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***MISSION***

***The Faculty and staff of Chadwick R-1 Schools in partnership with parents and the community, will establish high standards of learning and high expectations for achievement while providing comprehensive guidance for success****.*

*Subject: Algebra 2*

*Grade Level: 9-12*

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| ***August/September: Polynomial Expressions & Functions***  ***6 Weeks*** |

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| **ESSENTIAL MEASURABLE LEARNING OBJECTIVES**  | **CROSSWALK TO STANDARDS** |
| **GLEs/CLEs** | **PS** | **CCSS** | **MATH** | **DOK****(per GLE/CLE)** |
| **1. Students will solve quadratic equations** | **N.2.D.A2** | **1.6****3.2** | **N-CN.7** | **MP1****MP2****MP6****MP7** | **2** |
| **2. Students will generalize and apply patterns of geometric functions.** | **A.1.B.A2****A.2.A.A2** | **1.6****3.3****3.6** | **A-SSE.4** | **MP2****MP6****MP8** | **3** |
| **3. Students will perform arithmetic operations on polynomials and apply polynomial identities.** |  |  | **A-APR.1****A-APR.2****A-APR.3****A-APR.4** | **MP1****MP2****MP4****MP7****MP8** |  |
| **4. Students will represent and solve equations and inequalities graphically.** |  |  | **A-REI.11** | **MP2****MP5****MP6****MP7** |  |
| **5. Students will analyze functions using different representations.** | **A.1.C.A2****A.3.A.A2****A.4.A.A2****G.4.B.A2** | **1.6****3.3** | **F-IF.7c** | **MP1****MP2****MP3****MP4** | **3** |

Multiple Assessments given during the unit.

Unit Assessment given at end of unit.

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| ***October/November: Exponential & Logarithmic Functions 8 Weeks*** |

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| **ESSENTIAL MEASURABLE LEARNING OBJECTIVES**  | **CROSSWALK TO STANDARDS** |
| **GLEs/CLEs** | **PS** | **CCSS** | **MATH** | **DOK****(per GLE/CLE)** |
| 1. Students will recognize, analyze, compare, contrast, and describe exponential growth and decay using a variety of representations (including function notation, graphs, descriptions and tables).
 | A.1.C.A2A.1.D.A2A.2.A.A2 | 1.6 (8)1.6 (8)3.3 (3) | A-CED.2F-IF.2F-IF.4F-IF.5F-IF.8bF-IF.9F-BF.3 | MP2MP7MP8 | 3 23 |
| 1. Students will construct exponential growth and decay models to solve problems and interpret increasingly complex exponential expressions/functions (including compound interest) , breaking each expression/function into parts and explaining the effect each part has on the value of the expression/function (mathematically and in modeling) .
 | A.1.E.A2A.3.A.A2A.4.A.A2G.3.B.A2 | 1.6 (8)1.6 (8)1.6 (1)3.1 (4) | A-CED.4F-IF.5F-IF.8bF-BF.1aF-LE.1cF-LE.3F-LE.5 | MP1MP2MP4MP5 | 2232 |
| 1. Students will analyze inverse functions and given a function representation, create the inverse if it exists, and write the inverse of an exponential function as a logarithm. Students will represent both functions and their inverses (including exponential/logarithm) using multiple representations (graphically with transformations, numerically, table of values, using function notation, and descriptively), and communicate the process of finding inverses using mathematical language.
 | A.2.B.A2A.2.C.A2 | 3.2 (1)3.2 (1) | F-BF.4aF-BF.4bF-BF.4cF-BF.4dF-BF.5F-IF.7e | MP6 | 22 |
| 1. Students will use properties of exponents to transform both exponential and logarithmic expressions, evaluate logarithmic expressions, and solve logarithmic equations.
 | A.2.C.A2 | 3.2 | F-LE.4A-REI.1A-SSE.3c | MP7 | 2 |
| 1. Students will describe the properties of logarithms in context of the properties of exponents and solve problems using the properties of logarithms.
 | A.1.D.A2 | 1.6 | F-LE.5A-SSE.1A-SSE.2A-SSE.3c | MP3 | 2 |
| 1. Students will solve a variety of real-world and cross curricular problems by modeling with exponential and logarithmic functions (including compound interest, appreciation, depreciation, population growth, radioactive decay) and use technology as a strategic tool.
 | N.3.D.A2A.2.A.A2 | 3.23.3 | F-LE.2F-LE.4F-LE.5F-IF.5F-IF.8b | MP1MP2MP4MP5 | 23 |

Multiple Assessments given during the unit.

Unit Assessment given at end of unit.

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| ***December:***  1st Semester Completion 2 ***Weeks*** |

These two weeks are used to complete any objectives that have not been covered and to prepare for the semester finals.

