



Project code:
2019-1-EL01-KA201-062914

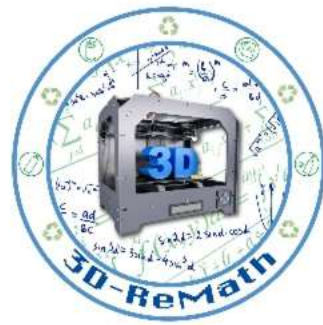
Erasmus+ Call: 2019 - KA2 -



3D printing technology aims students understanding maths and recycling procedure

*Curricula 3: Open Source S/W for Digital Files
"Adjusting 3D printing settings"*

Output 3 (O3) - 3D Printing and Maths



Overview (1/2)

In this lesson we learn how to better understand the relation between the 3D model and the printing process. We go through the basic settings provided by the software, like quality settings, temperature settings and previews.

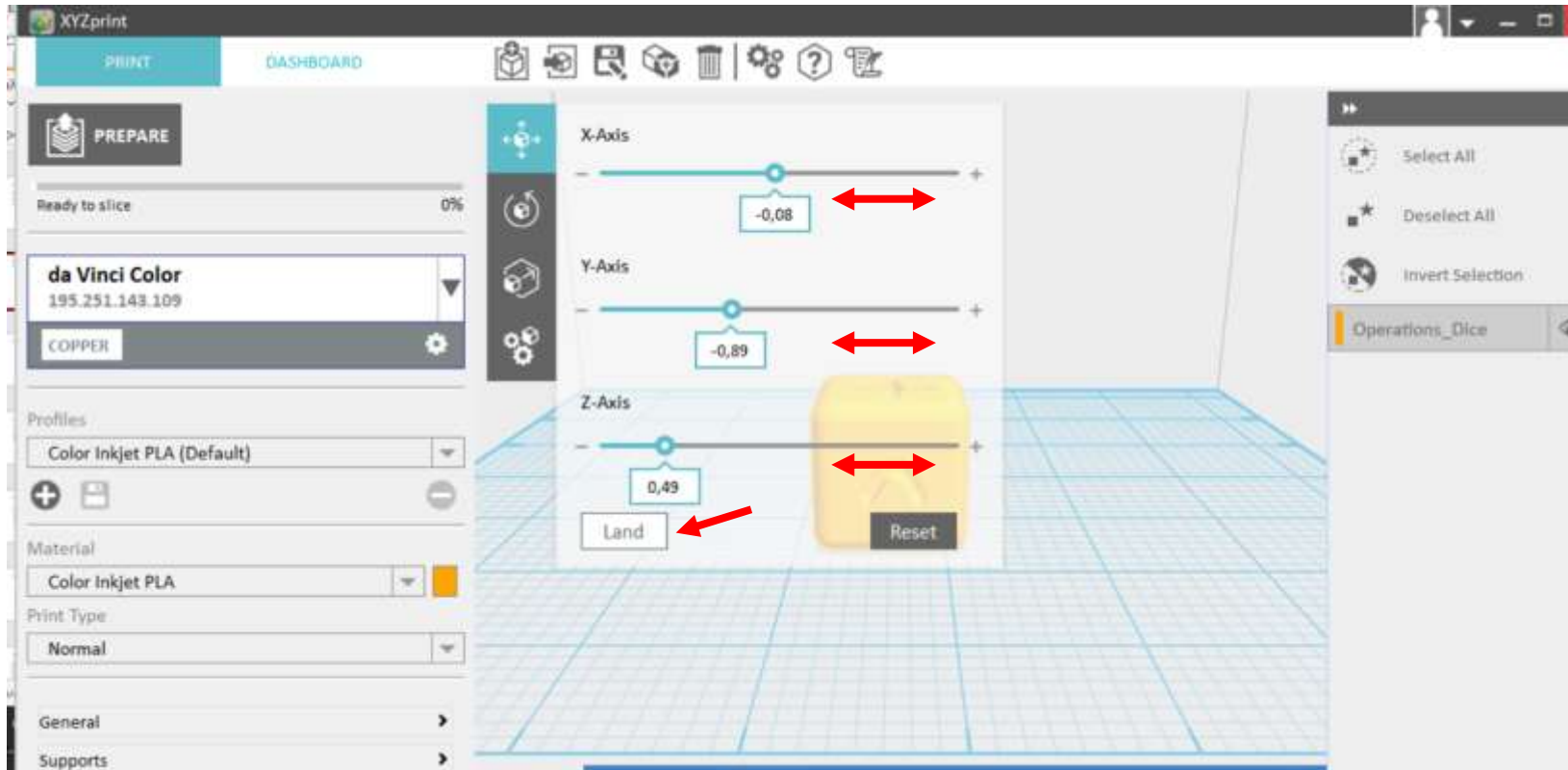
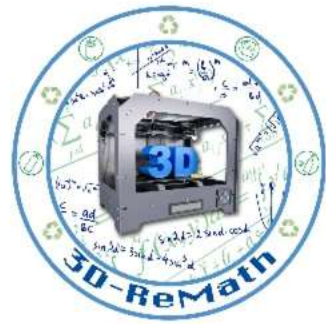


