



COURSE 1

Core-Plus Mathematics

Contemporary Mathematics in Context

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STANDARDS	PAGE REFERENCES
<p>Process Standard A: Students will develop their ability to solve problems by engaging in developmentally appropriate opportunities where there is a need to use various approaches to investigate and understand mathematical concepts in order to:</p>	
<ul style="list-style-type: none"> • Formulate their own problems • Find solutions to problems from everyday situations • Develop and apply strategies to solve a variety of problems • Integrate mathematical reasoning, communication and connections 	
<ul style="list-style-type: none"> • Generalize solutions and apply previous knowledge to new problem solving situations 	<p>Student Edition: 52, 57, 166, 206, 229 #22 <i>Summarize the Mathematics</i> 111, 196</p> <p>Teacher Guide: MT 156; PMD T197A-T197B; SM T167</p>
<ul style="list-style-type: none"> • Determine an efficient strategy, verify, interpret, and evaluate the results with respect to the original problem 	<p>Student Edition: 224, 232, 418 #14 <i>Summarize the Mathematics</i> 55, 72, 147, 160, 196 <i>Think About This Situation</i> 27</p>
<ul style="list-style-type: none"> • Apply problem solving strategies until a solution is found or it is clear that no solution exists 	<p>Student Edition: 179, 194, 256, 261, 281 #14, 311 #11, 440 #4 <i>Summarize the Mathematics</i> 200</p> <p>Teacher Guide: E T179; SM T200</p>

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<ul style="list-style-type: none"> Interpret and solve a variety of mathematical problems by paraphrasing 	<p>Student Edition: 82, 176, 194, 224, 350, 358, 401 #3 <i>Summarize the Mathematics</i> 434</p> <p>Teacher Guide: OYO T225 #4; PMD T7B</p>
<ul style="list-style-type: none"> Identify necessary and extraneous information 	<p>Student Edition: 52, 81, 176, 445 #7 <i>Summarize the Mathematics</i> 51 <i>Think About This Situation</i> 151</p>
<ul style="list-style-type: none"> Check the reasonableness of a solution 	<p>Student Edition: 159, 171, 176, 195, 198, 207, 226, 231 #29 <i>Summarize the Mathematics</i> 223 <i>Think About This Situation</i> 104</p>
<ul style="list-style-type: none"> Apply technology as a tool in problem solving situations 	<p>Student Edition: 53, 81, 88, 139, 173, 190 <i>Summarize the Mathematics</i> 31, 55</p> <p>Teacher Guide: T149A, T164; SM T31; TN T82</p>
<ul style="list-style-type: none"> Apply combinations of proven strategies and previous knowledge to solve non-routine problems 	<p>Student Edition: 56, 120, 188, 209, 227, 257 #14, 367, 421 #25</p> <p>Teacher Guide: E T163</p>
<p>Process Standard B: Students will develop their ability to communicate mathematically by solving problems where there is a need to obtain information from the real world through reading, listening, and observing in order to:</p>	
<ul style="list-style-type: none"> Translate information into mathematical language and symbols Process information mathematically Present results in written, oral, and visual formats Discuss and exchange ideas about mathematics as a part of learning Read a variety of fiction and nonfiction texts to learn about mathematics Use mathematical notation to communicate and explain problems 	
<ul style="list-style-type: none"> Use a variety of techniques to solve mathematical problems 	<p>Student Edition: 55, 56, 120, 161-162, 227-228 #4, 245, 311 <i>Summarize the Mathematics</i> 51, 147, 160</p>
<ul style="list-style-type: none"> Evaluate written and oral presentations in mathematics 	<p>Student Edition: 86, 94, 155, 183-184, 192, 198, 224, 228</p> <p>Teacher Guide: PMD T7B, T187A-T187B</p>

