INNOVARE JOURNAL OF SOCIAL SCIENCES

Vol 10, Issue 4, 2022

ISSN - 2347-5544

Research Article

COMPARISON OF THE TEACHING CURRICULUM IN MATHEMATICS BETWEEN MONTENEGRO, SERBIA, BOSNIA AND HERZEGOVINA, AND CROATIA IN VII (VIII) GRADE OF PRIMARY SCHOOL

AMOR HASIĆ*

Department of Mathematics, Faculty of Natural Sciences and Mathematics, University of Montenegro, Podgorica, Montenegro.
Email: amorhasic@gmail.com

Received: 17 April 2022, Revised and Accepted: 03 May 2022

ABSTRACT

The aim of this research is to compare the basic goals and tasks, learning outcomes, or contents/concepts, mathematical curriculum for VII (VIII) primary schools used in Montenegro, Serbia, Bosnia and Herzegovina, and Croatia. Mathematical curriculum for Montenegro of Serbia, Bosnia and Herzegovina, and Croatia is relatively analyzed in the following research work: (a) Mathematical curriculum of Montenegro used for VIII grade of primary school, (b) mathematical curriculum of Serbia used for VII grade of primary school, (c) mathematical curriculum of Bosnia and Herzegovina used for VIII grade of primary school, and (d) mathematical curriculum of Croatia used for VII grade of primary school. I note that these countries were once part of Yugoslavia and that they are similar in many ways and have a similar mentality in many spheres of life, which is the case with education. Since they are related and linguistically, it is easiest to compare the above countries. Each country does its best to design a quality curriculum by comparing its curriculum with other countries which means that the goal is to get the best possible education system. Since I am from Montenegro, my main goal is to find the best possible education system for my country by comparing it with the countries of the former Yugoslavia. The result is clear and expressed in the paper, in short, I can say that the results show that we have a random curriculum and that the purpose is to improve it and integrate it into modern teaching and the application of what will create interest and desire to learn. The conclusion is that we need to work on education, the quality of the education system, teaching staff, and the use of teaching aids to include all aspects of life in the teaching process. From the above, I can say that this is a continuation of the already compared curricula for V (VI), VI (VII), where the introductory part and the concept of work are similar with minor changes, except for the part concerning comparison. This part of the paper is exclusively related to the mentioned class, that is, VII (VIII) primary schools. The collected data were relatively analyzed using document analysis as a qualitative method of analysis.

Keywords: Comparative education, Mathematics curriculum for primary schools, Mathematics education.

 DOI: http://dx.doi.org/10.22159/ijss.2022v10i4.44863. Journal homepage: https://innovareacademics.in/journals/index.php/ijss

INTRODUCTION

The need for the highest quality education system is one of the main priorities and goals of every successful state. Montenegro, Serbia, and Bosnia and Herzegovina are countries that aspire to the European Union; therefore, all laws are directed toward that path. We are witnesses that the education system is working to create conditions that will be somewhat similar to the European Union as adequately and qualitatively as possible. While Croatia is a country that has been part of the European Union for several years, which is at the level of developed countries in terms of the education system, it is an incentive to compare it as part of research work. To this end, studies on the comparative study of education systems, educational policies, and practices of different countries are called comparative studies of education.

Many researchers who have worked on comparative education have expressed different opinions on the definition of this area. As a discipline that helps to discover the similarities and differences of two or more education systems in different cultures and different countries, it explains similar phenomena and makes useful suggestions for educating people.

This research paper was conducted to compare the similarities and differences in the curricula of primary education in Montenegro, Serbia, Bosnia and Herzegovina, and Croatia in relation to the basic goals and tasks as well as the learning outcomes or contents. Curriculum research is applied today in different countries and has an important place in comparative studies of education for the highest quality education, which is necessary today, where the existence of advanced technology, desire, and reason for learning is decreasing. Therefore, there are bigger problems in achieving that goal.

METHODS

This study is a national survey of comparative education. This study compares the content of mathematics lessons with respect to the secondary level of selected countries and the purpose of applied mathematics education programs. This is the most commonly used method of comparing the researchers' own country with other countries. In short, comparative research is the investigation and comparison of existing differences for analysis.

In the research, mathematical curriculum of Montenegro is applied for VIII grade of primary school (9-year primary education model harmonized with European education), in Serbia, mathematical curriculum is applied for VII grade of primary school, in Bosnia and Herzegovina, mathematical curriculum and the program are applied for the VIII grade of primary school (the model of 9-year primary education harmonized with the European school system), while in Croatia, the mathematical curriculum is the VII grade of primary school.

As the results are of a regional character, we were encouraged to choose this topic by the fact that all the above-mentioned republics were part of the FRY, so we came up with the idea to compare these four mathematical curricula. The fact is that all the above-mentioned republics, with their efforts and pilot projects, are trying to introduce the educational system of their Republic in the best possible way.

DATA COLLECTION AND DATA ANALYSIS

Information on the mathematics curriculum and their educational status is obtained from the curriculum guidelines on the official websites of the countries:
Montenegro (http://www.zzs.gov.me/naslovna/programi/osnovno),
Serbia (http://osnovneskole.edukacija.rs/materijali-za-nastavnike),
Bosnia and Herzegovina (http://www.sobih.ba/siteoo/images/stories/galerije/Zakonska_akta/okvini%20npp.pdf),
Croatia http://www.azoo.hr/index.php?option=com_content&id=5867:nastavni-plan-i-program-za-osnovnu-kolu-hnos-i-ostali-programi-&Itemid=631 http://www.azoo.hr/images/AZOO/Ravnatelji/RM/Nastavni_plan_i_program_za_osnovnu_skolu_-_MZOS_2006_.pdf

The basic goals and tasks, the subject of distribution, and evaluation of mathematical programs of selected countries were examined, and the obtained data were analyzed by a qualitative method of document analysis. The results presented in the form of a table are relatively interpreted and the research results are established.

RESULTS

In this part, there are data obtained from the point of view of basic goals and tasks as well as curricula in Montenegro, Serbia, Bosnia and Herzegovina, and Croatia for primary schools by learning outcomes or content.

According to Table 1, it is stated that the basic goals of teaching mathematics in Montenegro are achieved through the realization and achievement of cognitive and process goals. Cognitive goals include the knowledge that the student will acquire through the adoption of mathematical content given in the programs. Process goals include skills and values that are developed during and in the learning process. The main goals of teaching mathematics in Serbia are to ensure that all students acquire basic language and mathematical literacy and to progress toward the realization of appropriate standards of educational achievement. The main goals of mathematics teaching in Bosnia and Herzegovina are for students to acquire basic mathematical knowledge necessary for understanding phenomena and laws in nature, fully master the basic elements of mathematical language and terminology, develop the ability to express general mathematical concepts, and develop higher levels of thinking, while the basic goals of teaching mathematics in Croatia are the acquisition of basic mathematical knowledge necessary for understanding phenomena and laws in nature and society, the acquisition of basic mathematical literacy, and the development of abilities and skills in solving mathematical problems.

Table 2 shows the tasks of teaching mathematics in Montenegro are for the student to acquire the skill of reading and writing numbers, master the basic arithmetic operations and be able to calculate freely, easily, and accurately.

The tasks of teaching mathematics in Serbia are to create various opportunities for achieving the goals of teaching mathematics, as the goals of education are fully realized through various contents and forms of work during the teaching of mathematics; -numerous literacies for successful engagement in any profession and achieving quality of life.