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Adjusting 3D printing settings (1/3) – Place



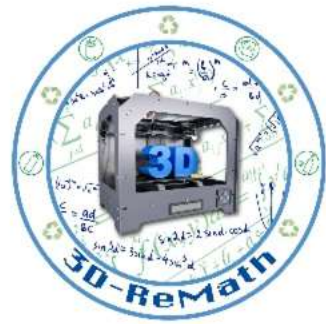
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Adjusting 3D printing settings (2/3) – Rotate



A screenshot of the XYZprint software interface. The window title is 'XYZprint'. At the top, there are tabs for 'PRINT' and 'DASHBOARD'. Below the tabs is a toolbar with icons for file operations and settings. On the left side, there is a 'PREPARE' section with a progress bar at 0%, a printer model 'da Vinci Color' with IP '195.251.143.109', and a material 'COPPER'. Below that are 'Profiles' (Color Inkjet PLA (Default)), 'Material' (Color Inkjet PLA), and 'Print Type' (Normal). On the right side, there is a 'Operations_Dice' panel with buttons for 'Select All', 'Deselect All', and 'Invert Selection'. The main 3D workspace shows a yellow dice model on a blue grid. A settings panel is overlaid on the workspace, showing rotation sliders for X-Axis (0), Y-Axis (0), and Z-Axis (41). A red double-headed arrow is positioned above the Z-Axis slider. Below the sliders are checkboxes for 'Auto Rotate Model' (unchecked), 'Material saving' (checked), and 'High quality' (checked). A 'Reset' button is at the bottom of the settings panel.



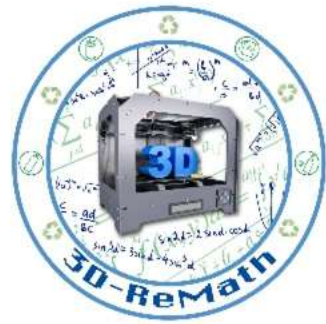
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Adjusting 3D printing settings (3/3) – Scale



The screenshot shows the XYZprint software interface. On the left, there are settings for material (Color Inkjet PLA) and print type (Normal). The central 3D view shows a yellow dice with a hole. A settings panel is overlaid on the 3D view, showing axis scaling: X-Axis (2,83), Y-Axis (2,83), and Z-Axis (2,17). A red double-headed arrow is positioned over the Z-Axis slider. Below the sliders, there are options for 'Fit' and 'Scale' (checked), and unit conversion buttons for mm to inch and inch to mm. A 'Reset' button is also present. On the right, a toolbar includes 'Select All', 'Deselect All', and 'Invert Selection' options.



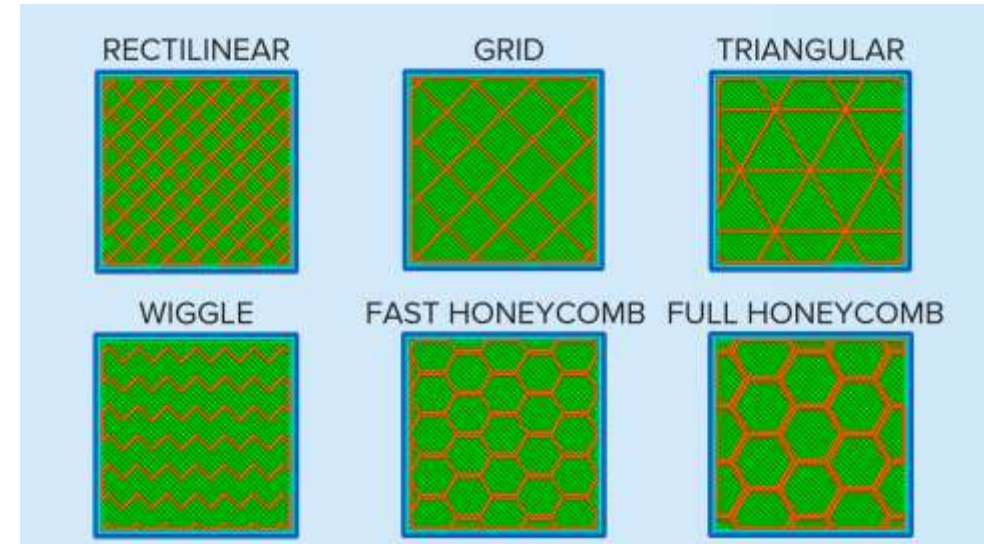
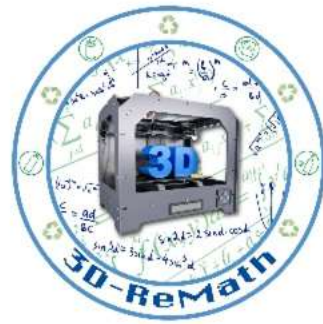
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Infill (1/3)

