



Introduction to 3D Modeling Using Tinkercad.com

Brian Zelig

Emerging Technologies Librarian

bzelip@hshsl.umaryland.edu

Workplane

Edit Grid

Snap Grid 1.0 mm



Workplane



Ruler

Tinkercad
Basic Shapes



Box



Cylinder



Box



Cylinder



Pyramid



Roof



Round Roof



Text



In this workshop we will...

- Browse existing 3D models online
- Create a 3D model using [Tinkercad.com](https://tinkercad.com)

Websites that provide 3D models in the .STL file format:

- [NIH 3D Print Exchange](#)
- [Thingiverse](#)
- [Instructables](#)
- [3D Warehouse](#)
- [GrabCAD](#)
- [Ponoko](#)
- [Nervous System](#)
- [Yeggi](#)

Now let's build our own 3D model!



A digital caliper is a tool used to measure physical objects.

Go to [Tinkercad.com](https://tinkercad.com)

Tinkercad is a free, online 3D design app

1. Go to tinkercad.com
2. Sign up for a free account

Tinkercad Basics – Mouse Control

- **Left button:** selects tools and a single object on the grid by clicking; selects multiple objects on the grid by clicking and dragging a rectangle around the objects you wish to select.
- **Center wheel hold:** pans around objects by holding the mouse wheel and dragging the mouse side to side.
- **Center wheel spin:** zooms the workspace view in and out.
- **Right button:** orbits around in space by holding the button and dragging.

Tinkercad Basics – Keyboard

Moving object(s)

↑ / → / ← / ↓ **Move** object(s) along X/Y

ctrl + ↑ / ↓ **Move** object(s) along Z

Shift + ↑ / → / ← / ↓ **×10 Nudge** along X/Y

ctrl + Shift + ↑ / ↓ **×10 Nudge** along Z

Keyboard + mouse shortcuts (press and hold kbd btn, then move mouse)

Alt + left mouse button **Duplicate** object(s)

Shift + left mouse button **Select** multiple object(s)

Shift + hold while rotating **45° rotation**

Alt + hold *side handle* **Scale (1D)**

Alt + hold *corner handle* **Scale (2D)**

Shift + hold *corner handle* **Scale (3D)**

Shift + Alt + hold *corner handle* **Scale (3D)**

Shift + Alt + hold *top handle* **Scale (3D)**

Shift + right mouse button **Pan view**

General shortcuts

ctrl + C **Copy** object(s)

ctrl + V **Paste** object(s)

ctrl + Z **Undo** action(s)

ctrl + Shift + Z **Re-do** action(s)

ctrl + G **Group** object(s)

ctrl + shift + G **Un-group** object(s)

ctrl + D **Duplicate** in-place

ctrl + L **Lock** object(s)

ctrl + A **Select** all object(s)

Del **Delete** object(s)

W **Workplane** toggle

R **Ruler** toggle

F **Fit view** to selected object(s)