Table 1: Basic goals of teaching mathematics in Montenegro, Serbia, Bosnia and Herzegovina, and Croatia

Montenegro	Serbia	Bosnia and Herzegovina	Croatia
The goals of teaching mathematics are achieved through the realization and achievement of cognitive and process goals. Cognitive goals include the knowledge that the student will acquire through the adoption of mathematical content given in the programs, Process goals include skills and values that are developed during and in the learning process. Through cognitive goals, students should: -acquire mathematical knowledge that forms the basis of modern general education; -acquire the mathematical knowledge they need for further education; -acquire basic knowledge: About sets, from algebra, geometry, combinatorics, probability, statistics, and theory of arrays and functions; -master the technique of calculation; -understand mathematical rules and statements; - adopt mathematical symbolism; -understand mathematical language; -master the techniques of mathematical modeling in solving textual problems. Through process goals, students should develop: -ability to think logically, reason and generalize and mathematically proving; - professional skills and abilities; -ability to solve problems; -skills of interpretation of data presented in diagrams, tables or graphs different types; -skill of using geometric accessories and measuring instruments; - ability to recognize situations in everyday life in which mathematical knowledge can be applied; -innovation and creative thinking; -ability to think critically; cultural, ethical, esthetic and work habits, criteria, and abilities.	The aim of teaching mathematics in primary school is to ensure that all students acquire basic language and mathematical literacy and to progress toward the realization of appropriate standards of educational achievement, as well as to: • Train students to solve problems and tasks in new and unknown situations; enable students to express and explain their opinions and disc strain with others; • Develops motivation for learning and interest in the subject contents; • Ensure that students acquire the basic mathematical knowledge required for Understanding of phenomena and laws in nature and society; • Enable students to apply the acquired mathematical knowledge in solving various tasks from life practice; • Is the basis for success Continuing mathematics education and for self-education; • Contributes to the development of mental abilities, forms her scientific view of the world and versatile development student personality.	The goal of teaching mathematics in primary school is for students to acquire basic mathematical knowledge needed to understand phenomena and laws in nature, fully master the basic elements of mathematical language and terminology, develop the ability to express general mathematical concepts, develop skills of higher levels of thinking, abstract, critical thinking, and logical reasoning, develop habits for independent work, responsibility towards oneself, others, toward work and obligations, accuracy, precision, orderliness, systematicity, and conciseness in written and oral expression, develop competencies necessary for building humane interpersonal relationships and nurturing human values to trained for continuing education and applying the acquired knowledge in everyday life, in practice and in the work of modern society.	The goal of teaching mathematics is to acquire basic mathematical knowledge necessary for understanding phenomena and laws in nature and society, to acquire basic mathematical literacy and developing the ability and skills to solve mathematical problems

Table 2: Mathematics teaching tasks in Montenegro, Serbia, Bosnia and Herzegovina, and Croatia

Montenegro	Serbia	Bosnia and Herzegovina	Croatia
(Hasic) That the student acquires the skill of reading and writing numbers, masters basic arithmetic operations, and is able to calculate freely, easily, and accurately; For the student to get acquainted with basic mathematical concepts: Set, operation, relation, function, as well as standard notation for the stated concepts; That the student gets acquainted with the basic units of measurement; that the student gets to know the most important plane figures, spatial shapes and bodies, as well as their mutual relations; To develop students' skills in using geometric accessories; to enable the student to accurately measure geometric objects; to nurture in students the ability to model and construct geometric figures; That the student adopts the mathematical statements that will be stated in the program; To enable the student to collect data from the environment and present them numerically, graphically, tabularly, or in some other way; to be able to read and interpret the data presented in some of the mentioned ways; That by choosing examples from the student's environment, mathematics is interpreted as a life discipline that helps us to solve some specific tasks; citing examples from physics, chemistry, biology, and geography develop awareness of the presence of mathematics in natural science; To develop students' awareness of the universality of mathematical language, as a means of communication; To develop and nurture mathematical literacy in students; To enable the student to use mathematical literature; To develop and nurture systematic, persistence, conciseness, creativity, logic in written and oral interpretation in students task, as well as the ability to think abstractly. It is very important that the student is able to read the task carefully, understands the conditions and understands what is required of him/her. With a good choice of tasks, it is desirable to create situations in which students can express their creativity. By insisting on the analysis of the setting and solution, the child is placed in the role of a small researcher: He is given the opportunity to take a critical look at the solution, to express his opinion on what will happen to the result if the input data changes and the freedom to just make some variation on the analyzed task; Mathematics should be an intellectual challenge for students, an area of their self-affirmation. The tasks for primary school are as follows that most can be done by all students, with more or less effort. The solution to each task requires intellectual effort. The moment the student solves the task, will have a confirmation of his intellectual identity; mathematics has its own esthetics, which can be approached by students. Nurturing a sense of mathematically beautiful should be a constant concern of teachers. Of course, by developing this feeling, the overall sense of beauty also develops; in mathematics teaching, opportunities should be used to divide children and solve problems in such formed groups. This form of work is inspiring for students, additionally motivates them; there is an abundance of ideas in the groups on how to solve the task. Working in groups nurtures the need for students and develops a sense of teamwork; to acquaint the student with the history of mathematics and its general civilization character. Special attention should be paid to the influence of mathematics on the development of natural sciences.	(Mathematics 5, 6, 7, 8-Manual Serbia) Creating various opportunities for achieving the goals of teaching mathematics, as well as the overall goals and objectives of education, are fully realized through various contents and forms of work during the teaching of mathematics; - numerous literacy for successful engagement in any profession and achieving quality of life; - acquiring knowledge necessary for understanding quantitative and spatial relations; laws in various phenomena in nature, society and everyday life; -acquiring the basic mathematical culture necessary for perceiving the role and application of mathematics in various areas of human activity (mathematical modeling), for the successful continuation of education and inclusion; - developing students' ability to observe, see and think logically, critically, analytically and abstractly; -develop students' cultural, work, ethical and esthetic habits, as well as the excitement of mathematical curiosity; - acquiring the ability to express in mathematical language, clarity and precision of expression in written and oral form; - acquiring basic facts about assemblies, relations and maps; - overcoming basic operations with natural, integer, rational and real numbers, as well as adopting the basic features of these operations; - getting to know the most important geometric objects: Lines, figures, and bodies and understanding their mutual relations; - training students for precision in measuring, drawing, and geometry of construction; - preparing students to understand the appropriate content of natural and technical sciences; - developing positive attributes of the student's personality, such as: systematic, persistence, accuracy, orderliness, objectivity, self-control, and a sense of autonomy; - acquiring habits and skills of using different sources of knowledge.	(Curriculum for the Primary School in Bosnia and Herzegovina) Assessing and understanding quantitative and spatial relationships and legality o various phenomena in nature and society, adopting the elementary mathematical culture necessary to understand the role and successful applications of mathematics in various fields of human activity, and for the successful continuation of education and involvement in the work process; reading and understanding mathematical texts and symbolism of different levels of complexity and structure; developing the ability to observe, observe, creative and abstract thinking and reasoning; developing the duration of curiosity, interest, and motivation in acquiring mathematical knowledge and building a positive attitude toward mathematics; mastering basic mathematical symbols and their applications; developing and nurturing cultural and work habits, esthetic, and ethical values; using the knowledge acquired in teaching other subjects and experiences of everyday life in their mathematical education; acquiring and developing abilities and habits for successful use of various sources of knowledge; developing the competencies needed to build, develop and nurture human interpersonal relationships and human values.	(Curriculum for Primary Schools Croatian) The student should learn to express himself mathematically in writing and orally, develop the skill of writing, reading, and comparing numbers, acquired mathematical knowledge to be able to apply in everyday life, develop the abilities and skills of basic mathematical problems needed for continuing education, to know mathematics as a useful and necessary part of science, technology, and culture, to train for abstract thinking, logical reasoning, and precise formulation of concepts, develop a sense of responsibility and criticism of one's own and others' work, develop the ability to work independently, responsibility for work, accuracy, neatness, precision, and conciseness in written and oral calculation;

The task of teaching mathematics in Bosnia and Herzegovina is to assess and understand the quantitative and spatial relationships and laws of various phenomena in nature and society.

