GLENCOE CORRELATION
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WASHINGTON
Essential Academic Learning Requirements—Mathematics
Benchmark 3—Grade 10

OBJECTIVES	PAGE REFERENCES
1. The student understands and applies the concepts and procedures of mathematics.	
1.1 understand and apply concepts and procedures from number sense	
number and numeration	
understand and use properties and symbolic representations of rational numbers, powers, and roots	SE: 11-18, 222-227, 229-232, 294-298, 301-305 TWE: I 12, 222, 225 S 226, 236
compare and order rational numbers, powers, and roots	SE: 245-249, 250-255, 257-262, 814 TWE: I 246, 247, 251, 252, 260
understand concepts of and use processes involving prime and composite numbers, factors and multiples, and divisibility	SE: 222-227, 239-244 TWE: C 224 I 222, 224, 239, 240, 241
understand and apply the concepts of ratio and both direct and inverse proportion	SE: 492-497, 515 TWE: D 494, 495 I 493, 495
Computation	
understand operations on rational numbers, powers, and roots	SE: 6-10, 11-18, 20-27, 222-227, 229-232 TWE: C 13 D 24, 27 I 7, 13, 21 R 12
compute with rational numbers, powers, and roots	SE: 6-10, 11-18, 20-27, 222-227, 229-232, 250-255 TWE: C 13 D 8, 223, 253 I 14, 251
use mental arithmetic, pencil and paper, calculator, or computer as appropriate to the task involving real numbers	SE: 6-10, 11-18, 20-27, 222-227, 229-232 *Study Tip* 225 TWE: C 13 D 8, 14, 24 I 21, 222
Estimation	
identify situations involving rational numbers, powers, and roots in which estimation is sufficient and computation is not required	SE: 225-227, 296 TWE: D 225, 226, 296 I 225
use estimation to predict computation results and to determine the reasonableness of answers involving real numbers, *for example, estimating*	SE: 225-227, 296 TWE: D 225, 226, 296 I 225
1.2 understand and apply concepts and procedures from measurement	
attributes and dimensions	
understand how changes in dimension affect perimeter, area, and volume	See Glencoe's *Geometry* © 2004 SE: 599 #32-#34, 608 #51-#56, #57, 615 #52-#54, 698 #1, 710 #10, 723 #18 *Spreadsheet Investigation* 695, 708-709

OBJECTIVES	PAGE REFERENCES
measure objects and events directly or use indirect methods *such as finding the volume of a cone given its height and diameter*	SE: 255, 382, 415, 701-707
calculate rate and other derived and indirect measurements	SE: 507-508, 560-564
approximation and precision	
understand that the precision and accuracy of measurement are affected by the measurement tools and calculating procedures	See Glencoe's *Geometry* © 2004 SE: 14, 16 #5-#6, 17 #16-#21, 18 #43-#44 TWE: DI 14 *Skills Practice* 9-10 *Study Guide and Intervention* 7-8
know when to estimate and use estimation to obtain reasonable approximations, *for example, estimating how much paint is needed to paint the walls of a classroom*	See Glencoe's *Geometry* © 2004 SE: 142 #2, 263 #2, 284 #3, 292 #1, 345 #3, 571 #2, 605 #2, 625 #3, 657 #3 *Geometry Software Investigation* 384
systems and tools	
understand the benefits of standard units of measurement and the advantages of the metric system	SE: 709-714, 753-754 TWE: I 710, 711, 712
compare, contrast, and use both the U.S. system and metric system	See Glencoe's *Geometry* © 2004 SE: 730-731
select and use tools that will provide an appropriate degree of precision and accuracy for the situation, *for example, using kilometers vs. light years*	SE: 709-714, 753-754 TWE: I 710, 711, 712
1.3 understand and apply concepts and procedures from geometric sense	
properties and relationships	
use geometric properties and relationships to compare, contrast, describe, and classify 2- and 3-dimensional geometric figures	SE: 266, 426-430, 433-440, 449-452
construct geometric models and scale drawings using tools as appropriate, *for example, building a model of a bridge*	SE: 744
understand and use properties of symmetry, congruence, and similarity	SE: 286-293, 817-819 TWE: I 287
perform complex geometric constructions using a variety of tools and technologies*, such as paper folding, computer software, straightedge, compass*	SE: 744
locations and transformations	
understand and use coordinate grids	SE: 68-73, 75-80, 89-94, 96-99, 110-114 TWE: D 71 I 70, 71, 76, 91
understand and apply multiple geometric transformations using combinations of translations, reflections, and/or rotations	SE: 175-181, 769-775 TWE: D 773 G 770 I 176, 177