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<ul style="list-style-type: none"> Model and explain mathematical relationships using oral, written, graphic, and algebraic methods 	<p>Student Edition: 40, 57, 127, 155, 159, 201, 235 <i>Summarize the Mathematics</i> 122</p> <p>Teacher Guide: IN T162; PMD T122A-T122B</p>
<ul style="list-style-type: none"> Communicate and evaluate mathematical thinking based on the use of definitions, properties, rules, and symbols in problem solving 	<p>Student Edition: 40, 55, 57, 76, 108, 156, 182, 200, 268 #2 <i>Summarize the Mathematics</i> 128</p>
<ul style="list-style-type: none"> Use everyday language, both orally and in writing, communicate strategies and solutions to problems using appropriate mathematical language 	<p>Student Edition: 77, 125, 209 <i>Summarize the Mathematics</i> 107, 147, 156, 193</p> <p>Teacher Guide: PMD T7N, T122A-T122B, T187A-T187B</p>
	<p>Process Standard C: Students will develop their ability to reason mathematically by solving problems where there is a need to investigate mathematical ideas and construct their own learning in all content areas in order to:</p>
	<ul style="list-style-type: none"> Reinforce and extend their logical reasoning abilities Reflect on, clarify, and justify their thinking Ask questions to extend their thinking Use patterns and relationships to analyze mathematical situations Determine relevant, irrelevant, and/or sufficient information to solve mathematical problems
<ul style="list-style-type: none"> Recognize and apply deductive and inductive reasoning 	<p>Student Edition: 45 #24, 226 #8, 230 #30, 373, 387, 440 #4, 477 #8 <i>Summarize the Mathematics</i> 359 <i>Think About This Situation</i> 323, 463</p>
<ul style="list-style-type: none"> Review and refine the assumptions and steps used to derive conclusions in mathematical arguments 	<p>Student Edition: 55, 111, 219, 226 #10, 365 #3, 387 <i>Summarize the Mathematics</i> 303</p> <p>Teacher Guide: T72A</p>
<ul style="list-style-type: none"> Make and test conjectures about algebraic and geometric properties based on mathematical principles 	<p>Student Edition: 119 #4c, 224, 279 #8b, 281 #14, 282, 390 #17, 401 #3, 409 #3 <i>Summarize the Mathematics</i> 411</p> <p>Teacher Guide: T244</p>

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<ul style="list-style-type: none"> Justify the validity of an argument 	<p>Student Edition: 177 #21, 208 #24, 343 #11, 379, 387, 440 #4b, 446 #10, 477 #8 <i>Summarize the Mathematics</i> 55</p> <p>Teacher Guide: TS T425</p>
<ul style="list-style-type: none"> Construct a valid argument 	<p>Student Edition: 130 #40, 208 #24, 219 #2, 376-377, 390, 402, 405 #3, 409 #3, 420 #22</p> <p>Teacher Guide: IN T244</p>
	<p>Process Standard D: Students will develop the ability to make mathematical connections by solving problems where there is a need to view mathematics as an integrated whole in order to:</p>
	<ul style="list-style-type: none"> Link new concepts to prior knowledge Identify relationships between content strands Integrate mathematics with other disciplines Allow the flexibility to approach problems in a variety of ways within and beyond the field of mathematics
<ul style="list-style-type: none"> Use mathematical ideas from one area of mathematics to explain an idea from another area of mathematics 	<p>Student Edition: 57, 234 #4, 335 #3, 421 #25, 446 #11, 511-512 #1 <i>Summarize the Mathematics</i> 236</p> <p>Teacher Guide: I T57</p>
<ul style="list-style-type: none"> Explain the relationship between concepts and procedures 	<p>Student Edition: 48-49, 62, 323 <i>Summarize the Mathematics</i> 325 <i>Think About This Situation</i> 323</p> <p>Teacher Guide: OYO T95 #12</p>
<ul style="list-style-type: none"> Use the connections among mathematical topics to develop multiple approaches to problems 	<p>Student Edition: 53-54, 57, 445 #7, 477 #7</p>
<ul style="list-style-type: none"> Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as rhythm in music and motion in science 	<p>Student Edition: 111, 176 #18, 261, 294, 486 #19 <i>Summarize the Mathematics</i> 468</p>

