Glencoe CORRELATION

Mathematics: Applications and Connections, Course 3

OHIO

Model Curriculum and Mathematics Proficiency Outcomes

Grade 8

OBJECTIVES	LESSON REFERENCES
Ohio Model Curriculum	
I. Strand One: *Patterns, Relations, and Functions* The student will be able to. . .	
1. use patterns and keys on the calculator to extend the concept of inverse operations.	1-4, 1-5
2. use inverted and conventional symbols to explain a function relation.	1-7B, 10-1, 10-1B
3. explore the right triangle relations sine, cosine, and tangent and their applications in measurement.	8-8B
4. explore the effect of multiplying the dimensions of a simple shape or solid by a constant factor and relate to the change in area or volume.	1-8, 11-3
5. explore and describe in words simple and complex patterns in the environment.	7-5A
II. Strand Two: *Problem-Solving Strategies* The student will be able to. . .	
1. select appropriate notation and methods for symbolizing the problem statement and the solution process.	1-1, 1-6, 4-1A, 5-2A
2. extend the application of previously learned strategies to a wide variety of problems.	2-9B, 8-3B, 9-5A, 12-6A
3. validate and generalize problem solutions.	1-1, 3-6A
III. Strand Three: *Numbers and Number Relations* The student will be able to. . .	
1. understand, represent, and use numbers written in a variety of equivalent forms in real-world and mathematical problem-solving situations.	3-2, 6-5
2. develop an understanding of operations with integers, using the number line and other models of integers.	2-3, 2-4, 2-5, 2-7, 2-8
3. represent numerical relationships in one- and two-dimensional graphs.	1-9, 2-1, 2-10, 9-6
4. understand the real number system and describe it in words.	9-3
5. construct segments to represent irrational numbers such as the square roots. or 2,3,5, etc.	9-2, 9-3, 9-5B

OBJECTIVES	LESSON REFERENCES
6. locate certain irrational numbers on the number line and find an irrational number between any two given numbers.	6-8A, 9-3, 9-5B
7. understand and describe in words how the negative numbers expand the non-negative rationals to the rational number system.	6-4
8. give a meaningful explanation for the impossibility of division by zero.	1-5, 6-4, 7-4
9. explore interesting topics such as abundant, deficient, or perfect numbers; triangular and square numbers; cubes; palindromes; factorials; and Fibonacci numbers.	7-5B, 9-1, 9-2A, 12-2
10. solve problems and make applications involving percentages.	8-2, 8-3
IV. Strand Four: *Geometry* The student will be able to. . .	
1. calculate missing measurements of similar figures.	5-6, 8-7
2. investigate the relationships between angles formed when parallel lines are cut by a transversal, using diagrams and computer graphics.	5-1, 5-1B
3. sketch three-dimensional figures from different perspectives.	11-2A, 11-2
4. graph similar figures, reflections, translations, and rotations on a coodinate plane.	10-7, 10-8, 10-9
5. explore linear relationships graphically using graph paper and computer or calculator graphics.	9-6, 10-4, 10-4B
6. extend experiences validating fundamental geometric theorems.	5-1B, 5-3A, 5-4A, 5-5B, 5-6A
7. find perimeters (circumferences) and areas of polygons (circles).	1-8, 7-6, 7-7A, 7-7, 11-1
8. explore uses of the Pythagorean theorem.	9-4A, 9-4
9. find suface areas and volumes of rectangular solids.	11-3, 11-5
V. Strand Five: *Algebra* The student will be able to. . .	
1. use and relate tables, graphs, and equations to solve problem situations involving exponential growth and decay, simple interest, and compound interest.	1-6, 4-1A, 10-4, 10-5, 10-6A
2. explain in words the meaning of the expression “solution of an equation”.	1-3
3. investigate solutions to pairs of simultaneous equations.	10-5
4. solve linear inequalities in one variable.	1-9, 7-10
5. interpret problem situations described by linear inequalities in words and graphically.	1-9, 7-10

