



Voronoi-Game



JKU STEAM Lab

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Summary

Voronoi-Game to support understanding the algorithm.

[Learning](#) > [Math](#)

Tags: [puzzle](#) [voronoi](#) [shape](#) [math](#) [mathematics](#) [maths](#)
[secondary](#)

Task: Assemble the cone puzzle so that the cones fit exactly together

Materials: Voronoi Cone Pieces

A group develops from 3 to 6 cones in the GeoGebra.
The group presents this cone puzzle to another group and investigates whether they can solve the following tasks:

On one side of a mountain stands a hiker, and on the other is an inn.

- On which path, now assembled as a puzzle, does the hiker have to travel the fewest vertical meters?
- What is the shortest path from the top?
- Which path does he have to take the fewest turns to avoid getting lost?

The two groups reflect on whether the assembled puzzle was intended this way.

1. **If yes**, the paths are discussed - are there any differences between the mathematically evaluable solution with, for example, a Dijkstra algorithm? How did the children come to the solutions of the paths?
2. **If no**, the children discuss what differences in the paths would have resulted from the different assembly methods and whether anything particularly surprised them/noticed them.

Age group: Primary; Secondary

Skills: Creativity; problem-solving; 3d design

Knowledge: Voronoi diagrams; Graphs; Algorithms

Software: GeoGebra

[Link to the GeoGebra resource](#)

Created by Linz STEAM Education Research Group - Johannes Kepler University

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Model files



part_9_jku.stl



part_3_jku.stl



part_7_jku.stl



part_8_jku.stl



part_5_jku.stl



part_1_jku.stl



part_10_jku.stl



part_6_jku.stl



part_4_jku.stl



voronoi_box_jku.stl



part_2_jku.stl

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