The task of teaching mathematics in Croatia is that the student should learn to express himself mathematically in writing and orally (Table 3).

PROPORTIONS AND PERCENTAGE ACCOUNT

Proportions and percentage calculation is a teaching topic that is in the curriculum of Montenegro, Bosnia and Herzegovina, and Croatia.

Proportions and percentage calculation is a teaching topic that is in the curriculum of Montenegro. It aims to: Quotient a: b, or fraction (a)/b formed to compare the numbers a and b, the scale of numbers is called a and b, the meaning of the scale of two quantities of the same type, the meaning of the scale of two quantities of different species, divide the number in a given ratio, shows how to form proportion, properties of proportion, determine unknown member of proportion, properties that are directly proportional and inversely proportional quantities, solve simple textual problems related to directly and inversely proportional quantities, define the term percentage, express the ratio of two numbers in percent, calculate % of a, determine the number a if p% of that number is equal to b, and solve simple problems related to percentages.

Proportionality, the function of direct and inverse proportionality is a teaching topic that is in the curriculum of Bosnia and Herzegovina. When introducing the concepts of scale and proportionality of lengths, students' previous knowledge of scale, measurement' and comparison of lengths should be used. Comparability and incommensurability are longer related to the value of the scale of their lengths which is a rational or irrational number. When students are introduced to the general notion of scale, the notion of proportion is introduced and then proportionality is introduced. Thales' theorem on the proportionality of sections that parallel lines build on the corners of the angle should be proved and its application practiced well. The notion of a correct coordinate system should be upgraded and more important notions related to the function should be introduced. Pay special attention to the functions of direct and inverse proportionality. It aims to: Distinguish clear notions of comparing lengths, measures, unit measures, measurement number, and lengths. Graphically, it compares longer and includes two cases: By how much one length is larger (smaller) than the other longer and how many times one length is larger (smaller) than the other longer. The notion of a measure longer (a length that contains an integer number of times in a given length) is also formed on examples. Introduce a measurement number and a unit length, and then conclude that a positive number can be assigned to each length. The notion of length is longer to build on examples. For example, if MN = 12 cm, the student should be able to answer the question: what is the unit length? What number is the measure number? How many times is the length of the MN greater than the unit length? How long is the length of MN? Repeat the scale of two numbers (definition and basic features) regardless of the fact that this concept was introduced and used by students in 6th grade in assignments. The notion of comparability and incommensurability longer is defined by the value of the scale longer. On the example of the scale of the diagonal and the side of the square which is 2, that is, irrational number apply the definition and report the correct conclusion. Define proportional lengths and indicate that the basic properties of proportions for numbers from lengths. Introduce the concept of a rectangular coordinate system by displaying data with two quantities (e.g., change in time and temperature). Explain the terms: Coordinate origin, unit length, abscissa, coordinate axis, and then define a rectangular coordinate system. Repeat the display of functions with graph, table, and formula and then define the function. Pay attention to the graphical representation of functions. Students should understand that the graph of a function is a set of all points obtained so that for each number X Î R the value of the function Y Î R can be calculated by the formula, and that each ordered pair (X, Y) corresponds to only one point of the coordinate plane. Give several examples of directly proportional quantities and on the basis of equality of proportions (proportions) define the proportion and its properties. The notion of percentage as a special case of fractions that students learned in 6th grade to expand and solve the problems of percentage calculation by proportion. Introduce interest account concepts and solve problems using properties of directly proportional quantities.

Proportional sizes, proportions, and percentage calculation is a teaching topic that is in the curriculum of Croatia. It aims to: Determine any unknown member of the proportion using the basic property of proportion. Recognize proportional quantities in everyday life tasks. Apply mathematical procedure to tasks from everyday life. Graphically show proportionality; from a given graphical representation of a certain value, that is, point coordinates. Recognizes inversely proportional quantities on examples from everyday life; determine the scale and formula of unknown magnitude in problems. They calculate percentages and apply them in everyday tasks. They determine interest and apply them in everyday tasks.

SQUARING, ROOTING, AND GRADING

Squaring, rooting, and grading are a teaching topic that is in the curriculum of Montenegro. Squaring and its properties form the basis for the study of mathematical content in the eighth grade. It aims to: Students solve as many different tasks as possible and to memorize the squares of natural numbers up to 20. Only when students master the squaring of natural numbers should we move to the squaring of integers and rational numbers. Special attention should be paid to the proper use of brackets in squaring. Students should know that the expressions $(-7)^2$ are not the same. The formulas for the square of the sum, the square of the difference, and the difference of the squares should be practiced on a sufficient number of different tasks. Understanding the structure of expression plays an important role in the adoption and proper use of these formulas. Students must learn to use the terms square sum, sum of squares, square of difference, and difference of squares correctly. The application of the formulas $(a\pm b)^2=a^2\pm 2ab+b^2$ should not be limited to the calculation of the square of the sum and the square of the difference. No less important role of these formulas is that they allow the expressions of the form to be written about the form $a^2\pm 2ab+b^2$ squares $(a\pm b)^2$. The teacher should keep in mind that such transformations in older classes are used in evidence of various inequalities, solving quadratic equations, examining quadratic functions, and the like. The square difference formula should also be used in both directions. In the initial phase, simple tasks are set whose goal is to practice the immediate application of the formula. Only when the students have mastered the direct application of the formula well can, we move on to more complex tasks. The notion of degree should be processed gradually. First, we need to consider the degrees whose bases are natural numbers. After that, we need to move on to degrees whose bases are integers and rational numbers. It should be borne in mind that the topic of graduation forms the basis of the entire content of algebra intended for high school and primary school students. That is why it is important that all students:

- Master the terminology related to graduation
- Know the properties of degrees whose exponents are natural numbers
- Successfully apply the properties of degrees in simple transformations of expressions.

By solving specific examples, students should be able to use the term monom, the standard form of monom and similar monomials correctly. After that, we should move on to tasks aimed at adopting the concept of similar monomials, mastering addition operations, and writing expressions in the form of sums of dissimilar monomials. Multiplication and gradation of monomials are another opportunity for students to practice operations with degrees of equal bases. Before establishing the concept of roots, the content of squaring and the table of squares of natural numbers up to 20 should be updated. The square root is defined

Table 3: Curricula for VII (VIII) grade of primary schools by learning outcomes and contents

