



## TEACHING THE ELEMENTS OF MATHEMATICAL STATISTICS IN SCHOOL

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Article history:	Abstract:
<b>Received:</b> 20 <sup>th</sup> October 2022	The article highlights the issues of teaching and analyzing the topics of "Mathematical Statistics" in school mathematics through various interactive methods
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Starting from the 2017 academic year, in accordance with the curricula of secondary schools, the study of "Mathematical statistics" topics will be studied from the 5th grade. 4 hours are allocated to the subjects of tables and diagrams in the curriculum for 6th grade students, students learn the following main stages [16]:

presentation of data in the form of tables, diagrams;

reading information presented in the form of a table, diagram;

extracting information presented in tables, diagrams;

drawing up diagrams and tables based on data;

extracting, interpreting and changing the data presented in tables and diagrams that reflect the properties and characteristics of real processes and events.

In the 6th grade, M.A. Mirzakhmedov, A.A. Rahimqoriyev, Sh.N. Ismailov, M.A. According to the textbook of the 6th grade of general secondary schools of Tokhtakhodjayeva [16], 4 hours were allocated to the topics "Tables and diagrams". In Russian literature, in the 5th grade, only 2 hours were allocated to study circular diagrams by Vilenkin N.Ya [25] in the textbook "Mathematics". In the 5th grade mathematics textbook, Dorofeeva [35], 3 hours are allocated to study the material in the textbook. In studying this textbook, students will not only learn how to read tables, but also how to make tables and diagrams. In the 6th grade, according to the textbook of Vilenkin N.Ya. [25] Bar charts and Graphs are studied. In the textbook edited by G.V. Dorofeev, the topic of circular and column charts is studied [16].

A table is the easiest way to organize data. Tables are used in school diary pages, lesson schedules, class journals. Tables make it easy to find the information you need. We will do the following when teaching these topics.

Methodology of studying the topic "Tables".

Objectives of teaching "Tables" lesson:

formation of skills and qualifications for working with tables: teaching students how to extract data from tables, analyze the obtained data;

creating tables, empty tables (rows and columns). formation of filling skills;

training fortitude, patience.

At the beginning of the lesson, the teacher offers the students a small game: the class is invited to divide into 2 teams, and each team receives the text of the task shown on the card. The team that completed the task first wins. The game consists in the fact that the task for the first team is presented in the form of text, and the task for the second team is presented in the form of a table.

### **Assignment 2.1.1 to the 1st team**

Erkinjon talked to his classmates and found out how much time each classmate spends in front of the computer per day. It turned out that the parents did not allow four of Erkinjon's classmates to use the computer. Five classmates spend no more than one hour a day on the computer, six classmates spend two hours; Three students in Erkinjon's class spend three hours a day on the computer, and the other two spend four hours or more on the computer a day. Based on the information obtained, prepare answers to the following questions:

1. How many students are there in Erkinjon's class?

2. How many of Erkinjon's classmates sit at the computer for 2 hours a day?

3. How many of Erkinjon's classmates spend less than 2 hours on the computer?

4. How many of Erkinjon's classmates spend more than 2 hours on the computer?

### **Assignment 2.1.1. to the 2nd team**

Forming a task for the second team: Erkinjon conducted a survey among the students of his class to find out how much time they spend on the computer per day. He presented the obtained results in the form of table 2.1.1:

The results of the survey of classmates.

2.1.1.-table

The number of hours spent by classmates on the computer	0	1	2	3	More than 3
Number of classmates	4	5	6	3	2

Use the information in the table and answer the questions:

1. How many students are there in Erkinjon's class?
2. How many of Erkinjon's classmates sit at the computer for 2 hours a day?
3. How many of Erkinjon's classmates spend 2 hours or less on the computer?
4. How many of Erkinjon's classmates spend 2 hours or more on the computer?

During the game, students should notice that using the tables allows them to find the solution faster than using the text condition. Thus, data systematization significantly increases efficiency and speed in solving problems.

After that, students can be asked to remember which tables the students have met before (adding and multiplying tables, verb conjugation tables, turn tables, diary pages).

It is necessary to analyze the simplest tables with students, to show that tables are very common in everyday life (calendars, menus in a canteen, shop opening hours, etc.). Therefore, it is emphasized that students will be able to classify the material and enter it into tables, as well as using tables. It is explained that tables have rows and columns, and that rows and columns can have their own names. Invite students to provide their own sample tables.

