**Hamilton County Department of Education**

**Bridge Mathematics Pacing Guide**

**2012-2013**

The following Common Core Mathematical Practices should be embedded in all lessons.

Mathematical Practices

1. Make sense of problems and persevere in solving them.

2. Reason abstractly and quantitatively.

3. Construct viable arguments and critique the reasoning of others.

4. Model with mathematics.

5. Use appropriate tools strategically.

6. Attend to precision.

7. Look for and make use of structure.

8. Look for and express regularity in repeated reasoning.

For more information on the Common Core please visit <http://www.corestandards.org/the-standards>

**Hamilton County Department of Education**

**Bridge Mathematics Pacing Guide**

**2012-2013**

**1st Quarter**

|  |  |
| --- | --- |
| **Big Ideas** | The first quarter of Bridge Mathematics is devoted to the development of algebraic functions. Both linear and non-linear functions are reintroduced and developed to a level of deeper understanding. Applications in the form of real-world problems are embedded throughout the course and in worthwhile tasks. |
| **Standards Addressed this Quarter** | **Tennessee Standards** |
| **I. Ways of Looking: Revisiting Concepts**  Students learn mathematics best by being introduced to concepts that they have previously studied in a new approach. The concepts in this section appear in a manner that emphasizes their basic definition. This presentation of each concept is based upon the format that would be a “best practice” of introducing the particular concept. |
| **II. Making Connections**  Making connections allows those concepts that need a more complex look to be studied through two different modalities. This allows connections to be made between the concepts, and allows for a more in-depth understanding of the topics supporting the foundation for problem solving application. In addition, building topics in this manner helps students work problems of a higher depth of knowledge level. |
| **III. Applications: Ways of Looking at the World**  Students are confronted with different ways to look at the world. Here students look at multiple representations of concepts, blend their new understanding of topics with applications, and have the opportunity to model contextual situations. Various applications should be addressed each week, throughout the course to support theoretical learning and increased complexity. |
| **Common Core Standards** |
| * Understand solving equations as a process of reasoning and explain the reasoning. |
| * Solve equations and inequalities in one variable. |
| * Represent and solve equations and inequalities graphically. |
| * Solve systems of equations. |
| * Perform arithmetic operations on polynomials. |
| * Rewrite rational expressions. |
| * Interpret the structure of expressions. |
| * Write expressions in equivalent forms to solve problems. |
| * Perform arithmetic operations with complex numbers. |