Montenegro	Serbia	Bosnia and Herzegovina	Croatia
Proportions and percentage account • Understand the relationship of two numbers; • Explain the relationships of two greats with the same and different names; • Divide the number in a given ratio; • Recognize and explain proportions; • Resolve proportions; • Apply direct and inverse proportionality to examples from everyday life; Express the ratio of two numbers to percentages; calculate p% of a; • Find the number a if p% of it is equal to the number Squaring, rooting and grading • Understand the concept of squares and calculate the square of a number; • Apply the rules for the square of the product and the quotient; • Understand the concept of square root and calculate the root of a number; • Use a pocket computer properly; • Explain equality; • Apply the rules for the square root of the product and the quotient; • Understand the term degree and calculate the degree of a number; • Apply a formula for multiplying and dividing degrees by the same bases; • Apply the formula for multiplying and dividing the degrees of the same exhibitors; • Recognize similar monomials, add, subtract and multiply monomials and binomials; • Apply the formulas for the difference of squares and squares of binomials. • Use a pocket computer properly; • Explain equality; • Apply the rules for the square root of the product and the quotient; • Understand the term degree and calculate the degree of a number; • Apply a formula for multiplying and dividing degrees by the same bases; • Apply the formula for multiplying and dividing the degrees of the same exhibitors; • Recognize similar monomials, add, subtract and multiply monomials and binomials; • Apply the formulas for the difference of squares and squares of binomials.	Real numbers • The square of a rational number; • Solving the equation • $x^2=a$ • Square root; • Existence of irrational numbers; • Real numbers and number rights; • Basic properties of real numbers; • Operations with square roots - basic properties; • Decimal record of a real number; • Approximate value of a real number; Pythagoras' theorem • Pythagorean theorem • Application of the Pythagorean theorem to a square and a rectangle; • Application of the Pythagorean theorem to a triangle; • Application of the Pythagorean theorem to a rhombus, trapezoid and deltoid; • Constructions of points on a number line; Rational algebra expressions • Degree whose exponent is a natural number; • Multiplying the degree of equal bases; • Dividing the degree of equal bases;	Vectors • Aimed along the vector; • Vector equality; • Vector addition; • Multiplication of vectors by natural numbers; • Some vector applications; Real numbers • Squaring integers. The square of a rational number; -solution of the equation $x^2=a,(a\geq 0)$. The square root of a rational number; • Irrational numbers; • Real numbers. • Numerical rights. • Order in a set of real numbers; • Equality $\sqrt{(a^2)}=\lvert a\rvert$ -Approximate values of a real number; -Basic arithmetic operations in a set of real numbers and their properties; Pythagoras' theorem and its application Pythagorean theorem (formulation and proof). • Reversal of Pythagoras' theorem; • Application of the Pythagorean theorem to a square and a rectangle; • Application of the Pythagorean theorem to isosceles and equilateral triangles; • Application of the Pythagorean theorem to a rhombus; • Application of the Pythagorean theorem to an isosceles and rectangular trapezoid; • Application of the Pythagorean theorem to a circle; • Construction of points on the number line which • Correspond to irrational numbers; • Application of the Pythagorean theorem in constructive problems; Proportionality direct and function inverse proportionality • Measurement longer. • Measurable and incommensurable longer; • Scale longer. • Proportional longer; • Divide longer into equal parts and in a given scale;	Coordinate system on the right Key words: coordinate system on the line, outcomes, unit length, coordinate point; Rectangular coordinate system in the flat Key words: ordered pair, coordinate axes, rectangular coordinate system in a plane, point coordinates; Direction and proportions (relationship) Key words: Direction, proportion; Proportional sizes Key words: Proportionality (scale), coefficient of proportionality; Application of proportionality to solving problems from everyday life Key words: Proportionality (scale), coefficient of proportionality; Graphic view of proportionality Key words: Graphic representation of proportionality; Inverse proportionality Key words: Inversely proportional quantities; Percentage. Calculation with percentage Key words: Percentage; Simple interest account Key words: Interest, interest rate, principal; Presentation and analysis of data Key words: Object set marking, frequency, and relative frequency, tabular display, bar diagram, pie chart; Probability of a random event Key words: Random event, elementary event, relative frequency of events, probability of events; Division longer to equal parts and in a given direction Key words: Direction two longer;

(*Contd...*)

Table 3: (*Continued*)

Montenegro	Serbia	Bosnia and Herzegovina	Croatia
Real numbers. level coordinate system and direct proportionality functions • Understand the reasons for the existence of irrational numbers; • Define the notion of a set of real numbers r as a union of sets of rational and irrational numbers; • Explain the mutually unambiguous association of points of a number line and a set of real numbers; • Govern the fact that the properties of addition and multiplication that were valid on the set of rational -numbers are transferred to the set of real numbers; • Describe the coordinate system in the plane (coordinate axes, point coordinates); • Find a point with given coordinates in the coordinate system; • Associate coordinates with a given point in the coordinate plane and vice versa; • Define a function; • Explain direct proportionality (y = kx) and fill in the table attached to it; • Know the procedure for drawing graphs of the function y = kx; • Use operations in a set of real numbers on examples from everyday life. Linear equations and inequalities with one unknown • Understand what equality, inequality, equality and inequality are; • Explanatory solutions of linear equations/inequalities; • Solve linear equations based on equivalent transformations; • Use the basic properties of equality and inequality in solving linear equations and inequalities; • Solve linear equations/inequalities in which fractions occur; • Solve linear equations/inequalities in which parentheses occur; determine the unknown in problem tasks, set the equation/inequality and check and interpret solutions Pythagoras' theorem • Formulate and give proof of Pythagoras' theorem; Calculate the unknown side of a right triangle by applying Pythagoras' theorem; Construct a square whose area is equal to the sum/ difference of the areas of two given squares; construct longer sizes, etc.; • Formulate theorems on hypotenuse segments; • Apply Pythagoras' theorem to square, rectangle, isosceles and equilateral triangle, rhombus, isosceles and rectangular trapezoid.	• Multiplying the degree of equal exhibitors; • Sharing the degree of equal exhibitors; • Graduation degree; • Application of operations with degrees; • Rational algebraic expressions The numerical value of an expression; • Polynomials; • Addition of polynomials; • Multiplication of monomials; • Polynomial multiplication; • The square of the sum and the square of the difference; • The difference of squares; • Decomposition of polynomials into factors; • More complex examples of factor polynomial division; • Application of polynomials - equations and equations; • Application of polynomials - inequalities and inequalities; • Polynomial applications; Polygon • Polygon - concept and types; -number of diagonals of a polygon; • The sum of the angles of a polygon; • Regular polygons - concept and properties; • Constructions of regular polygons; • Volume and area of polygons Dependent sizes and their graphic representation • Rectangular coordinate system in the plane; • The distance of a point in the coordinate plane; • Dependent quantities and their graphical representation; • Directly proportional sizes; • Inversely proportional sizes; • Proportion;	• Thales' theorem and its application; • Rectangular coordinate system in the plane. The distance between the two is correct; • Proportional sizes; • Proportion and its properties. • Direct proportionality function y = kx; • Inverse proportionality function y=k/x. • Application of direct and inverse proportionality (proportional account, percentage account, interest account, proportional division). Whole rational expressions • Degree of which he is an exponent natural number; Degree operations - multiplication of degrees equal grounds; • Sharing degrees of equal bases; • Product grade; Degree ratio of equal exhibitors. • Degree; • Constants and variables; • Complete rational expressions; Numerical value of rational algebraic expression; • Mon, stage, trine; • Collection of similar monomials; Arranged form of a polynomial. Degree polynomial; • Addition of polynomials; • Opposite polynomials; Polynomial difference • Multiplication of monomials. Multiplication of polynomials by monomials; • Polynomial multiplication by polynomial; • Square binomial; • Cube binomial; • Disassembly of polynomials into factors by applying the law of distributivity; • Solving the equation of the form $ax^2+bx=0$ • Square difference. Decomposing a polynomial of the shape of the difference of squares into factors;	Similarity of triangles and applications Key words: Similar triangles, coefficient of similarity; Polygon Key words: Polygon, diagonals of polygons, angles of polygons; Correct polygonal Key words: Regular polygon, characteristic triangle, construction of a regular polygon; Scope and area of the polygon Key words: Polygon, circumference and area of a polygon; Circle and circle Key words: Circle, circle, center, radius, and diameter of the circle; Relationship between central and peripheral angle, Thales's theorem Key words: Circle, central angle, peripheral angle, Thales' theorem; Rights and circle Key words: Tangent of a circle, tangent-tangent, secant; Circumference of the circle Key words: Circle, circle radius, circle circumference, number π. Circular arch Key words: Circle, circular arc, length of circular arc; Circle of the circle Key words: Circle and circle surface; System of linear equations Key words: System of two equations with two unknowns, solving the system; Replacement method Key words: System of two equations with two unknowns, substitution method; Method of opposite coefficients Key words: System of two equations with two unknowns, opposite coefficient; Application of the system of linear equations Key words: System of two equations with two unknowns, method of substitution and opposite coefficients ; Linear function Key words: Linear function, function value; Linear function graph, equation of law Key words: Graph of linear function, explicit the form of the equation is straight, the zero point; Flow linear functions Key words: Ascending and descending function; Graphic solution of linear systems equation Key words: Line, line parallel, line section, seat, seat coordinates;Dno obrasca

