WASHINGTON
Contemporary Mathematics in Context
Course 1, 2 & 3 © 2003

GRADE 9/10 GLE	Course 1	Course 2	Course 3
1. The student understands and applies the concepts and procedures of mathematics.			
1.1.1 Understand and apply scientific notation.			
Number and Numeration			
Read and use scientific and exponential notation. [MC, RL]	pp. 424-438, 439-454 RAP pp. 52, 74	pp. 298-310	
Identify a real-life situation to match a particular number written in scientific or exponential notation and justify the answer. [MC, RL]	RAP p. 14*		
Use scientific or exponential notation to simplify a problem. [RL, MC]	pp. 424-439 RAP p. 86	pp. 300-302, 308-309	
Illustrate the meaning of scientific notation using pictures, diagrams, or numbers. [CU]			
Read and translate numbers represented in scientific notation from calculators and other technology, tables, and charts.	pp. 424-439		
1.1.4 Apply understanding of direct and inverse proportion to solve problems.			
Explain a method for determining whether a real-world problem involves direct proportion or inverse proportion. [SP, CU, MC]	RAP pp. 115-116	pp. 261-263, 313-314, 317	pp. 2-10, 16-24
Explain a method for solving a real-world problem involving direct proportion. [CU, MC]	pp. 159-161, 170 RAP pp. 15-17, 115-116	pp. 234-238, 241-244, 311, 313-317	pp. 2-10, 14-24, 297-304, 311, 322
Explain a method for solving a real-world problem involving inverse proportion. [CU, MC]		pp. 250-264	pp. 2-10, 14-24
Solve problems using direct or inverse models (e.g., similarity, age of car vs. worth). [SP, MC]	RAP p. 76	pp. 234-238, 241-244, 248-249	pp. 2-10, 16, 297-304, 311 RAP p. 82
Explain, illustrate, or describe examples of direct proportion.[CU]	RAP pp. 115-116	pp. 234-238, 241-244, 248-249	pp. 2-10, 16, 297-304 RAP p. 82 *

* RAP References are to *Contemporary Mathematics in Context* Reference and Practice (RAP) student handbooks for each course level. These are also available on the TeacherWorks Planning CDs.

Explain, illustrate, or describe examples of inverse proportion. [CU].	RAP p. 76	pp. 250-264	
Use direct or inverse proportion to determine a number of objects or a measurement in a given situation		pp. 234-238, 241-244, 248-249	pp. 2-10, 297-304 RAP pp. 31-32, 35
1.1.6 Apply strategies to compute fluently with rational numbers in all forms including whole number exponents.			
Complete multi-step computations using order of operations in situations involving combinations of rational numbers including whole number exponents and square roots of square numbers. [MC]	pp. 31-73, 433, 459 RAP pp. 8, 68, 84, 85, 87, 89, 105	pp. 290-300	
Calculate using order of operations on all forms of rational numbers (e.g., (3•2+5)2-8, 22+32).	p. 459 RAP pp. 8, 68, 84, 85, 87, 89, 105	RAP p. 96	
Use properties to reorder and rearrange expressions to compute more efficiently. [RL]	p. 459 RAP pp. 8, 68, 84, 85, 87, 89, 103, 105	pp. 292, 297	
1.1.8 Apply estimation strategies to determine the reasonableness of results in situations involving multi-step computations with rational numbers including whole number powers and square and cube roots.			
Identify when an approximation is appropriate. [MC]	Throughout. See for examples: pp. 72, 110-120, 165-180, 362 RAP p. 41	pp. 400-405	
Explain situations involving real numbers where estimates are sufficient and others for which exact value is required. [CU]	pp. 112, 362, 369 RAP p. 41	pp. 400-405	
Justify why an estimate would be used rather than an exact answer in a given situation. [CU]	pp. 112, 362, 369 RAP pp. 41, 52	pp. 400-405	
Describe various strategies used during estimation involving integers, rational numbers. [CU]	p. 36 RAP pp. 41, 52	pp. 400-405	
Use estimation to predict or to verify the reasonableness of calculated results. [RL]	Throughout. See for examples: pp. 36, 158-180	pp. 173-175, 400-405	

