BULGARIAN FOLK TASKS, HISTORICAL ASPECTS AND CURRENT APPLICATIONS IN TEACHING MATHEMATICS IN THE PRIMARY SCHOOL IN BULGARIA

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Abstract: An examination of aspects of Bulgarian folklore with mathematical approach. Current applications in the initial stage of teaching mathematics are suggested.
Keywords: folk task, riddle, puzzle, brain teaser.

1.INTRODUCTION TO THE SUBJECT MATTER

Current trends in mathematics education for 7-11 year olds in the world and in Europe include the acquisition of knowledge and skills in the following areas of educational content in Mathematics: Numbers, Geometric Figures, Data. Some specific cognitive levels of utilization of mathematical knowledge are: Understanding, Application, Argumentation [Sharkova Zl., G. Kirova: 2015]. Work to increase the level of the students' mathematical literacy by developing the mathematical competencies of students [PISA: 2015]. Mathematical competencies include: re-creation (performing simple mathematical operations); determining the logical relationships (generalization of ideas to solve the problem); rationalization (demonstration of mathematical thinking and reasoning). Bulgarian mathematical education, and Bulgarian folk tasks viewed in historical retrospect have always been in tune with the modern understanding of numeracy and contributed to the development of mathematical competencies of many generations of Bulgarian children.

Bulgarian folklore from our ancestors - the ancient Bulgarians is full of riddles, brain teasers, mazes, puzzles and tasks with strict mathematical approach, which enrich the contemporary mathematical folklore. The study of mathematical folklore and its promotion for the purposes of compulsory, compulsory eligible and free optional training in mathematics at the Bulgarian school is associated with the names Iv. Ganchev, K. Chimev, Y. Stoyanov [1], [2] Popov [4], and N. Tenchev, T. Tenchev [3]. It is our duty as teachers to continue the traditions of our ancestors to preserve and enrich the Bulgarian mathematical folklore. The younger generation should feel the springs of folk wisdom and cunning, which is an important part of their patriotic and civic education. Bulgarian integrating mathematical education in the general global and European structures must maintain and continue its existence with typical Bulgarian folk specifics.

2. OBJECTIVE

The objective is to provoke and to motivate the wider use of typical Bulgarian folklore tasks, riddles, puzzles in mathematics education from 1st to 4th grade. The idea is to not interrupt the trend of using basic types of folk tasks and similar ones in mathematics education in different types of training and in the free time of students. All folk elements included in the training of students in mathematics provoke interest and are a great tool to develop their logical thinking.

Historically, I will comment on ancient Bulgarian riddles and puzzles inspired by the history of the First Bulgarian Kingdom and the ensuing folk puzzles, riddles, brain teasers and tasks. In the planning and implementation of training in mathematics from first to fourth grade, primary school teachers can incorporate tasks of those types. The accompanying tasks are indicative, their selection may serve to motivate teachers to use similar ones in their direct didactic activity in mathematics.

3. ANCIENT BULGARIAN RIDDLES

To optimize the statement, I will deal with riddles, puzzles and brain teasers [3]. They have accompanied the lives of our remote ancestors - ancient Bulgarians and evidence their creativity, subtlety, wit, and their ability for logical thinking.

3.1. Riddles

R1: Bony house, four hides. What is it?   Answer: Walnut.
R2: I will come to you when twenty-three plus two equals one. When is that?

Answer: 01:00 o'clock.
R3: If 4 candles are burn, then 1 of them is snuffed out, how many candles will remain?   Answer: 4 candles.

R4: I'm lighter than a feather, warmer than ice and colder than flame. But even the strongest man cannot hold me for more than a minute. Who am I?   Answer: Breath.

R5: If you have me, you can have all the riches you want. Who am I?   Answer: Mind.

Riddles 1, 3, 4 and 5 are suitable for all grades of primary school and riddle 2 is suitable for second, third and fourth grade.

3.2. Puzzles

P1: „*Mystery words*"

Knowing that:

Agrisam – big tree

Zaburasam – small tree

Samram – wooden palace. What does the word Agriram mean?   Answer: Big palace.
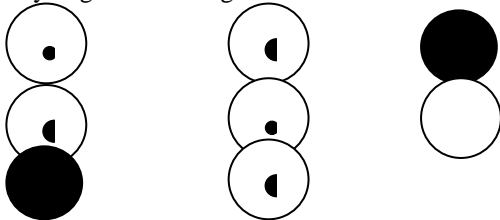
32: „*Lines in the ground*"

      | | | | | | | | | | =   **X** |

Look at the lines on the ground. You have to erase only one line and make it in another location to correct the equation. Know that there are two possibilities.

       Answer: | | | | | | | | | = | **X**

       | | | | | | | | | | =   **X**

33: „*Circles and dots*"

Can you guess what figure should be added the series? Draw it

Answer:

Circle with a dot. The logic is that the filled area inside the circle grows, then shrinks.

Puzzle 2 is suitable for students acquainted with Roman numerals and the other puzzles are suitable for students of all grades of primary school.

3.3. Brain teasers

B1: „Dog and wife"

My dog, five years ago, was twice younger than my wife. Now she is three times older than it. How old is my wife and how old is my dog?

       Answer: Wife – 30 years old, dog – 10 years old.