(*Contd...*)

Table 3: (*Continued*)

Montenegro	Serbia	Bosnia and Herzegovina	Croatia
Surface of triangle and quadrangle • Adopt the notion of the surface of a geometric figure; • Derive formulas for calculating the area of rectangles, squares, parallelograms and triangles; • Calculating the area of a triangle, parallelogram, trapezoid and quadrilateral with mutually normal diagonals. Circle and circle • Define what a circle and a circle are and notice their basic elements; • Describe the properties of the number π; • Explain the circumference and area of a circle of a given radius; • Use formulas to calculate the circumference and length of a circular arc; • Construct a tangent to a circle from a point on the circle and outside the circle;	• Graphic representation of directly proportional quantities; Circle • Central and peripheral corner of the circle; • Circle circumference, number p; • The length of the circular arc; • Circle surface; • Surface of a circular section and a circular ring;	• Solving the equation form x^2-a=0, a≥0. • Sum and difference of cubes. Decomposing a polynomial $x^3 \pm y^3$ on factors; • Factorization of polynomials of the form $x^2 \pm 2xy+y^2$. • Solving the equation of the form $x^2 \pm 2xy+y^2=0$ Factor polynomial factorization $x^3 \pm 3x^2y+3xy^2 \pm y^3$. Polygon Polygon. Division of polygons. • The sum of the interior and the sum of the exterior angles of the polygon. • Number of diagonals of the polygon. • A regular polygon and its characteristic triangle. • Constructions of regular polygons. • Polygon surface. Circle and circle • Parts of a circle and parts of a circle. • The ratio of the circumference of the circle and the diameter of the circle - the number of .π • The length of the circular arc. • Surface of the circle. • Surface of the circular ring and circular section.	

as a positive solution of the equation $x^2=a$. Therefore, the problem of solvability of this equation should be considered in the introductory part. When solving square root problems, we speak of a positive number whose square is equal to the subrooted size. The equality $\sqrt{(a^2)}=|a|$ should be explained in detail. Before that, the notion of absolute value needs to be restored. By solving a variety of tasks, students need to gain insight into the relationship between multiplication and division operations on the one hand and rooting operations on the other. With a few examples, it should be illustrated how the common factor extraction rule is applied in expressions containing roots with equal subcortical sizes. Partial rooting and rationalization of denominators are technical details that are often used when arranging expressions with roots, solving equations, and the like. Therefore, we should strive to adopt these transformations as many students as possible. The introduction of irrational numbers should be preceded by the conclusion that the set of fractions (rational numbers) is equal to the set of infinite periodic decimal numbers. After that, examples of infinite non-periodic decimal numbers should be given and these numbers should be called irrational numbers. A set of real numbers is defined as the union of a set of rational numbers and a set of irrational numbers

REAL NUMBERS

Real numbers are a teaching topic that is in the curriculum of Serbia. It aims to: Read and write different types of numbers (natural, integer, and rational). Compare the numbers of the same record using the picture when needed. When measuring, select the appropriate unit of measure, round off the quantities expressed by the given measure. Compare the sizes of numbers written in different forms. Determine the opposite number, the reciprocal value, and the absolute value of the number; calculates the value a simpler expression with multiple arithmetic operations, of different priority, including release from parentheses with numbers of the same record. Uses numbers and numerical expressions in simple, realistic situations. Determine the value of a more complex numerical expression. Uses numbers and numerical expressions in real situations.

Real numbers are a teaching topic that is in the curriculum of Bosnia and Herzegovina. To understand a set of real numbers, it is necessary to first repeat everything about the sets of natural, integer, and rational numbers and operations with those numbers. Gradual and correct formation of concepts: Square root, arithmetic square root, and irrational number are always for correct understanding of real number. It aims to: Explain well the notion of the square of a rational number and the notion of solving the quadratic equation $x^2=a$, and $a\neq0$. Calculates the value of the square of a rational number (fractional and decimal number) which will prepare students for later understanding and calculation degree values. Introduce the square root as a way of writing the solution of the quadratic equation, and the value of the square root as the number that needs to be squared to get the subordinate quantity. Emphasize taking the positive value of the square root of an arithmetic square root. Explain in detail the equality $\sqrt{(a^2)}=|a|$ by repeating the notion of the absolute value of the number. Explain and show by examples the identity $(\sqrt{a})^2=a$, $a\geq0$, that is, that the number does not change if we root it and then square it. Apply the definition of the square root and the relation ≤and ≥ to explain the approximate value of the square root of a rational number (use the tables of squares in the textbook). Calculate the approximate values of the square root of the numbers to a predetermined number of decimals (using a spreadsheet or pocket computer). Before introducing irrational numbers, state the reasons for their existence. Each rational number can be written as a decimal number (purely periodic or mixed periodic). Conversely, any rational number in decimal form with a finite or infinite number of decimals can be written in the form of a fraction a/b. Now tell the students that there are such numbers in decimal form with infinite decimals (non-periodic), which cannot be written in the form of fractions a/b, which means that they are not rational. Take $\sqrt{2}$ as an example or in the decimal notation 1,4142135 and prove by a known procedure that $\sqrt{2}$ is not a rational number. The conclusion is noticed, for example, $\sqrt{3}$, $\sqrt{5}$, $\sqrt{(7)}$, $-\sqrt{(8)}$, etc., are not rational numbers and that such numbers that are not rational are called irrational. Define an irrational number as a decimal non-periodic record with infinite decimals. Define a set of real numbers as a union of sets Q and I when students adopt that $Q \cap I = F$. Apply the contents of the teaching topic. Real numbers in combined tasks to systematize knowledge.

RATIONAL ALGEBRA EXPRESSIONS

Rational algebraic expressions are a teaching topic that is in the curriculum of Serbia. It aims to: Calculate the degree of a given number, know the basic operations with degrees. It adds, subtracts, and multiplies monomials. He operates with degrees and knows what a square root is. He adds and subtracts polynomials, he can multiply two binomials and squared by a binomial. Uses the properties of degree and square root. Knows and applies formulas for the difference of squares and squares of binomials. Practically transforms algebraic expressions and reduces them to the simplest form.

