

There are several kinds of 3D printing technology. Throughout this book we will focus on the most common type, found in all MakerBot® 3D Printers. Let's dive in and learn the basics.

## TERMINOLOGY

**FDM®:** Fused Deposition Modeling, the 3D printing technology used by MakerBot

**Slicing:** Turning a 3D model into 2D layers used for 3D printing

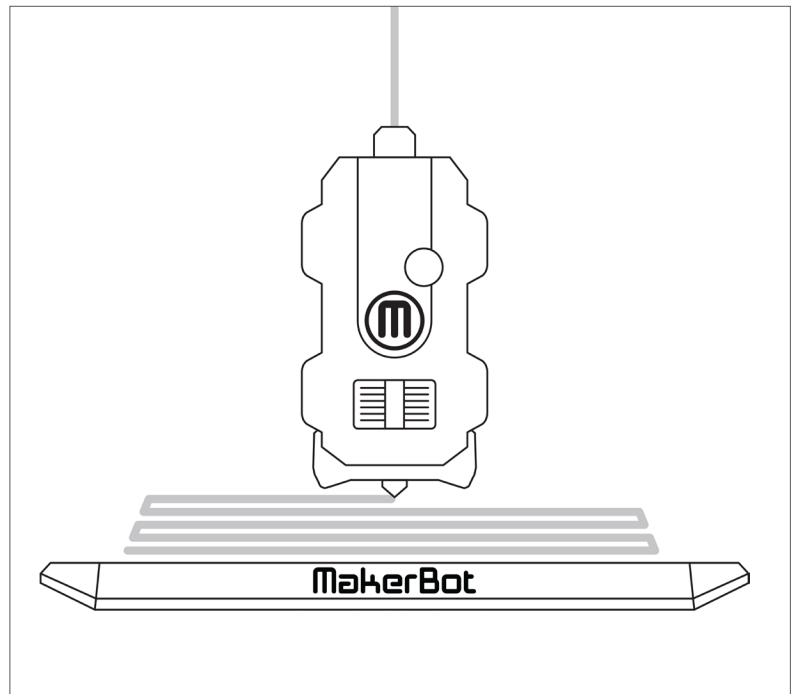
**Filament:** Material used to build 3D printed parts

**Extruder:** The “hot glue gun” of your 3D printer; it uses filament to draw out the layers of 3D printed parts

**Build Plate:** Surface on which 3D prints are built

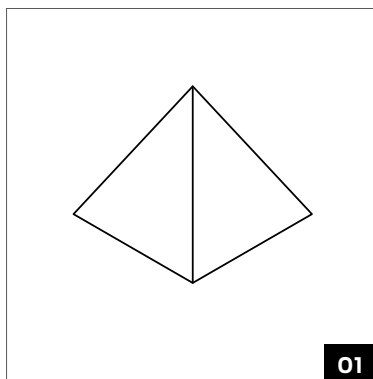
**Gantry:** Moves the carriage in the x-axis and y-axis

**Carriage:** Carries the extruder



## HOW DOES IT WORK?

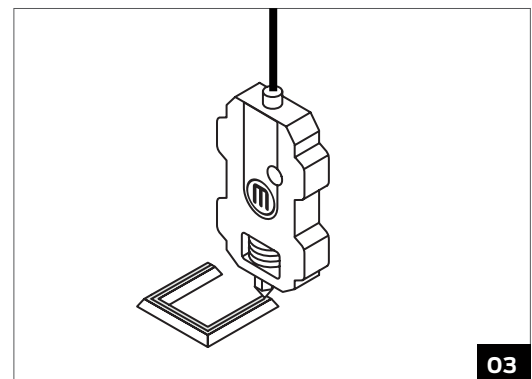
There are several types of 3D printing technology in use today. The additive manufacturing technology that MakerBot 3D Printers use is called Fused Deposition Modeling, or FDM for short.



**01:** FDM printing starts with a digital 3D model, most often generated from a 3D modeling program.



**02:** The 3D model is sliced into 2D layers using a slicing software and then sent to the printer.



**03:** On the printer, filament is fed into an extruder that draws out each slice, layer by layer, onto the build plate. Over time, these 2D layers stack on top of each other to build a 3D print.

## HOW TO USE A 3D PRINTER

These are the 3 basic steps to print on a MakerBot 3D printer.



**1: Design.** In order to 3D print, you must start with a 3D file. Here are a few ways to get one:

- › **Design** a model to print in a 3D design software or computer-aided design (CAD) program.
- › **Scan** an existing physical object with a 3D scanner.
- › **Find** a model online from websites like [thingiverse.com](https://www.thingiverse.com) or [grabcad.com](https://www.grabcad.com)



**2: Slice.** Before printing a model, prepare the file in MakerBot® Print™. Follow these steps:

- › **Edit** the print settings.
- › **Decide** if you want to print more than one part.
- › **Slice** the model to prepare for printing, which translates the model(s) into a language the 3D printer can understand.



**3: Print.** Send your sliced file to your MakerBot 3D printer for printing. The print time will depend on many factors, including:

- › Your print settings
- › The size and complexity of the model