GLENCOE CORRELATION

MATHEMATICS: APPLICATIONS AND CONNECTIONS, Course 2

OHIO

Model Curriculum and Mathematics Proficiency Outcomes

Grade 7

OBJECTIVES	LESSON REFERENCES
Ohio Model Curriculum	
I. Strand One: *Patterns, Relations, and Functions* The student will be able to. . .	
1. describe and represent relationships with tables, graphs, rules, and words.	3-2A, 4-4A, 5-7A, 6-4, 6-5, 6-6
2. describe, extend, analyze, and create a wide variety of patterns.	1-6, 4-3, 5-7A
3. explore and symbolize direct and inverse variation.	8-3, 8-3B
4. extend the investigation of number patterns.	5-7A
5. generate ordered pairs with and without a calculator to graph linear equations.	6-7
6. explore absolute value in the context of distance between points.	5-1
7. explore and describe in words simple and complex patterns in industrial technology and science.	1-6, 5-7A
II. Strand Two: *Problem-Solving Strategies* The student will be able to. . .	
1. use and open sentence (algebraic equation) to symbolize a problem situation and solve the equation to find a solution to the problem.	1-3A, 1-3, 1-3B, 6-4
2. validate solutions to problems in a variety of ways.	1-1, 2-3B, 6-1B, 10-1A
3. rephrase a problem as a simpler problem to find a method of solution.	11-1B
4. extend the application of previously learned strategies.	9-4B, 11-1B, 13-1A
5. identify problems that are similar in structure.	3-2A, 7-3B, 12-1B
III. Strand Three: *Number and Number Relations* The student will be able to. . .	
1. represent percent by proportions and algebraic equations and solve for missing terms.	8-8, 8-9, 11-2
2. solve problems and make applications involving percent.	8-8, 8-9, 11-2, 11-3, 11-5A, 11-5, 11-6, 11-7, 11-7B
3. solve and use proportions.	8-3, 8-4

OBJECTIVES	LESSON REFERENCES
4. develop the concept of integers using concrete models, including number lines, and in the context of real-world situations.	5-1, 5-2
5. compare, order, and determine the equivalence of whole numbers, fractions, decimals, percents, and integers.	2-1, 4-10, 5-2, 11-1
6. expand understanding of place value to include bases other than ten.	
7. find square root using a calculator.	10-2
8. explore the concept of pi by comparing the measure of the diameter and circumference of circles.	7-7
9. explore interpretations of addition and multiplication that are different for whole numbers and fractions.	7-2, 7-4A, 7-4
10. develop and apply theories about primes, factors, and multiples in real-world and mathematical problem situations.	1-4, 4-1A, 4-1, 4-2, 4-4, 4-9
11. explore powers and scientific notation as alternate ways of writing numbers and in the context of calculators.	1-4, 2-9
IV. Strand Four: *Geometry* The student will be able to. . .	
1. explore and verbalize relationships between different kinds of figures.	9-2, 9-3, 9-4
2. explore and describe procedures for changing one figure or shape to another.	9-3
3. develop minimum sets of properties that describe a geometric figure.	9-2, 9-4
4. develop definitions of common geometric figures.	9-2, 9-4
5. build the model of a figure given top, side, and front views.	12-1A
6. validate fundamental geometric theorems using manipulative materials and informal arguments.	9-1B, 9-2A, 9-2B, 9-4A
7. visualize and describe the results of folding geometric figures.	9-2B, 9-7
8. use separation of rectangles as an area model for the distributive property.	7-8
V. Strand Five: *Algebra* The student will be able to. . .	
1. use parentheses accurately to group numbers for applying operations.	1-2
2. apply formulas to problem situations.	1-7, 7-6, 7-7, 10-5, 10-6, 12-3
3. describe problem situations involving ratios, proportions, and percents with algebraic expressions.	8-1, 8-2, 8-3, 8-4, 8-9, 11-3, 11-5, 11-6, 11-7

