



Correlation of *Interactive Mathematics Program (IMP)* with West Virginia Specific Criteria for Content and Skills Integrated Math Year Three

INTRODUCTION

Integrated Mathematics – Years I, II and III provide a core mathematics curriculum for all students in grades 9–12; year IV continues the preparation of students for college mathematics. The courses are designed to implement the vision of high school mathematics portrayed in the National Council of Teachers of Mathematics Principles and Standards for School Mathematics. These courses feature ‘strands’ of algebra and function, geometry and trigonometry, statistics and probability, and discrete mathematics connected within units by fundamental ideas and across units by mathematical processes.

The evaluation of all mathematics materials is based on separate criteria for three (3) categories:

- Category I: Standards Based Components
- Category II: Technology and Manipulatives
- Category III: Mathematics Content

In order to be approved and listed on the West Virginia Multiple List for Mathematics Materials, each category must be evaluated separately.

- Category I: Standards Based Components must meet 80% (4/5) of the criteria at "In-depth" and/or "Adequate."
- Category II: Technology and Manipulatives must also meet 80% (7/8) of the criteria at "In-depth" and/or "Adequate."
- Category III: Mathematics Content must meet 80% of the criteria at "In-depth" and/or "Adequate" for each grade level or course.



Standard	Expectations	Correlation of <i>IMP</i> Year 3
<p>All materials at this grade level (1) be research based and theory driven; (2) incorporate basic, accurate information that is developmentally appropriate; (3) use interactive activities that actively engage students; (4) provide students with opportunities to model and practice relevant skills; (5) develop higher order thinking opportunities; and (6) be based on national standards. The instructional materials should provide students with opportunities to:</p>	<hr/> <p>1. solve systems of linear equations numerically and graphically, by the elimination method and by the substitution method (A1.2.11)</p> <hr/> <p>2. add and subtract polynomials (A1.2.12)</p> <hr/> <p>3. multiply and divide binomials by binomials or monomials (A1.2.13)</p> <hr/> <p>4. factor polynomials by using appropriate methods (A1.2.14)</p> <hr/> <p>5. solve quadratic equations by graphing, factoring and quadratic formula (A1.2.16)</p>	<p>A. ALGEBRA/PRECALCULUS 3</p> <hr/> <p><i>Meadows or Malls?</i> Strategy for Linear Programming: pp. 166-176 Equations, Points, Lines, & Planes: pp. 184-191 More Cookies: pp. 196-197 Equations, Equations, Equations: pp. 199-206 Equations & More Variables in Linear Programming: pp. 208, 211-212, 217-221</p> <hr/> <p><i>Meadows or Malls?</i> Equations, Equations, Equations: pp. 202-206 Equations & More Variables in Linear Programming: pp. 211-212</p> <hr/> <p>YEAR 4: <i>Know How</i></p> <hr/> <p><i>Fireworks</i> Factoring & Solving: pp. 19-26 Algebra of the Vertex: pp. 30, 34</p> <p><i>Orchard Hideout!</i> Cable Complications: p. 111</p> <hr/> <p><i>Fireworks</i> World of Quadratics: p. 8 Factoring & Solving: pp. 19-26 Algebra of the Vertex: pp. 31-34</p> <p>YEAR 4: <i>High Dive</i></p>



Standard	Expectations	Correlation of <i>IMP</i> Year 3
	<hr/> <p>6. add, subtract, multiply and divide simple rational expressions (A1.2.17)</p> <hr/> <p>7. factor higher order polynomials by applying various methods including factoring by grouping and the sum and difference of two cubes (A2.2.2)</p> <hr/> <p>8. solve quadratic equations over the set of complex numbers: apply the techniques of factoring and completing the square and the quadratic formula; use the discriminant to determine the nature of the roots; confirm the solutions numerically and graphically; and apply to practical problems (A2.2.6)</p> <hr/> <p>9. define the components of a matrix: develop and use the appropriate field properties by adding, subtracting, and multiplying; solve a system of linear equations using matrices; and apply skills toward solving practical problems (A2.2.7)</p>	<p>A. ALGEBRA/PRECALCULUS 3 (<i>continued</i>)</p> <hr/> <p>YEAR 4: <i>Know How</i></p> <hr/> <p><i>Fireworks</i> Factoring & Solving: pp. 19-26 Algebra of the Vertex: pp. 30, 34</p> <p><i>Orchard Hideout!</i> Cable Complications: p. 111</p> <p>YEAR 4: <i>Know How</i></p> <hr/> <p><i>Meadows or Malls?</i> Saved by the Matrices!: 223-226, 229-246 Solving "Meadows or Malls?": p. 250</p>



Standard	Expectations	Correlation of <i>IMP</i> Year 3
	<p>10. define a function: find the domain, range, zeros; find the inverse of a function; find the value of a function for a given element in its domain; and perform basic operations on functions including composition of functions (A2.2.9)</p> <hr/> <p>11. solve quadratic inequalities and graph their solution sets (A2.2.11)</p> <hr/> <p>12. define a logarithmic function: transform equations from exponential form into logarithmic form; and apply the basic properties of logarithms to simplify or expand an expression (A2.2.16)</p> <hr/> <p>13. perform a quadratic regression and use the results to predict specific values of a variable. Identify the regression equation (A2.2.17)</p>	<p>A. ALGEBRA/PRECALCULUS 3 (<i>continued</i>)</p> <hr/> <p><i>Fireworks</i> World of Quadratics: pp. 11-12, 17 Factoring & Solving: pp. 19-21, 24-26 Algebra of the Vertex: pp. 28-34</p> <p><i>Meadows or Malls?</i> Saved by the Matrices!: 242-244</p> <p><i>Small World, Isn't It?</i> All in a Row: pp. 304-305, 311 Beyond Linearity: pp. 313-315, 318 Model for Populations Growth: pp. 328-331, 336-337 Best Base: pp. 347-348</p> <p>YEAR 4: <i>World of Functions</i></p> <hr/> <p><i>Small World, Isn't It?</i> Model for Populations Growth: pp. 339-340</p> <hr/> <p><i>Meadows or Malls?</i> Saved by the Matrices!: 227-228, 246</p>



