LESSON SCENARIO 04:
PRIME NUMBERS

Topic: Algebra

Level: Age 14 -18

Foreknowledge: The 4 operations

Correlation: Cryptography

Time: 35 minutes

LEARNING OUTCOMES

- **Recognizing prime numbers**

TEACHING METHODS

- **VR technology**
- **Individual work and pair work**

KEY WORDS

- **Prime number**
- **Multiples**
- **Divisors**

RESOURCES

- **VR headsets**

ACTIVITIES

INTRODUCTION: RULES OF CONDUCT WHEN USING VR IN THE CLASSROOM (5 min)

The teacher starts discussion with the students asking them about the use of VR and their expectations in using VR in classroom.

After the discussion the teacher defines the work methods and rules of conduct for students regarding safety precautions for using VR headsets in the classroom and learning in virtual environment:

- **listen to the teacher carefully**

- **remove physical obstacles before using VR**

- **always work in pair - never alone**

- **keep the device clean.**

INTRODUCTION TO PRIME NUMBERS (25 MIN)

ACTIVITY:

• the teacher divides the students into pairs - in each pair there is a student A and a student B; student A has a VR headsed, and student B assists him

• student A carefully puts on his VR headset and starts the task in the VR application

• student A finds and selects the Prime Numbers exercise on the exercise shelf

• This exercise can be done only by one student

WORKSHEET FOR STUDENTS:

A labyrinth appears on the ground: students must move from a prime number to another in order to arrive at the "97" number.

Attention, students can only move to another box into the selected line or column > he easily sees it because the line/column will be surrounded by a green moving wall.

To move from one box to another, students have to use the light beam coming out of their joystick.

They have to point the number where they want to be teleported (so the prime number they have on theirs selected lines or columns).

➢ **If a yellow mist gets out of their box (after moving), the answer was right.**

➢ **If nothing other than moving happened, it means that they chose the wrong number (it is not a prime number). They have to try again by selecting another number on their lines/columns (in order to arrive to the "97" number).**

When the student A has completed the exercise, they can swap roles.

Reminder

A prime number is an integer greater than or equal to two, which has exactly two divisors: 1 and itself.

Multiple of 2: The last digit must be divisible by 2 (even)

Multiple of 3: Sum the digits, the result must be divisible by 3

Multiple of 5: The last digit is 0 or 5

83 (9)	78	70	71 (8)	82	77	54	96	66
46	5 (2)	56	68	60	95	40	76	7 (3)
50	86	65	57	75	32	52	39	45
49	35	27	37 (7)	93	74	23 (6)	88	24
87	2 (1)	51	44	8	30	10	28	80
49	16	72	34	33	4	81	18	22
20	92	36	1	99	63	14	6	84
91	12	48	85	9	26	17 (5)	90	11 (4)
97 (10)	25	64	59	38	15	98	42	58

DETAILED CORRECTION
With: in green where you start your line/column
And in yellow the prime number you must select to access to the next line/column

1st line:

87	2	51	44	8	30	10	28	80

2nd line:

78	5	86	35	2	16	92	12	25

3rd line:

7	76	40	95	60	68	56	5	46

4th line:

66	7	45	24	80	22	84	11	58

5th line:

11	90	17	26	9	85	48	12	91

6th line:

98	17	14	81	10	23	52	40	54

7th line:

24	88	23	74	93	37	27	35	49

8th line:

71	68	57	37	44	34	1	85	59

9th line:

66	96	54	77	82	71	70	78	83

10th line:

83	46	50	49	87	49	20	91	97

EVALUATION (5 minutes)

1. I like the way of work in this lesson.	1	2	3	4	5
2. This lesson was interesting.	1	2	3	4	5
3. It is clear what I was supposed to learn in this lesson.	1	2	3	4	5
4. The subject matter was clearly explained.	1	2	3	4	5
5. I have learned the subject matter.	1	2	3	4	5
6. I think I actively participated in this lesson.	1	2	3	4	5
7. I was more active in this lesson than usually.	1	2	3	4	5
8. By being active I contributed to the quality of the lesson.	1	2	3	4	5
9. I was motivated for work in this lesson.	1	2	3	4	5
10. I prefer using VR in lessons.	1	2	3	4	5

11. Name two things you liked in this lesson.

12. Name two things you didn`t like in this lesson.

INCLUSIVENESS GUIDELINES

Every student is different and their needs for the material might vary. Below you will find several tips that could make mathematics lesson more inclusive for students who struggle with learning disorders.

- When giving assignments to classroom try to break them into small pieces of information. Avoid the double tasks in the instructions. Remember that in case of operations/exercises with multiple steps, it is critical to help learners decompose the steps.
- You can use checklists for your students to make sure they have done all the steps
- Make sure the font, line spacing, and alignment of your document is accessible for students with learning disorders. It is recommended to use a plain, evenly spaced sans serif font such as Arial and Comic Sans. Others: Verdana, Tahoma, Century Gothic and Trebuchet. Spacing should be 1.5 and try to avoid justification in the text.
- At the end of each activity, take some time to ask the students what they have learnt to acknowledge every step in their learning process
- Make sure that the material the students manipulate is easy enough to grasp
- While using different media (paper, computer and visual aids) choose different background than white which can be too bright for students with learning disorders. The best choice would be cream or soft pastel but try to test different colours to learn more about student's preference.
- To stimulate short and long-term memory prepare for all the students in the classroom an outline describing what they are going to learn on this lesson and finish it with a resume of what has been taught. In this way they will strengthen the ability to remember information.

EXAMPLE:

1. Start every lesson with a short "CHECK-IN"

- Today, we will study the topic (name of the topic)
- I will tell you about: (name 3 keywords connected with the topic)
- Then I will present exercises: (name the exercises form the student book)
- Then we will do exercises (explain the way student will be working: ex. together with teacher / in pairs /individually)
- Once the exercises will be done [To continue]

2. Then finish lesson with a short "CHECK-OUT"

- During the lesson we learn about (topic of the lesson)

- **The most important things were: (name 3 keywords connected with the topic)**
- **We were able to do… (tell about the work student done during the lesson)**
- **We will explore the topic next time when we will learn about (name the following topic)**

It is a small adjustment that will take 5 min from the lesson but can make a great difference in the way that the material will be remembered. Try to create this as a routine habit.