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**2012-2013**

**1st Quarter**

|  |  |  |  |  |  |  |
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| **Week** | **Check** | **Common Core** | **Lesson** | **Essential Understanding** | **ACT Standards** | |
| **Unit Topic: Linear Functions** | | | | | | |
| 1 | 1.3.2, 1.3.3, |  | 1-1 | The Language of Mathematics | EE 13-16  EE 20-23 | |
| 1.3.2, 1.3.3, 1.5.1 |  | 1-2 | Real Numbers |  | |
| 3.2.2, 3.4.2 |  | 1-3 | Union and Intersection of Sets | PS 24-27 | |
| 1.3.2, 1.3.3, |  | 1-4 | Addition, Subtraction, and Estimation |  | |
| 1.3.2, 1.3.3, |  | 1-5 | Multiplication and Division |  | |
| 1.3.2, 1.3.3,1.3.6, 1.5.2, 2.3.4 |  | 1-7 | Distributive Property and Properties of Exponents | NC 24-27 | |
| 2 | 1.3.1, 1.3.5,1.5.2, 2.1.1, 2.3.2, 3.1.1 |  | 1-8 | Exponents and Scientific Notation | NC 24-27  NC 28-32 | |
|  |  |  | [www.connectseward.org/shs/algebra1/planetwebquest/unit3.html](http://www.connectseward.org/shs/algebra1/planetwebquest/unit3.html) |  | |
|  |  |  | *Unit Assessment* |  | |
| 1.2.6 |  | 2-1 | Patterns and Iterations |  | |
| 2.3.3, 3.3.1 | A. REI.11 | 2-2 | Coordinate Plane, Relations, and Functions | GR 20-23  F 20-23 | |
| 1.1.2 | A.REI.1 | 2-3 | Linear Functions | GR 24-27 | |
| 1.3.4, 1.3.6, 2.4.1 | A. REI.3 | 2-4 | Solve One-Step Equations | BO 13-15  BO 16-19 | |
| 1.3.4,1.3.6, 2.4.1 | A. REI.3 | 2-5 | Solve Multi-Step Equations | BO 13-15  BO 16-19 | |
| 3 | 1.1.3, 1.4.1, 1.5.3 | A.REI.10 | 6-1 | Slope of a Line and Slope-Intercept Form | | GR 20-23  GR 24-27 |
| 1.1.1,2.1.2, 2.4.2 | A. REI.3 | 2-6 | Solving Inequalities by Multiplication and Division | | EE 24-27  GR 24-27 |
| 2.1.2, 2.4.2 | A. REI.3 | 2-7 | Solve Linear Inequalities | | EE28-32  GR 28-32 |
|  |  |  | *Unit Assessment* | |  |
| 2.2.4 |  | 6-2 | Parallel and Perpendicular Lines | | GR 28-32 |
| 2.4.1 | A. REI.6 | 6-4 | Systems of Equations | | EE 28-32 |
| 4 |  | A. REI.6 | 6-5 | Solve Systems of Substitution | | EE 28-32 |
|  | A. REI.6 | 6-6 | Solve Systems by Adding and Multiplying | | EE 28-32 |
| 2.2.1, 3.3.3 |  | 6-7 | Problem Solving Skills: Determinants and Matrices | |  |
| 2.4.2 | A.REI.12 | 6-8 | Systems of Inequalities | | EE 28-32 |
|  |  |  | *Unit Assessment* | |  |
| 2.4.2 |  | 6-9 | Linear Programming | | EE 33-36 |
| **Unit Topic: Non Linear Algebraic Functions** | | | | | | | |
| 5 | 1.3.7 | A-APR.1 | 11-1 | Add and Subtract Polynomials | | EE 24-27 |
| 1.3.7 | A-APR.1 | 11-2 | Multiply by a Monomial | | EE 20-23 |
| 1.3.7 |  | 11-3 | Divide and Find Factors | | NC 20-23 |
| 1.3.7, 2.1.3 | A-APR.1 | 11-4 | Multiplying Binomials | | EE 20-23 |
| 6 | 1.3.7 | A-APR.6 | 11-12 | Dividing Polynomials | |  |
| 1.3.7 | A-SSE.1 | 11-5 | Find Binomial Factors in a Polynomial | | EE 24-27 |
| 1.3.7, 2.1.3 | A.SSE.3.a | 11-6 | Special Factoring Patterns | | EE 24-27 |
| 1.3.7 | A.SSE.3.a | 11-7 | Factor Trinomials | | EE 24-27 |
| 7 | 1.3.7 | A.SSE.3.a | 11-9 | More on Factoring Trinomials | | EE 24-27 |
| 1.4.4 | A-APR.7 | 11-10 | Simplifying Rational Expressions | | NC 24-27 |
| 1.4.4 | A-APR.7 | 11-11 | Multiplying and Dividing Rational Expressions | | NC 24-27 |
| 1.4.4 | A-APR.7 | 11-13 | Adding and Subtracting Rational Expressions | | NC 24-27 |
| 8 | 2.2.2, 2.5.6, 3.3.3, 3.3.6 |  | 11-A | Rational Equations (need to include graphic representation) | | GR 33-36 |
|  |  |  | *Unit Assessment (Time included for interim tests)* | |  |
| 1.4.2, 3.3.4 |  | 12-1 | Graph Parabolas | | GR 28-32  GR 33-36 |
| 1.4.2 |  | 12-2 | The General Quadratic Function | | EE 24-27 |
| 1.4.3 | A-SSE.3.a | 12-3 | Factor and Graph | | EE 24-27  GR 28-32 |
| 3.2.5 | A-REI.4.b  A.REI.11 | 12-7 | Roots and Zeros (include a focus on end behavior) | | EE 28-32  GR 28-32 |
| 1.5.5 | N-CN.1  N-CN.2 | 12-4 | Complex Numbers | | NC 33-36 |
| 1.4.3 | A.REI.4.b | 12-6 | The Quadratic Formula and the Discriminant | | EE 28-32 |
| 9 | 1.2.5, 1.4.5, 1.3.8, 1.3.9 |  | 10-1 | Irrational Numbers | | NC 24-27 |
| 2.2.2, 2.5.6 3.3.5 | A-REI.2 | 12-9 | Radical Equations (include pages 619b) | |  |
|  |  |  | *Unit Assessment/QuarterExam* | |  |

