

Math Assessment Expectations

PLEASE BRING A CALCULATOR TO ASSIST YOU IN THE COMPLETION OF THE MATH ASSESSMENT

These expectations are provided for your information only and offered as a guideline if you feel advanced preparation of the math assessment is required. The math assessment will be conducted on the first day of the Orientation Program.

GRADE EXPECTATION

9	Evaluate expressions involving decimals, operations with integers, expressions that involve integers including expressions that contain brackets and exponents, using order of operations.
9	Order Integers, rational number, expressions involving addition with simple fractions.
9	Solve and verify linear equations involving a one-variable term and having solutions that are integers, by using inspection, guess and check, and a "balance" model.
9	Translate between equivalent forms of number (decimal, fraction, and percent).
9	Evaluate algebraic expressions with up to three terms, by substituting fractions and integers for the variables.
9	Solve angles involving triangles, intersecting lines, parallel lines and transversals.
9	Solve problems involving addition, subtraction, multiplication and division with simple fractions.
9	Solve problems involving ratios and rates.
9	Calculate the area of a circle and the volume of a cylinder.
9	Solve problems involving right triangles using the Pythagorean Theorem
10	Evaluate algebraic expressions involving exponents.
10	Apply the exponent rules for multiplying and dividing monomials in expressions involving one and two variables with positive exponents.
10	Add and subtract polynomials with up to two variables. Multiply a polynomial by a monomial involving the same variable.
10	Solve first-degree equations, including equations with fractional coefficients.
10	Rearrange formulas involving variables in the first degree, with and without substitution.
10	Solve problems using the Pythagorean Theorem.
10	Determine the interior and exterior angles of triangles, quadrilaterals and other polygons.
10	Construct tables of values to represent linear relations.
10	Construct graphs to represent linear relations.
10	Solve problems involving the volumes of cones.
10	Interpret the meanings of graphs that represent linear relations.
10	Calculate the slope of a line given two points or a graph.
10	Determine the equation of a line joining two chosen points.
10	Graph a line given its equation.
10	Write the equation of a line given a graph.
10	Identify the slope of horizontal and vertical lines, and relationships between the slopes of parallel and perpendicular lines.
11	Expand and simplify second-degree polynomial expressions.
11	Factor polynomial expressions involving common factors, trinomials and differences of squares.
11	Solve quadratic equations that have real roots.
11	Solve systems of two linear equations involving two variables by graphing. Solve systems of two linear equations involving two variables by using the algebraic method of substitution or elimination.
11	Solve problems involving the slope, length, and midpoint of a line segment.
11	Determine the radius of a circle with center (0,0) given its equation.

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GRADE EXPECTATION

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| 11 | Determine the zeros and the maximum or minimum value of a quadratic relation from its graph. Determine the zeros and the maximum or minimum value of a quadratic relation from its defining equation. |
| 11 | Understand the roles of a , h , and k in $y = a(x-h)^2+k$ to identify the transformations. |
| 11 | Sketch by hand the graph of a parabola by applying transformations. |
| 11 | Solve problems involving the slope, midpoint and length of a line segment given its endpoints. |
| 11 | Determine the measures of the sides and angles in right triangles, using the primary trigonometric ratios and the Pythagorean Theorem. |
| 11 | Solve problems involving similar triangles. |
| 11 | Determine the measures of sides and angles in acute triangles using the sine law and cosine law. |
| 11 | Simplify algebraic expressions containing integer and rational exponents, and evaluate numeric expressions containing integer and rational exponents and rational bases. |
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| 12 | Simplify radicals and radical expressions obtained by adding, subtracting and multiplying. |
| 12 | Represent a sequence of numbers algebraically using formula for the n th term. |
| 12 | Apply sequence formula to calculate the sum of a given number of consecutive terms. |
| 12 | Determine formula for the general term of an arithmetic sequence and apply the formula to calculate any term in a sequence. |
| 12 | Use function notation when appropriate, the algebraic representation of the inverse of a linear or quadratic function, given the algebraic representation of the function. |
| 12 | Solve problems, using a scientific calculator, that involve the calculation of the amount, A , the principal, P , or the interest rate per compounding period, i , using the compound interest formula in the form $A = P(1+i)^n$. |
| 12 | Determine the maximum or minimum value of a quadratic function whose equation is given in the form $f(x) = ax^2 + bx + c$, using an algebraic method. |
| 12 | Determine the exact values of the sine, cosine, and tangent of the special angles: 0° , 30° , 45° , 60° , and 90° . |
| 12 | Simplify rational expressions by adding, subtracting, multiplying, and dividing, and state the restrictions on the variable values. |
| 12 | Demonstrate an understanding of functions, their representations, and their inverses, and make connections between the algebraic and graphical representations of functions using transformations. |
| 12 | Sketch graphs of $y=af[k(x-d)]+c$ by applying one or more transformations to the graph of $f(x)=x$, $f(x)=x^2$, $f(x)=\sqrt{x}$, $f(x)=1/x$, $f(x)=a^x$ ($a > 0$, $a \neq 1$), and state the domain and range of the transformed functions. |
| 12 | Solve problems involving right triangles and oblique triangles in two dimensional and three dimensional settings, and solve using the primary trigonometric ratios, the cosine law, and the sine law (including the ambiguous case). |
| 12 | Prove simple trigonometric identities, using the Pythagorean identity the quotient identity and the reciprocal identities. |
| 12 | Determine the measures of two angles from 0° to 360° for which the value of a given trigonometric ratio is the same. |
| 12 | Represent linear and quadratic functions using function notation. |
| 12 | Substitute into and evaluate functions using function notation. |
| 12 | Determine the number of zeros of a quadratic function. |
| 12 | Sketch graphs of $y=af[k(x-d)]+c$ by applying one or more transformations to the graphs of $f(x)=\sin x$ and $f(x)=\cos x$. |