Mesquite ISD Curriculum Sequence
High School Math - Algebra I

1st Six Weeks

Determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities. (A.2A)

Write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points. (A.2B)

Write linear equations in two variables given a table of values, a graph, and a verbal description. (A.2C)

Determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$. (A.3A)

Calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems. (A.3B)

Graph linear functions on the coordinate plane and identify key features, including *x*-intercept, *y*-intercept, zeros, and slope, in mathematical and real-world problems. (A.3C)

Solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides. (A.5A)

Solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides. (A.5B)

Rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property. (A.10D)

Decide whether relations represented verbally, tabularly, graphically, and symbolically define a function. (A.12A)

Evaluate functions, expressed in function notation, given one or more elements in their domains . (A.12B)

Solve mathematic and scientific formulas, and other literal equations, for a specified variable. (A.12E)

2nd Six Weeks

Write and solve equations involving direct variation. (A.2D)
Write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points. (A.2B)

Write linear equations in two variables given a table of values, a graph, and a verbal description. (A.2C)

Write and solve equations involving direct variation (A.2D)

Write the equation of a line that contains a given point and is parallel to a given line. (A.2E)

Write the equation of a line that contains a given point and is perpendicular to a given line. (A.2F)

Write an equation of a line that is parallel or perpendicular to the X or Y axis and determine whether the slope of the line is zero or undefined. (A.2G)

Write systems of two linear equations given a table of values, a graph, and a verbal description. (A.2I)

Determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$. (A.3A)

Determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$. (A.3A)

Graph linear functions on the coordinate plane and identify key features, including *x*-intercept, *y*-intercept, zeros, and slope, in mathematical and real-world problems. (A.3C)

Calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association. (A.4A)

Compare and contrast association and causation in real-world problems. (A.4B)

Write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems. (A.4C)

3rd Six Weeks

Write linear inequalities in two variables given a table of values, a graph, and a verbal description. (A.2H)

Write systems of two linear equations given a table of values, a graph, and a verbal description. (A.2I)

Graph the solution set of linear inequalities in two variables on the coordinate plane. (A.3D)

Graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist. (A.3F)

Estimate graphically the solutions to systems of two linear equations with two variables in real-world problems. (A.3G)

Graph the solution set of systems of two linear inequalities in two variables on the coordinate plane. (A.3H)

Solve systems of two linear equations with two variables for mathematical and real-world problems. (A.5C)

Identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes. (A.12C)

Write a formula for the nth term of arithmetic and geometric sequences, given the value of several of their terms.(A.12D)

Mesquite ISD Curriculum Sequence
High School Math - Geometry

1st Six Weeks

Determine the coordinates of a point that is a given fractional distance less than one from one end of a line segment to the other in one- and two-dimensional coordinate systems, including finding the midpoint. (G.2A)

Derive and use the distance, slope, and midpoint formulas to verify geometric relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines. (G.2B)

Distinguish between undefined terms, definitions, postulates, conjectures, and theorems. (G.4A)

Identify and determine the validity of the converse, inverse, and contrapositive of a conditional statement and recognize the connection between a biconditional statement and a true conditional statement with a true converse. (G.4B)

Verify that a conjecture is false using a counterexample. (G.4C)

Construct congruent segments, congruent angles, a segment bisector, an angle bisector, perpendicular lines, the perpendicular bisector of a line segment, and a line parallel to a given line through a point not on a line using a compass and a straightedge. (G.5B)

Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. (G.5C)

Verify theorems about angles formed by the intersection of lines and line segments, including vertical angles, and angles formed by parallel lines cut by a transversal and prove equidistance between the endpoints of a segment and points on its perpendicular bisector and apply these relationships to solve problems. (G.6A)

Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Side-Side-Side, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions. (G.6B)

Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, midsegments, and medians, and apply these relationships to solve problems. (G.6D)

Prove a quadrilateral is a parallelogram, rectangle, square, or rhombus using opposite sides, opposite angles, or diagonals and apply these relationships to solve problems. (G.6E)

Determine the area of composite two-dimensional figures comprised of a combination of triangles, parallelograms, trapezoids, kites, regular polygons, or sectors of circles to solve problems using appropriate units of measure. (G.11B)

2nd Six Weeks

Determine the coordinates of a point that is a given fractional distance less than one from one end of a line segment to the other in one- and two-dimensional coordinate systems, including finding the midpoint. (G.2A)

Derive and use the distance, slope, and midpoint formulas to verify geometric relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines. (G.2B)

Determine an equation of a line parallel or perpendicular to a given line that passes through a given point. (G.2C)

Describe and perform transformations of figures in a plane using coordinate notation. (G.3A)

Determine the image or pre-image of a given two-dimensional figure under a composition of rigid transformations, a composition of non-rigid transformations, and a composition of both, including dilations where the center can be any point in the plane. (G.3B)

Identify the sequence of transformations that will carry a given pre-image onto an image on and off the coordinate plane. (G.3C)

Identify and distinguish between reflectional and rotational symmetry in a plane figure. (G.3D)

Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools. (G.5A)

Construct congruent segments, congruent angles, a segment bisector, an angle bisector, perpendicular lines, the perpendicular bisector of a line segment, and a line parallel to a given line through a point not on a line using a compass and a straightedge. (G.5B)

Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. (G.5C)

Verify theorems about angles formed by the intersection of lines and line segments, including vertical angles, and angles formed by parallel lines cut by a transversal and prove equidistance between the endpoints of a segment and points on its perpendicular bisector and apply these relationships to solve problems. (G.6A)

Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Side-Side-Side, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions. (G.6B)

Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, midsegments, and medians, and apply these relationships to solve problems.(G.6D)

Prove a quadrilateral is a parallelogram, rectangle, square, or rhombus using opposite sides, opposite angles, or diagonals and apply these relationships to solve problems. (G.6E)

3rd Six Weeks

Derive and use the distance, slope, and midpoint formulas to verify geometric relationships, including congruence of segments and parallelism or perpendicularity of pairs of lines. (G.2B)

Describe and perform transformations of figures in a plane using coordinate notation. (G.3A)

Determine the image or pre-image of a given two-dimensional figure under a composition of rigid transformations, a composition of non-rigid transformations, and a composition of both, including dilations where the center can be any point in the plane. (G.3B)

Identify the sequence of transformations that will carry a given pre-image onto an image on and off the coordinate plane. (G.3C)

Identify and distinguish between reflectional and rotational symmetry in a plane figure. (G.3D)

Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, special segments of triangles, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools. (G.5A)

Use the constructions of congruent segments, congruent angles, angle bisectors, and perpendicular bisectors to make conjectures about geometric relationships. (G.5C)

Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Side-Side-Side, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions. (G.6B)

Apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides and angles. (G.6C)

Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, midsegments, and medians, and apply these relationships to solve problems. (G.6D)

Apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides and the congruent corresponding angles. (G.7A)

Apply the Angle-Angle criterion to verify similar triangles and apply the proportionality of the corresponding sides to solve problems. (G.7B)

Prove theorems about similar triangles, including the Triangle Proportionality theorem, and apply these theorems to solve problems. (G.8A)

Mesquite ISD Curriculum Sequence
High School Math - Algebra II

1st Six Weeks

Graph the functions $f(x)=\sqrt{x}$, $f(x)=1/x$, $f(x)=x^3$, $f(x)=\sqrt[3]{x}$, $f(x)=b^x$, $f(x)=|x|$, and $f(x)=\log_b(x)$ where b is 2, 10, and e, and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval. (2A.2A)

Describe and analyze the relationship between a function and its inverse including the restrictions on domain, which will restrict its domain (2A.2C)

Analyze the effect on the graphs of $f(x) = |x|$ when $f(x)$ is replaced by $af(x)$, $f(bx)$, $f(x-c)$, and $f(x) + d$ for specific positive and negative real values of a, b, c, and d. (2A.6C)

Formulate absolute value linear equations. (2A.6D)

Solve absolute value linear equations. (2A.6E)

solve absolute value linear inequalities. (2A.6F)

Determine the asymptotic restrictions on the domain of a rational function and represent domain and range using interval notation, inequalities, and set notation. (2A.6K)

Write the domain and range of a function in interval notation, inequalities, and set notation. (2A.7I)

Analyze data to select the appropriate model from among linear, quadratic, and exponential models. (2A.8A)

Use regression methods available through technology to write a linear function, a quadratic function, and an exponential function from a given set of data. (2A.8B)

Predict and make decisions and critical judgments from a given set of data using linear, quadratic, and exponential models. (2A.8C)

2nd Six Weeks

Formulate systems of equations, including systems consisting of three linear equations in three variables and systems consisting of two equations, the first linear and the second quadratic. (2A.3A)

Solve systems of three linear equations in three variables by using Gaussian elimination, technology with matrices, and substitution. (2A.3B)

Formulate systems of at least two linear inequalities in two variables. (2A.3E)

Solve systems of two or more linear inequalities in two variables. (2A.3F)

Determine possible solutions in the solution set of systems of two or more linear inequalities in two variables. (2A.3G)

Write the quadratic function given three specified points in the plane. (2A.4A)

Write the equation of a parabola using given attributes, including vertex, focus, directrix, axis of symmetry, and direction of opening. (2A.4B)

Formulate quadratic and square root equations using technology given a table of data. (2A.4E)

Analyze data to select the appropriate model from among linear, quadratic, and exponential models. (2A.8A)

Use regression methods available through technology to write a linear function, a quadratic function, and an exponential function from a given set of data. (2A.8B)

Predict and make decisions and critical judgments from a given set of data using linear, quadratic, and exponential models. (2A.8C)

3rd Six Weeks

Formulate systems of equations, including systems consisting of three linear equations in three variables and systems consisting of two equations, the first linear and the second quadratic. (2A.3A)

Solve, algebraically, systems of two equations in two variables consisting of a linear equation and a quadratic equation. (2A.3C)

Determine the reasonableness of solutions to systems of a linear equation and a quadratic equation in two variables. (2A.3D)

Transform a quadratic function $f(x) = ax^2 + bx + c$ to the form $f(x) = a(x - h)^2 + k$ to identify the different attributes of $f(x)$. (2A.4D)

Solve quadratic and square root equations. (2A.4F)

Solve quadratic inequalities. (2A.4H)

Add, subtract, and multiply complex numbers. (2A.7A)