**Hamilton County Department of Education**

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**2012-2013**

**2nd Quarter**

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| **Big Ideas** | The second quarter of Bridge Mathematics is comprised of two major units. The first of these focuses on geometric concepts and practical applications of the geometry using real life problems that involve several integrated geometric topics. The second unit focuses on probability and statistics, including linear regression of bivariate data. Additional time is provided in this quarter to include preparation for the ACT test. |
| **Standards Addressed this Quarter** | **Tennessee Standards** |
| **I. Ways of Looking: Revisiting Concepts**  Students learn mathematics best by being introduced to concepts that they have previously studied in a new approach. The concepts in this section appear in a manner that emphasizes their basic definition. This presentation of each concept is based upon the format that would be a “best practice” of introducing the particular concept. |
| **II. Making Connections**  Making connections allows those concepts that need a more complex look to be studied through two different modalities. This allows connections to be made between the concepts, and allows for a more in-depth understanding of the topics supporting the foundation for problem solving application. In addition, building topics in this manner helps students work problems of a higher depth of knowledge level. |
| **III. Applications: Ways of Looking at the World**  Students are confronted with different ways to look at the world. Here students look at multiple representations of concepts, blend their new understanding of topics with applications, and have the opportunity to model contextual situations. Various applications should be addressed each week, throughout the course to support theoretical learning and increased complexity. |
| **Common Core Standards** |
| * Experiment with transformations in the plane. |
| * Make geometric constructions. |
| * Define trigonometric ratios and solve problems involving right triangles. |
| * Explain volume formulas and use them to solve problems. |
| * Visualize relationships between two-dimensional and three-dimensional objects. |
| * Summarize, represent and interpret data on a single count or measurement variable. |
| * Summarize, represent and interpret data on two categorical and quantitaive variables. |
| * Interpret linear models. |
| * Understand independence and conditional probability and use them to interpret data. |
| * Interpret the structure of expressions. |
| * Solve systems of equations. |
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**2012-2013**

