

2022 - 2023, HS, Bridge Math

The following Practice Standards and Literacy Skills will be used throughout the course:

Standards for Mathematical Practice

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.

Literacy Skills for Mathematical Proficiency

1. Use multiple reading strategies.
2. Understand and use correct mathematical vocabulary.
3. Discuss and articulate mathematical ideas.
4. Write mathematical arguments.

Quarter 1

| Standards | Student Friendly "I Can" Statements |
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| B.N.RN.A.1. Use rational and irrational numbers in calculations and in real-world context. | I can perform operations using rational numbers to solve real-world problems. I can simplify rational and irrational expressions and use them in a real-world context. I can rationalize the denominator. |
| B.N.Q.A.1★ Use units as a way to understand problems and to guide the solution of multi- step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. | I can give the solution of an equation using the correct units. I can convert unit rates of measurements in multi step arithmetic problems. <i>For example, feet per second to miles per hour.</i> |
| B.N.Q.A.3★ Solve problems involving squares, square roots of numbers, cubes, and cube roots of numbers. | I can solve problems involving squares, square roots, cubes and cube roots. |
| B.N.Q.A.2★ Define appropriate quantities for the purpose of descriptive modeling. | I can determine the appropriate unit of measure. I can use the scale to read the data correctly. |

2022 - 2023, HS, Bridge Math

| Standards | Student Friendly "I Can" Statements |
|--|---|
| <p>B.A.CED.A.1★ Create equations and inequalities in one variable and use them to solve real-world problems.</p> | <p>I can solve multi-step equations and equations with variables on both sides.</p> <p>I can recognize and explain when 1 solution, no solution, or infinite solutions are the result of solving an equation.</p> <p>I can create linear equations and inequalities in one variable and use them in a contextual situation to solve problems.</p> |
| <p>B.A.CED.A.2★ Create equations in two or more variables to represent relationships between quantities.</p> | <p>I can create equations in two or more variables to represent relationships between quantities.</p> <p>I can solve word problems using two or more variables.</p> |
| <p>B.A.CED.A.3★ Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.</p> | <p>I can describe the calculations needed to model a function between two quantities.</p> <p>I can write equations to solve contextual problems that involve distance/time/rate, mixture, consecutive integers, and cost.</p> <p>I can solve multi-variable formulas or literal equations for a specific variable.</p> |
| <p>B.A.SSE.A.1 Use properties of multiplication and division to solve problems containing scientific notation.</p> | <p>I can solve problems involving scientific notation.</p> |
| <p>B.A.REI.D.5 Solve a linear inequality using multiple methods and interpret the solution as it applies to the context.</p> | <p>I can identify the graph of a linear inequality on the number line. (ACT) *</p> <p>I can solve first-degree inequalities that do not require reversing the inequality sign.</p> <p>I can solve linear inequalities that require reversing the inequality sign. (ACT)</p> <p>I can solve absolute value equations.</p> |

2022 - 2023, HS, Bridge Math

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|---|---|
| <p>B.S.ID.A.1 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.</p> | <p>I can calculate the average, given the number of data values and the sum of the data values. (ACT)</p> <p>I can calculate the missing data value, given the average and all data values but one. (ACT)</p> <p>I can calculate the median and mode in a set of data.</p> <p>I can compare measures of central tendency for a single data set.</p> |
| <p>B.S.ID.B.2 Interpret and use data from tables, charts, and graphs.</p> | <p>I can compare data sets using graphs and summary statistics.</p> <p>I can analyze data to make predictions based on an understanding of the data set.</p> |
| <p>B.A.REI.D.4 Use algebra and geometry to solve problems involving midpoints and distances.</p> | <p>I can find the midpoint of a line segment (ACT)</p> <p>I can find the missing endpoint when given the midpoint and the other endpoint.</p> <p>I can use the distance formula. (ACT)</p> |
| <p>B.G.C.A.1 Apply a variety of strategies to determine the area and circumference of circles after identifying necessary information.</p> | <p>I can find the area and circumference of circles.</p> |
| <p>B.G.GMD.A.1 Use relationships involving area, perimeter, and volume of geometric figures to compute another measure.</p> <p>B.G.GMD.A.2 Use several angle properties to find an unknown angle measure.</p> | <p>I can use relationships involving area, perimeter, and volume of geometric figures to compute another measure. (ACT)</p> <p>I can use several angle properties to find an unknown angle measure (i.e. supplementary, complementary, vertical, angles along a transversal, and sum of angles in a polygon).</p> |
| <p>B.G.GMD.A.3 Apply a variety of strategies using relationships between perimeter, area, and volume to calculate desired measures in composite figures (i.e., combinations of basic figures).</p> | <p>I can apply a variety of strategies using relationships between perimeter, area, and volume to calculate desired measures in composite figures.</p> |

