



◊ JELGAVAS VALSTS ĢIMNĀZIJA ◊



Using AI to analyse and improve lesson plans

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15 March, 2026

Grade 7

Planned outcome: Constructs equilateral and isosceles triangles, including digitally.

Differentiation:

- 1) learn by watching silent videos;
- 2) learn by activity in GeoGebra;
- 3) learn by AI plans.

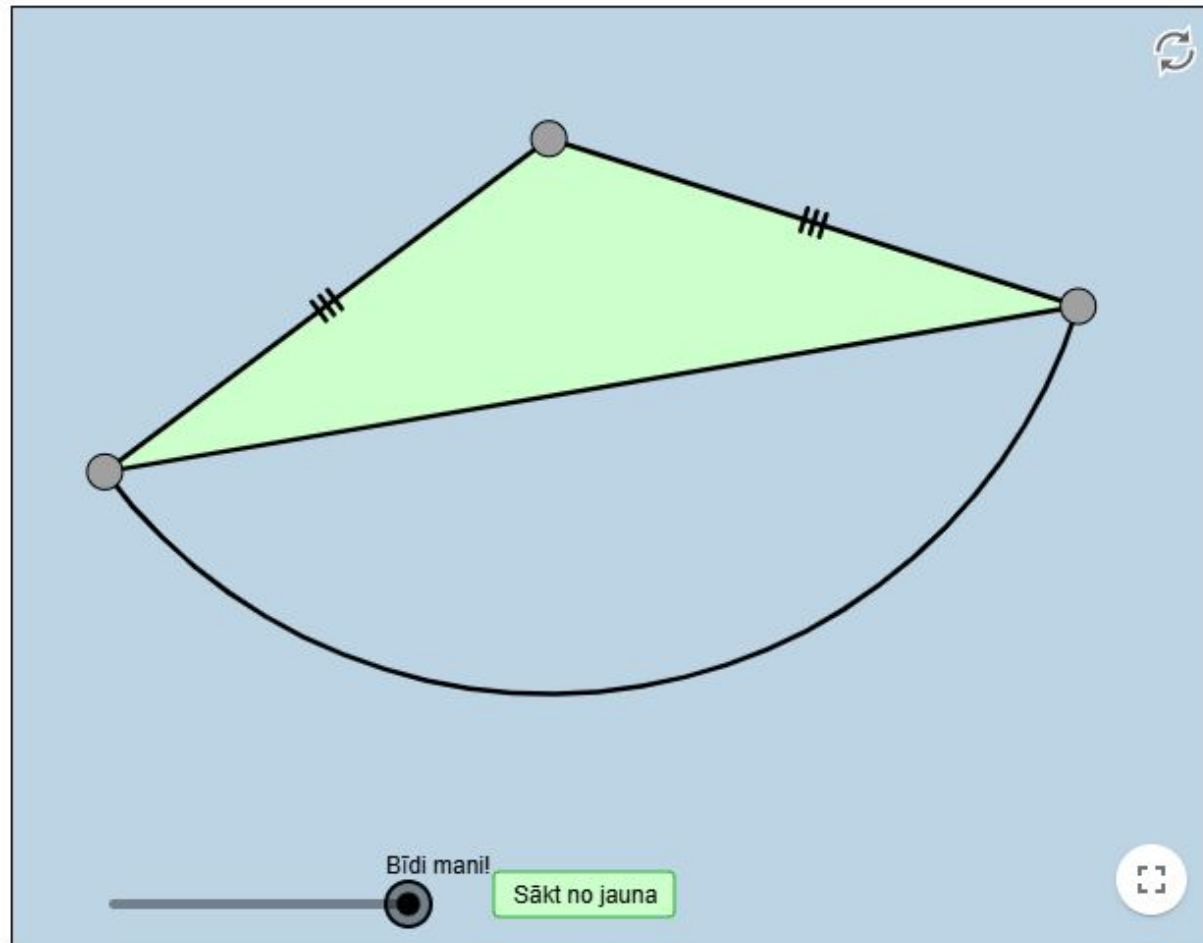
1) Learn by watching silent videos

Watch the video (without sound). Based on the example shown in the video, construct the triangles and write the construction plan.