- In contrast to most other manufacturing techniques, 3D printing allows one to carefully control two mutually-exclusive yet exhaustive aspects of a part: exterior walls (or perimeters) and infill. The walls, however thick, form the outermost regions of the part, while the infill is whatever exists within them.

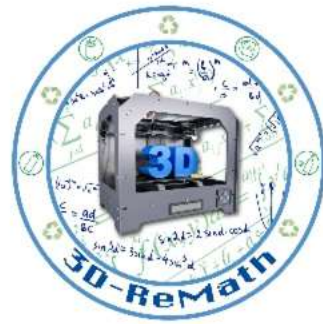


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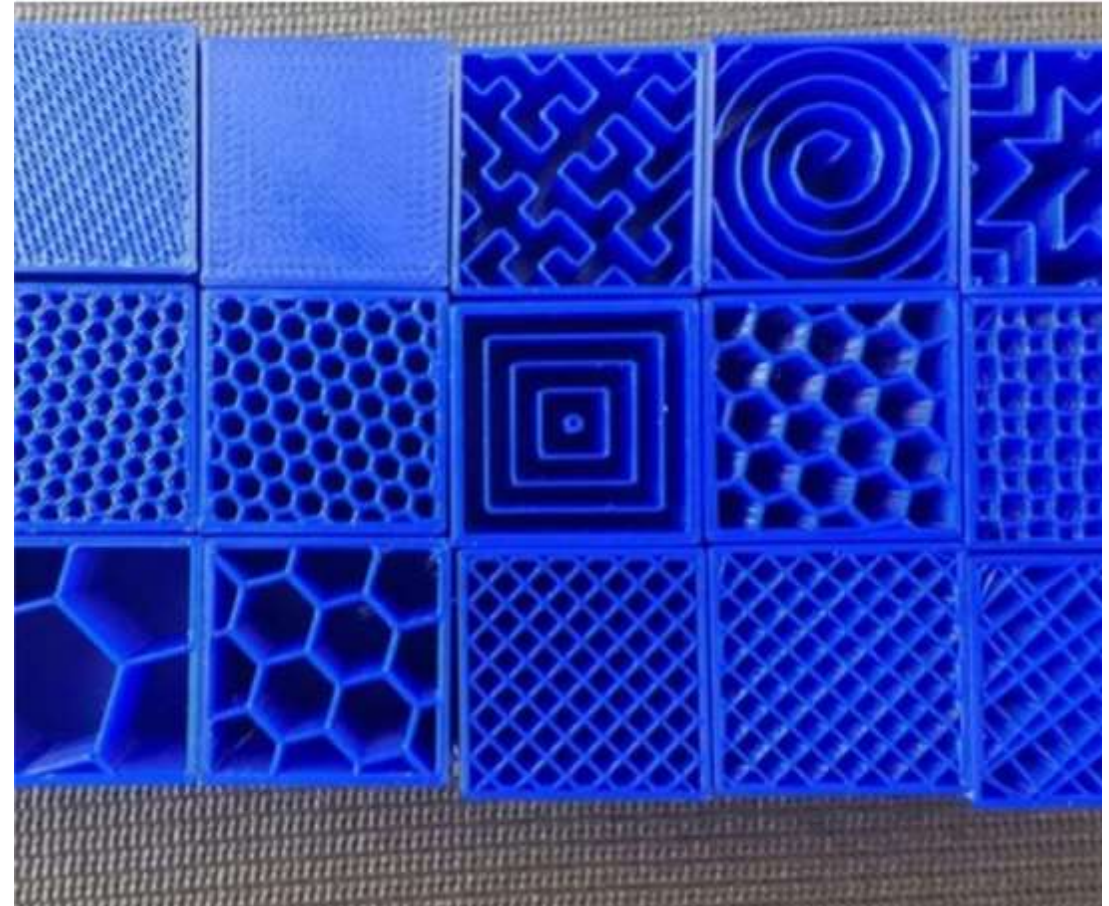
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Infill (2/3)



- Though one does have some amount of control over the walls, the infill is much more dynamic and plays a huge role in a part's strength, weight, structure, buoyancy, and more.