OBJECTIVES	LESSON REFERENCES
6. find the distance between two points in the coordinate plane.	9-6
7. explore and interpret the concepts of slope and intercept as characteristics of linear functions.	
8. describe and solve variation situations, direct and inverse, algebraically and graphically.	3-3
9. factor mathematical expressions involving a common factor.	13-7
10. select appropriate tools and/or techniques for computation.	1-2, 3-5, 11-1
11. solve simple number sentences and use formulas.	1-3, 1-4, 1-5, 1-7, 1-8, 2-9A, 2-9, 7-7, 7-9, 11-1, 11-3, 11-4, 11-5, 11-6
VI. Strand Six: *Measurement* The student will be able to meet any previous objective and, in addition. . .	
1. measure and compute perimeter for irregular polygonal figures.	1-8
2. compute area for regular polygonal regions, other composite figures, and lattice (geoboard) figures.	1-8, 7-6, 7-6B
3. make appropriate measurements and compute volume of solids such as prisms, cylinders, pyramids, and cones.	11-3, 11-4
4. recognize and use the concepts of significant digits and accuracy in measurements.	11-7
5. recognize and use the concepts of precision and relative error in measurements.	11-7
6. successfully utilize a ruler and protractor for specific measurement tasks.	5-1A, 5-1
7. read a scale on a measurement device to the nearest mark and make interpolations where appropriate.	5-1A
8. make change using the process of addition.	1-3
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, 1-3, 1-4, 1-5, 1-6
2. use fractions, decimals, and percent equivalents interchangeably in making estimates.	3-6
3. estimate the square root of a given number to the nearest whole number or range of whole numbers.	9-2A, 9-2
4. use estimation to determine the reasonableness of results in all problem solving.	1-1, 3-6, 4-2, 8-7, 9-4, 10-4, 10-9

OBJECTIVES	LESSON REFERENCES
5. extend mental computation to the solution of simple equations.	8-1
6. use estimation to eliminate choices in multiple-choice tests.	
7. use estimation to determine reasonableness of problem solutions.	3-6A
VIII. Strand Eight: *Data Analysis and Probablility* The student will be able to. . .	
1. collect data and create appropriate graphs to illustrate.	4-1, 4-1B, 4-3, 4-3B, 4-5B
2. make identifications, comparisons, and predictions, and solve application problems, using picture, bar, circle, and line graphs.	4-1, 4-1B, 4-2, 4-3, 4-3B, 4-5B, 10-6A
3. find the mean, mode, median, and range of a set of data and use them in application problems.	4-4, 4-4B, 4-5
4. detect misuses of statistical or numerical information.	4-8
5. use elementary notions of probability.	6-6
6. explore the role of sampling and collecting data in making a statistical argument.	12-7
LEARNING OUTCOMES FOR NINTH-GRADE MATHEMATICS	
The student will:	
1. compute with whole numbers, fractions, and decimals.	1-3, 7-1, 7-2, 7-3, 7-8
2. compare, order, and determine equivalence of fractions, decimals, percents, whole numbers, and integers.	2-2, 3-4, 6-5, 6-8
3. solve and use proportions.	3-3, 8-1
4. round numbers to the nearest thousand, hundred, ten, one, tenth, and hundredth.	7-7, 11-1, 11-3
5. solve problems and make applications involving percentages.	8-2, 8-3
6. select and compute with appropriate standard or metric units to measure length, area, volume, angles, weight, capacity, time, temperature, and money.	5-1A, 11-7
7. convert, compare, and compute with common units of measure within the same measurement system.	1-5, 5-1A
8. read the scale on a measurement device to the nearest mark and make interpolations where appropriate.	5-1A
9. recognize, classify, and use characteristics of lines and simple two-dimensional figures.	5-1, 5-1B
10. find perimeters (circumference) and areas of polygons (circles).	1-8, 7-6, 7-7A, 7-7, 11-1
11. find surface areas and volumes of rectangular solids.	11-3, 11-5

OBJECTIVES	LESSON REFERENCES
12. read, interpret, and use tables, charts, maps, and graphs to identify patterns, note trends, and draw conclusions.	4-1, 4-1B, 4-2, 4-3, 4-3B, 4-5B, 4-8, 10-6A
13. use elementary notions of probability.	6-6
14. compute averages.	4-4, 4-4B
15. solve simple number sentences and use formulas.	1-3, 1-4, 1-5, 1-7, 1-8, 2-9A, 2-9, 7-7, 7-9, 11-1, 11-3, 11-4, 11-5, 11-6
16. evaluate algebraic expressions (simple substitutions).	1-3, 1-3B, 1-4, 1-5