1. Angle construction (<https://ej.uz/lenkakop>)
2. Construction of a triangle when one side and one adjacent angle are given (<https://ej.uz/malapielenkis>)
3. Construction of a triangle when three sides are given (<https://ej.uz/dotasmalas>)
4. Construction of a triangle when two sides and the included angle are given (<https://ej.uz/lenkispialmas>)
5. Construction of a triangle when one side and its adjacent angles are given (<https://ej.uz/malaunabipialenki>)
6. Construction of an equilateral triangle (<https://ej.uz/vienadmalu>)

2) Learn by activity in GeoGebra

<https://www.geogebra.org/m/wnzme8xe>



3) Learn by AI plans.

On paper, **isosceles** and **equilateral** triangles can be constructed with a ruler and a compass in several ways.

Equilateral triangle

An equilateral triangle has **three equal sides** and **all angles** are 60° .

1. Construction using one side

1. Draw a segment AB .
2. With a compass set to the length AB , draw an arc with center at A .
3. With the same radius, draw an arc with center at B .
4. The intersection of the arcs is point C .
5. Connect A , B , and C .

→ Triangle ABC is an equilateral triangle.

2. Construction using a 60° angle

1. Draw a segment AB .
2. At point A , construct a 60° angle.
3. On this ray mark point C so that $AC = AB$ (using a compass).
4. Connect C with B .

Isosceles triangle

An isosceles triangle has **two equal sides**.

1. Construction using the base and equal sides

1. Draw the base AB .
2. With a compass, draw an arc with center at A and a chosen radius.
3. With the same radius, draw an arc with center at B .
4. The intersection of the arcs is point C .
5. Connect C with A and B .

2. Construction using the perpendicular bisector of the base

1. Draw the base AB .
2. Construct the **perpendicular bisector** of segment AB .
3. Choose any point C on this line.
4. Connect C with A and B .

→ Any point on the perpendicular bisector is equally distant from A and B .

3. Construction using the base and vertex angle

1. Draw the base AB .
2. Find the midpoint M of AB .
3. From M construct the given vertex angle.
4. Choose point C on this line and connect it with A and B .

Reflection / analyse:

Is the information provided by AI correct? How did you verify it?

Is the mathematical language precise?

Do you understand why the construction works?

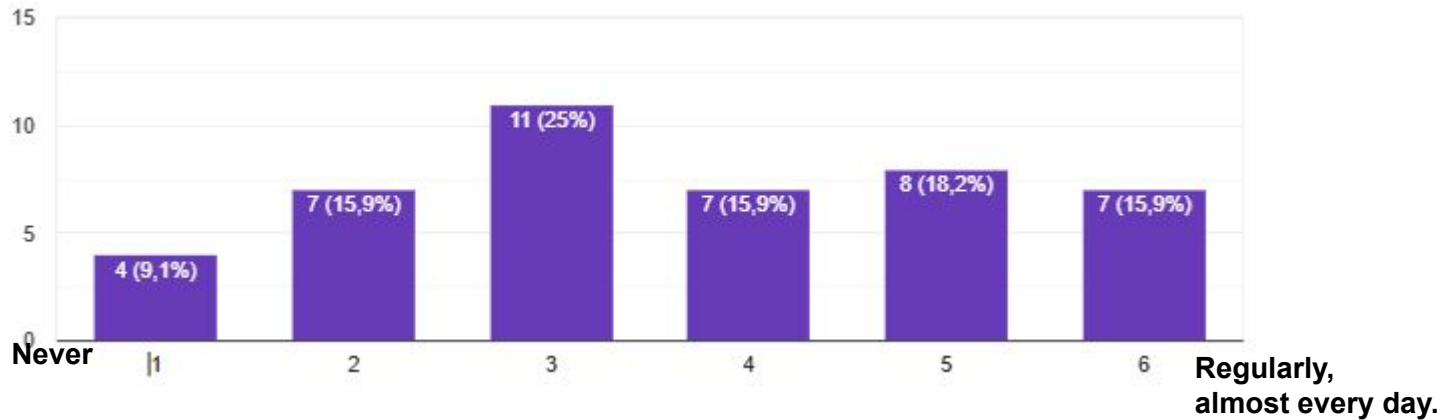
How did AI help (or not help) you learn this topic?

