Gladstone Regional Library MakerTime

What is a MakerSpace?
A MakerSpace is a collaborative workspace used for making, learning, exploring and sharing ideas that uses high-tech (e.g. 3D Printing) to no-tech tools (e.g. Knitting).

What is MakerTime?
MakerTime sessions are creative sessions aimed at teaching or providing a chance to practice new arts, crafts, science and technology.

Some MakerTime sessions previously run include:
- Quilling
- Jam making
- Galaxy Pendants
- Spool Knitting
- Squishy Circuits
- Sewing
- Embroidery
- Paper Pot creation
- Papercraft
- Robotics
- Macramé and
- 3D Printed Christmas Decorations

Information Handouts:
This range of information handouts have been created as a beginner's guide to a variety of self-paced activities. There are a large variety of resources readily available both in library and online for guidance and ideas.

Further Reading and References

The following resources contain more information about the topic:

1. Jha, S., 2019. *Autodesk Tinkercad exercises*. CADIN360.
2. Rock, S., 2019. *3D printing for beginners : 3D printer manual for exploring, maintaining and troubleshooting your 3D printer*. 2nd ed. U.S.A.
3. 2022. [online] Available at: <https://all3dp.com/2/d-ampersand-d-miniatures-3d-print-files-dnd-3d-models/> [Accessed 6 June 2022].
4. Instructables.com. 2022. [online] Available at: <https://www.instructables.com/3D-Printing-Basics/> [Accessed 6 June 2022].
5. Sequeira, E., 2020. *3D printing and maker lab for kids*. Beverly: Quarry Books.

Boyne Island Library hosts a dedicated MakerSpace however MakerTime sessions are available at all branches region wide including:

- Agnes Water Library
- Boyne Island Library
- Calliope Library
- Gladstone City Library
- Miriam Vale Library
- Mount Larcom Library

For more information visit:
www.gladstonelibraries.qld.gov.au

Gladstone Regional Libraries
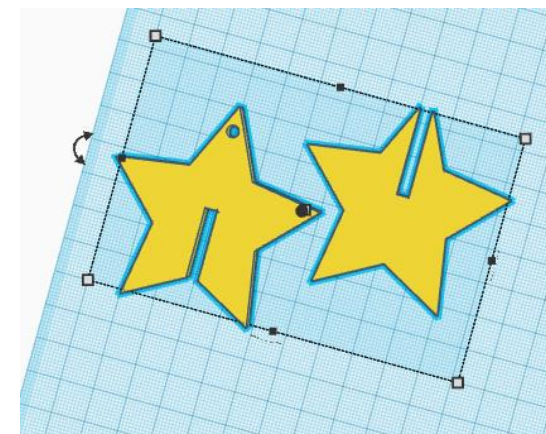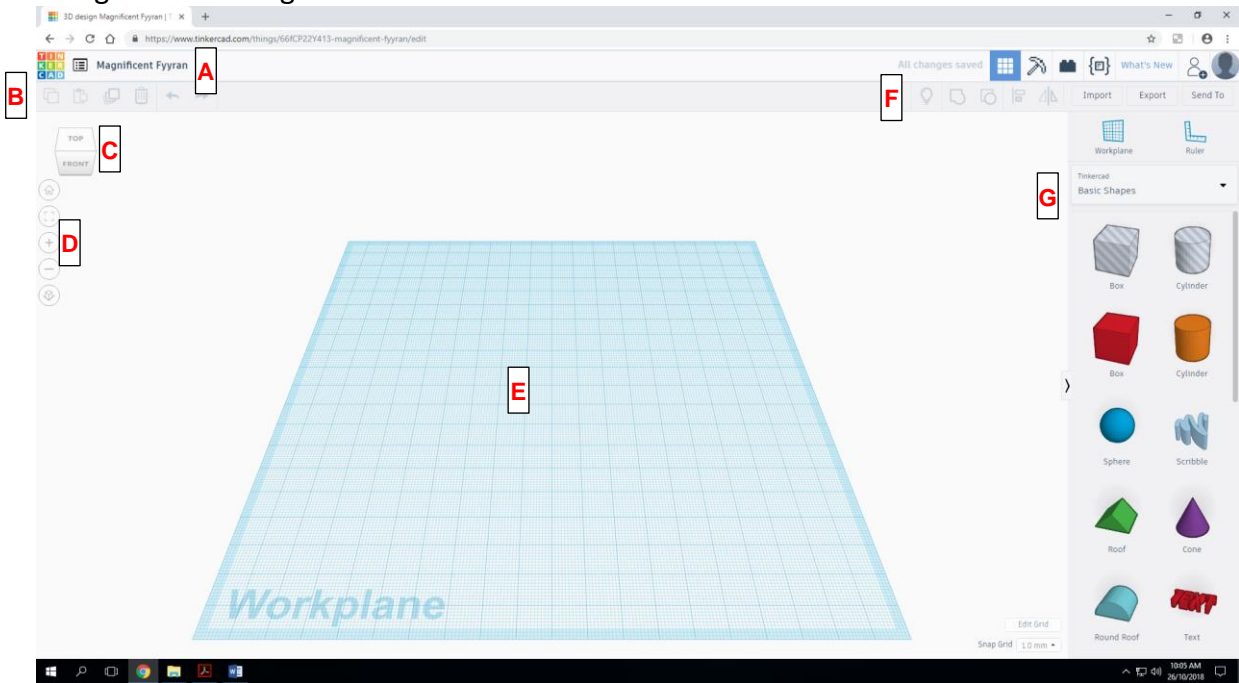
MakerSpace DIY Collection

Basic 3D Design

Image: Christmas Tree Ornament
Source: Jamie Treble

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Creating Tree Ornament

Created using the free design online software TinkerCad.

A File/project name   **B** Copy/Paste/Duplicate/Delete/Undo/Redo   **C** Workplane view
D Home view/Fit all in view/Zoom in/Zoom out/Orthographic View   **E** Workplane/Building platform
F Show all/Group/Ungroup/Align/Flip/Import/Export/Send To   **G** Premade shapes

1. On blank page scroll down the "Basic Shapes" on the Right and click on star shape
2. Move to building platform (the grid) and Left click to drop the shape
3. Click on shape to show the "edit points" then click on white corner point to show both X and Y axis dimensions
4. Change size to 60 (60mm) for both X and Y axis dimensions
5. Rotate the workplane view to "Front" view and change the Z axis dimension for the shape to 4 (4mm). The "Z" edit point will be in the middle of shape.
6. Duplicate shape by pressing "Ctrl + D" or the duplication button
7. Click and drag the two shapes so they are close together (and preferably start on the same line of the workplane grid)
8. Go back to "basic shapes" list and select the stripy "Box" (the grey stripes mean it's a hole/void)
9. Add hole box to building platform and change X axis dimension to 4mm and Y axis dimension to 30mm (so it reaches halfway through the shape)
10. Duplicate the hole/void shape
11. Go back to "basic shapes" list and select the stripy "Cylinder" (the grey stripes mean it's a hole/void)
12. Add hole cylinder to building platform and change X axis dimension to 4mm and Y axis dimension to 4mm (this is the hole to hang the ornament by)
13. Select the rectangle hole and drag it to the bottom point on one shape and the top 'V' of the other, ensuring the hole reaches no further that the middle of the star.
14. Select the cylinder hole and drag it to the point opposite to the 'V' rectangle hole.
15. Click the "Group" to finish/flatten the shape
16. Click "Export" and export the entire image in *.STL format ready to be printed