2022 - 2023, HS, Bridge Math

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|---|---|
| | I can compute the area of composite geometric figures when planning or visualization is required. (ACT) |
| B.G.MG.A.2 Solve problems involving surface area and volume in real-world context. | I can solve mathematical and real-world problems involving surface area, and volume of composite objects. |

Quarter 2

| Standards | Student Friendly "I Can" Statements |
|--|---|
| <p>B.F.IF.A.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then $f(x)$ denotes the output of f corresponding to the input x. The graph of f is the graph of the equation $y = f(x)$.</p> <p>B.F.IF.B.3 Recognize functions as mappings of an independent variable into a dependent variable. ★</p> | <p>I can (given the function $f(x)$) identify x as an element of the domain, the input, and $f(x)$ is an element in the range, the output.</p> <p>I can know that the graph of the function, f, is the graph of the equation $y=f(x)$.</p> <p>I can write an expression in function notation.</p> <p>I can represent a relation in different formats (graph, table, list, and mapping).</p> <p>I can determine whether or not a relation is a function and use the $f(x)$ notation.</p> |
| <p>B.F.IF.A.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.</p> | <p>I can use function notation to express a contextual problem.</p> <p>I can evaluate functions for inputs in their domain.</p> <p>I can interpret statements that use function notation in terms of the context in which they are used.</p> |
| <p>B.S.ID.C.4 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.</p> | <p>I can determine the slope of a line from points or equations. (ACT)</p> <p>I can interpret the slope in terms of unit rate.</p> <p>I can interpret the slope and the intercept of a linear model in the context of the data.</p> |
| <p>B.F.IF.C.4 Graph <u>linear</u>, quadratic, absolute value, and piecewise functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated ones. ★</p> | <p>I can determine the parent function for the line $f(x) = x$.</p> <p>I can identify and compare the different forms of linear functions. (point-slope, standard, slope-intercept)</p> |

2022 - 2023, HS, Bridge Math

| Standards | Student Friendly "I Can" Statements |
|---|--|
| <p>B.F.IF.C.5 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.</p> | <p>I can identify the intercepts of a function.</p> <p>I can compare the key features of two linear functions represented in different ways.</p> <p>I can describe a line as a translation of the parent function $y = x$.</p> |
| <p>B.A.REI.C.3 Solve and explain the solutions to a system of equations using a variety of representations including combinations of linear and nonlinear equations.</p> | <p>I can find solutions to systems of linear equations graphically and algebraically. (ACT)</p> <p>I can solve real world problems involving systems of equations.</p> |
| <p>B.G.SRT.A.1 Apply similar triangles to solve problems, such as finding heights and distances.</p> | <p>I can find the height or side of a triangle using proportions.</p> <p>I can determine the perimeter and area of a triangle using similar triangles.</p> |
| <p>B.A.SSE.A.2 Use algebraic structures to solve problems involving proportional reasoning in real-world context.</p> | <p>I can solve real world problems using proportions.</p> |
| <p>B.A.REI.A.1 Build functions and write expressions, equations, and inequalities for common algebra settings leading to a solution in context (e.g., rate and distance problems and problems that can be solved using proportions).</p> | <p>I can solve rate, distance, and work problems using proportions and percentages.</p> <p>I can solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in Geometry settings). (ACT)</p> |

2022 - 2023, HS, Bridge Math

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|---|---|
| <p>B.S.ID.B.3 Represent data on two quantitative variables on a scatter plot and describe how the variables are related.</p> <p>a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models.</p> | <p>I can create and analyze scatter plots to determine linear relationships and describe the association between the variables.</p> <p>I can find the correlation coefficient for data and use it to describe the data.</p> |
| <p>B.S.CP.A.1 Understand and use basic counting techniques in contextual settings.</p> | <p>I can solve problems using basic counting principles.</p> |
| <p>B.S.CP.A.2 Compute a probability when the event and/or sample space are not given or obvious.</p> | <p>I can find the probability of events when the sample space is not given.</p> |
| <p>B.S.CP.A.3 Recognize the concepts of conditional and joint probability expressed in real-world contexts.</p> | <p>I can use the relationship between the probability of an event and the probability of its complement. (ACT)</p> |
| <p>B.S.CP.A.4 Recognize the concept of independence expressed in real-world contexts.</p> | <p>I can differentiate between independent and dependent events in real-world contexts.</p> |