1.2.1 Analyze how changes in one or two dimensions of an object affect perimeter, area, surface area, and volume.			
Describe and compare the impact that a change in one or more dimensions has on objects (e.g., how doubling one dimension of a cube affects the surface area and volume). [CU, MC]	pp. 379, 380, 382	pp. 132-133, 138, 141-145, 158, 166, 168, 234-238, 241-249, 373-376, 378, 380	
Describe how changes in the dimensions of objects affect perimeter, area, and volume in real world situations (e.g., how does the change in the diameter of an oil drum affect the area and volume). [CU, MC]	pp. 379, 380, 382	pp. 132-133, 138, 141-145, 158, 166, 168, 234-238, 241-249, 373-376, 378, 380	
Solve problems by deriving the changes in two dimensions necessary to obtain a desired surface area and/or volume (e.g., given a box with certain dimensions, make the volume of the box y cubic units by changing two dimensions of the box). [SP]	p. 379	pp. 242, 373-383	
Compare a given change in one or two dimensions on the perimeter, area, surface areas, or volumes of two objects.	pp. 379, 380, 382	pp. 132-133, 138, 141-145, 158, 166, 168, 234-238, 241-249, 373-376, 378, 380	
Determine the change in one dimension given a change in perimeter, area, volume, or surface area.		pp. 242, 373-383	
1.2.3 Understand how to convert units of measure within systems (U.S. or metric).			
Understand how to convert units of measure within U.S. or within metric systems to achieve an appropriate level of precision.	pp. 66, 68, 110-113, 197-198, 366-367, 425 RAP pp. 54, 64	Opportunity to address pp. 400-411	
Convert within a system to a unit size appropriate to a given situation.	pp. 66, 68, 110-113, 197-198, 425 RAP pp. 54, 64	Opportunity to address pp. 400-411	

Convert to a larger unit within a system while maintaining the same level of precision (e.g., represent 532 centimeters to 5.32 meters).	pp. 66, 68, 110-113, 425 RAP p. 64	Opportunity to address pp. 400-411	
Convert to a smaller unit within a system to increase the precision of a derived unit of measurement.	pp. 66, 68, 110-113, 197-198, 425 RAP pp. 54, 64	Opportunity to address pp. 400-411	
1.2.5 Apply formulas to calculate measurements of right prisms or right circular cylinders.			
Explain how to use a formula for finding the volume of a prism or cylinder. [CU, MC]	pp. 355-357, 373-382, 397, 416	pp. 234-238 RAP pp. 48, 49, 61, 63, 74, 79*	
Use a formula to find the volume of a prism or cylinder. [RL, MC]	pp. 373-382, 397, 416 RAP p. 117	pp. 234-238 RAP pp. 48, 49, 61, 63, 74, 79	
Use a formula to derive a dimension of a right prism or right cylinder given other measures.	p. 379	p. 242 RAP pp. 61, 63	
Use formulas to describe and compare the surface areas and volumes of two or more right prisms and/or right cylinders. [RL]	p. 382	pp. 238, 241-242, 244	
Use formulas to obtain measurements needed to describe a right cylinder or right prism.	p. 379	p. 242 RAP pp. 61, 63	
1.2.6 Understand and apply strategies to obtain reasonable measurements at an appropriate level of precision.			
Identify situations in which approximate measurements are sufficient.	Opportunity to address pp. 355-382	Opportunity to address pp. 85-86	
Estimate a reasonable measurement at an appropriate level of precision. [MC]	Opportunity to address pp. 355-382	Opportunity to address pp. 85-86	RAP p. 55
Estimate quantities using derived units of measure (e.g., distance or time using miles per hour, cost using unit cost). [MC]	Opportunity to address throughout. See for examples: pp. 116, 131-135, 139, 227, 230, 424-425, 470	Opportunity to address throughout. See for examples: pp. 35, 243, 251-252, 259, 315, 417-419	
Estimate derived units of measure (e.g., miles per hour, people/year, grams/cubic centimeters). [MC]	Opportunity to address throughout. See for examples: pp. 116, 131-135, 139, 227, 230, 424-425, 470	Opportunity to address throughout. See for examples: pp. 35, 243, 251-252, 259, 315, 417-419	

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Apply a process that can be used to find a reasonable estimate for the volume of prisms, pyramids, cylinders, and cones.	Opportunity to address pp. 355-359		
Estimate volume and surface area for right cylinders and right prisms.	Opportunity to address pp. 356-357, 373-382	p. 137	
1.3.1 Understand the relationship among characteristics of one-dimensional, two-dimensional, and three-dimensional figures.			
Identify and label one- and two-dimensional characteristics (rays, lines, end points, line segments, vertices, and angles) in three-dimensional figures. [CU]	pp. 326-354		
Match or draw three-dimensional objects from different perspectives using the same properties and relationships (e.g., match to the correct net, draw the top view). [RL]	pp. 326-354	p. 386	
Draw and label with names and symbols nets of right prisms and right cylinders. [RL, CU]	pp. 352, 393-394, 397, 416		
Describe everyday objects in terms of their geometric characteristics. [CU]	pp. 326-418	pp. 87-90, 118, 122, 130-133	p. 335
Describe or classify various shapes based on their characteristics.	pp. 383-389, 390-416	pp. 368-383	p. 335
Make and test conjectures about two-dimensional and three-dimensional shapes and their individual attributes and relationships using physical, symbolic, and technological models (e.g., diagonal of a rectangle or prism is the longest interior segment; what figures make up cross-sections of a given three-dimensional shape). [SP, RL, CU, MC]	pp. 180, 256, 333, 336-337, 339, 345-346, 360	pp. 87-91, 138-141	pp. 261-278