B2: „Full and empty glasses"

   1   **2**   **3**   **4**   **5**   **6**   **7**   **8**

On the table there are 8 glasses. The first four glasses are full and the latter four are empty. Can you arrange them so that filled and empty alternate? The condition is to move two cups at once!

Answer: Suggested solution: the glasses are numbered from 1 to 8. The second and third go to the end, fifth and sixth take their places, eighth and second take their places, and finally we have to move first and fifth.

B3: „Rabbits and chickens"

I have rabbits and chickens. When I count their heads, there are a hundred. When I count their legs, there are three hundred and sixty. How many rabbits and how many chickens do I have?

       Answer: rabbits – 80, chickens – 20.

The brain teasers are suitable for students of third and fourth grade.

4. FOLK TASKS

From the vast variety of Bulgarian folk tasks, we will discuss some that involve the tricks and jokes of Hitar Petar and Nasreddin Hodja [2], [4], [5]. Nasreddin Hodja is a Turkish humorist. He wrote stories similar to the Aesopian fables. His work has a playful nature in which he often self-ironizes. As Hitar Petar is a collective image of the trickster in Bulgarian folklore, Nasreddin Hodja is a collective image in the Turkish folklore. They often argue, exchange quips and outsmart each other in cheerful stories at which Albanians, Arabs, Jews, Greeks, Italians, Persians, Serbs, Romanians, Bulgarians and Turks still laugh. Their cheerful stories are collected and described by Ch. Aladzhov, S. Popov and B. Valchanov.

F31: „Ten pennies"
Hitar Peter and a rich man met in the baths. Once bathed, the rich man put on a sheet, puffed up and asked Hitar Petar how much he thinks he's worth. Hitar Peter said 10 pennies. Insulted, the rich man said that only the sheet was worth that much. What did Hitar Petar reply?

Answer: „I only counted the sheet!"

F32: „Riddle"
Nasreddin Hodja asked Hitar Petar what his brother does. Hitar Petar replied: "When there is water - he drinks wine, and when there is no wine - he drinks water." Help Nasreddin Hodja guesfigure outs what Hitar Petar's brother does.
Answer: The brother is a miller. When there is water at the watermill, there is work, the brother gets more money so he drinks wine. When there is no water, there is no work at the mill, no money, and the brother drinks water.

F33: „Bag of jokes"
Since he was little, Hitar Petar loved to joke. One day Nasreddin Hodja met Hitar Petar and asked him to tell him a joke. Hitar Petar agreed, but asked Nasreddin Hodja to wait while he runs home and gets his bag of jokes. Guess what happened next!
Answer: Hitar Petar did not return, and Nasreddin Hodja was left waiting the small dodger.

F34: „How many donkeys are there?"
Nasreddin Hodja was taking five donkeys to sell them on the market. He ran after them and chased them, but then he got tired and got astride one of them. When he counted the donkeys, there were four. Startled, he jumped to the ground, counted again, and got five. He got astride on one of the donkeys again and drove them to the market. At some time he started to count them - again they were four. At that time he saw Hitar Petar and asked him for help - "Hitar Petar, please, tell me how many donkeys do you see, because when I count them from the ground, I count five and when I'm riding - one gets lost.". Hitar Petar laughed and said: "The donkeys are six, but one of them has two legs!" How many donkeys are there and what is the sixth donkey?
Answer: There are five donkeys. The sixth donkey can't count and has two legs - Nasreddin Hodja.

F35: „Horse race"
On a holiday in Hitar Petar's village a horse race was organized. Two men took part, but the condition of the race was odd - the one whose horse reached the end last, was going to be the winner. The men got on their horses, cheered on by the people, but they wouldn't start. They both waited for the other to go first, so they could finish last and take the prize. Some time passed, people were disappointed and were about to leave. At that time Hitar Petar showed up, asked what was going and reassured everyone that he will find a solution. He asked the men to get off the horses and whispered something in their ears. They got off and he told them a few words in secret from the others. Then the men immediately got astride on the horses and rode as fast as they could. What did Hitar Petar say to the riders?
Answer: He whispered to them: "Switch your horses. The prize will go to the one whose horse comes last."

F36: „Hitar Petar in prison"
Hitar Petar was sentenced to death. Pronouncing the sentence on a Saturday, the judge formulated it this way: "You will be scragged at noon in one of the next seven days, but you will not know until the morning of the day of the execution. If any provision of this sentence is not completed, you will be set free. "Hitar Petar thought a little and immediately asked to speak with the judge. After the judge heard him, he ordered his release. What did Hitar Petar say to the judge?
Answer: Hitar Peter told the judge: "The last of the next seven days is Saturday. I can not be scragged on Saturday because Saturday morning, I will know that this day I will be scragged. There is no other day after Saturday when I

could be scragged. But this contradicts the condition that the morning of his execution, I should not know about it. But since I cannot be scragged on Saturday, I cannot be scragged on Friday either, as this day remains the last of the seven in which I could be scragged and on Friday morning I'll know I'll be scragged. Everything said about Friday and Saturday, applies to Thursday, Wednesday, Tuesday, Monday and Sunday. "

Folklore tasks are suitable for students of all grades of primary school.

In our efforts to modernize the teaching of mathematics, we should not ignore the huge variety of mathematical riddles, brain teasers, riddles and folk tasks. Rather, they are an effective tool to motivate students, starting from primary school to develop logical thinking, resourcefulness and ingenuity.

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