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<ul style="list-style-type: none"> Identify, explain, and apply mathematics in everyday life 	<p>Student Edition: 6, 34, 49, 62 #13f, 65, 257 #15, 267-268, 299, 471 #4 <i>Think About This Situation</i> 27</p> <p>Teacher Guide: SM T72</p>
<p>Grade 12</p>	
<p>1.0 Numbers, Number Sense, and Computation</p>	
<p>Content Standard 1.0 Students will accurately calculate and use estimation techniques, number relationships, operation rules, and algorithms; they will determine the reasonableness of answers and the accuracy of solutions to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.</p> <p>At a minimum, students will maintain previous skills and attain the following:</p>	
<p>1.12.6 Determine an approximate value of radical and exponential expressions using a variety of methods.</p>	<p>Student Edition: 297, 300 #5, 304, 321 #42, 328 #5, 351 #36, 358 #5 <i>Think About This Situation</i> 291</p> <p>Teacher Guide: T358 #5</p>
<p>1.12.7 Solve mathematical problems involving exponents and roots.</p>	<p>Student Edition: 296 #5, 300 #6, 301, 304-305, 311 #13, 312 #14-#16, 316 #28-#29, 319 #35-#36, 332</p> <p>Teacher Guide: T305</p>
<p>Perform addition, subtraction, and scalar multiplication on matrices.</p>	<p>Student Edition: 248-249 #4, 262 #28, 287 #2C <i>Summarize the Mathematics</i> 249</p> <p>Teacher Guide: T287; OYO T262</p>
<p>1.12.8 Identify and apply real number properties to solve problems.</p>	<p>Student Edition: 195 #2, 219-221, 224-227, 229, 304-305, 332-334, 335-336, 351, 358 #4</p> <p>Teacher Guide: I T219</p>

STANDARDS	PAGE REFERENCES
2.0 Patterns, Functions, and Algebra	
Content Standard 2.0 Students will use various algebraic methods to analyze, illustrate, extend, and create numerous representations (words, numbers, tables, and graphs) of patterns, functions, and algebraic relations as modeled in practical situations to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.	
At a minimum, students will maintain previous skills and attain the following:	
2.12.1 Use algebraic expressions to identify and describe the n^{th} term of a sequence.	Student Edition: 65 #25, 71, 152-154, 157-160, 161-167, 168 #1, 170, 175, 192 #4, 206 #17, 217-218, 224 #1-#2
2.12.2 Isolate any variable in given equations, inequalities, proportions, and formulas to use in mathematical and practical situations.	Student Edition: 47-48, 60, 70, 202 #5, 204 #12, 224 #3, 227 #13, 235 #5, 299, 329 <i>Think About This Situation</i> 151 Teacher Guide: CYU T200
2.12.3 Add, subtract, multiply, and factor 1 st and 2 nd degree polynomials connecting the arithmetic and algebraic processes.	Student Edition: 218-219, 221 #6-#7, #9, 222 #11, 223, 225 #6, 228 #18 <i>Summarize the Mathematics</i> 218 Teacher Guide: CYU T223; I T219
Simplify algebraic expressions, including exponents and radicals.	Student Edition: 218-219, 221 #6-#7, #9, 222 #11, 223, 225 #6, 228 #18 <i>Summarize the Mathematics</i> 218 Teacher Guide: CYU T223; I T219
2.12.4 Determine the domain and range of functions, including linear, quadratic, and absolute value, algebraically and graphically.	The following examples can be used to determine domain and range. Student Edition: 60 #8, 169 #3, 172 <i>Summarize the Mathematics</i> 55, 72 Teacher Guide: IN T172; SM T58B, T72
Solve absolute value equations and inequalities both algebraically and graphically.	Student Edition: 189-190, 196, 197, 203 #8, 234 #4, 487-488 #23, 549 #25 <i>Summarize the Mathematics</i> 190, 196 Teacher Guide: OYO T487-T488