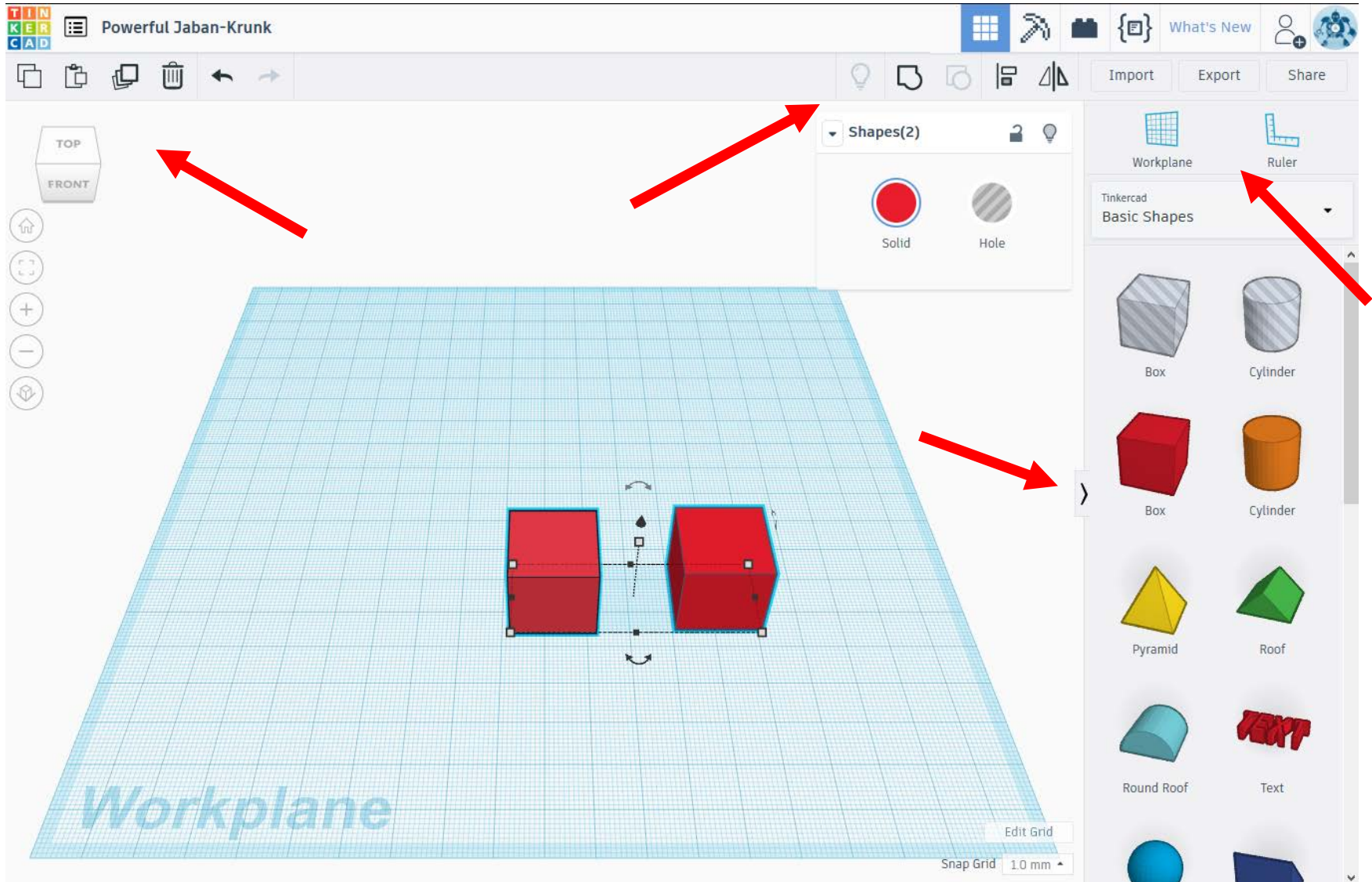
D **Drops** object(s) to work plane

Legend

ctrl = Cmd / Alt = Option

via <https://www.tinkercad.com/learn/>

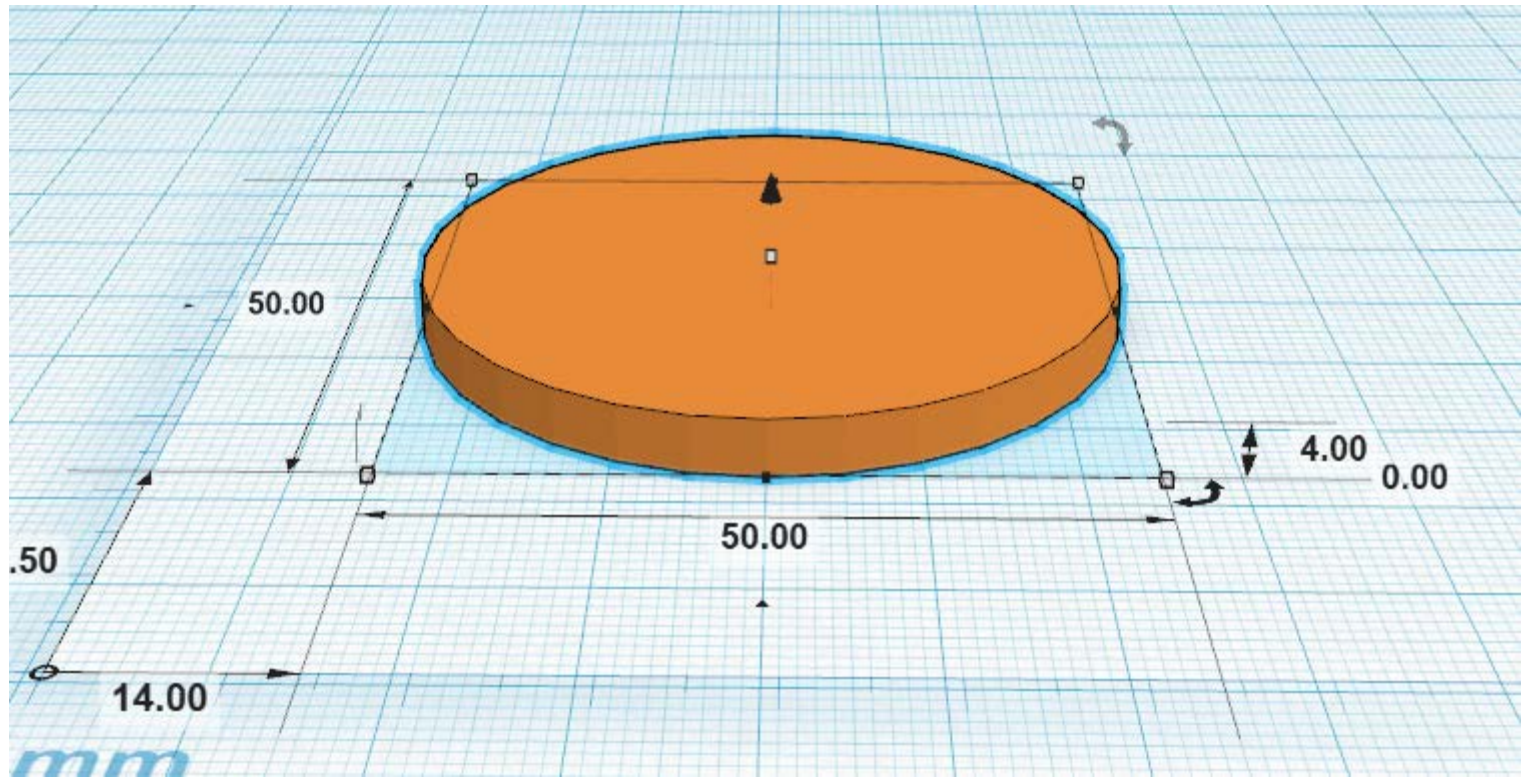