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| ***January/February: Trigonometry 8 Weeks*** |

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| **ESSENTIAL MEASURABLE LEARNING OBJECTIVES**  | **CROSSWALK TO STANDARDS** |
| **GLEs/CLEs** | **PS** | **CCSS** | **MATH** | **DOK****(per GLE/CLE)** |
| 1. **Students will describe the relationship between radian measure and arc length and apply this relationship to solve problems (arc length, area of a sector of a circle, linear and angular speed)**
 |  |  | **F-TF.1** | **MP1****MP2****MP3****MP4****MP5****MP6** | **3** |
| 1. **Students will apply the definition of a unit circle to find the coordinates of given angle measures where the terminal side of the angle intersects the circle and verify that these measures are correct by using the Pythagorean theorem**
 |  |  | **F-TF.8** | **MP3****MP5****MP6** | **2** |
| 1. **Students will apply the Pythagorean identity to find the values of sin (θ), cos (θ) or tan (θ) if given the value of one of the functions and the quadrant of the angle**
 |  |  | **F-TF.8** | **MP1****MP5****MP6** | **2** |
| 1. **Students will use the unit circle to extend trigonometric functions to all real numbers**
 |  |  | **F-TF.2** | **MP3****MP4****MP6** | **2** |
| 1. **Students will graph sinusoidal functions and their transformations**
 |  |  | **F-TF.5****F-BF.3** | **MP1****MP3****MP5****MP6** | **3** |
| 1. **Students will use sinusoidal functions to model real world data**
 |  |  | **F-TF.5****F-IF.4** | **MP1****MP3****MP4****MP5****MP6****MP8** | **3** |

Multiple Assessments given during the unit.

Unit Assessment given at end of unit.

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| ***March: Inferences & Conclusions from Data 3 Weeks*** |

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| **ESSENTIAL MEASURABLE LEARNING OBJECTIVES**  | **CROSSWALK TO STANDARDS** |
| **GLEs/CLEs** | **PS** | **CCSS** | **MATH** | **DOK****(per GLE/CLE)** |
| **1. Students will select and use appropriate representation of data.** | **D.1.C.A2** | **3.6** | **S-IC.1** | **MP1****MP2****MP3****MP4** | **3** |
| **2. Students will, given one-variable quantitative data, describe its shape and calculate summary statistics.** | **D.1.C.A2****D.2.A.A2** | **3.6****1.8****1.10** | **S-IC.1****S-IC.4****S-ID.4** | MP1MP2MP3MP4MP5MP6 | **3** |
| **3. Students will apply statistical measures of center to solve problems.** | **D.1.C.A2****D.2.A.A2** | **3.6****1.8****1.10** | **S-IC.1****S-IC.4****S-IC.6****S-ID.4** | MP2MP3MP4MP5MP6MP7MP8 | 3 |
| **4. Students will apply and use real numbers and various models, drawing, etc. to solve problems involving probability and statistics.** | **N.1.B.A2** | **1.10** | **S-ID.4****S-MD.7** | MP1MP4MP5 | 3 |
| **5. Students will evaluate random processes underlying statistical experiments.** | **D.1.C.A2****D.2.A.A2** | **3.6****1.8****1.10** | **S-IC.2****S-IC.4****S-ID.4****S-MD.6** | **MP2****MP3****MP4****MP5****MP6** | 3 |

Multiple Assessments given during the unit.

Unit Assessment given at end of unit.

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| **ESSENTIAL MEASURABLE LEARNING OBJECTIVES**  | **CROSSWALK TO STANDARDS** |
| **GLEs/CLEs** | **PS** | **CCSS** | **MATH** | **DOK****(per GLE/CLE)** |
| 1. **Students will rewrite rational expressions with linear or quadratic denominators in different forms and state any necessary restrictions on the unknown**
 | **A.1.D.A2****A.2.B.A2** | **1.6****3.2** | **A-APR.6** | **MP1****MP4****MP7****MP8** | **2** |
| 1. **Students will graph rational functions (with technology) and identify key features of the graphs (horizontal and vertical asymptotes, and end behavior)**
 | **A.1.C.A2****A.1.D.A2****G.4.B.A2** | **1.6****1.6****3.3** | **F-IF.7d****F-IF.5** | **MP1****MP3****MP4****MP7****MP8** | **3** |
| 1. **Students will find the inverse of quadratic and cubic functions using a variety of representations and state the restrictions on the domain where needed.**
 | **A.2.B.A2****A.3.A.A2****G.4.B.A2****A.1.C.A2****A.1.D.A2****A.3.A.A2****G.4.B.A2** | **3.2****1.6****3.3****1.6****1.6****1.6****3.3** | **F-BF.4a****F-IF.7b****F-IF.5** | **MP1****MP3****MP4****MP7****MP8** | **3** |
| 1. **Students will graph square root and cube root functions and describe the effects of replacing f(x) with f(x + h) and f(x) + k**
 | **A.1.E.A2****G.4.B.A2** | **1.6****3.3** | **F-IF.7b****F-BF.3** | **MP1****MP3****MP4****MP7****MP8** | **3** |
| 1. **Students will solve simple radical and rational equations, including those with extraneous solutions**
 | **A.2.B.A2****A.2.A.A2** | **3.2** | **A-REI.2****A-CED.3** | **MP1****MP4** | **2** |
| 1. **Students will derive the formula for the sum of a finite geometric series (when the common ratio is not 1) and use this formula to solve problems**
 | **A.2.B.A2****A.2.A.A2** | **1.6****3.3** | **A-SSE.4** | **MP1****MP3****MP4****MP7****MP8** | **3** |
| 1. **Students will use radical and rational equations to model and solve problems**
 | **A.2.A.A2** | **3.3** | **F-BF.1a****A-CED.1** | **MP1****MP3****MP4****MP7****MP8** | **3** |

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| ***March/April: Radicals & Rationals 4 Weeks*** |



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| ***May:***  2nd Semester Completion ***2 Weeks*** |

These weeks are used to complete any objectives that have not been covered and to prepare for the semester finals.