WHOLE RATIONAL EXPRESSIONS

Entire rational expressions are a teaching topic that is in the curriculum of Bosnia and Herzegovina. This thematic unit is realized first by further building the concept of degrees that students have already met in the topic of real numbers. After that, we move on to getting to know the concept of rational expression and calculating a number of values. Polynomials are especially important for rational expressions. Identical transformations of polynomials can be successfully performed with a good knowledge of the contents of the degrees, as well as the properties of computational operations. It aims to: Process the concept of degree gradually. Give examples so that natural, integer, rational, and irrational numbers are taken as the base, after which generalizations are made. To determine the value of the degree, use the reverse process – representing the degree in the form of products of equal factors. In degree operations, practice each individual rule on a sufficient number of different tasks. Extend the notion of expression introduced in the set of rational numbers to the set of real numbers and introduce the name algebraic expression. Computational operations with monomials and polynomials (in ordered form) are performed on the basis of known laws of calculation with numbers. After practicing certain formulas, give their geometric interpretation with the help of appropriate images, which obviously convinces students of the truth of the statement. Gradually work on breaking down polynomials into factors because it is quite difficult for students. For example, adapt the polynomial to the shape of the adopted formula and then break it down into factors. ($4x^2-25y^2=(2x)^2-(5y)^2$. $8x^3+27y^3=(2x)^3+(3y)^3$ etc.). Calculate rationally by applying the formula for the difference of squares to purely numerical expressions ($7{,}29^2-2{,}71^2$).

REAL NUMBERS: LEVEL COORDINATE SYSTEM AND DIRECT PROPORTIONALITY FUNCTIONS

Real number: The coordinate system in the plane and the function of direct proportionality are a teaching topic that is in the curriculum of Montenegro. It aims to: That the set of real numbers is a union of sets of rational and irrational numbers. That $N \subset Z \subset Q \subset R$. In which way, the mutual unambiguous association of the points of the number line and the set of real numbers of the property of addition and multiplication in the set of real numbers is established. definitions of terms: Coordinate system in the plane, coordinate plane, coordinate origin; coordinate axes, and point coordinates. Determine the point in the coordinate plane with the given coordinates. Determine the coordinates of a given point in the coordinate plane. Display simple diagram data. Read simple tables and graphs using columns and pie charts. Graph dependent quantities.

The coordinate system is a real teaching topic that is in the curriculum of Croatia. It aims to: Know how to associate points on a number line with rational numbers.

RECTANGULAR COORDINATE SYSTEM IN THE FLAT

The rectangular coordinate system in the plane is a teaching topic that is in the curriculum of Croatia. It aims to: Determine the points of the coordinate plane if it is given coordinates and vice versa, read the coordinates of the given point.

LINEAR EQUATIONS AND INEQUALITIES WITH ONE UNKNOWN

Linear equations and inequalities with one unknown are a teaching topic that is in the curriculum of Montenegro. It aims to: The procedures for solving equations should be illustrated on the scales. After that, we need to move on to solving equations with new methods. An important role in the study of equations is their application to solving textual problems. Therefore, linear equations should be studied thoroughly and not only on formal examples, but they should be applied to tasks from everyday life. Procedures for solving linear equations are processed in order from simpler to more complex with the constant application of new procedures for solving textual problems. First, the equations that are solved by applying the rule of switching the equation member from one side of the equals sign are considered, and then, the equations that are solved by applying the rules of multiplication and division of the left and right sides of the equation by the same number. Finally, equations containing fractions and parentheses should be studied. Before introducing inequalities, enter the records <*i*> as well as ≤,≥ by specifying numbers that are larger (smaller) than the given number. {,} Should be used when enumerating numbers that satisfy an inequality. Procedures for solving linear inequalities should be based on the properties of numerical inequalities.

PYTHAGORAS' THEOREM

Pythagoras' theorem is a teaching topic that is in the curriculum of Montenegro, Serbia, and Bosnia and Herzegovina.

Pythagoras' theorem is a teaching topic that is in the curriculum of Montenegro. The proof of Pythagoras' theorem should be based on formulas for calculating the area of a right triangle and a square. Before that, the basic facts about the right triangle should be renewed, with special emphasis on the recognition of the leg and the hypotenuse. Without proof, the theorem opposite to Pythagoras' theorem should be stated. The application of Pythagoras' theorem on a square, rectangle, isosceles and equilateral triangle, rhombus, isosceles, and right-angled trapezoid should be practiced with a large number of different tasks. The procedure for constructing a square whose area is equal to the sum/difference of the areas of two given squares. The construction procedure is longer than size, $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$ $\sqrt{6}$, $\sqrt{7}$, etc. The procedure by which points are constructed on the number line that is associated with the numbers $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$, etc. Formulation of the theorem on hypotenuse segments how the Pythagorean theorem determines the unknown elements of a square, rectangle, isosceles and equilateral triangle, rhombus, isosceles, and rectangular trapezoid.

Pythagoras' theorem is a teaching topic that is in the curriculum of Serbia. This theorem expresses a significant connection of the sides of a right triangle and has wide applications in computational and constructive problems, so it should be given due attention (knowledge of formulation, simpler proof, and understanding of the essence of Pythagoras' 5 theorem). It is necessary to achieve practice in its application with various figures in which a right triangle appears. Students should also be trained to recognize some triangles with integer sides (for example, 3, 4, 5 and 5, 12, 13) as rectangles. It is useful to give some examples of practical application (for example, to check whether two adjacent walls of the room are orthogonal or to draw a right angle on the ground with a rope with knots at 3, 7, and 12 m). Students should also learn to construct points of number law that corresponds to the numbers 2 3, 5… Aims to: Distinguish the basic types of triangles, know their basic elements. Can calculate the circumference and area of a triangle, square, and rectangle, based on the elements directly given. Calculates the unknown side of a right triangle by applying Pythagoras' theorem. Calculates the circumference and area of triangles, squares, and rectangles, based on the elements obtained by applying the Pythagorean theorem. Uses the basic properties of triangles, quadrilaterals, parallelograms, and trapezoids, calculates their circumferences and areas based on elements that are not directly given in the task formulation. Constructs points on a number line that corresponds to some irrational numbers.

Pythagoras' theorem and its application are a teaching topic that is in the curriculum of Bosnia and Herzegovina. It is necessary to acquaint students with: The formulation of the Pythagorean theorem – statement and notation, understanding and comprehension of the essence of the Pythagorean theorem, and its wide application in computational, constructive, and practical tasks. It aims to: Introduce students to the Pythagorean theorem using the so-called "Egyptian triangle." Historically refer to the "Egyptian triangle" whose sides are 3, 4, and 5 units. Determine that the triangles with sides 5, 12, and 13. 6, 8 and 10 will also be right angled (by constructing the triangle of the given sides and checking by measurement). Leads students to find the dependence $3^2+4^2=5^5$, $5^2+12^2=13^2$, and $6^2+8^2=10^2$ (arithmetic interpretation), and then provide information on "Pythagorean numbers." Construct squares over the legs and the hypotenuse of the constructed "Egyptian triangle" and give a geometric interpretation of Pythagoras' theorem based on the equality of surfaces. On the model of Pythagoras' theorem, confirm that the sum of squares constructed over the legs is equal to the square constructed over the hypotenuse. The geometric proof of the Pythagorean theorem is performed by each student on his own model (from cardboard in the color of squares and right triangles and their assembly), and the teacher on his model or uses multilayered graph paper. It can also report stricter evidence with symbolic writing. Prove without proof the inverse theorem of Pythagoras' theorem and establish it by examples. By applying the Pythagorean theorem, constructively determine the points of the number line to which the irrational numbers $\sqrt{2}$, $-\sqrt{2}$, $\sqrt{3}$, $-\sqrt{3}$, $\sqrt{5}$, $-\sqrt{5}$., join. Practice the application of the Pythagorean theorem.

