LEVEL

Name of the object	Level
Recommended ages (from…)	12 - 17 years old
Thematic areas combined (STEAM)	Technology Engineering Mathematics
Materials needed	The materials we will need are the following: 1. Two straight wooden boards (one meter long) and one more 0.4m long 2. A rope or a fishing line 3. A small weight (approx. 200gr) 4. A large screw and a few nails The tools we will use are a meter, a screwdriver, a saw and a hammer. If the wood is not smooth, then we need to take a piece of sandpaper and sand it.
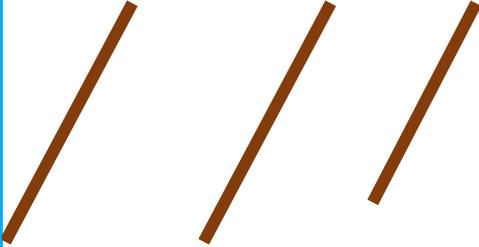
Instructions step by step	**Step 1**. Setting up all the materials and looking at the instructions and models, and building the capital A. **Step 2**. Attaching the rope. **Step 3**. Attaching the weight. **Step 4**. Building all together.

The Level ('Alpha-di' in modern Greece) is one of the tools used by Greek craftsmen and builders for the construction of works of art and buildings in antiquity. That is, when they built two-story buildings, palaces, castles and ancient temples, they used the Level. Even in the pyramids of ancient Egypt, which had to have a slope, they calculated the angle they wanted and maintained it during its construction with the Level. It takes its name from the first letter of the Greek alphabet.

Step by step: how to build the Level

Step 1

Time needed: 15 minutes.

Place the wood in a position that forms the capital letter A. The two wooden boards must be equal to form an isosceles triangle. With the nails we fix them as shown in figures 1-5 .
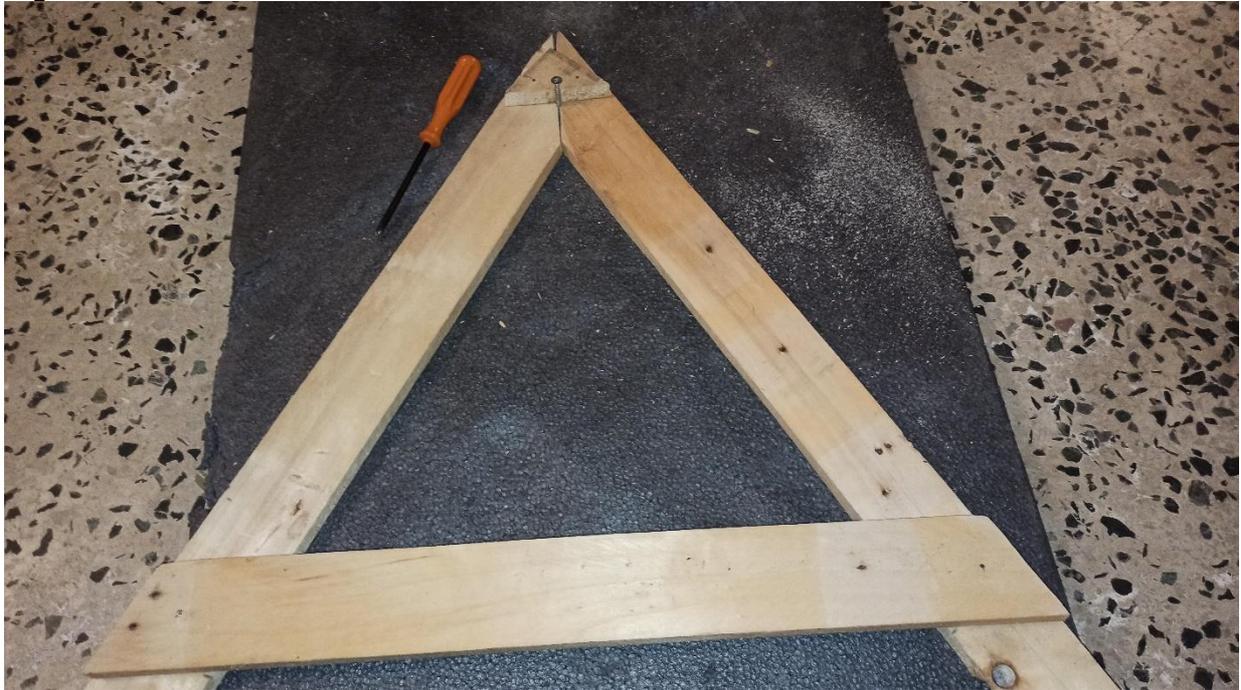
Fig 1

Fig 2

Fig 3

Fig 4

Fig 5

Step 2

Time needed: 5 minutes.

From the top of the A, we screw a bolt/screw and tie the rope (fig 6).

Fig 6

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Step 3

Time needed: 5 minutes.

At the other end of the rope, we hang a weight. The length of the rope must be less than the height we bring from the vertex A of the triangle (fig 7).
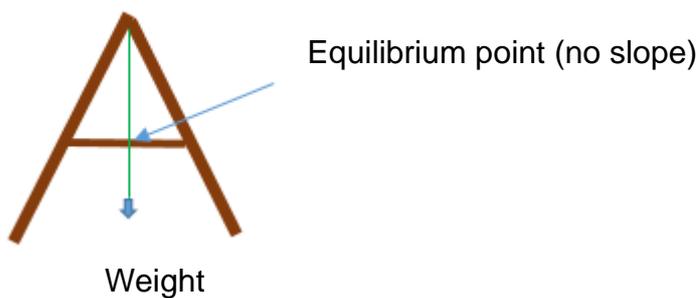
Fig 7

Step 4

Time needed: 10 minutes.

In the middle of the A where the weight forms a right angle with the ground, we put a line. This line is our balance, in the case that we do not have a slope (fig 8).
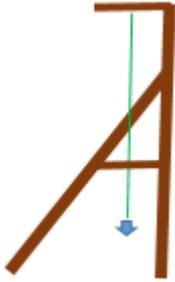
Fig 8

Fig 9

Equilibrium point (no slope)

Weight

As shown in figure 9, when the ground is level (without slope), then the weight is balanced. In any other case it will tilt right or left. Apart from this form, there was also the following tool. Its construction is done with similar steps.

Fig 10

This spirit level was used to build upright buildings without slope (fig 10). Thus, the peoples of antiquity were able to build buildings, temples, pyramids, and castles with great precision.