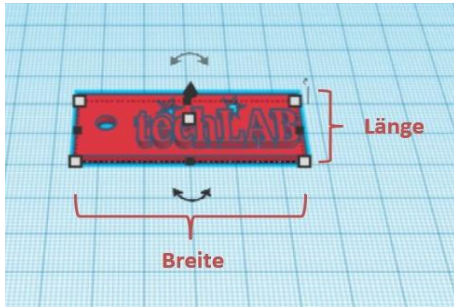


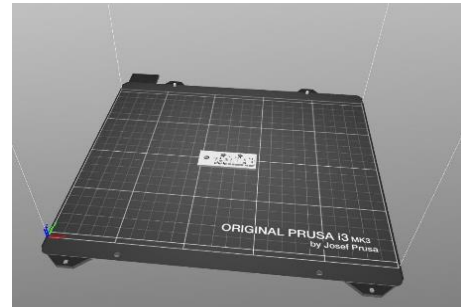
3D-PRINTING YOUR OWN KEY CHAIN

These instructions will guide you on your way to 3D-print your personalised key chain!

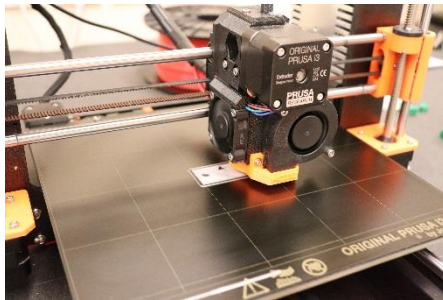
Overview



The first step is to design your 3D-model in the easy to use CAD-program Tinkercad.



The process "slicing" then translates the 3D-model into the language of the 3D-printer, the G-code.


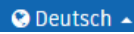



The G-code is sent to the 3D-printer, which creates your object by melting and depositing layers of plastic filament.

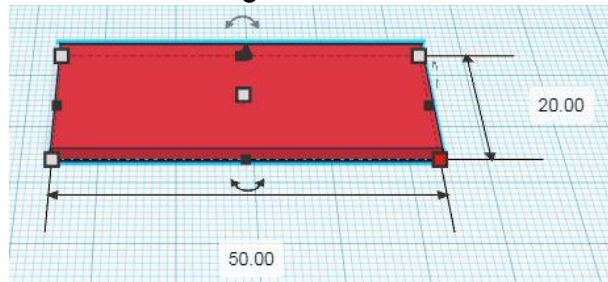



Finally you will hold your first 3D-print in your own hands. The print will be yours to take home!

Let's go!

- 1) Open Tinkercad by clicking on the -icon on the desktop.
- 2) If the website is not in English scroll to the bottom of the page, click on the language next to the small world logo  and **select English**.
- 3) Click on the button "**Create new design**". An empty workspace will be opened. If the button is not there you need to login first. Ask an explainer for help.
- 4) Give your design (and file) a name. Click on the funny random words at the top left corner next to the -logo and type in a memorable name.
- 5) On the right side you will find objects of various shapes. **Select the red "Box"** by clicking once on it.
- 6) Move the Box into the middle of the workspace and drop it there by left-clicking.
- 7) Click on the small white square in the middle of the Box to adapt its height. Change the value of the **height to 2.00 mm**.

- 8) Click on one of the small white squares at the corners of the Box. **Change the width to 50.00 mm and the length to 20.00 mm.**



- 9) A key chain needs a hole! Get a **striped cylinder** and drop it onto the workspace.
- 10) Click on one of the white boxes of the **cylinder** and set **both values to 5.00 mm**.
- 11) Position the cylinder close to the left edge of the box. Moving can be done by using the arrow keys of the keyboard or by mouse.
- 12) It can be useful to change the view of your workspace. At the top left corner of the screen there is a white cube. Click on "TOP" of the cube to change the view to the top view. Pro-Tip: Try holding the right mouse button while moving the mouse.
- 13) Hold down the combination „**Strg + A**“ on the keyboard to select all elements, followed by „**Strg + G**“ to group them. Wait a little and the hole will be cut out!
- 14) Look for the  object on the right side and drag it onto your box.
- 15) To fill in your name click on the textbox that reads "TEXT" on the right side of the screen. It should be next to the striped box. **Replace the "TEXT" with your name.**
- 16) **Change the height of your name to 3 mm** (see Step 9). Because the bottom of the name is flush with the bottom of the box, the name only sticks out 1 mm.
- 17) Adjust the width and the length of your name so that it fits on the red box.

YOU ARE DONE! Ask an explainer for the next steps

- You can also work further on your design! Adding or cutting out shapes, rounding corners, the possibilities are endless! Just keep in mind to keep your design small: an object of doubled size takes 8 times as long to print!
- Any shape can be a hole! Click on the object and then select the striped circle on the right to turn the object into a hole.
- You might want to change the z-position (level) of an object. To achieve this, hold down the "Strg" key and press the up or down arrow on the keyboard. Changing the view to a side view is a good idea to make the z-positioning of objects easier.