Tinkercad Basics – Tools



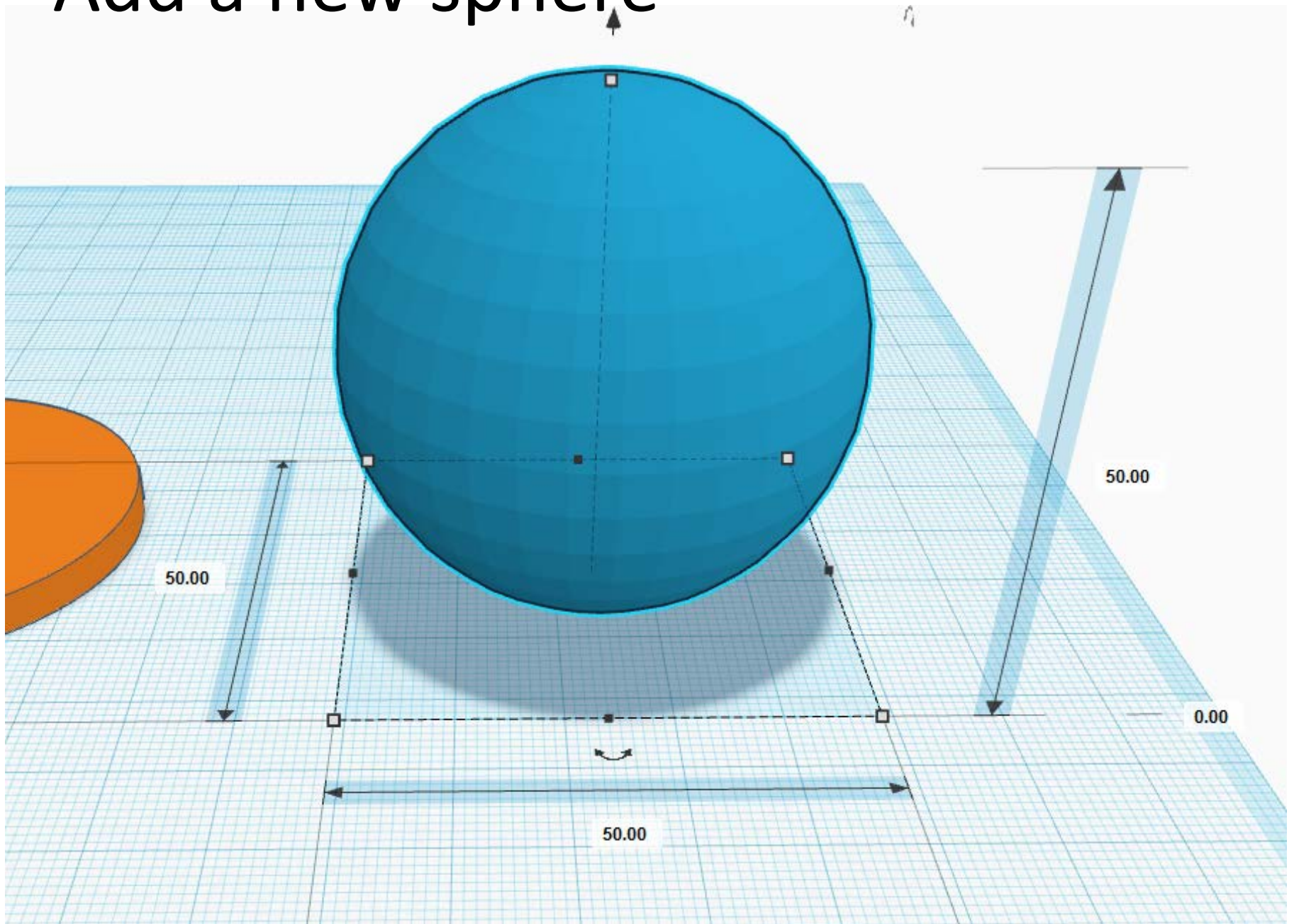
About the Following Slides

Each of the following slides show the end result of the instructions contained on that slide.