If you had to learn a new skill using AI next time, what questions would you ask? How would you approach the learning process?

Upper secondary school - Grade 11.

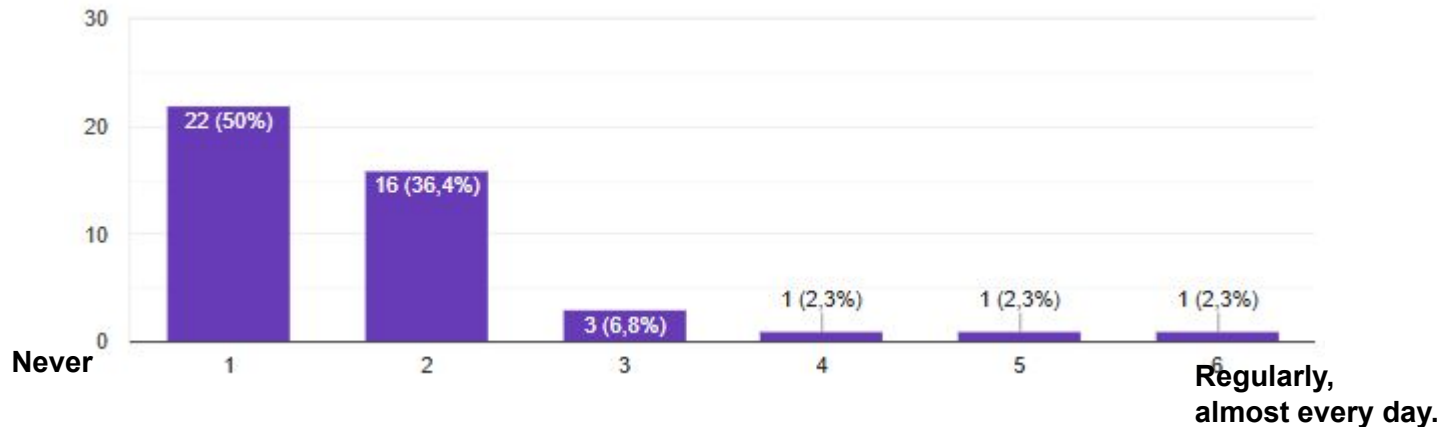
How often do you use AI tools?

44 responses



How often do you use AI tools to learn mathematics?

44 responses



Upper secondary school - Grade 11.

Student to receive feedback on a formative assessment task.

Usually

- the teacher assigns a task
- the teacher checks and corrects the work
- the teacher provides feedback
- the student receives the feedback, analyses what they know and what they do not know, and plans what to do next

What I did

- the teacher assigns a task
- the teacher checks the work
- the student with AI receives the feedback, analyses what they know and what they do not know, and plans what to do next

What I expect in future

- AI provides personalised tasks for each student
- students receive immediate feedback on their work
- AI helps students identify mistakes and misunderstandings
- students use the feedback to plan their next learning steps
- the teacher monitors the learning process and supports deeper understanding

How students start conversations with AI

Teach me this about logarithms, analyse my mistakes, explain what is happening there and what I should do.

Explain the solution to the given problem step by step. Rewrite $\lg_{10} x^a$ as a sum or a difference. Then give me 4 examples whose solutions require similar skills.

I want to learn how to use the properties of exponents to transform an expression so that I can apply the properties of logarithms. Also write an example similar to the one in Problem 2.

At the moment, the topic in my mathematics class is logarithms. Here is a short test on this topic. The tasks marked with “+” are the ones I solved correctly, and the ones marked with “–” are incorrect or unfinished. Based on my answers, could you help me learn what I may not yet fully understand and explain my mistakes?

Typical student strategies in conversation

- asking for a step-by-step solution
- checking their own answer
- asking for an explanation after making a mistake

What teachers can teach about interacting with AI

- how to ask good mathematical questions
- how to ask for an explanation, not just an answer
- how to use AI for error analysis

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What else do I do as a teacher to improve the quality of my lessons?

- analyse the structure of my lesson plans
- improve and refine student learning activities
- create differentiated tasks for students with different ability levels
- design formative assessment questions

Thank you

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