1.3.2 Apply understanding of geometric properties and relationships.			
Use geometric properties and relationships to describe, compare, and draw two-dimensional and three-dimensional shapes and figures.	pp. 326-354	pp. 80-108, 109-148	
Construct geometric figures using a variety of tools and technologies (e.g., angle bisectors, perpendicular bisectors, triangles given specific characteristics). [MC]	pp. 327, 333, 390, 393, 416	pp. 80-108, 109-148, 370-372, 384-388	pp. 296, 308, 320, 321, 324, 337
Draw a plane shape and justify the answer given a set of characteristics. [RL, CU]	pp. 360, 362-363	pp. 87-90	
Use the properties of two-dimensional and three-dimensional shapes to solve mathematical problems (e.g., find the width of a river based on similar triangles; given a set of parallel lines, a transversal, and an angle, find the other angles). [SP, RL, CU, MC]	Throughout. See for examples: pp. 366, 367, 376-382 RAP pp. 31-33, 64, 82-83, 94	pp. 92-93, 130-137, 368-383, 384-411	pp. 32-36, 40-41, 311, 323, 333-334, 341 Rap pp. 67, 74, 77
Compare two-dimensional and three-dimensional shapes according to characteristics including faces, edges, and vertices, using actual and virtual modeling. [RL, CU] (cont…)	p. 349	pp. 87-92	
Use technology to generate two and three-dimensional models of geometric figures with given geometric characteristics (e.g., generate a two-dimensional animation using pentagons with fixed coordinates for one edge). [RL, SP]		pp. 80-96, 109-168	p. 324
Create a three-dimensional scale drawing with particular geometric characteristics. [SP, CU, MC]	pp. 343-344		

1.3.3 Apply understanding of geometric properties and location of points to figures.			
Use coordinates to describe or identify the location of objects on coordinate grids.		pp. 80-168	RAP pp. 26-30
Describe geometric characteristics of two-dimensional objects using coordinates on a grid. [MC]		pp. 80-96	
Describe the location of points that satisfy given conditions (e.g., the set of points equidistant from a given point; a point equidistant from a given set of points). [CU]			pp. 321, 342
Represent situations on a coordinate grid or describe the location of points that satisfy given conditions (e.g., locate a gas station to be equidistant from given cities; locate a staking point to maximize the grazing area of a tethered goat). [MC, SP, RL]		p. 93	p. 553
Use tools and technology to draw objects on a coordinate grid based on given conditions. [CU]		pp. 80-168	RAP pp. 28-30
Identify, interpret, and use the meaning of slope of a line as a rate of change using physical, symbolic, and technological models. [SP, RL, MC]	pp. 181-199		
1.3.4 Apply understanding of multiple transformations.			
Apply multiple transformations to create congruent and similar figures in any or all of the four quadrants.		pp. 109-129, 138-147, 148-164	
Use multiple transformations (combinations of translations, reflections, or rotations) to draw an image. [RL]		pp. 138-144, 148-164	
Use dilation (expansion or contraction) of a given shape to form a similar shape. [RL, CU]		pp. 126-137	Rap p. 29

Determine the final coordinates of a point after a series of transformations. [RL, CU]		pp. 138-148	
Examine figures to determine rotational symmetry about the center of the shape. [RL, MC]	pp. 387-389, 395-399, 405-415 RAP pp. 33-36	pp. 80, 109, 117-125, 143 RAP pp. 33-34, 56	
Define a set of transformations that would map one onto the other given two similar shapes. [SP, RL]		pp. 80, 109, 138-148	
Create a design with or without technology using a		pp. 149-168	

combination of two or more transformations with one or two two-dimensional figures. [SP, RL]			
Use technology to create two- and three-dimensional animations using combinations of transformations. [MC, SP, RL]		pp. 149-168	
1.4.1 Understand the concept of conditional probability.			
Compare the probabilities of dependent and independent events. [CU, MC]		pp. 460-466, 472-484	p. 266
Determine and justify whether the outcome of a first event affects the probability of a later event (e.g., drawing cards from a deck with or without replacement). [CU]	pp. 484-529 RAP pp. 74, 94	pp. 460-466, 470, 472-484	
Explain the difference between dependent and independent events. [CU]		pp. 472-484	
Explain and give examples of compound events. [CU]	RAP pp. 74, 94	pp. 459, 495-509	pp. 405-415
1.4.2 Apply understanding of dependent and independent events to calculate probabilities.			
Determine probabilities of dependent and independent events. [SP]	pp. 484-528 RAP pp. 49-50, 60, 69, 74, 94	pp. 456-471, 472-484, 485-509, 510-533 RAP p. 51	pp. 405-415
Generate the outcomes and probability of multiple independent and dependent events using a model or procedure (e.g., tree diagram, area model, counting procedures).	pp. 494, 500 RAP pp. 60, 69, 74, 94	pp. 459, 472-484, 485-509, 510-520	