**2nd Quarter**

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| **Week** | **Check**  **(Insert Grade#)** | **Common Core** | **Lesson** | **Essential Understanding** | **ACT Standards** |
| **Unit Topic: Geometry**  WebSearch Project Resource: <http://www.create.cett.msstate.edu/create/classroom/handouts/Moore_CD1_Set4_Geometry_Words_Web_Search_Revised.doc> | | | | | |
| 10 | 1.2.3, 2.1.4 | G-CO.1 | 3-1 | Points, Lines, and Plane |  |
| 1.2.3, 2.1.4 | G-CO.1 | 3-2 | Types of Angles | PF 24-27 |
| 1.2.3, 2.1.4 | G-CO.1 | 3-3 | Segments and Angles | PF 24-27  M 16-19 |
| 1.2.3, 2.1.4 | G-CO.12 | 3-4 | Constructions and Lines | PF 16-19 |
| 1.2.3, 2.1.4 |  | 4-1 | Triangles and Triangle Theorem | PF 24-27 |
| 1.2.3, 2.1.4 |  | 4-7 | Polygons and Angles | PF 33-36 |
| 1.2.4, 2.1.4 |  | 4-8 | Special Quadrilaterals: Parallelograms |  |
| 1.2.4, 2.14 |  | 4-9 | Special Quadrilaterals: Trapezoids |  |
|  |  |  | *Unit Assessment* |  |
| 11 | 2.2.3 |  | 5-1 | Ratios and Units of Measure | BO 24-27  BO 28-32 |
| 1.1.4, 1.1.5, 1.1.6, 2.1.5, 3.2.2 | G-GMd.1 | 5-2 | Perimeter, Circumference, and Area (needs to include arc length and area of a sector) | M 16-19  M 20-23 |
| 2.1.5 |  | 5-4 | Problem Solving Skills: Irregular Shapes | M 24-27  M 33-36 |
| 3.4.3 |  | 5-3 | Probability and Area |  |
| 1.2.4 | G-GMD.4 | 5-5 | Three-dimensional Figures and Loci |  |
| 3.2.3 |  | 5-6 | Surface Area of Three-dimensional Figures | M 28-32 |
| 3.2.3 | G-GMD.3 | 5-7 | Volume of Three-dimensional Figures | M 28-32 |
| 12 | 2.2.3, 3.1.3 |  | 7-1 | Ratios and Proportions | BO 20-23  BO 28-32 |
| 1.2.2 |  | 7-2 | Similar Polygons | M 33-36 |
| 1.2.2, 3.2.1 |  | 7-3 | Scale Drawings | M 33-36 |
| 1.2.1 |  | 7-6 | Parallel Lines and Proportional Segments |  |
| 1.2.2 |  | 7-7 | Problem Solving Skills: Indirect Measurement | BO 28-32 |
|  |  |  | *Unit Assessment* |  |
| 13 | 2.5.7 | G-SRT.8 | 10-2 | Pythagorean Theorem | PF 24-27  PF 28-32 |
| 2.5.7 | G-SRT.8 | 10-3 | Special Right Triangles | PF 28-32 |
| 2.4.3 | G-SRT.8 | 14-1 | Basic Trigonometric Ratios | F 24-27 |
| 2.4.3, 3.2.4 | G-SRT.8 | 14-2 | Solve Right Triangles | F 28-32  PF 28-32 |
| 2.4.4 |  | 14-4 | Experiment with the Sine Function | F 33-36 |
| 2.4.4 |  |  | Graphing Technology Lab page 715 B or Spaghetti Sine  <http://illuminations.nctm.org/LessonDetail.aspx?id=L785> |  |
|  |  |  | *Unit Assessment* |  |
| **Unit Topic: Probability, Statistics, and Additional Topics** | | | | | |
| 5 | 3.1.2 |  | 9-2 | Percents of Increase and Decrease | BO 33-36 |
| 2.6.1 |  | 9-1 | Review Percents and Probability | PS 20-23 |
| 1.5.4, 2.6.3 | S-CP.1 | 9-4 | Compound Events | PS 24-27 |
| 2.6.2 | S-CP.2 | 9-5 | Independent and Dependent Events | PS 24-27 |
| 1.4.6, 2.5.4, 2.5.5 | S-ID.2 | 2-8 | Data and Measures of Central Tendency | PS 13-15  PS 16-19  PS 20-23  PS 24-27  PS 28-32  PS 33-36 |
| 2.5.5 | S-ID.1 | 2-9 | Display Data | PS 13-15  PS 16-19  PS 20-23  PS 24-27  PS 28-32  PS 33-36 |
| 2.5.5 | S-ID.1 | 2-10 | Problem Solving Skills: Misleading Graphs |  |
|  |  | 10-5 | Problem Solving Skills: Circle Graphs | PS 13-15  PS 16-19  PS 20-23  PS 24-27  PS 28-32  PS 33-36 |
| 1.4.1 | S-ID.7 | 6-3 | Write Equations of Lines | GR 24-27 |
| 1.4.8 | S-ID.5 | 9-7 | Scatterplots | PS 16-19  PS 20-23  PS 24-27  PS 28-32  PS 33-36 |
| 1.4.7, 1.4.8, 2.5.2, 2.5.3 | S-ID.7  S-ID.8  S-ID.9 | 9-8 | Regression and Median-Fit Lines (add non-linear regressions) |  |
| 6 | 1.4.9 |  | 12-8 | The Distance and Midpoint Formulas | GR 24-27  GR 28-32 |
| 2.3.3, 2.3.4, 2.3,5 |  | 13-10 | Operations on Functions | F 24-27  F 28-32  F 33-36 |
| 3.3.2 |  | 13-5 | Direct Variation |  |
| 3.3.2 |  | 13-6 | Indirect Variation |  |
| 2.1.1, 2.3.1, 3.3.7 | A.SSE.1.b | 13-8 | Exponential Functions | GR 33-36 |
|  | A.REI.7 | Supplemental Materials Needed | Solving Linear-Quadratic Systems Graphically  <http://www.teacherweb.com/NY/Arlington/AlgebraProject/U5L5.SolvingaLinear-QuadSysGraphically.pdf> |  |
| 7 |  |  |  | *ACT Prep Week*  *Time is allotted for additional ACT Prep work prior to the December ACT test. Full length practice tests should be incorporated into class review.* |  |
| 8 |  |  |  | *Unit Assessment* | |
|  |  |  | *Cumulative Assessment* | |