To develop students' ability to extract and analyze the information presented in the table, the following tasks can be considered.

Task 2.1.2. The results of weather monitoring for five months in 2021-2022 are presented in Table 2.1.2.

Results of weather observation for five months

2.1.2.-table

the weather	Months					Total
	November	December	January	February	March	
Mostly cloudy	8	6	12	9	8	
Partly cloudy	12	17	8	14	12	
Sunny	10	8	11	5	11	

The last column should be filled.

According to the information included in table 2.1.2, the following questions should be answered:

1. Identify the months with the same number of exact days?
2. Identify the month with the most cloudy days?
3. Determine the exact number of days in five months?
4. Determine the number of open days for the whole winter?
5. Which days were clear or cloudy in November?

As a result, students will acquire the skills of working with rows and columns, learn to summarize table data. In the 6th grade, students consider tasks aimed at working directly with tables, the ability to present the necessary information in the form of a table is formed.

As homework, students can be asked to complete a questionnaire that may include a variety of questions: your favorite movies, games, sweets, family size, how much time students in your class spend on homework, birthday or friends every month of the year etc. Form the questionnaire in the form of a table and, after talking with friends, family members or classmates, enter the results of the survey into the table.

The following tasks will help to form the skills of presenting the necessary information in the form of a table.

2.1.1 task. The table contains information about the notable works of talented students in the district:

T.r.	Type of work	September	October	November	December	Total
1	Poem	22	30	15	28	95
2	The story	14	17	20	19	70
3	Newspaper article	25	32	21	18	96
4	Scientific project	9	7	12	16	44
5	Technical model	15	11	23	14	63
	<b>Total</b>	<b>85</b>	<b>97</b>	<b>91</b>	<b>95</b>	<b>368</b>

Answer the questions:

- 1) How many scientific projects were created in November?
- 2) How many stories were written in 4 months?

- 3) How much work was done in September?
- 4) What are the most things done in December? What about in 4 months?
- 5) In which month was the most work done? What about the least?
- 6) What is the sum of the colored numbers?

2.1.2 task. Study the schedule of the interclass football competition.

T.r.	class	1	2	3	4	5	Points	Balls	Position
1	6-"A"		2:3	1:2	0:0	2:1	4	5:6	4
2	6-"B"	3:2		5:0	0:1	4:2	9	12:5	1
3	6-"D"	2:1	0:5		1:1	2:0	7	5:7	2
4	6-"E"	0:0	1:0	1:1		2:2	6	4:3	3
5	6-"F"	1:2	2:4	0:2	2:2		1	5:10	5

**Methodology of studying the topic "Diagrams".**

When there is a lot of information, it is necessary to sort it. A table is the easiest way to organize data. Tables make it easy to find the information you need without digging through all the available information. However, the tables do not provide a visual representation of the ratio of values. Various charts are used for this: bar charts, pie charts, dot charts, etc. Charts are used to provide a visual, memorable image and to compare data.

Objectives of the lesson topic "Diagrams":

- introducing the concept of diagrams, showing different types of diagrams;
- learning to read and construct diagrams.

In practice, you need to deal with tables more often, diagrams are less common in everyday life. Diagramming is a completely new concept for fifth-graders, and it needs to be explained with concrete examples. You can consider the following problem.

Task 2.1.3. A survey was conducted among sixth graders on the topic "Favorite time of the year". The survey results are presented in Table 2.1.3. Based on this table, you can make a diagram (Figure 2.1.1). Results of a survey of sixth graders.