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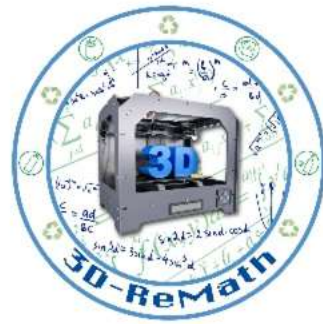
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Infill (3/3)



XYZprint

General

Infill Density: Low (10%)

Infill Type: Rectilinear

Shells: Normal

Layer Height: 0.2 mm

First Layer Height: 0.30 mm

Print Speed: Standard

Temperature: 0 °C

Retract Length: 6.00 mm

Retract Speed: 30 mm/s

Detail Threshold: 0.040 mm

Select All

Deselect All

Invert Selection

Operations_Dice



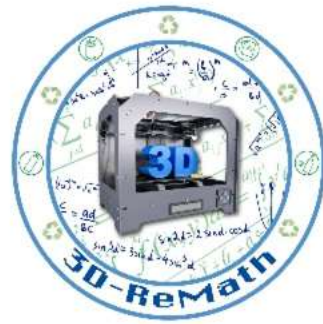
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Support (1/2)

To combat problems, slicer software adds all sorts of 3D printed supports alongside your model. And once the whole thing is printed, those supports can be removed.

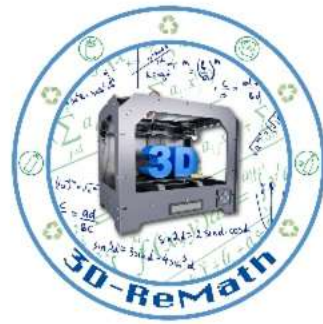


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Support (2/2)



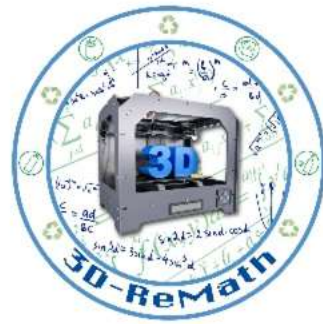
A screenshot of the XYZprint software interface. The window title is 'XYZprint'. On the left, there is a 'Supports' settings panel. A red arrow points to the 'Enable Supports' toggle switch, which is currently turned on. Below it are settings for 'Support Type' (set to 'Rectilinear'), 'Density of Supports' (set to 'Low'), 'Overhang threshold' (set to '45'), 'Supports Gap' (set to '1' layers), 'Extend Supports' (set to '0' mm), 'Enable Raft' (turned off), 'Raft Type' (set to 'Rectilinear'), 'Raft Gap' (set to '0.35' mm), 'Enable Brim' (turned off), and 'Brim Width' (set to '10'). The main 3D view shows a yellow dice with holes on its faces, positioned on a blue grid. On the right side, there is a 'Operations' panel with buttons for 'Select All', 'Deselect All', and 'Invert Selection'. Below these buttons, the current operation is identified as 'Operations_Dice'.



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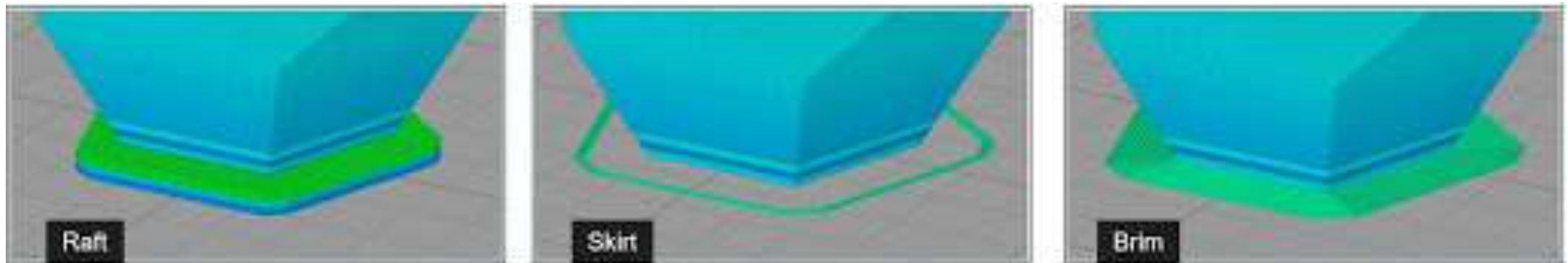
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Bed adhesion (1/2)

Bed adhesion is the ability of 3D printed plastic to “stick” to the build plate while printing. When 3D prints do not stick to the build plate, you can get curled, shifted, and disastrous results. Makers use varying types of 3D printing surfaces to get objects to stick to the plate while printing.