Generate the outcomes and probability of events using a counting procedure (e.g., the number of license plates that can be made with three letters and three numbers; winning the lottery). [MC]	pp. 509-510		
Explain the relationship between theoretical probability and empirical frequency of dependent events using simulations with and without technology. [CU]	p. 522	pp. 456-569, 570 RAP pp. 22-25	
Create a simple game based on independent probabilities wherein all players have an equal probability of winning. [MC, SP]		Opportunity to address pp. 530-533	
Create a simple game based on compound probabilities. [MC, SP]		Opportunity to address pp. 530-533	
Determine the sample space for independent or dependent events.	RAP pp. 49-50	pp. 472-484 RAP 22-25	
1.4.3 Apply appropriate methods and technology to collect data or evaluate methods used by others for a given research questions.			
Identify sources of bias in data collection questions, samples, and/or methods and describe how such bias can be controlled. [RL, CU]	Opportunity to address p. 29	pp. 197-208	pp. 115-134, 149
Evaluate methods and technology used to investigate a research question. [CU, MC]	pp. 15, 32	pp. 197-208	p. 149
Collect data using appropriate methods	pp. 2-6, 52, 68, 160-161	p. 253	Opportunity to address pp. 116-134
Use technology appropriately to collect data. [RL, MC]	Opportunity to address p. 440	Opportunity to address p. 253	pp. 140-143, 152
Identify appropriate data collection methods that might impact the accuracy of the results of a given situation. [RL, CU]	Opportunity to address pp. 29, 39	Opportunity to address p. 253	pp. 116-134
Determine whether the sample for a given study was from a representative sample.	p. 32	Opportunity to address p. 198	pp. 116-120, 163
Determine whether the methods of data collection used were appropriate for a given question or population. [RL]	pp. 32, 490	pp. 203-204	pp. 116-134, 163
1.4.4 Understand and apply techniques to find the equation for a reasonable linear model.			
Determine the equation for a reasonable line to describe a set of bivariate data. [RL, MC]	pp. 158-180, 194-196	RAP pp. 6-8	
Determine the equation of a line that fits the data displayed	pp. 158-180, 194-196	RAP pp. 6-8	

on a scatter plot. [SP, RL]			
Use technology to determine the line of best fit for a set of data. [MC]	pp. 197-199, 203-204, 207	pp. 211-231	RAP pp. 20-22, 49
Match an equation with a set of data. [MC]	pp. 146-147, 148, 191-194,	RAP pp. 8, 66	
Match an equation with a graphic display. [MC]	pp. 144, 152, 181-194,	RAP pp. 8, 48, 66, 74, 95	
Create a graph based on the equation for the line.	pp. 181-194	pp. 211-226 RAP pp. 48, 66	
1.4.5 Analyze a linear model to judge its appropriateness for a data set.			
Determine whether a straight line is an appropriate way to describe a trend in a set of bivariate data. [MC, RL]	pp. 162-165, 173, 190, 192-193, 196-198, 207, 461-464, 469-470	pp. 192, 200-201, 205, 210, 211-231	RAP pp. 49, 53, 55, 65
Determine whether the underlying model for a set of data is linear. [RL, MC]	pp. 162-165, 173, 178, 207-210, 461-464, 469-470	pp. 192, 200-201, 205, 210, 211-231	RAP pp. 49, 53, 55, 65
Decide and explain whether it is appropriate to extend a given data set following a line of best fit. [RL, MC]	pp. 162-163, 198, 203-204, 206, 208-209	pp. 219, 233	
Determine whether a linear prediction from a given set of data is appropriate for the data and support the decision with data. [MC]	pp. 162-165, 203-204, 206, 208-209	pp. 219-223 RAP p. 78	
Determine whether an equation for a line is appropriate for a given set of data and support the judgment with data. [RL, MC]	pp. 163, 165-169, 174, 177	pp. 211-219, 224	RAP pp. 20-22, 49, 53, 55, 65
Use technology to generate data to fit a linear model. [SP, MC]	pp. 196-198, 203, 208, 209	Opportunity to address p. 254	

