Edition: 241 #1, 242 #3, 243 #5, 250 #2, 251 #3, 252 #1, 253 #4, 254 #1, 319 #1, 321 #3, 323 #1 Teacher's Guide: CMT T293; I T290

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10.M.5.4.2	Contrast experimental and theoretical probability. (352.04.a)	Student Edition: 277-282, 283-289, 290-297, 301-307, 308-310, 311-315, 319-322, 323-325, 326-329 Teacher's Guide: U T331
Goal 5.5: Make predictions or decisions based on data.		
Objective(s): By the end of Grade 10, the student will be able to:		
10.M.5.5.1	Make predictions based on randomness, chance, equally likely events, and probability. (352.04.c)	Student Edition: 241 #1, 242 #3, 243 #5, 250 #2, 251 #3, 253 #4, 254 #1 Teacher's Guide: CMT T293; I T290
10.M.5.5.2	Use appropriate tools/technology to conduct simulations and employ graphical models to make predictions or decisions based on data. (352.05.a)	Student Edition: 241 #1, 658-661, 662-663, 672-677, 681-687, 688-690 Teacher's Guide: E T776
10.M.5.5.3	Design, conduct, and interpret results of statistical experiments. (352.05.b)	Student Edition: 277 #1, 324 #3, 326 #1-#2, 334 #3, 335 #5, 348 #1 <i>On Your Own</i> 325 <i>Think About This Situation</i> 318