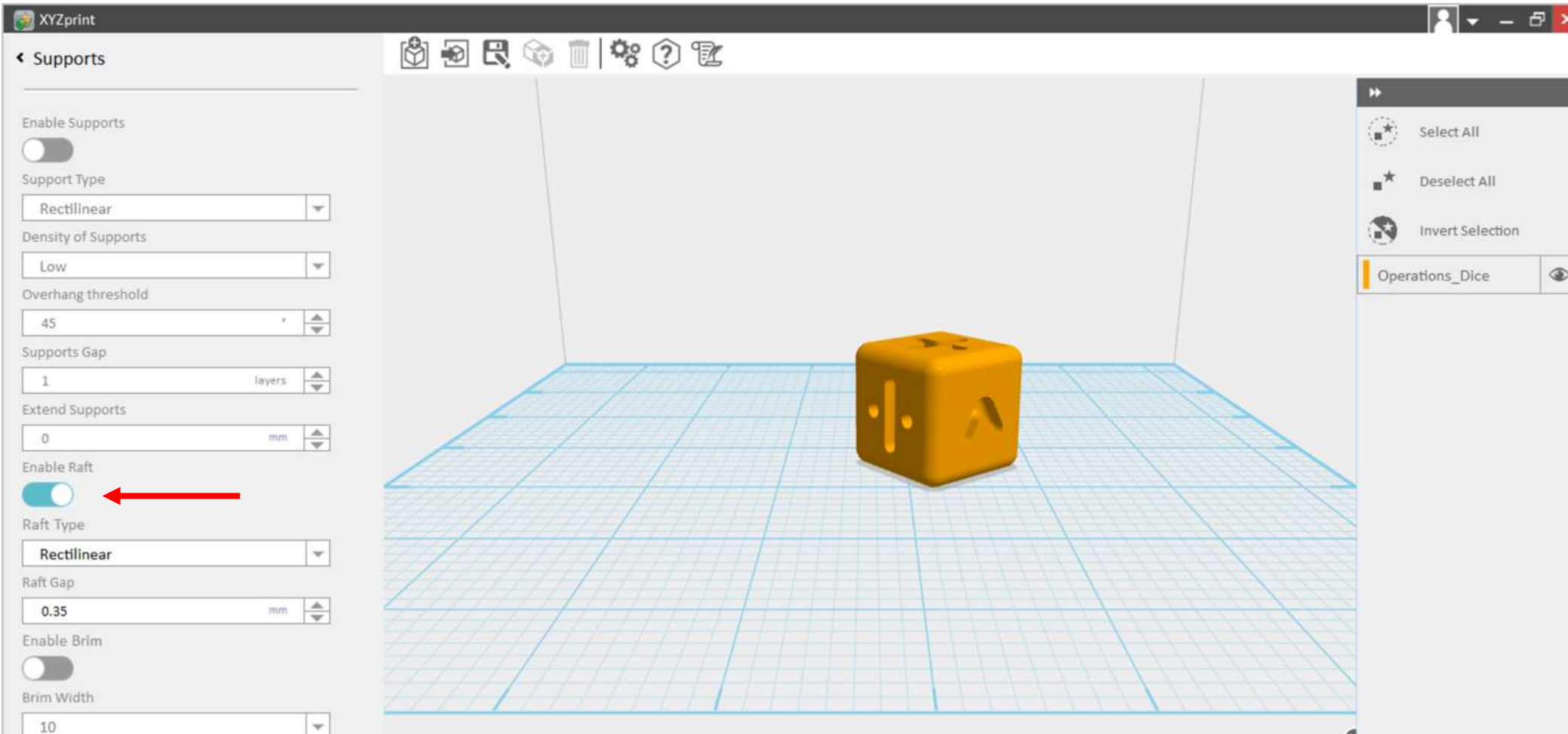
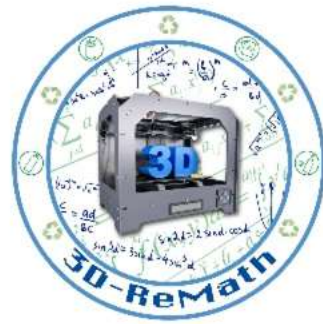


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Bed adhesion (2/2)



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Thank you!!

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