Quarter 3

| Standards | Student Friendly "I Can" Statements |
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| <p>B.A.APR.A.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.</p> | <p>I can add, subtract, and multiply polynomials. (ACT)</p> <p>I can divide with polynomials.</p> |
| <p>B.A.APR.B.2 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.</p> | <p>I can identify zeros of a polynomial on a graph.</p> <p>I can use zeros of a polynomial to aid in graphing.</p> |
| <p>B.F.IF.C.4 Graph linear, quadratic, absolute value, and piecewise functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated ones. ★</p> | <p>I can identify the parent function of a quadratic as $f(x)=x^2$.</p> <p>I can graph and identify solutions to simple quadratic equations. (ACT)</p> <p>I can identify the axis of symmetry, vertex, and intercepts of a quadratic when given the equation in standard form.</p> <p>I can graph by hand in simple cases of quadratic and use technology for more complicated ones.</p> |
| <p>B.A.REI.B.2 Solve quadratic equations in one variable. Solve quadratic equations by inspection (e.g., for $x^2= 49$), taking square roots, completing the square, knowing and applying the quadratic formula, and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.</p> | <p>I can factor simple quadratics (e.g., the difference of squares and perfect square trinomials). (ACT)</p> <p>I can solve quadratic equations by various techniques including taking the square, completing the square, applying the quadratic formula and factoring.</p> <p>I can recognize complex solutions and write them.</p> |
| <p>B.N.CN.A.1 Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.</p> | <p>I can multiply two complex numbers. (ACT)</p> <p>I can apply properties of complex numbers. (ACT)</p> |

2022 - 2023, HS, Bridge Math

| Standards | Student Friendly "I Can" Statements |
|--|---|
| B.N.CN.A.2 Know and use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. | I can apply the properties of complex numbers to add, subtract, and multiply. |
| B.F.IF.C.6 Use the properties of exponents to interpret for exponential functions. | I can graph exponential functions Solve problems involving exponential growth and decay. |

Quarter 4

| Standards | Student Friendly "I Can" Statements |
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| <p>B.F.IF.C.4 Graph linear, quadratic, absolute value, and piecewise functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated ones. ★</p> | <p>I can graph absolute value functions.</p> <p>I can describe key features of absolute value functions.</p> <p>I can evaluate a piecewise function for specific inputs from looking at the graph or by using the equation.</p> <p>I can graph piecewise functions given the equation.</p> |
| <p>B.G.MG.A.1 Use appropriate technology to find the mathematical model for a set of non-linear data.</p> | <p>I can use appropriate technology to find the mathematical model for a set of non-linear data.</p> |
| <p>B.WCE.7 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.</p> | <p>I can transform a variety of functions including linear, quadratic, and absolute value.</p> <p>I can use technology to experiment with the graphs of various functions when transforming the equations using different values of k.</p> <p>I can form conjectures based on my experiments with substituting different values into the general (parent) functions.</p> |
| <p>B.G.SRT.B.2 Apply basic trigonometric ratios to solve right triangle problems.</p> | <p>I can express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths. (ACT)</p> |
| <p>B.G.SRT.B.3 Apply properties of 30° 60° 90°, 45° 45° 90°, similar, and congruent triangles</p> | <p>I can apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles. (ACT)</p> <p>I can apply the Pythagorean Theorem. (ACT)</p> <p>I can apply basic trigonometric ratios to solve right-triangle problems. (ACT)</p> |
| <p>B.G.SRT.B.4 Solve problems involving angles of elevation and angles of depression.</p> | <p>I can solve problems involving angles of elevation and depression.</p> |

2022 - 2023, HS, Bridge Math

| Standards | Student Friendly "I Can" Statements |
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| B.WCE.8 Exhibit knowledge of unit circle trigonometry. | I can exhibit knowledge of unit circle trigonometry. (ACT) I can find trigonometric ratios (sine, cosine, and tangent) using special right triangles and the unit circle |