Two Colour 3D Printing

In order to print an object with two colours, two seperate files must be created. These separate objects should be designed and exported in such a way that they will merge together in Cura, our slicing software.

This can be a bit of a difficult concept to wrap your head around the first time. In Cura, an imported .STL file is seen as a single object, even if there are "separate parts." This object can be only one colour, the colour of the chosen filament. The Ultimaker 3+ has dual extrusion (print heads), which means we can designate which extruder the individual objects are printed with. If the parts can be merged together, the merged object prints with two colours.


In this example, we are printing a 6-sided die that has a different colour for the symbols on the faces. You can find this Symbol Die object on Thingiverse if you wish to see, and download, the .STL files.

This object was created in TinkerCAD. The cube object was created, then the symbols and text objects placed within.
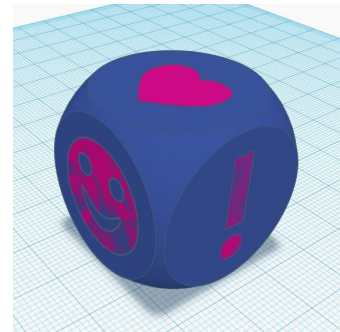
The symbols were then turned holes, so that would create a cutout version of the cube. This entire object was exported as a .STL, forming the cube (or negative) portion of the die.
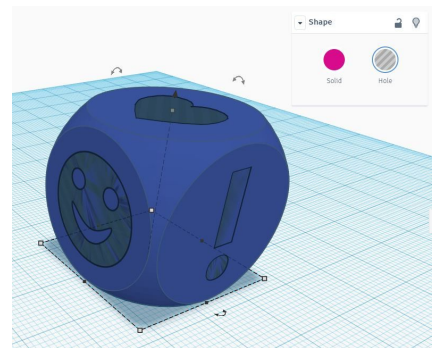

By hiding, or removing, the cube. We can now see the symbols on their own. They are made solid again, grouped, and exported as a separate object to form the symbol (or positive) portion of the die.
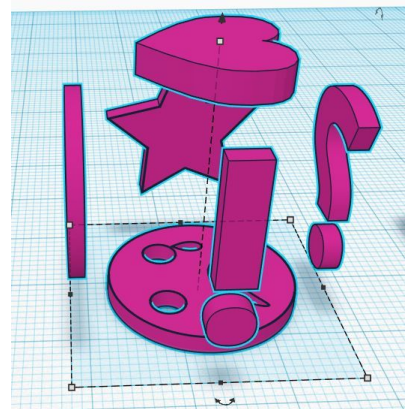
You have to separate the different coloured parts and save them as separate .stl files for us to print them in different colours.

In Cura, we import these two object files. The objects are selected individually. The cube portion is selected for Extruder 1, which will use the blue filament. The symbols are designated for Extruder 2, which will use magenta filament.
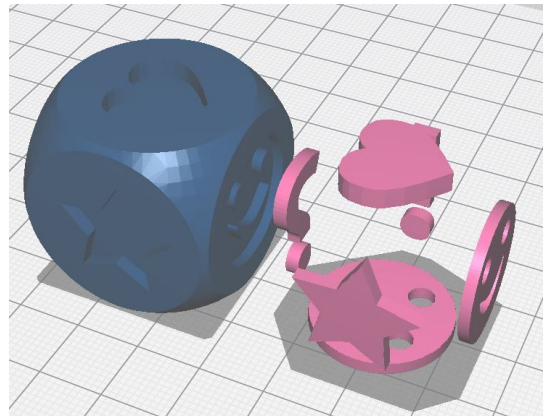
Finally, the two objects are merged. As they have been designed to fit together, Cura is able to logically merge them into the final object we want to print.

Without the proper design, Cura cannot figure out what parts should fit together, and the merging will produce unanticipated results.

At this time, this is the only way to create an object with two colours. In Cura, there is no way to designate what areas of a single object should be printed with each extruder.
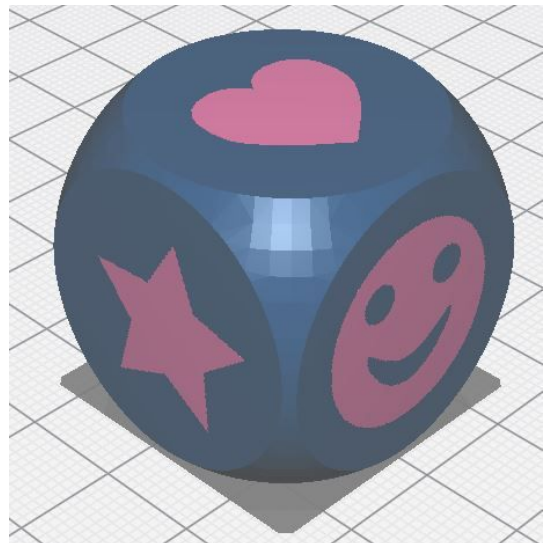
Separating parts of an existing object for two-colour printing
Many found objects will contain all parts as one file. In order for these pieces to be printed in two colours, it will be necessary to separate them and export them as two files.

In this example, this gear keychain was downloaded as one file. You can use TinkerCAD to separate the pieces. After importing the object, we start by placing a hole box over top of the gears, then exporting all. Next a new box is created over the mount, then exported again. This creates two files, one with the mount, and one with the gears.
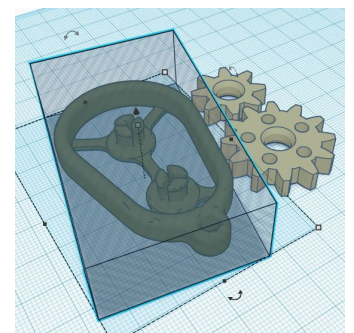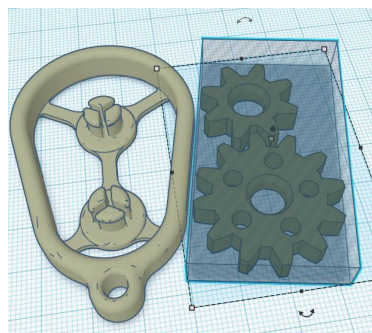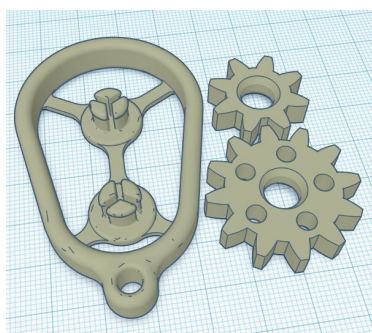
In Cura, we can bring in the objects separately, and use different colours of filament to print the objects.