1.4.6 Apply understanding of statistics to make, analyze, or evaluate a statistical argument.			
Identify trends in a set of data in order to make a prediction based on the information. [CU, MC]	pp. 14-96	pp. 188-226, 229-231	pp. 346-383, 384-405
Justify a prediction or an inference based on a set of data. [CU, MC]	pp. 88-89, 91	pp. 204, 229-231	pp. 346-383, 384-405
State possible factors that may influence a trend but not be reflected in the data (e.g., population growth of deer vs. availability of natural resources or hunting permits). [MC, CU, RL]	pp. 80-93, 96, 99-101, 107, 110	pp. 197-210	pp. 384-405
Use statistics to support different points of view. [RL]	pp. 14-74	pp. 197-210	pp. 346-362, 384-405
Analyze a set of statistics to develop a logical point of view. [RL. CU, MC]	pp. 14-74	pp. 197-210	pp. 135-152, 346-383, 384-405
Justify or refute claims and supporting arguments based on data. [CU, MC]	pp. 69-70	pp. 197-210	pp. 115-134, 146
Determine whether statistics have been used or misused to support a point of view or argument and support the evaluation with data. [RL]	pp. 69-70	pp. 197-210	pp. 115-134, 138, 146
1.5.1 Apply processes that use repeated addition (linear) or repeated multiplication (exponential).			
Recognize, extend, or create a pattern or sequence between sets of numbers and/or linear patterns. [RL, CU, MC]	pp. 98-140, 158-248	pp. 234-237, 241-242	pp. 488-529
Identify, extend, or create a geometric or arithmetic sequence or pattern. [RL, CU]	pp. 106, 427, 432, 436-437, 443-445	pp. 234-238, 241-242	pp. 509, 520, 521
Translate among equivalent numerical, graphical, and algebraic forms of a linear function. RL, MC]	pp. 98-101, 158-248,	pp. 234-237, 241-242	pp. 46-62, 63-90, 173-178, 423-440
Make predictions based on a pattern or sequence.	pp. 98-140, 158-210	pp. 234-237, 253-256	pp. 488-549

1.5.2 Analyze a pattern, table, graph, or model involving repeated addition (linear) or repeated multiplication (exponential) model to write an equation or rule.			
Find the equation of a line in a variety of ways (e.g., from a table, graph, slope-intercept, point-slope, two points). [RL, MC]	pp. 158-180, 181-210	RAP pp. 8, 46, 52	pp. 46-90
Generate and use rules for a pattern to make predictions about future events (e.g., population growth, future sales, growth of corn stalks, future value of savings account). [SP, RL, MC]	pp. 181-210, 420-481	pp. 234-313 RAP pp. 12-15, 52	pp. 46-90
Identify or write an equation or rule to describe a pattern, sequence, and/or a linear function. [RL, CU, MC]	pp. 181-210	pp. 234-313 RAP p. 70	pp. 46-90
Write an equation for a line given a set of information (e.g., two points, point-slope, etc.). [CU, MC]	pp. 181-210	pp. 271-273 RAP pp. 52, 54, 60, 65, 66	RAP pp. 46, 52
Write a recursive definition of a geometric pattern (e.g., Start and New = Old * Number). [CU, MC]	pp. 427, 432, 436-437, 443-445 RAP p. 73	RAP pp. 47, 50, 57, 70	pp. 487-504
Represent systems of equations and inequalities graphically. [RL, MC]	pp. 211-219, 226-233	pp. 271-273 RAP p. 81	pp. 59-60, 63-85 RAP p. 9-10
Write a story that represents a given linear equation or expression. [CU, MC]	pp. 212, 224		Opportunity to address pp. 46-90
Write an expression, equation, or inequality with two variables representing a linear model of a real-world problem. [CU, MC]	pp. 181-242	pp. 271-273 RAP p. 50	pp. 46-90
1.5.4 Apply understanding of equations, tables, or graphs to represent situations involving relationships that can be written as repeated addition (linear) or repeated multiplication (exponential).			
Represent variable quantities through expressions, equations, inequalities, graphs, and tables to represent linear situations involving whole number powers and square and cube roots. [CU, MC]	pp. 158-218	pp. 271-273 RAP pp. 44, 50	pp. 46-90

