

**I AM Performance Level Descriptors (PLDs)
Grade 10 Mathematics**

| | Content Connector | Below Proficiency | Approaching Proficiency | At Proficiency |
|--|--|---|---|---|
| Equations and Inequalities (Linear and Systems) | | | | |
| MA10.EI.1.a.1 | Solve linear equations with integer coefficients using one or two steps. | Substitutes values into a linear equation. | Solves a one-step linear equation. | Solve linear equations with integer coefficients using one or two steps. |
| MA10.EI.2.a.1 | Recognize when a linear equation has one solution, infinitely many solutions, or no solutions. | Identifies concept of a linear equation. | Identifies one solution in linear equation. | Recognizes when a linear equation has one solution, infinitely many solutions, or no solutions. |
| MA10.EI.3.a.1 | Translate a real-world problem into a one-variable linear equation. | Identifies the variable in the real-world problem. | Attempts to translates a real-world problem into a linear equation. | Translates a real-world problem into a one-variable linear equation. |
| MA10.EI.4.a.1 | Represent a real-world situation using a proportion. | Identifies a proportion in the real-world problem. | Attempt to write a proportion from a real-world situation. | Represents a real-world situation using a proportion. |
| MA10.EI.5.a.1 | Identify solutions from the graph of a linear inequality within a real-world problem. | Identifies linear inequality within a real-world problem. | Identifies single solution from the graph of a linear inequality. | Identifies solutions from the graph of a linear inequality within a real-world problem. |
| MA10.EI.6.a.1 | Finds a solution of compound inequalities given a graph. | Graphs inequalities on a number line. | Determines if single solution satisfies inequality conditions. | Finds a solution of compound inequalities given a graph. |
| MA10.EI.7.a.1 | Solves literal equations for a specified variable. | Identifies specified variable. | Solves equations with one variable. | Solves literal equations for specified variable. |
| MA10.EI.8.a.1 | Evaluate the absolute value of an expression. | Identifies expression containing absolute value. | Evaluates expressions. | Evaluates absolute value of an expression. |

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| MA10.EI.9.a.1 | Identify an absolute value graph. | Identifies absolute value graph. | Identifies absolute value graph. | Identifies absolute value graph. |
| MA10.SEI.1.a.1 | Identify the solution to a system of linear equations given a graph. | Identifies a solution to one equation in the system of equations. | Identifies a labeled point that is a solution to the system of linear equations. | Identifies the coordinates/point of the solution of a system of a linear equation given a graph. |
| MA10.SEI.2.a.1 | Solve a system of linear equations. | Checks a solution in both multiple equations. | Uses elimination method to solve system of linear equation. | Solves a system of linear equations. |
| MA10.SEI.3.a.1 | Choose a system of linear equations that represents a given real-world problem. | Identifies variables when given real world problems. | Chooses a system of linear equations. | Chooses linear equations that represent real world problems. |
| MA10.SEI.4.a.1 | Identify the solution set to a system of inequalities. | Identifies the graphs on the corresponding linear equations. | Identifies a single point in solution set of a system of inequalities. | Chooses the correct solution to a set of inequalities. |
| Functions (Linear and Non-linear) | | | | |
| MA10.F.1.a.1 | Given multiple representations, describe a function as linear and not linear. | Identifies a function as linear and not linear using one representation. | Identifies a function as linear and not linear using a graph and an equation. | Given multiple representations, describes a function as linear and non linear. |
| MA10.F.2.a.1 | Identify the rate of change (slope) and initial value (y-intercept) from graphs. | Identifies the rate of change (slope) as positive, negative, or constant from graphs. | Identifies either the rate of change (slope) or initial value (y-intercept) from graphs. | Identifies the rate of change (slope) and initial value (y-intercept) from graphs. |
| MA10.F.4.a.1 | Interpret the rate of change using graphical representations of a real-world situation. | Identifies that a rate of change occurred. | Identifies the rate of change using graphical representations of a real-world situation. | Interprets the rate of change using graphical representations of a real-world situation. |

