



**Grade / Age:** Grade 8

**Topic:** Mathematics, visual culture, **STEAM**

**Subject area:** spatial geometry

**Keywords:** prism, letters

**Single/ team work:** team

**Language:** (English or Local) English

**Duration:** 2 hours

### **Description of the Task:**

Making spatial (block) letters

Create a 3D block model of your name's initial letter in cardboard!

- Design the front view of the letter! - A (round letters can also be made in a square shape)

- Scale the figure! Make an axonometric figure - E

- Design the net of the letter!

- Draw glue tabs on the net for a perfect connection - E

- Cut out and glue together.

- In GeoGebra Classroom you can create the net and projection of the letter! - You can ask for help if you get stuck - T

- Measure and calculate the size of the sheet of paper you cut the net from - M

- Calculate what percentage of your paper is wasted! - M

- If you want to 3D print this letter, you need to know its volume, so calculate that too! - M

- Make a lapbook of your work! Be sure to include the phases in the lapbook! You can ask each other for help as you work, but no two letters can be exactly the same!

- You can also create the spatial figure in GeoGebra 3D. Put the letters together from prisms!

### **Solutions of the Task:**

Making spatial (block) letters, volume and surface area of polyhedrons: project task



<https://www.geogebra.org/classic/umwaqukf>

**Prior knowledge:**

Calculating the surface area and volume of prisms

**Comments:**

Technology used: teacher's computer with projector, tablets, GeoGebra editing tools

Learning outcomes: - The learner can complete a design task - Can create a spatial model of his/her creation from a front view - Can model the designed body - Can compile a work diary of the work done

Objectives: - Can design a front view of the body (block letter) - Can draw an axonometric diagram of the body - Can draw a projection of the body - Can draw a net of the body - Can glue the net to ensure correct connection - Can assemble the model - Can determine the surface area and volume of the body by measurement and calculation Assessment: - Can produce a working diary of the design process - Assessment based on the working diary and the model - Knows the scores for the sub-tasks assigned

Preparatory, introductory activities: - The network, surface area, volume, projection of the letters L and T from the axonometric picture of a problem called Thomas the Little from the previous lesson - Practice exercises on the topic - Bring cardboard, scissors, cutter, glue, ruler

Use the knowledge learned earlier in a creative design, knowing all the details separately.

You can create your grid in the interactive interface of Geogebra Classroom.

**Connection to other subjects/topics/areas:**

drawing, technology, informatics (GeoGebra)