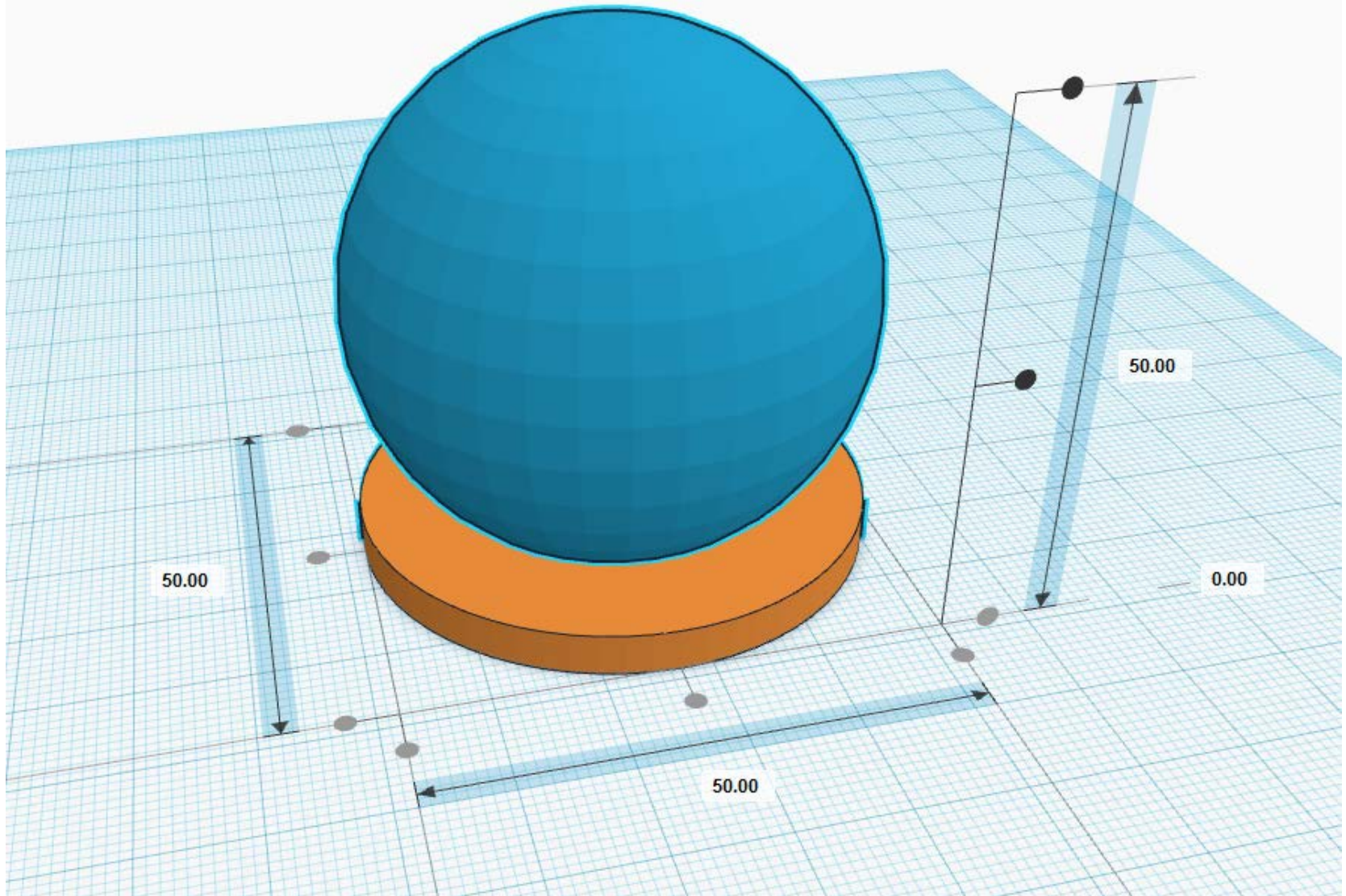
Start with a new cylinder



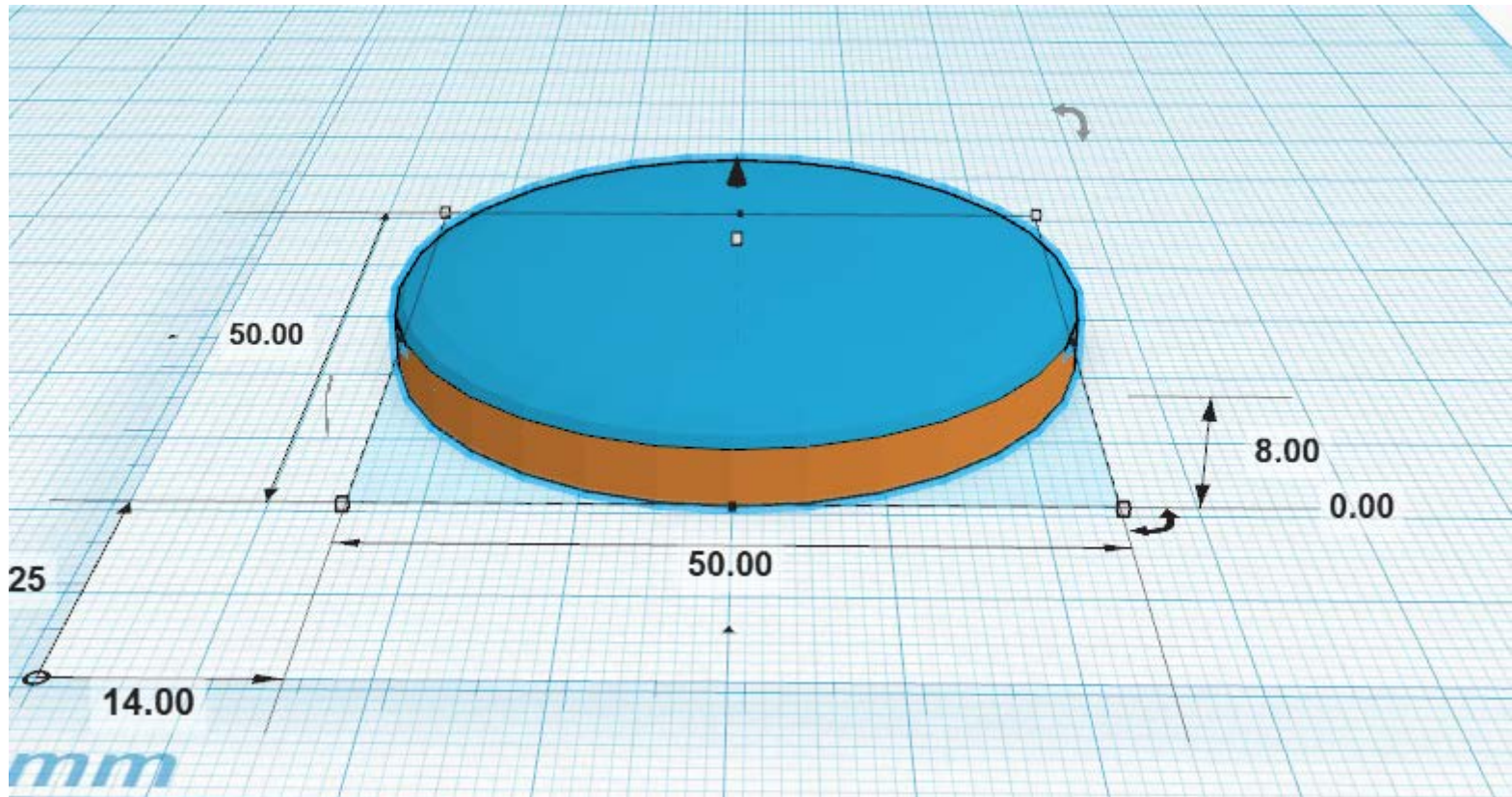
Add a new sphere



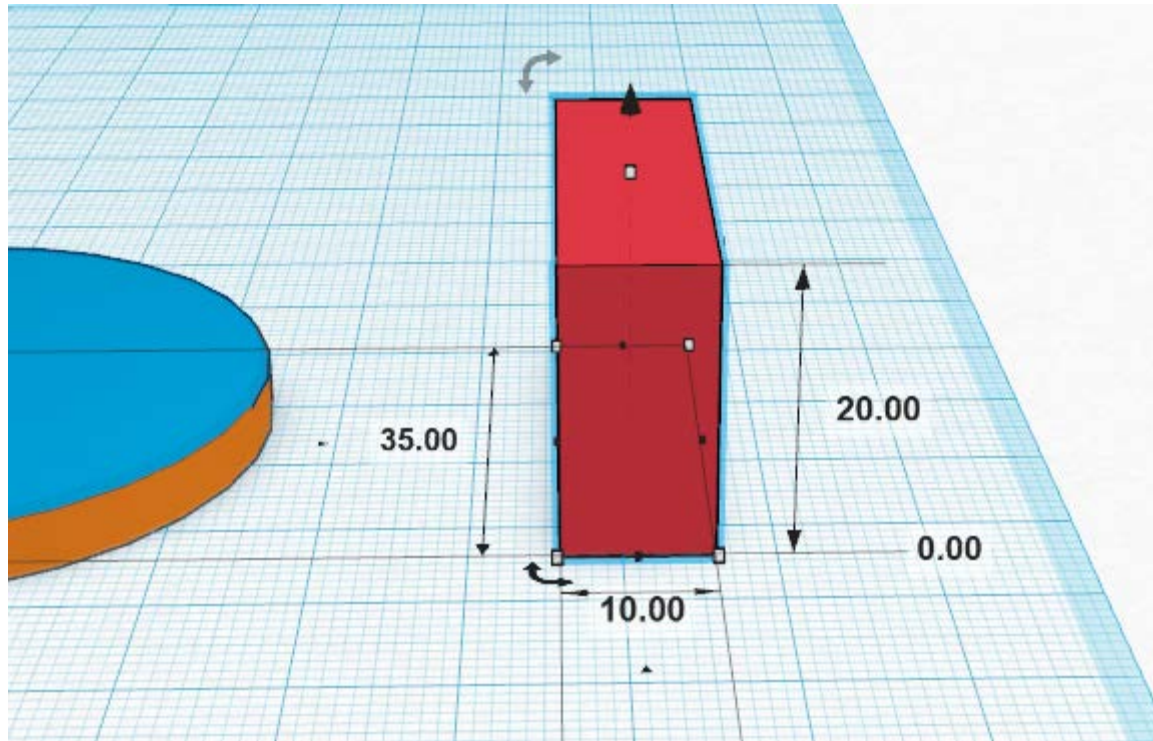
1. Select both objects
2. Center-align objects via X and Y axes