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| MA10.F.5.a.1 | Describe the attributes of an equation given various forms. | Identifies various forms of an equation. | Describes the attributes of one form of an equation. | Describes the attributes of an equation given various forms. |
| MA10.F.6.a.1 | Given a table or a graph, compare two linear functions to answer a question about rates. | Given a table or a graph, identifies the rate of one linear function. | Given a table or a graph, identifies the rate of both linear functions. | Given a table or graph, compare the rates of two linear functions to answer a question about rates. |
| MA10.F.7.a.1 | Distinguish between functions and non-functions within graphs or tables. | Identifies that a graph is a function. | Distinguish between functions and non-functions given a graph. | Distinguish between functions and non-functions within graphs or tables. |
| MA10.F.8.a.1 | Identify the domain and range from a table or graph. | Identifies the domain or range from a table. | Identifies the domain and range from a table. | Identifies the domain and range from a table or graph. |
| MA10.F.9.a.1 | Given the qualitative features, sketch a graph. | Chooses the graph with the correct extrema (maxima and/or minima). | Chooses the graph with some of the qualitative features. | Chooses the correct graph with all the qualitative features. |
| MA10.F.9.a.2 | Given a sketch, describe and make predictions about the relationship between the variables. | Given a sketch, identifies characteristics of the sketch. | Given a sketch, describes the relationship between the variables. | Given a sketch, describes and make predictions about the relationship between the variables. |
| MA10.F.9.a.3 | Given multiple graphs, describe the defining features of a function. | Given a graph, identifies a feature of a function. | Given a graph, describes some of the defining features of a function. | Given a graph, describes all the defining features of a function. |
| MA10.F.9.a.4 | Given a verbal description, create or identify a graph to model the situation. | Given a verbal description without values, chooses an appropriate linear or quadratic graph. | Given a verbal description with one value, chooses an appropriate graph to represent the given linear or quadratic situation. | Given a verbal description with multiple values, identifies a specific linear or quadratic graph to model the situation. |
| MA10.F.10.a.1 | Interpret statements that use function notation in terms of a context. | Recognize statements that use function notation. | Recognize statements that use function notation in terms of a context. | Interpret statements that use function notation in terms of a context. |
| MA10.QEEF.1.a.1 | Given multiple graphs, describe the function as linear or not linear. | Given a graph, describes the function as linear or not linear. | Given a graph, describes the function as linear or not linear. | Given a graph, describes the function as linear or not linear. |

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| MA10.QEEF.2.a.1 | Determine if points lie on a graph of an exponential or quadratic function. | Determines if a graph is a quadratic or exponential function. | Determines if an equation is a quadratic or exponential function. | Determines if an equation, graph or table of points are an exponential or quadratic function. |
| MA10.QEEF.3.a.1 | Solve equations using the properties of square roots. | Solves a square root equation with perfect square roots (not exceeding 100). | Solves a square root equation involving non-perfect square roots. | Solves equations using the properties of square roots. |
| MA10.QEEF.4.a.1 | Determine if points lie on a graph of a quadratic function of a real-world situation. | Identifies if a point is a possible solution, given a graph. | Identifies if a point is a possible solution of a quadratic function of a real-world situation. | Determines if points lie on a graph of a quadratic function of a real-world situation. |
| MA10.QEEF.5.a.1 | Describe attributes of a quadratic function in a real-world problem. | Identifies an attribute of a quadratic function. | Describes the attributes of a quadratic function. | Describes the attributes of a quadratic function in a real-world problem. |
| MA10.QEEF.6.a.1 | With a model, answer questions about exponential functions. | Given a model, identifies a feature of an exponential function. | Given a model, identifies features of an exponential function. | Given a model, answer questions about exponential functions. |
| Geometry and Measurement | | | | |
| MA10.GM.1.a.1 | Identify and describe attributes of three-dimensional geometric objects. | Given a list of attributes, matches to 3-D object. | Identifies attributes of 3-D object. | Identifies and describes attributes of 3-D geometric objects. |
| MA10.GM.2.a.1 | Apply the formula to find the volume of three-dimensional shapes (e.g., cubes, spheres, and cylinders). | Identifies corresponding formula to find volume of 3-D Shapes from given list. | Substitutes numbers into formula to find volume of three-dimensional shapes. | Applies the formula to find the volume of three-dimensional shapes. |
| MA10.GM.3.a.1 | Describe a sequence of transformations between two congruent figures. | Identifies congruent shapes that have been translated (moved in 1 direction). | Identifies congruent shapes that have been a multiple step transformation. | Describes sequence of transformations between two congruent figures. |

