# ANALYSIS OF THE POSSIBILITIES OF ENSURING THE COHERENCE OF MATHEMATICS PROGRAMS

**Zakirov Furkat Muxsinovich**
Candidate of Physics and Mathematics, Associate Professor at Tashkent State Pedagogical University named after Nizami

*Abstract. In this article, we discuss the scientific and methodological foundations for the implementation of the national curriculum in mathematics in primary school, as well as the discussion of the draft national curriculum by the Republican Inspectorate of Education.*

*It is necessary to regularly use modern information and telecommunication tools to expand the possibilities of effective development of competence in working with information in the teaching of sciences. In doing so, students are trained to work with textbooks and various educational resources, to search and analyze information related to mathematics from various sources, and to form the skills of working with information media, taking into account information security, from various applications, rockets and supplies, mobile devices ( it is recommended to use phones, tablets and other gadgets).*

*Keywords: feedback, technology, goals, curriculum, educational standards, primary education, mathematics, knowledge and skills.*

Here is the content of the program:

GRADE 1 OVERVIEW

Learning to Learn and to Think as a Mathematician

Co-constructing with the students a definition for the meaning of Mathematics

Identifying the importance of Mathematics in our world and in their lives

Creating a personal model of learning and identifying how each child's model enables them to learn effectively as a Mathematician

Introducing the students to the universal models of learning, for example the Joy of Not Knowing Model of Learning and identifying how each of the six stages of the model helps the students learn effectively as a Mathematician

Developing the effective dispositions of learning and equipping students with the skills of creativity, resilience, curiosity, collaboration, reflection and resourcefulness and establishing practical examples of how these apply to Mathematics

Thinking like a Mathematician and introducing the concept of the thinking skill starters to launch lessons, the importance of strategic awareness and knowing which strategy to apply at any one time and the steps needed to problem solve successfully

Investigating like a Mathematician and introducing the concept of planning open-ended investigations, checking results, analysing mathematical meaning

Philosophy and Mathematics introducing the concept of asking questions as a Mathematician

Analysing the aims, objectives, competencies and goals of the Renewed Framework from a Mathematical perspective, describing how each of these competencies supports the learning of Mathematics

Objects and their Mathematical Properties and Characteristics

Describing objects mathematically in terms of their position

Comparing objects using mathematical concepts and vocabulary

Grouping objects using mathematical concepts and vocabulary

Finding similarities and differences between objects

Finding advantages and disadvantages when comparing objects related to a real life scenario

Introduce the language of directional instruction and movement, left, right, to the left to the right, ahead, behind

Number and Place Value

Recognise, read, write and order numbers from 1 to 9

The concept of place value and the meaning of 0 in the number 10

The concept of place value in history and how the concept of number has developed with different cultures and civilisations

Counting to and from 10

Recognise, read, write and order numbers 1-20

Locate numbers 1-20 on a number line

Use objects to depict quantity of numbers 1-20. Develop confidence with numbers 1-20 by counting backwards from 10 and 20

Developing confidence with numbers by counting in steps of 2, 5 and 10 to 20

Develop confidence with numbers by counting forwards and backwards from 0, 1 or any given number

Introduce the language and mathematical symbols of equal to, more than, less than, most and least

Introduce the concept of even and odd numbers using a number line

Extend all concepts above to now include numbers 1-100

Identify patterns, odds and even numbers on a 100 square grid

Introduce the concept of partitioning numbers and understanding that 15 is composed of a 10 and a 5

Introduce the concept of fractions

Recognise, find and name half as two equal parts of an object and quarter as four equal parts of an object

(Note: the concept of days of the week and of before and after will be better if introduced when learning about time as the sequence of the days in dependent on a time sequence rather than on a mathematical concept of order or place value)

Addition and Subtraction

Introduce number bonds to 10 and 20

Represent number bonds to 10 and 20 using the addition sign

Interpret the number equation formed using an addition sign to introduce the terms of components and totals

Represent number equations involving 10 and 20 using the subtraction sign

Develop confidence with number by stating what is 1 more or less of any number between 1 and 20

Add and subtract one-digit and two-digit numbers to 20, including zero

Solve one-step problems involving addition and subtraction

Solve one-step problems involving addition and subtraction where there are missing numbers

Solve one-step problems involving addition and subtraction to 20 using mental strategies

Solve one-step problems involving addition and subtraction to 20 using concrete objects

Introduce the concept that addition and subtraction are related and use this inverse correlation to check addition and subtraction problems to 20

Note: Move these sections to Chapter 4: The point. Straight line. Cut. Broken line and curved line. Light. Point, straight line, cross section, broken line and curved line, light. The length of things. Measure the length of an object using a conventional measuring tool. Create different shapes from multiple sticks. Find the differences in the pair pictures. Compare pictures, find differences. Continuing the sequence. Identify the regularity in a simple picture sequence, continue it, and find the excess

Multiplication and Division

Introduce the concept, language and symbols of multiplication through grouping objects and multiplying them together to get a total