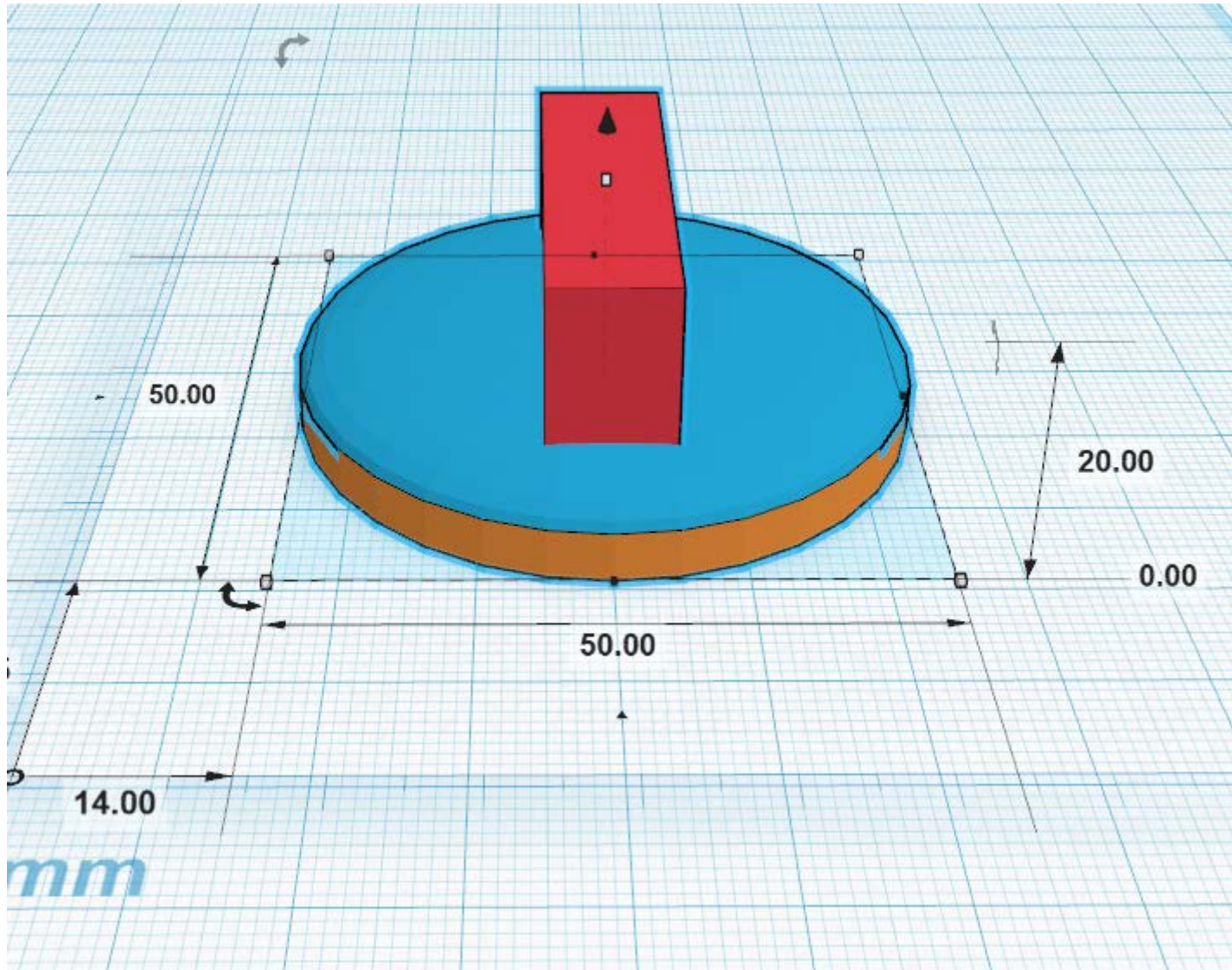
1. Adjust sphere height
2. Select both objects
3. Group both objects