OBJECTIVES	PAGE REFERENCES
1.4 understand and apply concepts and procedures from probability and statistics	
Probability	
understand the properties of dependent and independent events	SE: 632-636, 644-650, 651-657, 658-663 TWE: D 639, 654, 660 I 633, 652, 659
understand and use appropriate counting procedures to determine probabilities	SE: 632-637, 638-643 TWE: D 639, 640
use both experimental and theoretical methods to determine probabilities	SE: 649
Statistics	
collect data using appropriate methods and technology	SE: 19, 83, 681, 682-685 TWE: A 83 D 672, 683 I 683
organize and display data in appropriate forms, *such as tables, graphs, scatter plots, and box and whisker plots*	SE: 81-86, 87-88, 95, 99, 159, 822-827 TWE: I 82, 83
calculate and use the different measures of central tendency, variability, and range as appropriate to describe data	SE: 664-669, 671-675 TWE: D 672 I 665, 672
use statistics to support different points of view, *for example, in a debate or a position paper*	SE: 664-669, 686 TWE: I 665
prediction and inference	
predict outcomes and design and conduct experiments to verify or disprove predictions	SE: 681 TWE: D 596
understand and make inferences based on the analysis of experimental results, statistical data, and graphical representations	SE: 682-685 TWE: D 683 I 683
1.5 understand and apply concepts and procedures from algebraic sense	
Patterns	
recognize, extend, and create complex patterns and sequences	SE: 578-582, 583-587, 588-592, 594-598 TWE: D 579, 590, 596 I 579, 584, 589
generalize and express rules describing patterns and sequences	SE: 578-582, 583-587, 588-592, 594-598 TWE: I 579, 585, 589, 600, 601
Representations	
translate among tabular, symbolic, and graphical representations of relations using =, ≠, >, <, ≥, ≤	SE: 20-27, 33-39, 56-62, 75-80, 96-99 TWE: D 22, 24, 35 I 21, 23, 34, 35
use variables to write expressions, equations, and inequalities	SE: 6-10, 20-27, 33-39, 56-62 TWE: I 7, 21, 35, 36, 59
operations	
simplify and evaluate expressions and formulas	SE: 6-10
solve equations and inequalities	SE: 20-27, 28-32, 33-39, 40-46 TWE: D 22, 24, 35 I 21, 23, 34, 35

OBJECTIVES	PAGE REFERENCES
2. The student uses mathematics to define and solve problems.	
2.1 investigate situations	
search systematically for patterns in complex situations	SE: 862-875
use multiple strategies	SE: 862-875
identify what information is missing or extraneous and compensate for it	SE: 862-875
analyze an unproductive approach and attempt to modify it or try a new approach	SE: 862-875
2.2 formulate questions and define the problem	
identify questions to be answered in complex situations	SE: 862-875
define problems in complex situations	SE: 862-875
identify the information that is known and unknown in complex situations	SE: 862-875
2.3 construct solutions	
organize and synthesize information from multiple sources	SE: 862-875
select and use appropriate mathematical tools	SE: 862-875
apply viable strategies and appropriate concepts and procedures to construct a solution	SE: 862-875
3. The student uses mathematical reasoning.	
3.1 analyze information	
compare, contrast, interpret and integrate information from multiple sources	SE: 19, 66, 255, 440 *Lessons in Home Buying and Selling* 3, 27, 84, 120, 192, 207
validate thinking and mathematical ideas using models, known facts, patterns, relationships, counter-examples, and proportional reasoning	SE: *Concept Check* 127, 133, 166, 207, 304 TWE: C 35, 112, 224, 315
3.2 predict results	
make and explain conjectures based on analysis of problem situations	SE: *Critical Thinking* 172, 181, 187, 227, 275
3.3 draw conclusions and verify results	
test conjectures by formulating a proof or by constructing a counterexample	SE: *Concept Check* 185 *Critical Thinking* 31, 143, 327, 618-621, 626 TWE: D 619 I 619
support arguments and justify results using inductive and deductive reasoning	SE: *Concept Check* 185 *Critical Thinking* 31, 143, 327, 618-621, 626 TWE: D 619 I 619
check for reasonableness of results	SE: *Concept Check* 119, 185, 205, 226, 386
reflect on and evaluate procedures and results and make necessary revisions	SE: *Critical Thinking* 262, 267, 275, 298, 351