Table 2.1.3

Seasons	Number of students
summer	13
Autumn	8
Winter	5
Spring	5

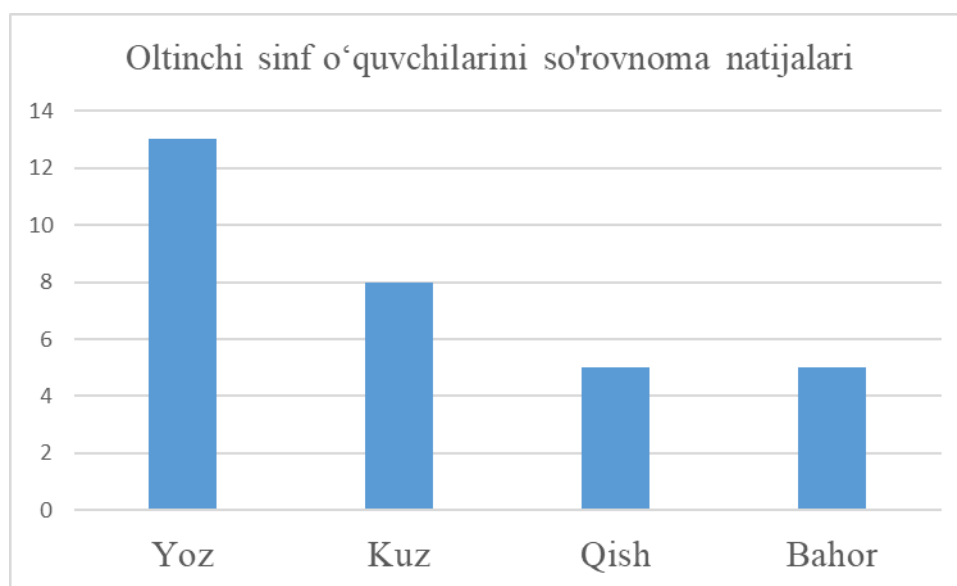


Figure 2.1.1.

**Students can be invited to compare the table and the diagram.**

- 1. Do you think it is more convenient to use a table or a diagram to compare data?

2. Which form of presentation of information is most understandable for you - in the form of a table or in the form of a diagram?

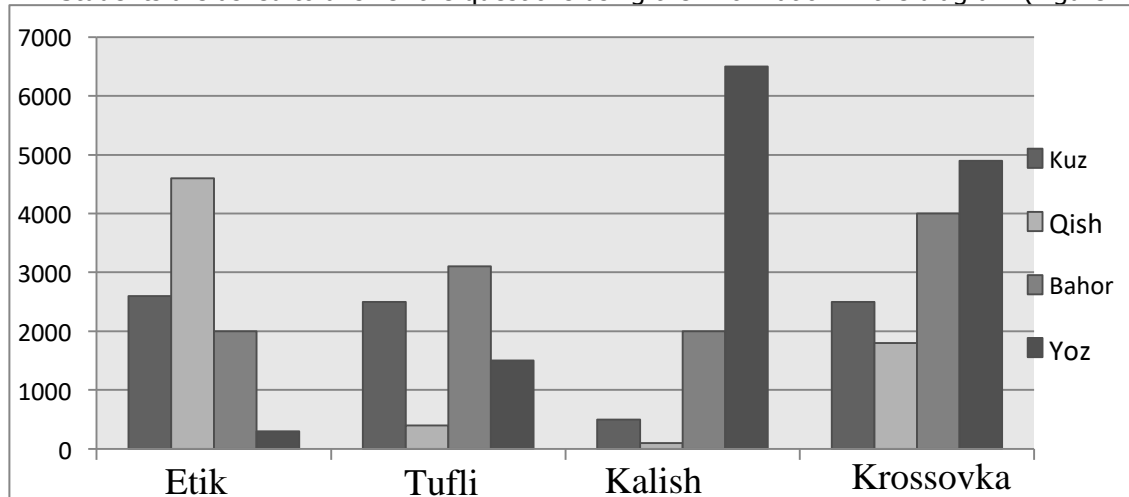
3. Have you been familiar with diagrams before? Where are charts used?

4. There are different types of charts. The name of the diagram depends on which geometric figure is used to represent the information. The diagram can be linear, circular, columnar, conical, cylindrical, etc. Figure 2.1.1 shows a bar chart.

Let's take some other examples of diagrams.

You can strengthen your ability to read diagrams with the following task.

Task 2.1.4. Students are asked to answer the questions using the information in the diagram (Figure.1.2). Figure



2.1.2. Chart of sales of goods in different seasons.

**Questions for the diagram:**

1. What type of product is sold the most in summer (spring, autumn, winter)?
2. What is the best season to sell shoes (boots, calises, sneakers)?
3. At what time of the year are the most sold shoes (boots, shoes, sneakers)?
4. What kind of shoes sell best in summer (spring, autumn, winter)?
5. What product is in demand at all times of the year?
6. What sells better in the fall - boots or boots?
7. In the spring, how many times do sneakers sell better than shoes?

At the end of the lesson, students will be asked questions.

1. Give examples of diagrams.
2. Are tables or charts a more visual and convenient way to read information?

The following tasks will help to form the skills of presenting the necessary information in the form of a diagram.

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