Identify and use variable quantities to read and write expressions and equations to represent situations that can be described using repeated addition (e.g., models that are linear in nature). [CU, MC]	pp. 158-218	pp. 271-273 RAP pp. 44, 50	pp. 46-90
Identify and use variable quantities to read and write expressions and equations to represent situations that can be described using repeated multiplication (e.g., models that are exponential such as savings accounts and early stages of population growth). [CU, MC]	pp. 110-120, 420-481	RAP pp. 12-15	pp. 488-504 RAP p. 84
Recognize and write equations in recursive form for additive models (e.g., starting value, New=Old + some number). [CU, MC]	pp. 110-120, 420-481	RAP pp. 44, 50, 70	RAP pp. 6-8
Recognize and write equations in recursive form for additive models (e.g., starting value, New=Old - some number). [CU, MC]	pp. 181-194	RAP pp. 12-15, 66, 70	RAP pp. 6-8
Select an expression or equation to represent a given real world situation. [MC]	pp. 158-246, 420-481	RAP pp. 44, 50, 52, 54	RAP p. 84
1.5.5 Apply procedures to simplify expressions.			
Simplify expressions and evaluate formulas involving exponents.	pp. 424-427, 433, 458 RAP pp. 32, 84, 85, 89, 113-114	pp. 289-310 RAP pp. 55, 72	pp. 187-224 RAP pp. 68, 70, 74, 78, 81, 89
Justify a simplification of an expression involving exponents. [RL, CU]	pp. 424-427, 433, 458 RAP pp. 32, 84, 85, 89, 113-114	pp. 300-310	pp. 187-224
Use multiple mathematical strategies and properties to simplify expressions.	pp. 424-427, 433, 458 RAP pp. 32, 84, 85, 89, 113-114	pp. 289-310	pp. 187-224 RAP p. 82
1.5.6 Apply procedures to solve equations and systems of equations.			
Rearrange formulas to solve for a particular variable (e.g., given $A = .5bh$, solve for h). [MC, CU]	p. 375	pp. 260, 311	pp. 2-24 RAP pp. 66, 68, 74

Solve real-world situations involving linear relationships and verify that the solution makes sense in relation to the problem. [SP, RL, CU]	pp. 121-140, 158-248	pp. 59-78, 102-103	pp. 46-90, 225-228
Find the solution to a system of linear equations using tables, graphs, and symbols. [CU, MC]	pp. 211-219, 226-233	pp. 59-78, 97-108	pp. 59-60, 63-85, 225-239
Interpret solutions of systems of equations. [CU, MC]	pp. 211-219, 226-233	59-78, 97-108	pp. 59-60, 63-85, 225-239
Solve multi-step equations. [SP, RL]		RAP pp. 46, 51, 52, 56, 58, 62, 71	pp. 187-239 RAP pp. 72, 73, 82
Use systems of equations to analyze and solve real-life problems. [SP, CU, MC]	pp. 211-219,226-233	pp. 59-78, 102-103	pp. 225-239 RAP p. 76
Determine when two linear options yield the same outcome (e.g., given two different investment or profit options, determine when both options will yield the same result).	pp. 211-219, 226-233	pp. 59-78, 102-103	pp. 59-60, 63-85, 225-228
Use systems of equations to determine the most advantageous outcome given a situation (e.g., given two investment options, determine under what conditions each will yield the best result.). [MC, SP]	pp. 211-219, 226-233	pp. 59-77	pp. 59-60, 63-85, 225-239
2.1.1 Analyze a situation to define a problem.			
Use strategies to become informed about the situation (e.g., listing information; examine the table for patterns; create a scatter plot to look for patterns; asking questions).	pp. 1-13, 74-96	pp. 320-367, 384-394	Throughout. See for example: p. 187
Summarize the problem (e.g., there are Olympic winning times over the past 50 years; both men's and women's times are decreasing; will there come a time when women run faster than men).	pp. 208-210, 211-219, 226-233	pp. 320-367, 368-372	pp. 46-61

Determine whether enough information is given to find a solution (e.g., list what is needed to be found; extend the pattern to see if women's times will be less).	pp. 211-219, 226-233	pp. 250-256, 320-367	p. 306
Determine whether information is missing or extraneous (e.g., compare the list of known things to the list of needed things to see if there are things that are not needed).	pp. 1-13	pp. 253-256, 320-367	pp. 74, 306
Define the problem (e.g., if the pattern continues in the same fashion, will women run faster than men and, if so, when will that occur).	pp. 211-219, 226-233, 461-476	pp. 252, 320-367	pp. 63-84
2.2.1 Apply strategies, concepts, and procedures to devise a plan to solve the problem			
Organize relevant information from multiple sources (e.g., create a list of known and unknown information; create a scatter plot of men's and women's times vs. time on the same coordinate axis to analyze the patterns).	pp. 98-156, 158-248, 420-482	pp. 2-25, 92-93, 170-186, 211-226, 305	pp. 46-62, 225-239, 340-344
Select and apply appropriate mathematical tools to devise a strategy in a situation (e.g., if the data, in either tabular or graphical form, suggest a linear relationship, plan to find a linear equation for each set of data; solve those equations simultaneously [or use technology to find the intersection of the two lines] to answer the question). If the data pattern suggests a non-linear model, plan to project what the pattern is and extend that pattern.	pp. 98-156, 158-248, 420-482	pp. 10-77, 90-101, 211-226, 227-231	pp. 46-62, 136, 225-239

