# MATHEMATICS

| COMPONENT | OBJECTIVES | COMPETENCY |
|---|---|---|
| I Geometry | 1. Apply properties of similarity to define trigonometric ratios. **(MA.B.1.4.3)** <br><br> 2. Develop and use several methods of finding areas of polygons. **(MA.C.1.3.1)** <br><br> 3. Develop formulas for finding surface area and volume of three-dimensional figures. **(MA.B.1.4.1)** <br><br> 4. Use trigonometric functions to solve area and perimeter problems. **(MA.B.1.4.3)** <br><br> 5. Develop properties of transformations and use them to solve problems and develop and prove conjectures. **(MA.C.1.4.1)(MA.C.2.4.1)** <br><br> 6. Compare areas and volumes of similar solids. **(MA.C.2.4.2)** <br><br> 7. Develop properties of trigonometric functions, using technology. **(MA.C.3.4.1)** <br><br> 8. Use properties of vectors to derive coordinate geometry relations. **(MA.C.3.4.2)** | A. Apply properties of geometric figures to solve problems and prove conjectures. |
| II Algebra | 1. Develop and use principles for equivalent expressions and equations. <br><br> 2. Solve problems involving linear equations and inequalities. <br><br> 3. Solve quadratic equations by factoring. <br><br> 4. Solve equations using technology. <br><br> 5. Develop properties of exponents and graphical properties of power functions. | A. Solve problems involving algebraic transformations and multiple representations of the function concept. **(MA.D.1.4.1)** |

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| | 6. Solve problems involving simplification of expressions by the laws of exponents.<br>**(MA.A.1.4.4)**<br><br>7. Develop properties of parallel and perpendicular lines in the plane.<br>**(MA.C.3.4.2)**<br><br>8. Relate a square root to the solution of a quadratic equation.<br>**(MA.A.3.4.3)**<br><br>9. Solve linear programming problems.<br><br>10. Solve problems involving simplifications of radicals.<br>**(MA.A.1.4.4)** | |
| III Statistics and Probability | 1. Draw inferences from statistical data.<br>**(MA.E.3.4.2)**<br><br>2. Make and test statistical hypotheses.<br>**(MA.E.3.4.1)**<br><br>3. Formulate null hypotheses and understand their role in statistical reasoning.<br>**(MA.E.3.4.2)**<br><br>4. Understand and use the chi-square statistics.<br>**(MA.E.1.4.3)**<br><br>5. Understand the inconclusiveness of test of statistical significance.<br>**(MA.E.3.4.2)**<br><br>6. Use conditional probability to solve problems.<br>**(MA.E.2.4.2)** | A. Use the concept a random variable to generate and interpret probability distributions.<br><br>B. Design a statistical experiment to study a problem, conduct the experiment and interpret and communicate the outcomes.<br>**(MA.E.3.4.1)** |

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| IV   Logical Reasoning | 1.  Construct indirect proofs.<br><br>2.  Construct proofs by contradiction.<br><br>3.  Use conditional statements to formulate conjectures.<br><br>4.  Understand the structure of an axiomatic system.<br>**(MA.A.3.4.2)(MA.C.1.4.1)** | A.  Construct proofs to justify mathematical conjectures. |