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<p>2.12.5 Solve systems of two linear equations algebraically and graphically and verify solutions (with and without technology).</p>	<p>Student Edition: 199, 204 #12, 205 #13, 208 #24, 211 #32, 236 #7 <i>Summarize the Mathematics</i> 200</p> <p>Teacher Guide: OYO T204 #12</p>
<p>2.12.6 Solve mathematical and practical problems involving linear and quadratic equations with a variety of methods, including discrete methods (with and without technology).</p>	<p>Student Edition: 188-194, 198, 234 #4, 508 #26, 468-469, 471, 481, 511-515, 517-519</p> <p>Teacher Guide: IN T189; TS T511</p>
<p>3.0 Measurement</p>	
<p>Content Standard 3.0 Students will use appropriate tools and techniques of measurement to determine, estimate, record, and verify direct and indirect measurements to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.</p> <p>At a minimum, students will maintain previous skills and attain the following:</p>	
<p>3.12.1 Estimate and convert between customary and metric systems.</p>	<p>Student Edition: 46 #29, 397</p> <p>Teacher Guide: T49 #5</p>
<p>3.12.2 Justify, communicate, and differentiate between precision, error, and tolerance in practical problems.</p>	<p>Degree of accuracy can be taught along with the following measurement examples.</p> <p>Student Edition: 80 #7, 82, 395 #30, 401 #2d, #3</p> <p>Teacher Guide: T395 #30, T413 #33, T415 #7, T418 #14d, T521B</p>
<p>3.12.3 Select and use appropriate measurement tools, techniques, and formulas to solve problems in mathematical and practical situations.</p>	<p>Student Edition: 4-5, 67 #33, 80 #7, 143 #31, 180 #30, 193 #5, 364 #1, 371 #3, 380-381 #3, 521 #20</p> <p>Teacher Guide: T5 #1</p>
<p>3.12.4 Interpret and apply consumer data presented in charts, tables, and graphs to make informed financial decisions related to practical applications.</p>	<p>Student Edition: 34 #7, 71, 152-153, 299-300 <i>Summarize the Mathematics</i> 300</p> <p>Teacher Guide: T34B</p>
<p>3.12.5 Determine the measure of unknown dimensions, angles, areas, and volumes using relationships and formulas to solve problems.</p>	<p>Student Edition: 49-50 #5-#7, 52, 62-63 #13-#14, 70, 212 #37, 226 #11, 264 #34, 285 #25-#26, 447-448, 452 #24, 453 #26, 483 #11, 490 #32, #35, 507 #20 <i>Think About This Situation</i> 363</p>

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4.0 Spatial Relationships, Geometry, and Logic	
Content Standard 4.0 Students will identify, represent, verify, and apply spatial relationships and geometric properties to solve problems, communicate, and make connections within and beyond the field of mathematics.	
At a minimum, students will maintain previous skills and attain the following:	
4.12.1 Identify and use the parts of a circle to solve mathematical and practical problems.	Student Edition: 46 #28, 51 #8, 62 #13, 175 #14, 205 #14, 315 #24, 390 #16, 483 #11, 569 #6 <i>Summarize the Mathematics</i> 51
Identify and apply properties of interior and exterior angles of polygons to solve mathematical and practical problems.	Student Edition: 371 #4, 376-377 #5, 401, 404-407, 413 #3 <i>Summarize the Mathematics</i> 377, 406 Teacher Guide: OYO T523; SM T377, T406
4.12.2 Apply properties of similarity through right triangle trigonometry to find missing angles and sides.	Student Edition: 285 #26, 374, 392 #21, 524 #31c, 585 #31 Teacher Guide: I T374
4.12.5 Determine the slope of lines using coordinate geometry and algebraic techniques.	Student Edition: 155, 160, 169, 180 #30, 233 #c, 234 #3a, 235 #6b, 264 #32, 321 #44
Identify parallel, perpendicular, and intersecting lines by slope.	Student Edition: 157, 177 #22, 180 #30, 354 #45 Teacher Guide: OYO T177 #22, T180 #30
Graph linear equations and find possible solutions to those equations using coordinate geometry.	Student Edition: 60 #6-#7, 61 #9, 285 #23, 395 #31, 585 #30 Teacher Guide: T585 #30
Find possible solution sets of systems of equations whose slopes indicate parallel, perpendicular, or intersecting lines.	Student Edition: 199 #4, 205 #13, 208 #24, 211 #32, 236 #7 <i>Summarize the Mathematics</i> 200 Teacher Guide: MT T200; OYO T205
4.12.6 Solve problems using complementary and supplementary angles, congruent angles, vertical angles, angles formed when parallel lines are cut by a transversal and angles in polygons.	Student Edition: 376, 380-381, 389 #13, 391 #18 Teacher Guide: T376; OYO T389 #13