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| MA10.GM.4.a.1 | Describe the effects of transformations on the coordinates of a figure. | Identifies corresponding coordinates that have been translated only. | Identifies corresponding coordinate that have been transformed no more than two times. | Describes the effects of transformation of coordinates of a figure. |
| MA10.GM.5.a.1 | Apply the Pythagorean Theorem to determine lengths/distances in real-world situations. | Given the Pythagorean Theorem and two legs of a triangle, applies with perfect square numbers. | Solves problems with Pythagorean Theorem. | Applies Pythagorean Theorem to determines lengths/distances in real world situations. |
| MA10.GM.5.a.2 | Find the hypotenuse of a two-dimensional right triangle (Pythagorean Theorem). | Identifies which side of right triangle is hypotenuse. | Given all three side lengths of triangle, determines using the Pythagorean Theorem, if it is a right triangle. | Finds the hypotenuse of a two-dimensional right triangle. |
| MA10.GM.6.a.1 | Apply the Pythagorean Theorem to determine lengths/distances on a coordinate plane. | Compares segment lengths on a coordinate plane. | Given triangle on a coordinate plane, uses Pythagorean Theorem to determines length and distance. | Applies the Pythagorean Theorem to determines lengths/distances on a coordinate plane. |
| Number Sense and Data Analysis | | | | |
| MA10.DASP.1.a.1 | Graph bivariate data using scatter plots and identify possible associations between the variables. | Identifies bivariate data. | Graphs bivariate data using scatter plots. | Graphs bivariate data using scatter plots and identifies possible associations between the variables. |
| MA10.DASP.1.a.2 | Using scatter plots, identify data points that appear to be outliers. | Identifies a scatter plot. | Using scatter plots, identifies data points; understand data trend. | Using scatter plots, identifies data points that appear to be outliers. |
| MA10.DASP.2.a.1 | Determine the theoretical probability of multi-stage probability experiments (2 coins, 2 dice). | Given the sample space and formula, makes appropriate calculations. | Given the sample space of each individual event, determines the theoretical probability of multi-stage probability experiments. | Determines the theoretical probability of multi-stage probability experiments. |

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| MA10.DASP.2.a.2 | Collect data from multi-stage probability experiments (2 coins, 2 dice). | Recognizes a multi-stage probability experiment. | Collects data from one probability experiment. | Collects data from multi-stage probability experiments. |
| MA10.DASP.3.a.1 | Use the multiplication counting principle to determine the total number of outcomes. | Recognizes that there are multiple outcomes. | Identifies the multiplication counting principle and attempt computation. | Uses the multiplication counting principle to determine the total number of outcomes. |
| MA10.DASP.4.a.1 | Determine whether a sampling method was random or nonrandom. | Understands what a sample size is. | Understands what random and nonrandom sampling is. | Determines whether a sampling method was random or nonrandom. |
| MA10.DASP.6.a.1 | Use the line of best fit to find a point that answers a question about the data. | Determines if a given line of best fit best represents the data. | Writes a line of best fit for the data. | Uses a line of best fit to find a point that answers a question about the data. |
| MA10.DASP.7.a.1 | Interpret a two-way table summarizing data on two categorical variables collected from the same subjects using relative frequencies calculated for rows or columns. | Given pertinent information from a two-way table, calculates appropriately. | Distinguishes independent parts of a two-way table. | Interprets a two-way table summarizing data on two categorical variables collected from the same subjects using relative frequencies calculated for rows or columns. |
| MA10.NSEC.1.a.1 | Identify rational and irrational numbers. | Understands what a rational number is. | Understands the difference between rational and irrational numbers. | Identifies rational and irrational numbers. |
| MA10.NSEC.1.a.2 | Round irrational numbers to the hundredths place. | Rounds to hundredths place. | Identifies numbers as irrational number. | Rounds irrational numbers to the hundredths place. |
| MA10.NSEC.2.a.1 | Use the estimate of irrational numbers to locate them on a number line. | Estimates irrational numbers. | Locates and plots irrational numbers on a number line between two integers. | Uses the estimate of irrational numbers to locate them on a number line to the hundredths place. |

