*** IMPORTANT: In order to prepare for the math portion of the entrance exam, students should review the following:**

Math Common Core Standards Assessed in IPoly's Entrance Exam

(Standards Convention is as follow Grade.Concept.Item.Sub-Item)

(CCSS.MATH.CONTENT.4.OA.C.5)

Generate and analyze patterns. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. ***For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.***

(CCSS.MATH.CONTENT.6.EE.A.1)

Write and evaluate numerical expressions involving whole-number exponents.

(CCSS.MATH.CONTENT.6.EE.A.2.C)

Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). ***For example, use the formulas V = s3 and A = 6 s2 to find the volume and surface area of a cube with sides of length s = 1/2.***

(CCSS.MATH.CONTENT.6.EE.A.3)

Apply the properties of operations to generate equivalent expressions. ***For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.***

(CCSS.MATH.CONTENT.6.NS.B.3)

Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

(CCSS.MATH.CONTENT.6.NS.C.7.C)

Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. ***For example, for an account balance of -30 dollars, write |-30| = 30 to describe the size of the debt in dollars*.**

(CCSS.MATH.CONTENT.7.EE.B.4)

Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

(CCSS.MATH.CONTENT.7.EE.B.4.A)

Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. ***For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?***

(CCSS.MATH.CONTENT.7.EE.B.4.B)

Solve word problems leading to inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. ***For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions*.**

(CCSS.MATH.CONTENT.7.G.B.4)

Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

(CCSS.MATH.CONTENT.7.RP.A.3)

Use proportional relationships to solve multistep ratio and percent problems. ***Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.***

(CCSS.MATH.CONTENT.8.EE.A.4)

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.

(CCSS.MATH.CONTENT.8.EE.B.6)

Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.

(CCSS.MATH.CONTENT.8.EE.C.7)

Solve linear equations in one variable.

(CCSS.MATH.CONTENT.8.EE.C.7.A)

Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers).

(CCSS.MATH.CONTENT.8.EE.C.7.B)

Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

(CCSS.MATH.CONTENT.8.EE.C.8.A)

Analyze and solve pairs of simultaneous linear equations. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.

CCSS.MATH.CONTENT.8.EE.C.8.B

Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. ***For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.***

(CCSS.MATH.CONTENT.8.EE.C.8.C)

Solve real-world and mathematical problems leading to two linear equations in two variables. ***For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.***

(CCSS.MATH.CONTENT.8.NS.A.2)

Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2). ***For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.***

(CCSS.MATH.CONTENT.8.F.A.1)

Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.1

(CCSS.MATH.CONTENT.8.F.A.2)

Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). ***For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.***

(CCSS.MATH.CONTENT.8.F.A.3)

Interpret the equation *y = mx + b* as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. ***For example, the function A = s2giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.***

(CCSS.MATH.CONTENT.8.F.B.4)

Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.