2.2.2 Apply mathematical tools to solve the problem.			
Implement the plan devised to solve the problem (e.g., solve the set of simultaneous equations to arrive at a time where the two times are the same).	pp. 211-219, 226-233	pp. 10-77, 90-101, 227-231	pp. 46-62, 63-90, 225-239, 289, 340-344
Use mathematics to solve the problem (e.g., use algebra to write equations for the two linear models, solve the system of equations using either symbols or technology).	pp. 211-219, 226-233	pp. 10-77, 90-101, 250-256	pp. 46-62, 63-90, 225-239, 289, 340-344
Identify when an approach is unproductive and modify or try a new approach (e.g., if the result does not make sense in the context, return to the plan to see if something has gone wrong and adjust accordingly).	Expected throughout Course 1	Opportunity to address throughout pp. 80-101	pp. 63-90, 241, 265
Check the solution to see if it works (e.g., the solution may be a partial year [i.e., 2003.6]; decide how to deal with this and also if the year is reasonable [i.e., 1925 does not make sense given the context]).	Throughout. See for examples: pp. 113-115, 128, 136, 174, 206, 371, 455-458	Throughout. See for examples: pp. 18, 192, 285, 329, 495, 523	Throughout. See for examples: pp. 63-90
3.1.1. Synthesize information from multiple sources in order to answer questions.			
Use the properties of two-dimensional and three-dimensional figures to solve mathematical problems (e.g., find the width of a river based on similar triangles; given a set of parallel lines, a transversal, and an angle, find the other angles).	pp. 250-323, 326-418, 420-482 RAP pp. 31-33, 38, 82, 83	pp. 26-58, 137, 242, 400-411	pp. 24-36, 40-41, 311, 323, 333-334 RAP pp. 67, 74, 77

3.2.1 Apply skill of conjecturing and analyze conjectures by formulating a proof or constructing a counter example.			
Make and test conjectures about two-dimensional and three-dimensional figures and their individual attributes and relationships using physical, symbolic, and technological models (e.g., diagonal of a rectangle or prism is the longest interior segment; what figures make up cross-sections of a given three-dimensional shape). (1.3.1)	pp. 180, 256, 333, 336-337, 339, 345-346, 360	pp. 137, 238	pp. 261-278
3.2.2 Analyze information to draw conclusions and support them using inductive and deductive reasoning.			
Compare and describe the volume of cylinders, cones, and prisms when an attribute is changed (e.g., the area of the base, the height of solid). (1.2.4)	pp. 379, 380, 382	pp. 132—133, 136-138, 141-145, 158, 166, 168, 234-238, 241-249, 378, 380	
Draw a plane shape of a given set of characteristics and justify the answer. (1.3.2)	pp. 360, 362-363	pp. 87-90	
Identify trends in a set of data in order to make a prediction based on the information. (1.4.6)	pp. 14-96	pp. 188-226, 229-231	pp. 346-383, 384-405
Use statistics to support different points of view. (1.4.6)	pp. 14-74	pp. 197-210	pp. 346-362, 384-405
3.2.3 Analyze procedures to determine appropriateness of claims and arguments.			
Examine claims and supporting arguments based on data and make needed revisions. (1.4.6)	pp. 69-70, 484-489	pp. 197-210	pp. 115-134, 138, 146
3.3.1 Analyze results using inductive and deductive reasoning.			
Compare and contrast similar two-dimensional figures and shapes using properties of two-dimensional figures and shapes. (1.3.2)	pp. 326-382, 383-415	pp. 87-92, 126-137, 373-376, 395-399	pp. 298-339
Find a reasonable estimate for the volume of prisms, pyramids, cylinders, and cones. (1.2.6)	pp. 355-356, 373-382, 397, 416	p. 137	RAP p.51