SURFACE OF TRIANGLE AND QUADRANGLE

The area of triangles and quadrilaterals is a teaching topic that is in the curriculum of Montenegro. The geometric body should be adopted by the students as a part of the space limited by the surfaces. One way to start this whole is to demonstrate the model of geometric bodies. In this way, students notice the similarities and differences between individual bodies and classify them according to these differences. The concept of polygons is defined by generalizing the common properties of triangles, quadrilaterals, pentagons. The difference between convex and non-convex polygons should be emphasized. Through the tasks, students practice the application of formulas for calculating the sum of angles and the number of diagonals of polygons. Special attention should be paid to the tasks related to the sum of the angles of a quadrilateral. After general considerations about polygons, we move on to a more detailed study of certain types of quadrilaterals (parallelograms, trapezoids, and deltoids). Before that, the terms opposite side and opposite corners, adjacent sides, and adjacent corners should be specified. Using the views on the congruence of triangles, the basic properties of parallelograms should be proved. Better students should also understand the opposite statements (conditions under which a quadrilateral is a parallelogram). The teacher should explain why it is necessary to specify five elements for the construction of a quadrilateral. It should also be explained why the construction of certain types of quadrilaterals (parallelograms, isosceles trapezoids, and deltoids) is possible with a smaller number of given elements. The students met with the concept of area and formulas for calculating the area in previous classes (area of a rectangle, area of a square, and area of a right triangle). The knowledge acquired here should be deepened and systematized. Formulas for calculating area should be applied to solving tasks from everyday life. The proof of Pythagoras' theorem should be based on formulas for calculating the area of a right triangle and a square. Before that, the basic facts about the right triangle should be renewed, with special emphasis on the

recognition of the leg and the hypotenuse. Without proof, the theorem opposite to Pythagoras' theorem should be stated. The application of Pythagoras' theorem to a square, a rectangle, an isosceles and an equilateral triangle, a rhombus, an isosceles, and a right trapezoid should be practiced with a large number of various problems**.**

POLYGON

Polygon is a teaching topic that is in the curriculum of Serbia, Bosnia and Herzegovina, and Croatia.

Polygon is a teaching topic that is in the curriculum of Serbia. Starting from previously acquired knowledge about certain geometric figures (area, broken line, convex area, triangle, and quadrilateral), polygon should be defined as a part of a plane bounded by a polygonal line. The dependence of the sum of angles and the number of diagonals of any polygon on the number of its sides should be processed, as well as the dependence between the elements of a regular polygon, as well as its symmetry. In addition to constructions of some regular polygons (with 3, 4, 6, 8, and 12 pages), other regular polygons (with 7, 9, 10,… pages) can be drawn using protractors. At the same time, the construction should be clearly distinguished from the approximate drawing. It aims to: Government terms: Triangle, quadrilateral, square, and rectangle (observes their models in real situations). Determine the number of diagonals, the sum of the angles, the circumference, and the area of the polygon based on the elements given directly in the tasks. Uses the basic properties of polygons, calculates their circumferences and areas with elements that are not necessarily given in the task formulation.

Polygon is a teaching topic that is in the curriculum of Bosnia and Herzegovina. This thematic unit will expand, deepen, and systematize the previously acquired knowledge about the triangle and quadrilateral. It aims to: Introduce polygons, by the inductive method, by observing and systematizing previously learned notions about triangles and quadrilaterals. Each student should be convinced by some of the methods that the sum of the exterior angles of each polygon is equal to 360°. The formula, the rule for calculating the number of diagonals of a polygon should also be used when solving some logically combinatorial problems. For example: How many different lines can be drawn through 10 points, three of which are not collinear… Based on the learned knowledge of calculating the area of a triangle, especially an isosceles one, introduce students to strategies for calculating the area of a polygon in general. It is especially useful to connect the construction of regular polygons and calculate the volume and area of the same.

Polygon is a teaching topic that is in the curriculum of Croatia. It aims to: Adopt the concept of polygon and draw a polygon; determine the total number of diagonals of the polygon. Determine the sum of the angles of the polygon. Emphasize the characteristic triangle in a regular polygon. Constructs regular polygons with 6, 8, and 12 pages. Draws a right pentagon using a characteristic triangle using a protractor. Calculate the circumference and area of a polygon.

CIRCLE AND CIRCLE

Circle and circle is a teaching topic that is in the curriculum of Montenegro, Serbia, Bosnia and Herzegovina, and Croatia.

Circle and circle is a teaching topic that is in the curriculum of Montenegro. Using historical curiosities, the teacher introduces the number π to the students. In the process of forming the number π, an experiment (division of volume and diameter) must be used. It should be emphasized that the number π is irrational and point out the correct and approximate results when calculating the circumference and area of the circle. It aims to: Approximate the value of the number π, knows the formulas for calculating the circumference and area of a circle, and applies those formulas. Calculates the area of a semicircle, a quarter and a sixth of a circle, as well as the length of a semicircle, a quarter and a sixth of a circle. Calculates the length of a circular arc. Calculates the area of a circular section and a circular ring.

The circle is a teaching topic that is in the curriculum of Serbia. In addition to introducing the concepts of the central and peripheral angle of the circle and observing and proving their relationship, the central topic should be determining the circumference and area of the circle. This should start through the practical aspects of the problem (the path that crosses the wheel, (). It is good to experimentally feel, or state, the constancy of the relationship between the circumference and the diameter of the circle, with the introduction of the number p and informative acquaintance of students with its (irrational) nature. After processing the circumference and surface of the circle, report the patterns for the length of the circular arc, the surface of the circular section, and the surface of the circular ring. In practical calculations for p, it is not always necessary to take an approximate value of 3.14, but occasionally work with other approximate values (3.142; 3.1427; 22/7 or less accurate 3.1). Enter information about the number of known decimals for the number p and state its approximate value with, say, 10 decimals. Can calculate the circumference and area of a circle of a given radius. Use formulas for the circumference and area of a circular ring. Determine the central and peripheral angle, calculate the area of the clip, as well as the length of the circular arc.

Circle and circle is a teaching topic that is in the curriculum of Bosnia and Herzegovina. It aims to: After expanding and completing the knowledge about the circle and the circle and their parts, we approach an extremely important problem of building the concept of the number p. In the process of forming the number p, it is obligatory to use experiment, measurement, and division of numbers (volume and diameter) at the beginning. After that, the ratios of the circumference and diameter of regular polygons inscribed and described in a circle are studied. The number π, by its origin, instructs the student in the way of calculating the circumference of a circle. The formula for calculating the area of a circle should be obtained experimentally. By an approximate transformation of the surface of a circle into the surface of a rectangle. The starting point for deriving the formula for the area of a circle can also be the formula for the area of a circular section viewed as a triangle with base l and height r. The formula for the area of a circle should be given a geometric meaning (an area π times larger than the area of a square of page r, or an area equal to the area of a rectangle whose sides are π r and r).

Circle and circle is a teaching topic that is in the curriculum of Croatia. Aims to: Distinguish between the concepts of circle and circle. He knows that a circle is defined by three points that are not in the same direction. Determines the mutual position of two circles. Knowing that the peripheral angle is equal to half the central angle, he adopts the fact that each peripheral angle above the diameter of the circle is a right angle. Accept that a line and a circle can have two common points, one common point or that they have no common point. He knows the construction of the tangent of a circle at its point. Calculates the circumference of the circle and applies knowledge to tasks from everyday life. Calculates the length of a circular arc. Calculates the area of a circle. Apply knowledge to solve tasks from everyday life. Calculates the area of a circular section.

