

# Spanish Fork High School

## Resource Secondary Math III

### Unit 1: Inferences and Conclusions from Data

S.ID.4:

- I can use the mean and standard deviation to fit data to a normal distribution.
- I can use the mean and standard deviation to estimate population percentages.
- I can recognize when using the mean and standard deviation to fit data is not appropriate.
- I can use calculators, spreadsheets, and tables to estimate areas under the normal curve.

S.IC.1:

- I can make inferences about population parameters based on a random sample using statistics.

S.IC.2:

- I can decide if a model is consistent with the generated results.

S.IC.3:

- I can recognize the differences and purposes of sample surveys, experiments, and observational studies.
- I can explain how randomization relates to sample surveys, experiments, and observational studies.

S.IC.4:

- I can use sample data to estimate a population mean or proportion.
- I can develop a margin of error for random sampling through the use of simulation.

S.IC.5:

- I can use data from a randomized experiment to compare two treatments.
- I can use simulations to decide if differences between parameters are significant.

S.IC.6:

- I can evaluate reports based on data.

S.MD.6(+):

- I can use probabilities to make fair decisions.

S.MD.7(+):

- I can analyze decision and strategies using probability concepts.

### Unit 2: Polynomials, Rational, and Radical Relationships

N.CN.8(+):

- I can extend polynomial identities to the complex numbers.

N.CN.9(+):

- I know the Fundamental Theorem of Algebra.
- I can show that the Fundamental Theorem of Algebra is true for polynomials with real coefficients.

A.SSE.1 a, b

- I can interpret the terms, factors, and coefficients of polynomial and rational expressions.
- I can interpret complicated expressions by viewing one or more of their parts as a single entity.

A.SSE.2:

- I can use the structure of an expression to identify ways to rewrite it.

A.SSE.4:

- I can derive the formula for the sum of geometric series.
- I can use the formula for the sum of geometric series to solve problems.

A.APR.1:

- I can add, subtract, and multiply polynomials.
- I understand the closure of polynomials over addition, subtraction, and multiplication.

A.APR.2:

- I know and can apply the Remainder Theorem.

A.APR.3:

- I can identify the zeros of a polynomial.
- I can construct a rough graph using the zeros defined by a polynomial.

A.APR.4:

- I can prove polynomial identities.
- I can use polynomial identities to describe numerical relationships.

A.APR.5(+):

- I can use the Binomial Theorem to expand any binomial with a positive exponent.

A.APR.6:

- I can rewrite simple rational expressions by inspection, long division, or a computer.

A.APR.7(+):

- I can demonstrate that rational expressions are closed under addition, subtraction, multiplication, and division by a nonzero rational expression.
- I can add, subtract, multiply, and divide rational expressions.

A.REI.2:

- I can solve simple rational equations in one variable.
- I can solve simple radical equations in one variable.
- I can identify when an extraneous solution will occur.

A.REI.11:

- I can explain the solutions to systems of equations.
- I can find solutions to systems of equations using technology.

F.IF.7c:

- I can graph (with or without technology) polynomial functions and show key features of the graph such as identifying zeros and end behavior.

### Unit 3: Trigonometry of General Triangles and Trigonometric Functions

G.SRT.9(+):

- I can derive the formula for the area of any triangle.

G.SRT.10(+):

- I can prove the Law of Sines.
- I can prove the Law of Cosines.
- I can use the Law of Sines and the Law of Cosines to solve problems.

G.SRT.11(+):

- I can use the Law of Sines and the Law of Cosines to solve contextual problems.

F.TF.1:

- I can define the radian measure of an angle.

F.TF.2:

- I can extend the unit circle to trigonometric functions with domain of all real numbers.

F.TF.5:

- I can model periodic phenomena with trigonometric functions.

## Unit 4: Mathematical Modeling

A.CED.1:

- I can create equations in one variable and use them to solve problems.
- I can create inequalities in one variable and use them to solve problems.

A.CED.2:

- I can create equations in two or more variables to represent relationships between quantities.
- I can graph equations on a coordinate axis with labels and scales.

A.CED.3:

- I can use equations or inequalities to denote constraints from systems of equations or inequalities representing contextual models.
- I can interpret solutions as viable or non-viable options.

A.CED.4:

- I can solve a formula for a given variable.

F.IF.4:

- I can interpret key features (intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity) of a function.
- I can graph key features from a verbal description of the relationship.

F.IF.5:

- I can determine the appropriate domain of a relationship in the context of a problem.

F.IF.6:

- I can calculate the average rate of change of a function over a specified interval using an equation or a table.
- I can interpret the average rate of change of a function.
- I can estimate the average rate of change from a graph.

F.IF.7 b, e:

- I can graph square root, cube root, step (or greatest integer), absolute value, and piecewise-defined functions.
- I can graph exponential, logarithmic, and trigonometric functions showing key features.

F.IF.8:

- I can write a function in an equivalent, appropriate form.

F.IF.9:

- I can compare and contrast two functions when each is represented differently (algebraically, graphically, numerically in tables, or by verbal description).

F.BF.1b:

- I can write a function that describes a relationship between two quantities.
- I can combine standard function types by adding, subtracting, multiplying, and dividing.

F.BF.3:

- I can identify and explain the effect of a constant “k” on the parent graph of using various representations.
- I can use technology to illustrate and then explain the effect of “k” on a graph.
- I can find the value of “k” given the parent graph and a graph of the transformation.
- I can recognize even and odd functions from their graphs and algebraic expressions.

F.BF.4:

- I can find the inverse of a function including simple rational, radical, and exponential functions.

F.LE.4:

- I can express the solution to exponential models (base 2, 10, or ) as a logarithm.
- I can evaluate logarithms using technology.

G.GMD.4:

- I can identify the two-dimensional cross-section shapes of three dimensional objects.
- I can identify three-dimensional objects generated by rotating two-dimensional objects.

G.MG.1:

- I can use geometric shapes, their measures, and their properties to describe objects.

G.MG.2:

- I can apply concepts of density based on area and volume in modeling situations.

G.MG.3:

- I can apply geometric methods to solve design problems.