

LESSON SCENARIO: PRISMS

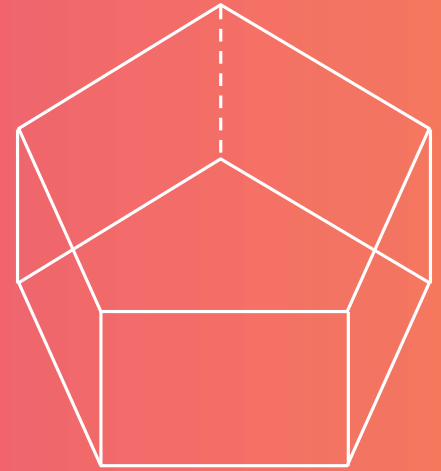
Topic: Geometry

Level: Age 15 -16

Foreknowledge: Base of a prism, side of a prism, right prisms, oblique prisms, right regular prism

Correlation: Physics, Architecture, Construction, Art

Time: 45 minutes



LEARNING OUTCOMES

- Repeat how prisms are made
- Describe and define a prism
- Find examples of prisms from real life in virtual reality
- Distinguish between right and oblique prism

TEACHING METHODS

- VR technology
- individual work and pair work

KEY WORDS

- Prisms

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.

ACTIVITY 1 (5 min): LET'S REPEAT

In a discussion with the teacher, students repeat how prisms are created and the descriptive definition of a prism. They distinguish between right and oblique prisms and classify prisms in relation to other geometric solids.

ACTIVITY 2 (15 min): PRISMS IN REAL LIFE THROUGH VR GLASSES

Outcomes:

Student:

- searches for examples of real-life prisms on the Internet in a virtual environment
- gives examples and sources of prisms

Organization of work: pair work

Required accessories: virtual glasses

Procedure:

The teacher gives clear instructions to students on how to work and use the VR headset. The teacher divides the students into pairs according to the agreement. Student A puts on his glasses and searches for prisms (upright and oblique) in a virtual environment. During that time, student B assist him and writes down examples and the source of the prisms found by student A. This is followed by a change of roles, and student B searches for examples of prisms given by student A. Student B will also explore some of his examples of prisms traveling through a virtual environment. Students discuss with each other whether they have found good examples of right and oblique prisms.

After the activity, the teacher leads a discussion with students who found interesting examples of prisms (right or oblique) in the world around them (architecture, arts, household, ...).

ACTIVITY 3 (15 min): PRISMS IN VR APPLICATION

Outcomes:

Student:

- states what is a prism and what is not in the virtual library of the VR application
- finds and selects the PRISMS exercise on the exercise shelf
- solves a task in a VR application

Organization of work: pair work

Required accessories: virtual glasses

Procedure:

Student A opens the VR application and answers the questions asked by student B and student B writes them on the received slip. Student A opens the PRISMS exercise in a virtual library in a VR application. After the open exercise, the student appears in the corner of the prism with a question to be answered in order to be able to the next task. Student A answers questions to student B, and student writes down the answers. This is followed by a role swap.

STUDENT WORKSHEET (A and B):

Can you list some prisms you find in a virtual library in a VR application?	Student answer:
Can you give an example that does not represent a prism in that space?	Student answer:
Choose an exercise Prisms on the shelf and move to the corner where the globe and 3D printer are located. Is the prism shown right or oblique?	Student answer:
What is the next prism, right or oblique?	Student answer:
What kind of prism is created using a 3D printer?	Student answer:

After that, student B takes over the VR headset and completes the tasks according to the instructions of student A who records and writes down the answers given to him by student B.

STUDENT WORKSHEET (A and B) (possible student answers):

Can you list some prisms you find in a virtual library in a VR application?	Student answer: - <i>regular four-sided prism,...</i>
Can you give an example that does not represent a prism in that space?	Student answer: - <i>sphere, pyramid,...</i>
Choose an exercise Prisms on the shelf and move to the corner where the globe and 3D printer are located. Is the prism shown right or oblique?	Student answer: - <i>right</i>
What is the next prism, right or oblique?	Student response: - <i>oblique</i>
What kind of prism is created using a 3D printer?	Student response: - <i>oblique</i>

EVALUATION

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 colors 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 from 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.