3.3.2 Analyze thinking and mathematical ideas using models, known facts, patterns, relationships, counter examples, or proportional reasoning.			
Examine a set of data, research other sources to see if the data is consistent, find articles written to see if the data makes sense, to develop a logical point of view and to support that view. (1.4.6)	Opportunity to address throughout. See for examples: pp. 30-46, 74-93, 159-161, 360	pp. 197-210	
4.1.1 Understand how to develop or apply an efficient system for collecting mathematical information for a given purpose.			
Collect data efficiently on the outcomes of first events and later events to determine and justify how the first event affects the probability of later events (e.g., drawing cards from a deck with or without replacement). (1.4.1)	pp. 2-6, 52, 68, 160-161, 484-529	pp. 460-466, 470, 472-484	pp. 402-415
4.1.2 Synthesize mathematical information for a given purpose from multiple, self-selected sources.			
State possible factors that may influence a trend but not be reflected in the data (e.g., population growth of deer vs. availability of natural resources or hunting permits). (1.4.6)	pp. 80-93, 96, 99-101, 107, 110	pp. 197-210	pp. 115-134, 384-405
4.2.1 Analyze mathematical information to organize, clarify, and refine an argument.			
Develop an argument to support a given point of view and set of statistics. (1.4.6)	pp. 14-74, 94-96	pp. 186-210	pp. 115-152, 346-362, 384-405
4.2.2 Understand how to express ideas and situations using mathematical language and notation.			
Explain how division of measurements produces a derived unit of measurement (e.g., miles traveled divided by hours traveled yields the derived unit [miles per hour]). (1.2.2)	Opportunity to address throughout. See for examples: pp. 116, 132, 133, 139, 230, 424-425	pp. 35, 243, 251-252, 259, 315, 417-419	
Describe the location of points that satisfy given conditions (e.g., the set of points equidistant from a given point; a point equidistant from a given set of points). (1.3.3)			pp. 321, 342

Describe and compare the impact that a change in one or more dimensions has on objects (e.g., doubling the edge of a cube affects the surface area). (1.2.1)		pp. 132-133, 138, 141-145, 158, 166, 168, 234-238, 241-249, 378, 380	
Explain the relationship between theoretical probability and empirical frequency of dependent events using simulations with and without technology. (1.4.2)	p. 522	pp. 456-564, 570 RAP pp. 22-25	
5.1.1 Apply multiple mathematical concepts and procedures in a given problem or situation.			
Estimate derived units of measure (e.g., miles per hour,	Opportunity to address pp. 116, 131-135, 139, 227,	pp. 35, 243, 251-252, 259, 315, 417-419	RAP p. 82

people/year, grams/cubic centimeters). (1.2.6)	230, 424-425		
Determine the final coordinates of a point after a series of transformations. (1.3.4)		pp. 138-148	
5.1.2 Understand how use different mathematical models and representations in the same situation.			
Identify, interpret, and use the meaning of slope of a line as a rate of change using concrete, symbolic, and technological models. (1.2.2)	pp. 181-199		pp. 46-90, 432
Construct one-dimensional, two-dimensional, and three-dimensional geometric figures using a variety of tools and technologies (e.g., angle bisectors, perpendicular bisectors, triangles given specific characteristics). (1.3.2)	pp. 327, 333, 390, 393, 416	pp. 80-108, 109-148, 370-372, 384-388	pp. 296, 308, 320, 321, 324, 337
Find the equation of a line in a variety of ways (e.g., from a table, graph, slope-intercept, point-slope, two points). (1.5.1)	pp. 158-180, 181-210	RAP pp. 8, 46, 52	pp. 46-90
Find the solution to a system of linear equations using tables, graphs and symbols. (1.5.6)	pp. 211-219, 226-233	pp. 59-78, 97-108	pp. 59-60, 63-85, 225-239
5.2.1 Analyze mathematical patterns and ideas to extend mathematical thinking and modeling in other disciplines.			
Justify a prediction or an inference based on a set of data. (1.4.6)	pp. 30-46, 74-93, 100, 461-476	pp. 197-210	pp. 124-130, 346-383, 384-405
Create a physical activity plan that results in a specified number of calories over a specified time. [PE]			

5.2.2 Know contributions of individuals and cultures to the development of mathematics.			
Recognize the mathematical contribution of a person or culture (e.g., create a report or presentation that highlights a mathematical contribution related to current mathematical study).	pp. 263, 273-275, 395, 402-409	pp. 325, 338, 345	p. 525
5.3.1 Understand situations in which mathematics can be used to solve problems with local, national, or international implications.			
Explain a method for determining whether a real world problem involves direct proportion or inverse proportion. (1.1.4)	RAP pp. 115-116	pp. 261-263, 313-314, 317	pp. 2-10, 16-24
Describe how changes in the dimensions of objects affect perimeter, area, and volume in real-world situations (e.g., how does the change in the diameter of an oil drum affect the area and volume). (1.2.1)	pp. 379, 380, 382	pp. 132-133, 138, 141-145, 158, 166, 168, 234-238, 241-249, 373-376, 378, 380	
Represent situations on a coordinate grid or describe the location of points that satisfy given conditions (e.g., locate a gas station to be equidistant from given cities; locate a staking point to maximize the grazing area of a tethered goat). (1.3.3)		p. 93	p. 553
5.3.2 Understand the mathematical knowledge and training requirements for occupational/career areas of interest.			
Select a career and research the mathematics necessary to get the job and the mathematics used in the job.			