Note: From the above, we can conclude that in some countries the teaching topic begins with the name circle and circle as in Montenegro, while in Serbia, it is only called Circle, while in Bosnia and Herzegovina and Croatia, it is called circle and circle.

DEPENDENT SIZES AND THEIR GRAPHIC REPRESENTATION

Dependent quantities and their graphic representation are a teaching topic that is in the curriculum of Serbia. It aims to: Determine the value of the dependent quantity given by the table or formula. Determine the position of a point in the first quadrant of the coordinate system if the coordinates are given and vice versa. Notice the dependence between the variable. He knows the formula y = kx and graphically interprets it. It binds the notion of direct proportionality and determines an unknown member of proportion. Determine the position (coordinates)

of points that meet more complex conditions. It distinguishes between directly and inversely proportional quantities and expresses this in an appropriate notation.

VECTORS

Vectors are a teaching topic that is in the curriculum of Bosnia and Herzegovina. Introduce the concept of vectors in a "natural" way, with many examples (use terms from physics, etc.). Pay special attention to the relationship between the two vectors (collinearity, equality, and comparison by intensity) and connect it with physical processes. It aims to: Explain the concept of a vector and its characteristics (direction, direction, and intensity) on the example of directed length. For a more natural understanding of the concept of vectors, use examples from physics. Pay special attention to the relations of two vectors (collinear – lie on parallel lines, compare them by intensity, pay attention to the change of direction of the vector, etc.). Separately define and explain the equality of two vectors. Graphically introduce the operation of addition of two vectors and show the properties of that operation. Graphically introduce the operation of multiplication of vectors and scalars (scalars taken from the set of natural numbers) and show the properties. He gives some concrete examples and tasks from physics that are solved with the help of vectors, with the use of introduced relations and operations.

PRESENTATION AND ANALYSIS OF DATA

Data presentation and analysis is a teaching topic that is in the curriculum of Croatia. It aims to: Recognize the feature of a set of objects, determine the value of that feature, display the collected data on that feature using a table of frequencies and relative frequencies and graphically using a bar chart and pie chart, calculate the arithmetic mean, and interpret the data.

PROBABILITY OF A RANDOM EVENT

The probability of a random event is a teaching topic that is in the curriculum of Croatia. It aims to: To list elementary events, identify which elementary events are favorable for a given event, calculate a given event**.**

DIVISION LONGS INTO EQUAL PARTS AND IN A GIVEN DIRECTION

Dividing longer into equal parts and in a given direction is a teaching topic that is in the curriculum of Croatia. It aims to: Divide the length into equal parts and in a given direction.

SIMILARITY OF TRIANGLES AND APPLICATIONS

The similarity of the triangle and its application is a teaching topic that is in the curriculum of Croatia. It aims to: Adopt the notion of similarity of triangles. Calculates the distances of the sides of similar triangles. Calculates the circumference and area of similar triangles.

SYSTEM OF LINEAR EQUATIONS – REPLACEMENT METHOD, METHOD OF OPPOSITE COEFFICIENTS, AND APPLICATION OF SYSTEM OF LINEAR EQUATIONS

The system of linear equations is a teaching topic that is in the curriculum of Croatia. It aims to: Verify that the given ordered pair is a system solution. Adopts the replacement method, makes a solution check. Adopts the method of opposite coefficients, checks the solution. In the given examples, independently determines which of the two methods leads to a simpler solution, reduces problem tasks to solve a system of two equations, pronounce, write down, check the solution, and discuss it if necessary.

LINEAR FUNCTIONS, SCHEDULE OF LINEAR FUNCTIONS, EQUATION OF RIGHT, AND FLOW OF LINEAR FUNCTIONS

Linear functions, graph of linear function, equation of line, and flow of linear function are a teaching topic that is in the curriculum of Croatia. It aims to: Adopt how to write a function. Calculates the value of the function. Applies knowledge to solving tasks from everyday life. Draws a graph of a linear function and reads the value of the function from the drawn graph; Apply and check (computational or graphical) whether the setpoint belongs to the graph of the function. Determine the zero point of a given linear function computational and graphical Describes the dependence of two quantities using tables and graphs. Adopt the meaning of the slope of a line and a segment on the y-axis and their geometric interpretation. Examine the rise and fall of a linear function according to the slope of the line.

GRAPHIC SOLUTION OF LINEAR SYSTEMS

Equation

Graphic solution of linear systems of equations is a teaching topic that is in the curriculum of Croatia. It aims to: Solve the system of linear equations graphically and computationally. Check the solution. Determine by the graphical method whether the system has two linear equations, one, none or infinitely many solutions.

DISCUSSION

First of all, I would like to mention that this is not the third work that deals with this topic by comparing classes between the former Yugoslav republics. This topic could be discussed for a long time with a lot of evidence and examples where there would be a completely new concept of work. I can only say that all republics have a similar concept and have approximately the same curriculum that is studied at this age. There is neither a perfect plan nor the same state of the above that have the same conditions. The curriculum itself is linked to the very form of development of the countries we are talking about. If a republic does not have the possibility to provide the teaching aids of the modern age with computer equipment and modern aids, then its curriculum will date exclusively from the classical method of application.

CONCLUSION

The aim of this research is to compare the basic goals and tasks, learning outcomes or contents/concepts, mathematical curriculum of VII (VIII) grade of primary school used in Montenegro, Serbia, Bosnia and Herzegovina, and Croatia. analyzed relatively using document analysis as a qualitative method of analysis.

The results of the research show that the curriculum in Montenegro is based on the realization and achievement of cognitive and process goals. Cognitive goals include the knowledge that the student will acquire through the adoption of mathematical content given in the programs. Process goals include skills and values that are developed during and in the learning process. Serbia's curriculum is based on ensuring that all students acquire basic language and mathematical literacy and that they progress toward the realization of appropriate standards of educational achievement. The curriculum of Bosnia and Herzegovina is based on students acquiring basic mathematical knowledge needed to understand phenomena and laws in nature, fully master the basic elements of mathematical language and terminology, develop the ability to express general mathematical concepts, and develop skills of higher levels of thinking while the curriculum of Croatia is the acquisition of basic mathematical knowledge necessary for understanding phenomena and laws in nature and society, the acquisition of basic mathematical literacy, and the development of skills and abilities to solve mathematical problems.

Another important thing to note is that countries such as Montenegro and Bosnia and Herzegovina have a 9-year education system, while Serbia and Croatia still have an 9-year education system. Analogously, it was logical to compare Grade VII with Grade VIII.

Analysis of learning outcomes/content of this curriculum shows that some topics are covered in the same period, that is, age, while some

topics are covered differently by grades and countries in which they are covered. Of course, there are some teaching outcomes/contents that are only processed in one of these countries and are exclusively related to those countries and the period of their processing.

REFERENCES

Curriculum for Primary Schools Croatian. Available from: https://www.azoo.hr/index.php?option=com_content&id=5867; https://mzo.hr/sites/default/files/migrated/nastavni_plan_i_program_za_os_2013.pdf

Curriculum for the Primary School in Bosnia and Herzegovina. Available from: https://www.sobih.ba/siteoo/images/stories/galerije/Zakonska_akta/okvini%20npp.pdf

Hasic A. Comparison of Mathematics Teaching Curriculum between Montenegro, Serbia, Bosnia and Herzegovina and Croatia in V (VI) Grade.

Mathematics 5, 6, 7, 8- Manual Serbia Available from: https://osnovneskole.edukacija.rs/materijali-za-nastavnike

Mathematics for Primary Schools in Montenegro Available from: https://www.zzs.gov.me/naslovna/programi/osnovno