3D PRINTER STATION • PRUSA MK3S

Side 1: at the station • for the volunteer • runs from the SD card, no laptop or Wi-Fi

STEAM Night 2026

PLA filament, 1.75 mm

Hot parts
Nozzle 215°C, bed 60°C. Nobody touches them while it prints or warms up.

Doors cracked open
Open a few inches for airflow (closed doors make PLA clog). Hands out while it moves.

Watch layer 1
Check every new print's first layer goes down and sticks.

A volunteer at the printer at ALL times
Never leave it running alone, even for a minute. Need a break? Stop or finish the print first.

1 Start a print

most of the night

1. Printer off? The **rocker switch** is on the power supply, **back-left**, above the power cord. Push it **back, toward the wall**, and the screen lights up.
2. Put the SD card in the slot by the screen, **pins facing left, inward**.
3. Press the knob, turn to `Print from SD`, and press.
4. Scroll to the `.gcode` file and press the knob.
5. If it asks *"File sliced for a diff printer… Continue?"*, choose `Yes`.
6. **Watch the whole first layer** go down and stick.

2 Take the print off

1. Let it **cool**. A cool sheet lets go easily; a hot one holds on.
2. Lift the steel sheet off the magnetic bed.
3. **Bend the sheet slightly** and the print pops off.
4. Small print stuck? Slide a **rounded** spatula under a corner. Never use a sharp tool.
5. Line the sheet's slots up with the two pins at the back and lay it down flat.

3 End of the night

1. Let the last print finish, or choose `Stop print` from the menu.
2. Take the print off (card 2) and put the sheet back.
3. **Switch the printer off** at the rocker switch (back-left). Don't leave it on overnight.

! When something goes wrong

Filament won't come out, or the end is gummy
Unscrew the feed tube at the top and pull the filament out. Cut the soft end off at an angle so it's **clean and pointy**, then load it again (side 2, card B). A warm, closed enclosure causes this with PLA, so keep the doors cracked open.

The spool runs out mid-print
The printer pauses, unloads the last bit, moves the head aside and asks for a new spool. Load the new spool (side 2, card B), clear the purge with pliers, and carry on.

The first layer isn't sticking
Choose `Stop print`. When the sheet is cool, wipe it with isopropyl alcohol on a paper towel, then start again.

A snap-off piece won't come loose
An adult flexes the small piece gently, without bending the main part.

Anything else
Choose `Stop print` and find a lead.

Families: watch how it works
Nat Geo Kids, "How 3-D Printers Print" (2:30), in its How Things Work videos.

Design your own at home
Tinkercad: free 3D design in the browser. Kids can make a name tag or keychain.

What's happening inside? (read it to the kids)

- The plastic string goes into a nozzle at **215°C** that melts it, like a super-precise hot-glue gun.
- It draws one flat layer **0.2 mm** thin, about two sheets of paper, then moves up and draws the next one on top.
- A toy 2 cm tall is about **100 layers**.

Ask the kids

- What do you think it's making? Watch the shape grow.
- Why does it have to start at the bottom?
- What would you print if you could print anything?

More on side 2: turn over ▶

3D PRINTER STATION • PRUSA MK3S

Side 2: setup and full workflow • for whoever sets up the station

STEAM Night 2026

PLA filament, 1.75 mm

A Take the old filament out

1. Press the knob for the menu. Choose `Unload filament`, then `PLA`. The nozzle heats up.
2. When it's hot it beeps, backs the filament out, and says *"Please pull out filament immediately"*.
3. **Pull straight away**, firmly and steadily, from the top guide hole, before the end cools and sticks.
4. If it won't come out, see "Filament won't come out" on side 1.

B Load a new spool

1. Put the spool on the inside holder so it unwinds from the **top**.
2. **Cut the tip at an angle** so it's clean and pointy.
3. Feed it up through the enclosure hole and into the top guide hole (follow the arrow), then down the clear tube to the extruder.
4. With **autoload** on, the sensor feels the filament and loads it. Otherwise choose `Load filament` › `PLA`, wait for the heat, and push gently until the gears grab it.
5. *"Filament extruding & with correct color?"* Choose `Yes` once it's one clean color, or `No` to purge more.
6. Remove the purge with pliers once it's cool.

C PLA settings and the enclosure

Part	Printer preset	Prusa handbook
Nozzle	**215°C**	215°C
Bed	**60°C**	50 to 60°C

> Prusa warns that PLA in a fully closed, unventilated enclosure is likely to clog (heat creep). On the night: doors cracked open a few inches, with a volunteer at the printer at all times.

D Slice a new model (PrusaSlicer, before the night)

1. Put the printer's SD card in the laptop.
2. Open **PrusaSlicer**. Clear the old model with `Edit` › `Select All` › `Delete`.
3. Go to `File` › `Import` › `Import STL…`.
4. **Check the profiles:** `0.20mm QUALITY`, `Prusament PLA`, `Original Prusa i3 MK3S & MK3S+`.
5. Steep overhangs? Set Supports to **Everywhere** or **Support on build plate only**. Tilting the model about 45° saves support material.
6. Press `Slice now` and check the print time, then `Export G-code` to the SD card.
7. **Eject the card safely** before you pull it out.

> For the demo, pick short prints (under about 30 minutes) so kids see something finish.

Prusa: clogs and heat creep
Why PLA jams in a warm enclosure, and how to prevent it.

Prusa: removing stuck filament
The official steps when unload doesn't work. Adults only: the nozzle runs very hot.

Steps checked 11/03 against Prusa's MK3S handbook and help.prusa3d.com, plus a hands-on test session on 11/02.