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| MA10.NSEC.3.a.1 | Use properties of integer exponents to produce equivalent expressions. | Simplifies a numerical expression with a single integer exponent. | Identifies properties of integer exponents. | Uses properties of integer exponents to produce equivalent expressions. |
| MA10.NSEC.6.a.1 | Solve real-world problems with rational numbers by using two operations. | Given the operations to solve a real-world problem involving integers, computes problem. | Identifies operations when solving problems requiring two operations with rational numbers. | Solves real-world problems with rational numbers by using two operations. |
| MA10.NSEC.8.a.1 | Simplify numeric exponential expressions in rational form. | Identifies that an exponent is a series of multiplication. | Uses properties of exponents to expand a rational expression to attempt to simplify. | Simplifies numeric exponential expressions in rational form. |
| MA10.NSEC.9.a.1 | Use factoring to find equivalent expressions. | Knows process of factoring numbers. | Identifies that polynomial can be factored. | Uses factoring to find equivalent expressions. |
| MA10.NSEC.10.a.1 | add and subtract polynomials. | Finds a monomial with in a polynomial. | Combines like terms. | Adds and subtracts polynomials. |
| MA10.NSEC.10.a.2 | Multiply polynomials. | Uses distributive property. | Multiplies a polynomial and monomial | Multiplies polynomials. |
| MA10.NSEC.10.a.3 | Divide a polynomial by a monomial. | Divides/simplifies a monomial. | Breaks a polynomial divided by a monomial into a series of individual monomials. | Divides a polynomial by a monomial. |
| Process Standards | | | | |
| PS.1 | Make sense of problems and persevere in solving them. | Identifies given quantities and unknowns for a given problem. | Identifies what question is asking, relevant or irrelevant information, and can set up solution method. | Makes sense of and solves problems. |
| PS.2 | Reason abstractly and quantitatively. | Represents a problem using numbers and symbols. | Identifies a symbolic expression or equation that represents a problem situation. | Creates symbolic expressions or equations to represent problem situations. |

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| PS.3 | Construct viable arguments and critique the reasoning of others. | Identifies clearly invalid arguments, without justification or explanation. | Identifies the flaws in a given argument. | Constructs arguments and justifications for mathematical thinking, and critiques the reasoning of others. |
| PS.4 | Model with mathematics. | Identifies parts of a real-world problem. | Creates a model to represent a real-world problem. | Applies math knowledge to solve real-world problems using a variety of models and representations and reflects to make sure the answer makes sense. |
| PS.5 | Use appropriate tools strategically. | Recognizes familiar mathematic tools. | Uses familiar tools to aid mathematical process. | Uses relevant mathematical tools and external mathematical resources to communicate mathematical ideas. |
| PS.6 | Attend to precision. | Identifies common mathematical definitions. | Uses common mathematical vocabulary to connect or explain simple mathematical concepts. | Communicates correct mathematical language with appropriate precision and context. |
| PS.7 | Look for and make use of structure. | Identifies simple structures. | Identifies the rules for simple numeric and geometric structures, and uses those rules to extend a pattern. | Applies structural classifications and patterns to answer problems in a variety of ways. |
| PS.8 | Look for and express regularity in repeated reasoning. | Identifies simple examples of repeated reasoning or patterns. | Identifies the rules exhibited in repeated reasoning or patterns. | Applies repeated reasoning to develop general methods, rules, and short-cuts for solving mathematical problems. |