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<p>4.12.7 Apply the Pythagorean Theorem and its converse in mathematical and practical situations.</p>	<p>Student Edition: 50 #7, 230 #26, 263 #30, 335 #3, 380-381, 391 #19, 392 #20, 521 #20b <i>Summarize the Mathematics</i> 382</p> <p>Teacher Guide: T382A; OYO T521B</p>
<p>4.12.8 Solve problems by drawing and/or constructing geometric figures to demonstrate geometric relationships.</p>	<p>Student Edition: 46, 257 #14, 347 #25, 353 #43, 365 #3, 371 #3, 379, 381 #3c, 421</p> <p>Teacher Guide: T361A-T361B</p>
<p>4.12.9 Formulate, evaluate, and justify arguments using inductive and deductive reasoning in mathematical and practical situations.</p>	<p>Student Edition: 45 #24, 226 #8, 230 #30, 373, 387, 440 #4, 477 #8 <i>Summarize the Mathematics</i> 359 <i>Think About This Situation</i> 323, 463</p>
<p>5.0 Data Analysis</p>	
<p>Content Standard 5.0 Students will collect, organize, display, interpret, and analyze data to determine statistical relationships and probability projections to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.</p> <p>At a minimum, students will maintain previous skills and attain the following:</p>	
<p>5.12.1 Organize statistical data through the use of tables, graphs, and matrices (with and without technology).</p>	<p>Student Edition: 537, 557, 557, 560, 562, 564, 569 #5, 571, 572 <i>Summarize the Mathematics</i> 570</p>
<p>5.12.2 Select and apply appropriate statistical measures in mathematical and practical situations.</p>	<p>Student Edition: 74-75, 84 #1, 165-166, 173 #12, 176 #19, 178, 330, 587 <i>Summarize the Mathematics</i> 331</p> <p>Teacher Guide: T165; STM T331</p>
<p>5.12.3 Distinguish between a sample and a census.</p>	<p>Student Edition: 100 #23, 555-556, 562, 578-579 #17</p> <p>Teacher Guide: T556; STM T557</p>
<p>Identify sources of bias and their effect on data representations and statistical conclusions.</p>	<p>Student Edition: 88 #10d <i>Think About This Situation</i> 75 #e</p> <p>Teacher Guide: T73; TATS T75</p>

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Use the shape of a normal distribution to compare and analyze data from a sample.	Student Edition: 76 #1, 79 #4d, 82, 91 #4c, 99 #21a
5.12.4 Apply permutations and combinations to mathematical and practical situations, including the Fundamental Counting Principle.	Student Edition: 533-535, 581-582 #22 <i>Summarize the Mathematics</i> 536 Teacher Guide: T581-T582 #22; STM T536
5.12.5 Determine the probability of an event with and without replacement using sample spaces.	Student Edition: 532-548, 552-567, 568-570, 571-583, 587, 590 <i>Summarize the Mathematics</i> 589 Teacher Guide: STM T563; TATS T533, T552A
Design, conduct, analyze, and effectively communicate the results of multi-stage probability experiments.	Student Edition: 74-75, 84 #1, 165-166, 173 #12, 176 #19, 178, 330, 587 <i>Summarize the Mathematics</i> 331 Teacher Guide: T165; STM T331
5.12.6 Design, construct, analyze, and select an appropriate type of graphical representations to communicate the results of a statistical experiment.	Student Edition: 537, 557, 557, 560, 562, 564, 569 #5, 571, 572 <i>Summarize the Mathematics</i> 570
Formulate and justify inferences based on a valid data sample.	Student Edition: 12 #5, 537, 557, 564, 566 #4, 571, 573 #3 <i>Think About This Situation</i> 552 Teacher Guide: T564 #a; STM T557