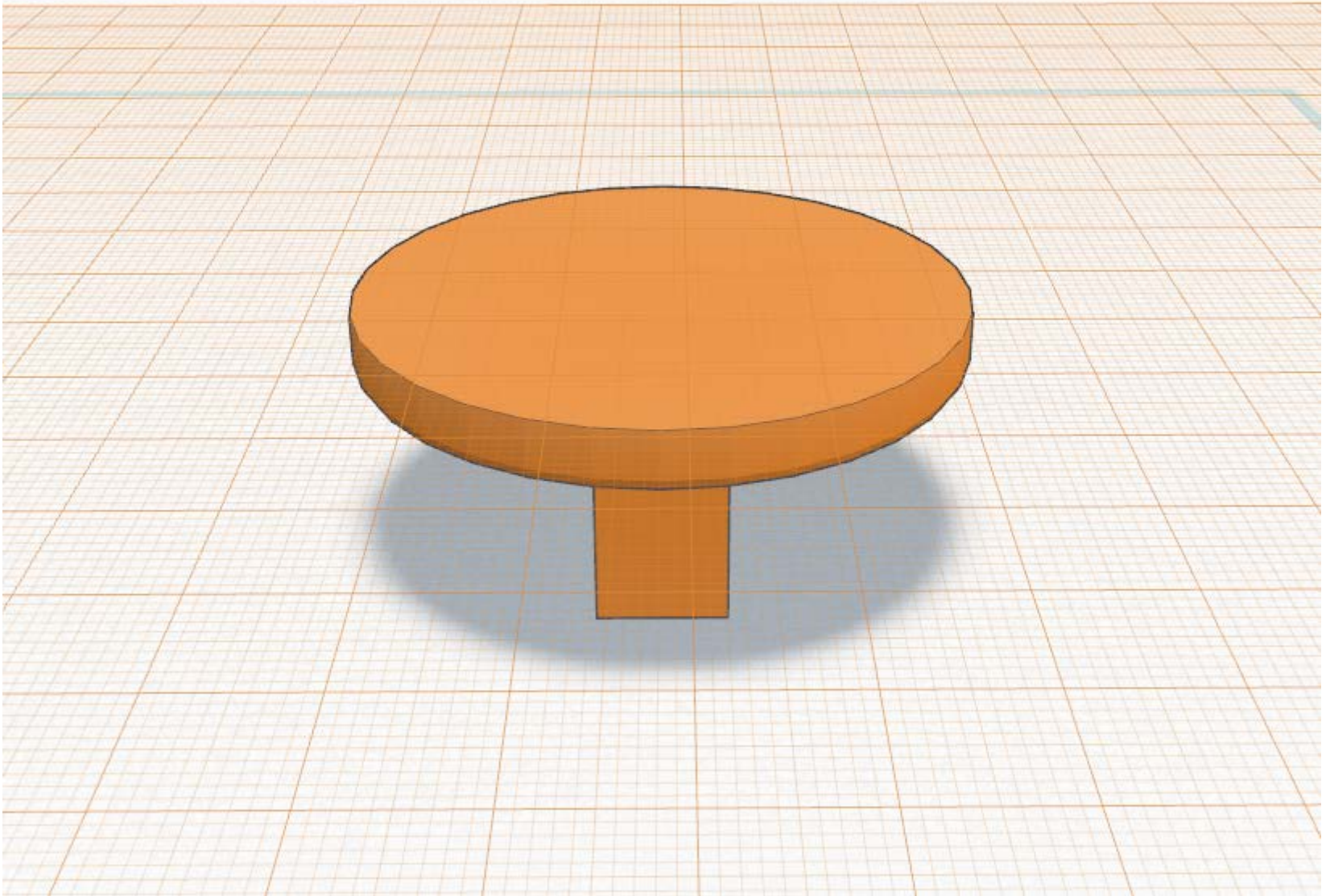
Add a new box



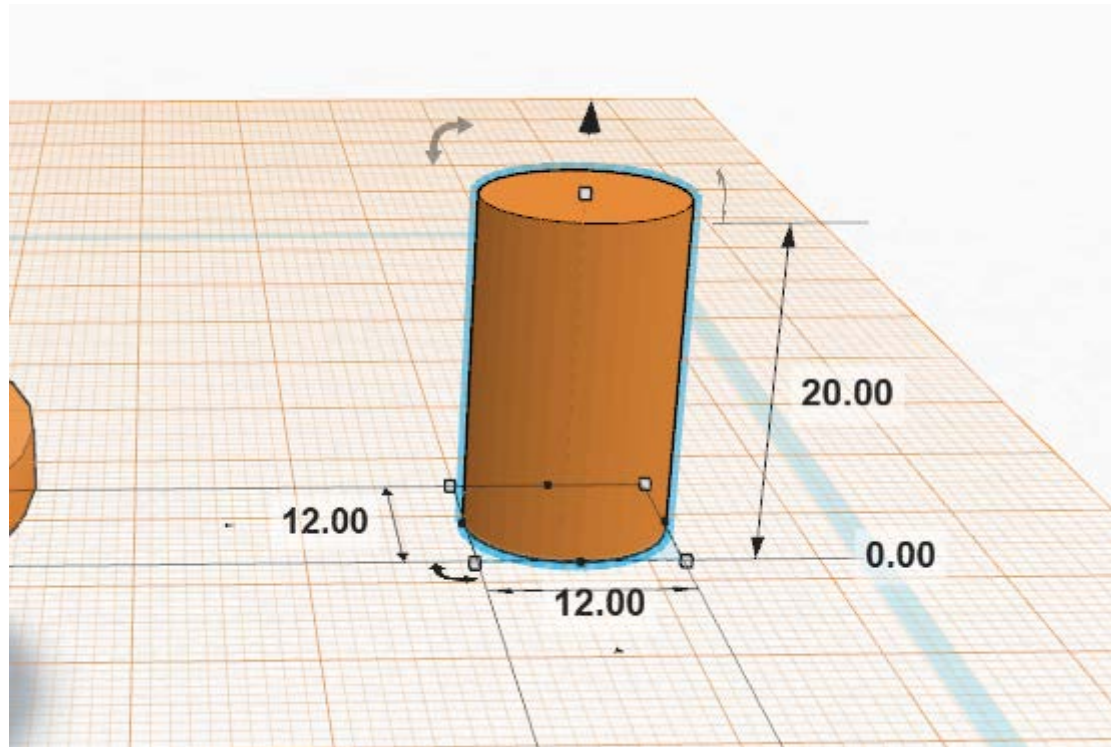
Align box to base



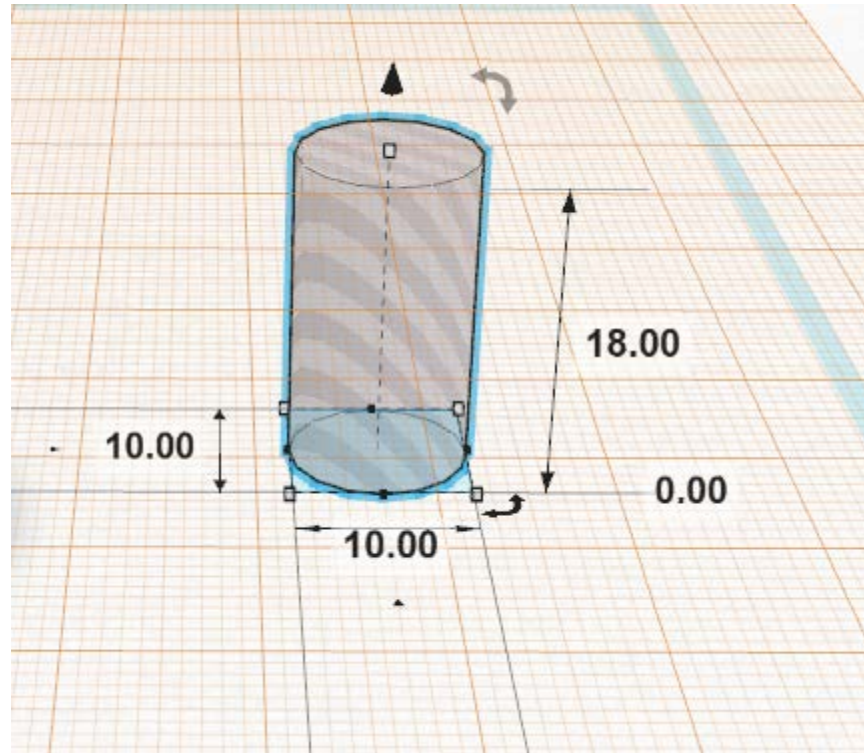
1. Rotate object 180°
2. add new workplane to top surface



