

ARMENIAN EVANGELICAL CENTRAL HIGH SCHOOL

MATH Grade 9 (2014 - 2015)

Teacher: Shoghig Chekijian

Objectives for the academic year for each topic

**I. Square Roots**

- 1) Perform the operations of calculation of real numbers.
- 2) Distinguish between rational and irrational numbers.
- 3) Perform the operations on irrational numbers.
- 4) Determine the conjugate of a number.
- 5) Rationalize the denominator of an irrational number.

**II. Algebraic expressions.**

- 1) Define the degree of a polynomial.
- 2) Expand and factorize polynomials by using remarkable identities.
- 3) Determine the domain of definition of a fractional expression.
- 4) Find the root of a fractional expression.
- 5) Find the numerical value of an expression.
- 6) Solve an inequality and represent the solution as an interval.

**III. System of Equations**

- 1) Solve a system of equations in two unknowns.
- 2) Organize a data as a system of equations in two unknowns.

**IV. The Circle**

- 1) Define the properties of tangents and angles.
- 2) Define Thales' Property.
- 3) Apply Thales' Property to determine ratios and calculate lengths.
- 4) Define similar triangles, and write the ratio of similarity.
- 5) Apply ratio of similar triangles to calculate lengths.
- 6) Find geometric loci.

**V. Statistics**

- 1) Organize data by recognizing the character and its type.
- 2) Calculate the mean, the relative and cumulative frequencies.
- 3) Make bar graphs and circular diagrams.

## **VI. Analytic Geometry**

- 1) Recognize the relation between proportionality and linear function.
- 2) Write a linear function for percent increase or decrease.
- 3) Recognize the equation of a straight line, and the slope.
- 4) Plot a line in an orthonormal system of axes.
- 5) Write the equation of a straight line passing through two points.
- 6) Write the equation of a straight line parallel to a given line.
- 7) Write the equation of a straight line perpendicular to a given line.
- 8) Find the intersection of two lines graphically and analytically.

## **VII. Vectors**

- 1) Define a vector by its direction, sense and magnitude.
- 2) Distinguish between equal and opposite vectors.
- 3) Construct addition of vectors by different methods.
- 4) Determine the coordinates of a vector and a vector sum.
- 5) Use Chasle's Relation to simplify expressions.
- 6) Translate a figure by a vector.
- 7) Find the coordinates of the translated image.
- 8) Use equality of vectors in the proof of parallelograms.

## **VIII. Trigonometry**

- 1) Define the sine, cosine and tangent of an angle.
- 2) Define the trigonometric values of remarkable angles.
- 3) Derive two basic relations between the trigonometric lines.
- 4) Calculate lengths in a triangle by using trigonometric relations.
- 5) Use the calculator to find the values of trigonometric lines.

## **IX. Calculation**

- 1) Perform calculations with powers, fractions and square roots.
- 2) Recognize the order of operations.
- 3) Discover short cuts to calculations by using remarkable identities.
- 4) Find the area and perimeter of triangles and quadrilaterals.