OBJECTIVES	PAGE REFERENCES
4. The student communicates knowledge and understanding in both everyday and mathematical language.	
4.1 gather information	
develop or select and follow an efficient system for collecting information	SE: 522, 638, 681, 716
use reading, listening, and observation to access and extract mathematical information from multiple, self-selected sources *such as pictures, diagrams, physical models, oral narratives, and symbolic representations*	SE: *Open Ended* 8, 156, 317, 350, 445
integrate the use of a variety of available technologies to browse, select, and retrieve mathematical information from multiple sources	SE: 19, 66, 255, 440 *Lessons in Home Buying and Selling* 3, 27, 84, 120, 192, 207
4.2 organize and interpret information	
organize, clarify, and refine mathematical information in multiple ways - reflecting, verbalizing, discussing, or writing	SE: *Open Ended* 290, 414, 535, 563, 608
4.3 represent and share information	
express complex ideas and situations using mathematical language and notation in appropriate and efficient forms	SE: *Open Ended* 98, 178, 325, 450, 608, 654
explain or represent complex mathematical ideas and information in ways appropriate for audience and purpose	See Glencoe's *Geometry* © 2004 SE: 25 #1, 71 #1, 84 #2, 147 #1, 149 #53, 164 #32, 191 #46, 198 #37, 284 #1, 296 #56-#58, 369 #62, 444 #41, 625 #1, 693 #32, 704 #1
5. The student understands how mathematical ideas connect within mathematics, to other subject areas, and to real-life situations.	
5.1 relate concepts and procedures within mathematics	
relate and use conceptual and procedural understandings among multiple mathematical content strands	SE: 45, 187, 243, 292, 295 TWE: 4c, 54c, 108c, 152c, 218c
relate and use multiple equivalent mathematical models and representations	SE: 63-66 TWE: D 65 I 64, 65, 66
5.2 relate mathematical concepts and procedures to other disciplines	
extend mathematical patterns and ideas to other disciplines	SE: 81-86, 129-134, 300-305 TWE: D 65 I 64, 65, 66
apply mathematical thinking and modeling in other disciplines	SE: 81-86, 129-134, 300-305 TWE: D 65 I 64, 65, 66
describe examples of contributions to the development of mathematics *such as the contributions of women, men, and different cultures*	SE: 16, 372, 489, 612

OBJECTIVES	PAGE REFERENCES
5.3 relate mathematical concepts and procedures to real-life situations	
identify situations in which mathematics can be used to solve problems with local, national, or international implications *such as calculating resources necessary for interstate highway maintenance*	See Glencoe's *Geometry* © 2004 SE: 72 #15-#17, 113 #41, 190 #36-#38, 350, 374 #14-#15, 375 #25, 397 #24, 498, 555 #7, 694 #43
investigate the mathematical knowledge and training requirements for occupational/career areas of interest	SE: *Career Choices* 85, 121, 237, 363, 561

Codes Used for TWE Pages

A	Algebra Activity
C	Concept Check
D	Daily Intervention
G	Graphing Calculator Investigation
I	In-class Exercises
R	Reading Tip
S	Study Notebook