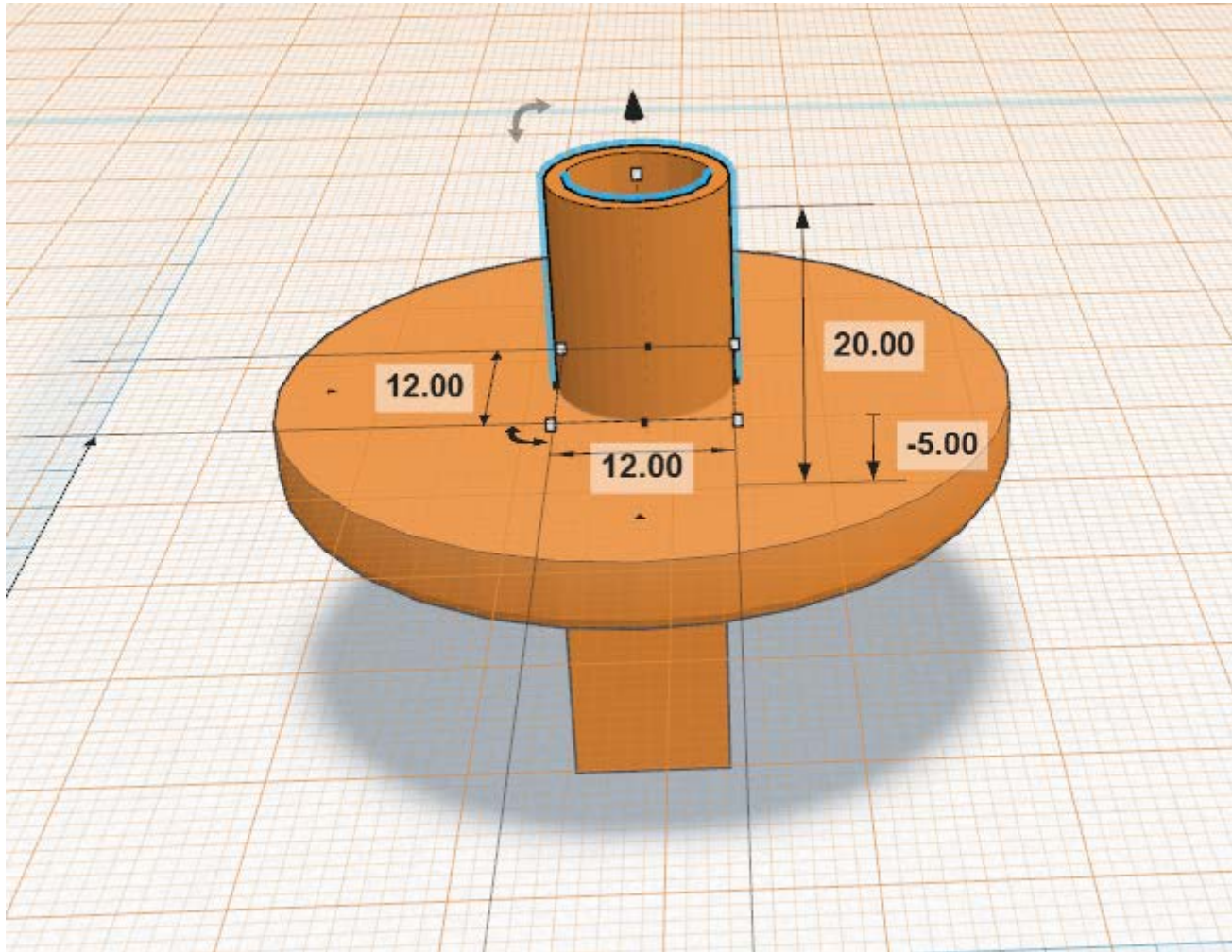
Add a new cylinder



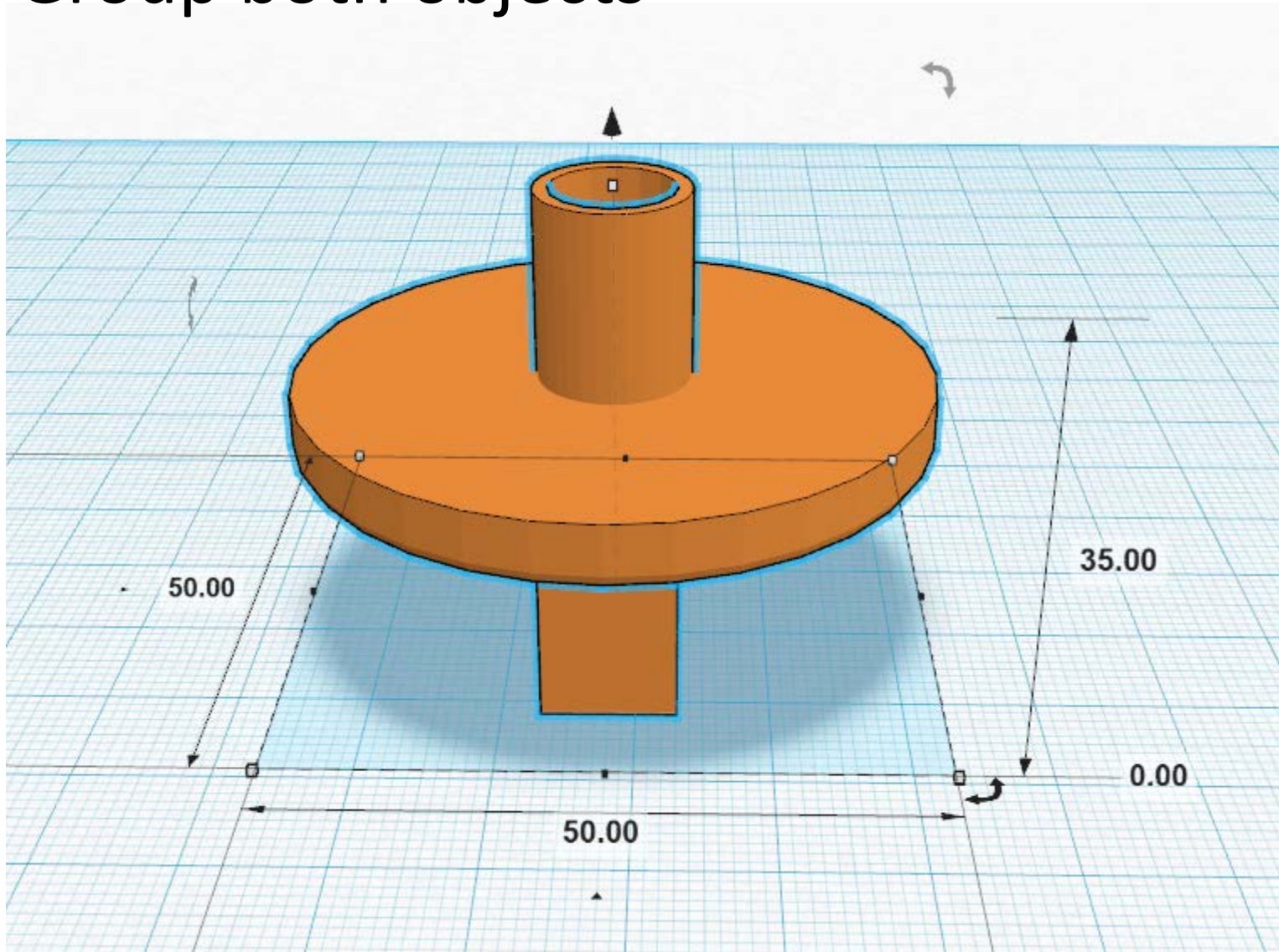
1. Add a new cylinder
2. Make it a hole object