Recognise that multiplication is a short cut to addition

Use one step problems to work out simple multiplication, doubling for example

Introduce the concept of division through grouping objects and dividing them together from an initial total

Recognise that division is the opposite of multiplication

Use one step problems to work out simple divisions, halving for example

Measurement

Compare, describe and solve practical problems using the concept of measure

Introduce the concepts and vocabulary of long/longer, short/shorter, tall/taller

Introduce the concepts and vocabulary of weight using lighter/heavier

Introduce the concept of capacity and volume using full/empty, more than and less than

Introduce the concept of time and the vocabulary of quicker, faster and slower, earlier and later

Use diagrammatic representations to measure and record length, height, mass, weight, capacity, volume, hours, minutes, seconds

Sequence events in chronological order for example days of the week

Introduce the vocabulary of before, next, after, today, tomorrow, yesterday

Extend understanding of sequencing and time to include days, weeks, months and years

Introduce the use measuring tools such as a ruler, weighing scales, containers and clocks

Use the language of time to describe o'clock and half past the hour drawing these on clocks

Geometry and Properties of Shape

Recognise and name the common 2D shapes including rectangles, squares, circles and triangles

Recognise and name the common 3D shapes including cubes, cuboids, pyramids and spheres

Recognise 2D and 3D shapes in the environment and in everyday objects

Recognise that 2D and 3D shapes can be represented in different orientations and sizes

Describe positions, directions and turns of shapes by introducing the concept of turns, including whole, half, quarter turns in both directions (left and right)

Introduce concept of symmetry and folding shapes in half and a quarter

Note: Corner types. Corner types. Right angle. Angles larger (obtuse) or smaller (acute) than right angles.

Example: It is appropriate to use the following picture in the formation of mathematical concepts in 1st grade students.
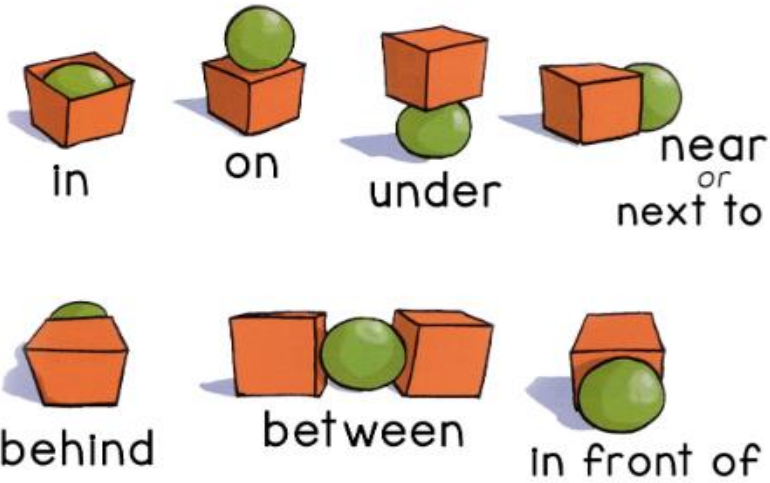


Example: Qualitative comparison of objects in the following real-world contexts in the formation of mathematical concepts in 1st graders.
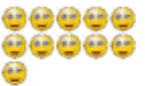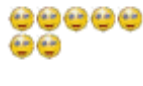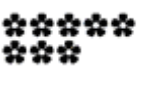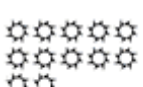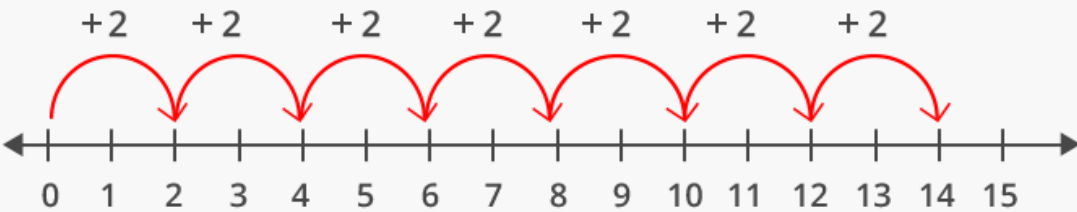


Determine the location of numbers from 1 to 20 in the number light.

## Add the objects and write the sum.

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Develop self-confidence in numbers by counting from 1 to 20 2 times, 5 times.

We focused on the formation of elementary mathematical concepts in the mathematics program.

Recommendations on the development of basic concepts in students through mathematics.

In the general secondary education system, it is determined that the students will have academic qualifications along with subject qualifications. It is appropriate to focus on the formation of students' competences through the subjects of the block of specific subjects, to use the skills and qualifications they have acquired in various situations. In particular, in the formation of communicative competencies, it is necessary to teach the state language, foreign languages, independent, creative thinking, fluent and oral communication, correct pronunciation, interpretation, and free communication. In particular, the science of mathematics has its own scientific language, its own concepts, signs and symbols, and communication in this language should be considered as a factor in the formation of communicative competences.

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