OBJECTIVES	LESSON REFERENCES
4. solve linear equations with one variable by working backward (relate to inverse operations).	1-5, 1-6, 6-1B
5. evaluate algebraic expressions (simple substitutions).	1-3A, 1-3, 1-3B, 6-4
6. interpret graphs of problem situations describing linear, quadratic, and exponential relationships.	6-5, 6-6, 6-7
7. construct graphs describing problem situations and assign and label scales to axes of graphs appropriately.	3-2, 3-7, 6-6, 6-7
8. relate ratio and proportion concepts to variation situations, direct and inverse.	8-1, 8-2, 8-3, 8-4
VI. Strand Six: *Measurement* The student will be able to meet any previous objective and, in addition. . .	
1. select and compute with appropriate standard or metric units to measure length, area, volume, weight, capacity, time, money, and temperature.	1-7, 2-8, 3-4, 7-5, 7-6, 12-2
2. make appropriate judgments regarding accuracy and precision.	7-6, 9-3
3. make reasonable estimates of measurements.	10-4, 12-2
4. state and apply area formulas for the following regions: circular, rectangular, parallelogram, trapezoidal, and triangular.	1-7, 10-5, 10-6
5. apply volume formulas for the following: prisms, cylinders, and spheres.	12-2, 12-2B, 12-3
6. determine formulas for surface area.	12-4A, 12-4, 12-5
7. explore measurement of time relative to time zones.	See Glencoe's *Mathematics Connections* page 35.
8. determine what to measure and measure to calculate perimeters, areas, and volumes.	1-7, 7-6, 10-5, 10-6, 12-2, 12-3
VII. Strand Seven: *Estimation and Mental Computation* The student will be able to. . .	
1. perform, refine, and extend the objectives listed in previous grades.	1-1, 1-2, 2-1, 2-2
2. adjust fractional number and decimal estimates in all operations.	2-3, 7-1
3. estimate with percents, using 1%, 10%, and 50%, and multiples of these numbers.	8-7, 11-1
4. use fractions, decimals, and percent equivalents interchangeably in making estimates.	8-5, 8-6, 8-7, 11-1
5. estimate the square root of a given number to the nearest whole number or range of whole numbers.	10-2
6. use estimation to eliminate choices in multiple choice tests.	2-3B

OBJECTIVES	LESSON REFERENCES
VIII. Strand Eight: *Data Analysis and Probability* The student will be able to. . .	
1. collect data and create the appropriate type of graph and use the appropriate scale.	3-2A, 3-2, 3-3, 11-3
2. create, read, and interpret tables, charts, diagrams, and maps.	3-1, 3-2A, 4-4A, 8-4A
3. identify the ordered pair for a point on a labeled coordinate plane.	5-3
4. calculate and explore relationships between the mean, median, mode, and range of a given set of numbers.	3-4, 3-4B
5. explore permutations and combinations and the relationships between them.	13-5A, 13-5, 13-6A, 13-6
6. make logical inferences from statistical data.	3-2, 11-4
7. detect misuses of statistical or numerical information.	3-7
8. develop and interpret frequency tables.	3-1
9. compute averages.	3-4, 3-4B
LEARNING OUTCOMES FOR NINTH-GRADE MATHEMATICS	
The student will. . .	
1. compute with whole numbers, fractions, and decimals.	1-5, 2-3, 2-4, 2-6, 7-2, 7-4, 7-9
2. compare, order, and determine equivalence of fractions, decimals, percents, whole numbers, and integers.	2-1, 4-10, 5-2
3. solve and use proportions.	8-3, 8-4
4. round numbers to the nearest thousand, hundred, ten, one, tenth, and hundredth.	2-2, 2-3
5. solve problems and make applications involving percentages.	11-3, 11-5A, 11-5, 11-6, 11-7 11-7B
6. select and compute with appropriate standard or metric units to measure length, area, volume, angles, weight, capacity, time, temperature, and money.	1-7, 2-8, 3-4, 7-5, 12-2
7. convert, compare, and compute with common units of measure within the same measurement system.	2-8, 7-5
8. read the scale on a measurement device to the nearest mark and make interpolations where appropriate.	7-6
9. recognize, classify, and use characteristics of lines and simple two-dimensional figures.	9-1B, 9-2A, 9-2, 9-4A, 9-4
10. find perimeters (circumference) and areas of polygons (circles).	1-7, 7-6, 10-5, 10-6, 12-2, 12-3
11. find surface areas and volumes of rectangular solids.	12-2, 12-4
12. read, interpret, and use tables, charts, maps, and graphs to identify patterns, note trends, and draw conclusions.	3-1, 3-2A, 3-2, 4-4A, 8-4A, 11-4

OBJECTIVES	LESSON REFERENCES
13. use elementary notions of probablility.	4-8
14. compute averages.	3-4, 3-4B
15. solve simple number sentences and use formulas.	1-5, 6-1, 6-2, 6-3
16. evaluate algebraic expressions (simple substitutions).	1-3A, 1-3, 1-3B, 6-4