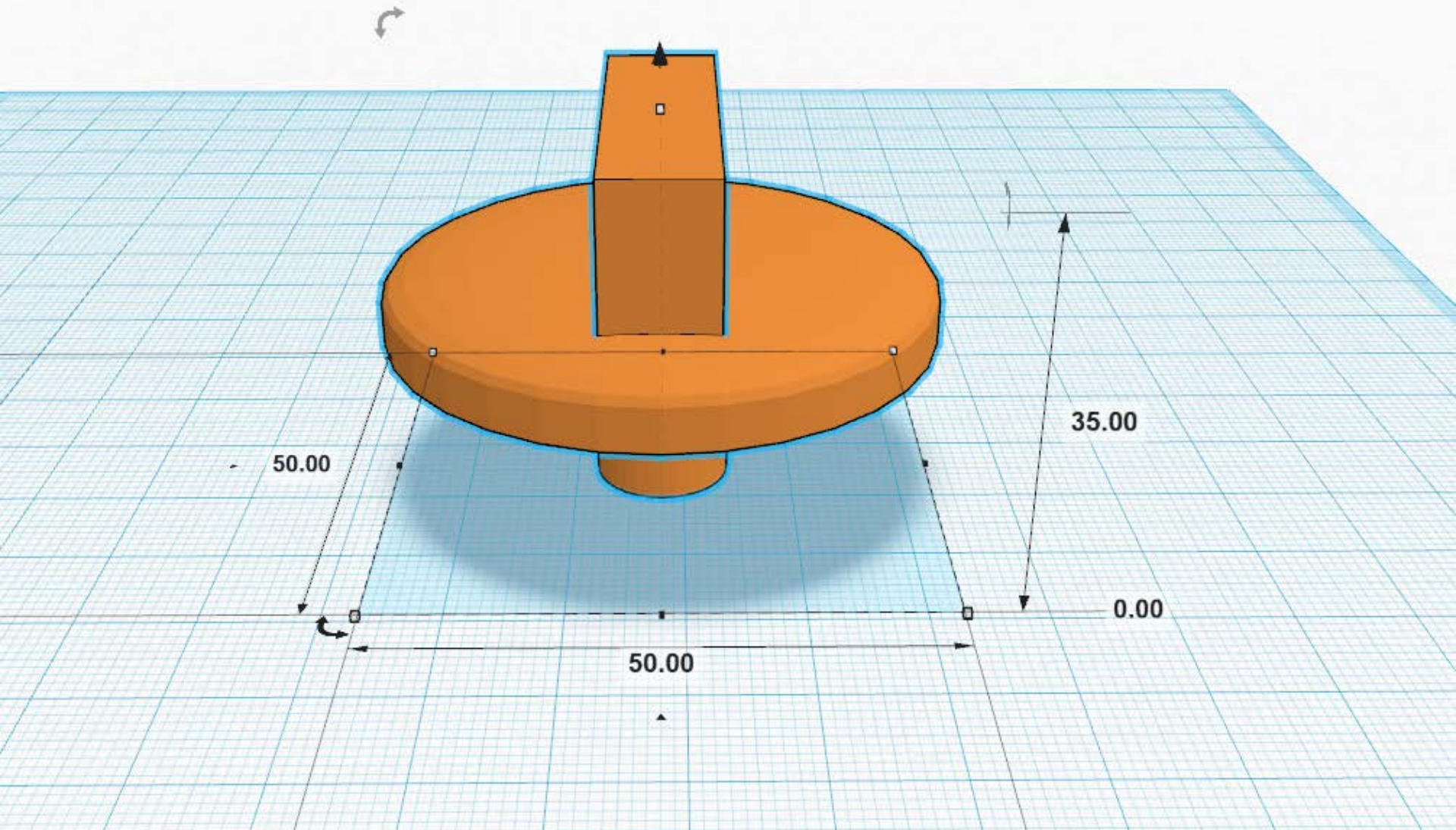
1. Center-align both cylinders by X and Y axes
2. Top-align both cylinders by Z axis
3. Group both cylinders to make the hole



1. Center-align both objects by X and Y axes
2. Group both objects



Rotate, then export!



For more info, see
guides.hshsl.umaryland.edu/tinkercad

The screenshot displays the library's website interface. At the top left is the University of Maryland logo and the text "UNIVERSITY of MARYLAND Health Sciences and Human Services Library". To the right is a search bar labeled "Search the Library Website". A red navigation bar contains links for "Resources", "Services", "Assistance", "About the Library", "OneSearch", "Ask Us!", "Hours", and "Follow Us". Below this is a breadcrumb trail: "HS/HSL / Guides / 3D Modeling Basics Using Tinkercad.com / 3D Modeling Basics Using Tinkercad.com". The main heading is "3D MODELING BASICS USING TINKERCAD.COM". A search bar on the right says "Enter Search Words" and "Search". On the left, a sidebar lists the guide's sections: "1. Web Browser Choice and Tinkercad Account", "2. Workspace Set Up", "3. Mouse Control", "4. Keyboard Shortcuts", "5. Working With Objects", and "6. Saving And Exporting Your Design". The main content area repeats the heading and states: "This guide provides a beginners introduction for learning to use the free web-based 3D modeling design tool [Tinkercad.com](https://tinkercad.com)." It then lists the aspects explored: "1. Web browser choice and creating a Tinkercad account", "2. Workspace set up", "3. Mouse control", "4. Keyboard shortcuts", "5. Working with objects", and "6. Exporting your design". At the bottom, it begins with "3D modeling is the process of creating a mathematical representation of a three dimensional surface of a physical".

UNIVERSITY of MARYLAND
Health Sciences and
Human Services Library

Search the Library Website

Resources ▾ Services ▾ Assistance ▾ About the Library ▾ OneSearch Ask Us! Hours Follow Us ▾

HS/HSL / Guides / 3D Modeling Basics Using Tinkercad.com / 3D Modeling Basics Using Tinkercad.com

3D MODELING BASICS USING TINKERCAD.COM

Enter Search Words Search

3D Modeling Basics Using Tinkercad.com

1. Web Browser Choice and Tinkercad Account
2. Workspace Set Up
3. Mouse Control
4. Keyboard Shortcuts
5. Working With Objects
6. Saving And Exporting Your Design

EMERGING TECHNOLOGIES LIBRARIAN

3D MODELING BASICS USING TINKERCAD.COM

This guide provides a beginners introduction for learning to use the free web-based 3D modeling design tool [Tinkercad.com](https://tinkercad.com).

The following aspects of Tinkercad are explored:

1. Web browser choice and creating a Tinkercad account
2. Workspace set up
3. Mouse control
4. Keyboard shortcuts
5. Working with objects
6. Exporting your design

3D modeling is the process of creating a mathematical representation of a three dimensional surface of a physical