

Algebra

Year 9

(70 hrs, 2 hrs per week, reserve – 18 hrs)

Table of contents	
1.	<p>Inequalities Numerical inequality Inequalities with variables. Linear inequalities Numerical intervals. Equivalent inequalities. Systems of linear inequalities with one variable</p>
2	<p>Quadratic function Features of functions. Zeroes of functions, intervals of equal signs, function growth and reduction. Function graph conversion. Quadratic function Quadratic inequality.</p>
3.	<p>Numerical sequences Numerical sequences. Arithmetic and geometric progressions, and their features</p>
4.	<p>Basics of combinatorics, probability theory, and statistics Main rules of combinatorics Frequency and probability of an accidental event Initial details of statistics Means of data presentation and processing</p>
<p>Expected results Pupil:</p> <ul style="list-style-type: none"> ● solves: linear inequalities with one variable; systems of linear inequalities with one variable; ● solves tasks with: building a graph of quadratic function; solving quadratic inequalities; finding the solution of a system with two equalities and two variables – at least one second degree equality; making up and solving a system of equalities with two variables as mathematic models of applied tasks; ● solves tasks implying: the calculation of terms of progression; setting progressions using their terms or relations between them; calculating the sum of first n terms of arithmetic and geometric progression; using the formulas of general terms and sums of progressions to find the unknown progression elements; ● finds, selects and arranges information from the available sources; ● solves tasks on: using the combinatory rules of sums and products; calculating the probability of accidental events; calculating the frequency of accidental events; presenting statistical details as tables, diagrams and graphs. 	

Geometry

Year 9

(70 hrs, 2 hrs per week, reserve – 24 hrs)

Table of contents	
1.	<p>Coordinates and planes. Sine, cosine, and tangent of angles 0° to 180°. Identical equations Circle and line equation.</p>
2.	<p>Vectors on a plane Vector. Vector module and direction. Equality of vectors. Coordinates of vectors. Adding and subtracting vectors. Multiplying vectors by numbers. Collinear vectors. Scalar vector product</p>
3.	<p>Solving triangles. Cosine and sine theorems Formulas for triangle area</p>
4.	<p>Regular polygons. Circle length. Circle area Regular polygons, their types and features. Circle length. Length of a circle arc. Area of circle and its parts</p>
5.	<p>Geometric interchange Interchange (movement) and its features. Symmetry related to a dot and a line, turning, and parallel shift. Equality of figures</p>
<p>Expected results Pupil:</p> <ul style="list-style-type: none"> ● calculates the coordinates of a middle of segment, distance between two dots with their coordinates; ● uses the learned formulas and equations of figures to solve tasks; ● calculates the coordinates of a vector, the sum (difference) of vectors, multiplying vectors by numbers; vector length, and an angle between two vectors; ● calculates: the length of the unknown sides and angles of the unknown angles of a triangle; and areas of triangles; ● correlates geometric figures with objects around us. 	