Standard	Expectations	Correlation of <i>IMP</i> Year 3
	<p>14. establish the relationship between exponential and logarithmic functions; graph related functions and include their domain and range (PC.2.4)</p> <hr/> <p>15. solve equations and practical problems involving exponential and logarithmic expressions: include natural and common logarithms; use laws of exponents; and confirm solutions graphically and numerically (PC.2.5)</p> <hr/> <p>16. find the limit of a function, a sequence, or a series by graphing, intuitive reasoning, algebraic methods, and numerical substitution (PC.2.7)</p> <hr/> <p>17. perform mathematical operations with vectors and use vectors to solve practical problems (PC.2.8)</p>	<p>A. ALGEBRA/PRECALCULUS 3 (<i>continued</i>)</p> <hr/> <p><i>Small World, Isn't It?</i> Model for Populations Growth: pp. 328-333, 335</p> <hr/> <p><i>Small World, Isn't It?</i> Beyond Linearity: pp. 324-325 Model for Populations Growth: pp. 328-335, 339-343 Best Base: pp. 345-351, 354-355 Back to the Data: pp. 357, 359-360</p> <hr/> <p><i>Orchard Hideout!</i> All About Circles: pp. 90-96</p> <p><i>Small World, Isn't It?</i> Beyond Linearity: pp. 313-321 Best Base: pp. 347, 349, 351, 354</p> <hr/> <p><i>Meadows or Malls?</i> Saved by the Matrices!: 223-226, 238-245 Solving "Meadows or Malls?": pp. 248-250</p> <p>YEAR 4: <i>High Dive</i></p>



Standard	Expectations	Correlation of <i>IMP</i> Year 3
	<p>1. use the basic concepts of symbolic logic including identifying the converse, inverse, and contrapositive of a conditional statement and testing the validity of conclusions with Venn Diagrams (G.3.3)</p> <p>2. explore the relationship between angles formed by two lines cut by a transversal when lines are and are not parallel, and use the results to develop methods to show parallelism (G.3.6)</p> <p>3. investigate measures of angles formed by chords, tangents, and secants of a circle and the relationship to its arcs (G.3.12)</p> <p>4. develop and apply concepts of analytical geometry such as formulas for distance, slope, and midpoint and apply these to finding dimensions of polygons on the coordinate plane (G.3.16)</p>	<p>B. GEOMETRY/TRIGONOMETRY 3</p> <hr/> <p>YEAR 2: <i>All About Alice</i> <i>Orchard Hideout!</i> Orchards & Mini-Orchards: pp. 62-67, 72 Equidistant Points & Lines: pp. 83, 85, 88 All About Circles: pp. 97-99</p> <hr/> <p>YEAR 1: <i>Shadows</i> <i>Orchard Hideout!</i> Orchards & Mini-Orchards: pp. 65-66 <i>Small World, Isn't It?</i> All in a Row: p. 310</p> <hr/> <p><i>Orchard Hideout!</i> Equidistant Points & Lines: pp. 84-88 All About Circles: pp. 92-95 Cable Complications: p. 105 Lines of Sight: pp. 113-114, 117-119</p> <p>YEAR 4: <i>High Dive</i></p> <hr/> <p><i>Orchard Hideout!</i> Orchards & Mini-Orchards: pp. 68, 74-75 Coordinates & Distance: pp. 77-79, 81 Equidistant Points & Lines: pp. 83, 88 Cable Complications: pp. 104, 108-110 Lines of Sight: pp. 113-114, 117-119</p>



Standard	Expectations	Correlation of <i>IMP</i> Year 3
	<p>5. using various methods, construct a triangle's medians, altitudes, angle and perpendicular bisectors; identify conjectures and develop mathematical arguments about their relationships (G.3.17)</p> <hr/> <p>6. compare and contrast other geometry to Euclidean geometry (G.3.19)</p> <hr/> <p>7. using the Cartesian coordinate system, find the dimensions of a polygon, given the coordinates of the polygon (G.3.21)</p> <hr/> <p>8. perform mathematical operations with vectors and use vectors to solve practical problems (T.3.16)</p> <hr/> <p>1. expand binomials with positive integral exponents by the use of Pascal's triangle and the Binomial Theorem (PC.2.3)</p>	<p>B. GEOMETRY/TRIGONOMETRY 3 (<i>continued</i>)</p> <hr/> <p>YEAR 2: <i>Do Bees Build it Best?</i> <i>Orchard Hideout!</i> Orchards & Mini-Orchards: pp. 69-73 All About Circles: pp. 92-98 Cable Complications: p. 104 Lines of Sight: pp. 113-114, 117-119</p> <hr/> <p><i>Orchard Hideout!</i> Equidistant Points & Lines: pp. 83, 88 Cable Complications: pp. 104 Lines of Sight: pp. 113-114, 117-119</p> <hr/> <p><i>Meadows or Malls?</i> Saved by the Matrices!: 223-226, 238-245 Solving "Meadows or Malls?": pp. 248-250</p> <p>YEAR 4: <i>High Dive</i></p> <p>C. DATA ANALYSIS/STATISTICS 3</p> <hr/> <p><i>Pennant Fever</i> Combinatorial Reasoning: pp. 445-446 Pascal's Triangle: pp. 450-457</p>