

ARMENIAN EVANGELICAL CENTRAL HIGH SCHOOL

MATH Grade 8 (2014 - 2015)

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Objectives for the academic year for each topic

**I. Powers**

- 1) Perform operations on powers having integers as exponents.
- 2) Use powers of 10 to write a number in the scientific notation.
- 3) Find the *GCF* and *LCM* of two or more natural numbers in terms of powers of prime numbers.

**II. Fractions**

- 1) Perform operations on literal fractions.
- 2) Use the reciprocal of a fraction to divide fractions.
- 3) Simplify a compound fraction.

**III. Square Roots**

- 1) Recognize the square root of a positive number.
- 2) Differentiate between rational and irrational numbers.
- 3) Add, multiply and simplify irrational numbers.

**IV. Algebraic expressions**

- 1) Perform operations on monomials.
- 2) Reduce and arrange a polynomial.
- 3) Expand and factorize remarkable identities.
- 4) Expand and factorize polynomials using remarkable identities.
- 5) Find the root of a factorized polynomial.
- 6) Determine the domain of definition of a fractional expression.
- 7) Find the numerical value of an algebraic expression.
- 8) Solve an inequality and represent the solution on the number line.

**V. Statistics.**

- 1) Determine percentage by using proportionality.
- 2) Arrange a statistical data and determine the relative and increasing cumulative frequencies.
- 3) Make a bar graph and a circular diagram.

## **VI. Parallelogram**

- 1) Memorize the properties of a parallelogram.
- 2) Prove that a figure is a parallelogram by using the properties.
- 3) Differentiate between square, rhombus, rectangle and trapezoid.
- 4) Recognize the common properties of special parallelograms.

## **VII. Pythagorean Theorem**

- 1) Recognize the special features of a right triangle.
- 2) Prove congruency of right triangles.
- 3) Calculate the lengths of the sides of a right triangle.
- 4) Calculate the lengths in a semi-equilateral and right isosceles triangle.

## **VIII. Circle**

- 1) Construct the relative positions of a circle and a straight line.
- 2) Construct two circles given the radii and the distance between the centers. Deduce the relative positions of the two circles.
- 3) Construct the circles passing through two fixed points.
- 4) Construct the circumscribed circle of a triangle.
- 5) Construct the tangents to one or two circles.
- 6) Define central angle and inscribed angle.
- 7) Solve problems using the relation of central and inscribed angles.
- 8) Elementary introduction to geometric loci.

## **IX. Analytic Geometry and vectors**

- 1) Locate a point in the orthonormal system of axes.
- 2) Find the coordinates of the midpoint of a segment.
- 3) Define a vector by its sense, direction and magnitude.
- 4) Recognize equal and opposite vectors
- 5) Add two vectors by Chasle's Relation and by Parallelogram Rule.
- 6) Calculate the coordinates of a vector.
- 7) Find the image of a point by translation of a vector.

## **X. Calculator**

- 1) Set the calculator on the desired mode.
- 2) Use the calculator to round quotients and irrational numbers.
- 3) Use the calculator to write a number in the scientific notation.