

3D Design with TinkerCAD

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3D Design with TinkerCAD

TinkerCAD is a free web app used to create 3D designs, examples of wired electronics, and code. In this tutorial, you will learn how to use TinkerCAD to create 3D designs.

The first step is to explore TinkerCAD's interface. We will begin by creating a new design and navigating all the functionalities available to you. This includes:

A breakdown of TinkerCAD's interface.

What the work plane looks like.

What the buttons do.

How to adjust your view within the work plane.

After you have become familiar with all the tools at your disposal, we will then move on to create a simple 3D design – a snowman. While creating the snowman, you will learn how to:

How to drag and drop objects to the interface.

How to size objects.

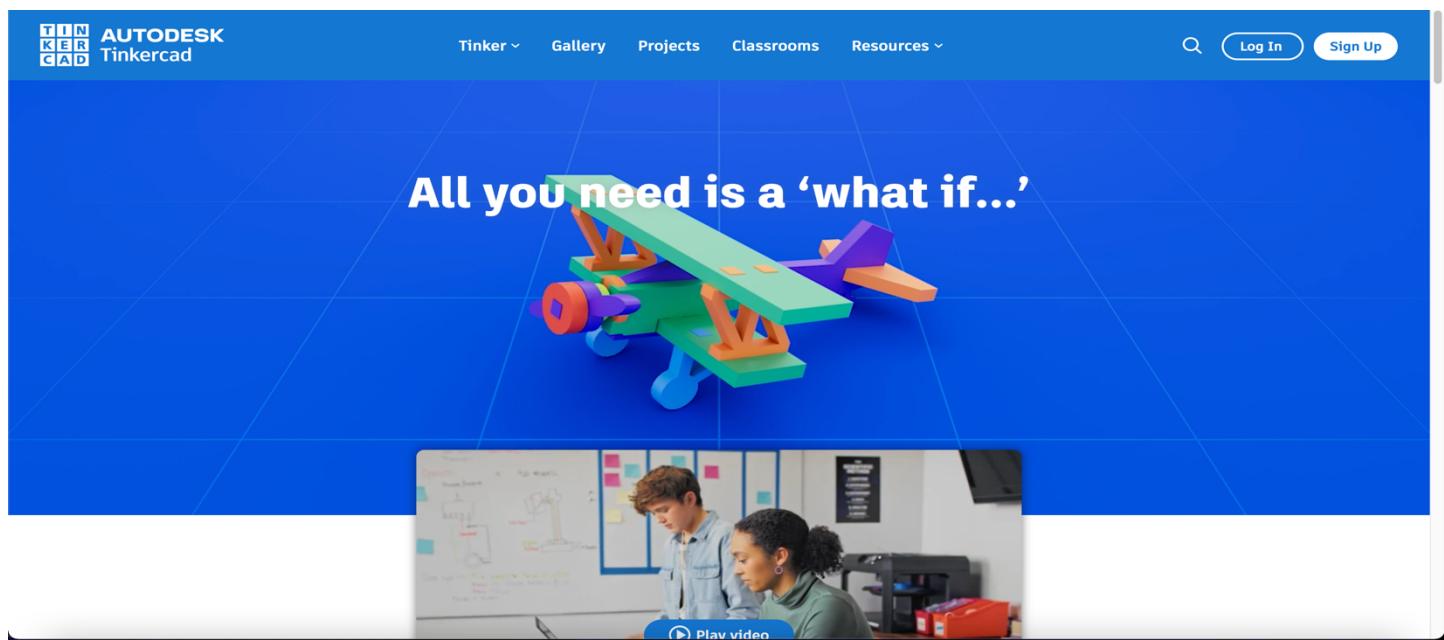
How to cut/attach objects.

How to lift an object off or set an object back down on the work plane.

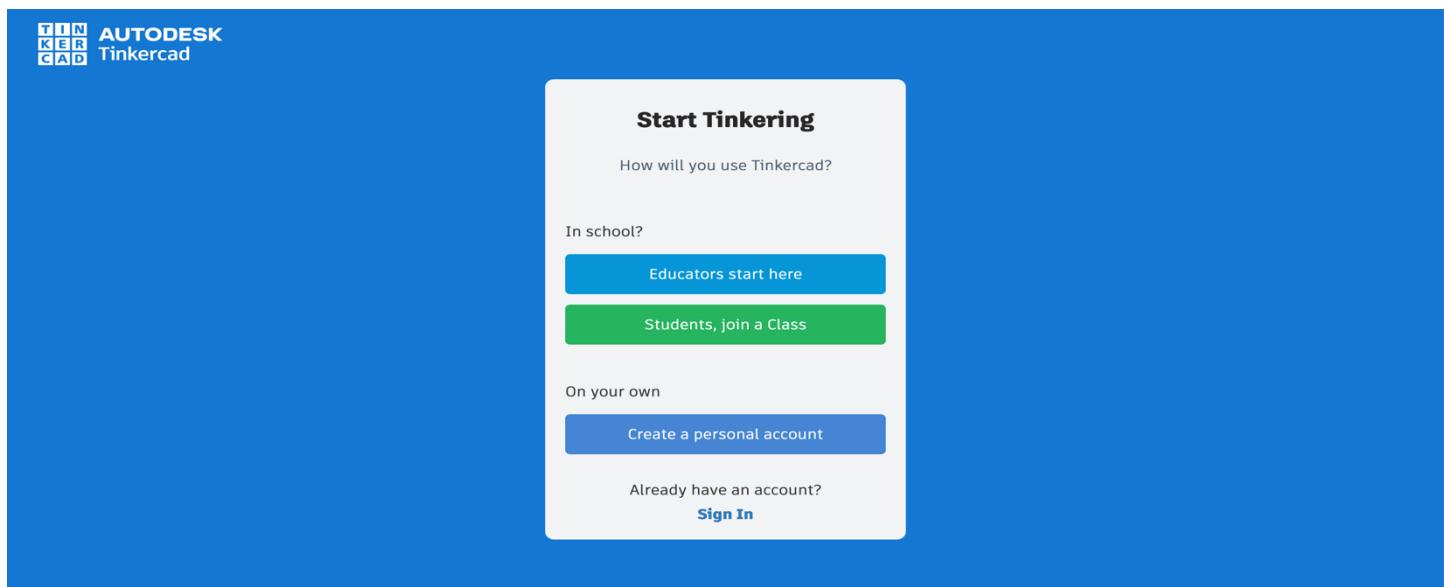
Welcome to TinkerCAD!

Let's begin by creating a TinkerCAD account (it's free!).

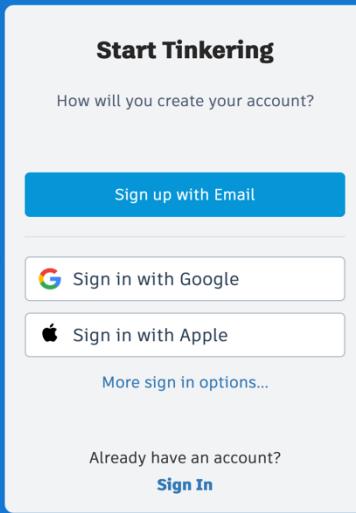
Go to www.tinkercad.com



Click on "Sign Up" on the upper right side of the screen.



Click "Create a personal account"



Click "Sign up with Email"

Create account

Country, Territory, or Region

United States

Birthday

Month Day Year

Next

Already have an account? [Sign in](#)

Enter the correct information, then click "Next"

Create account

Email

Password

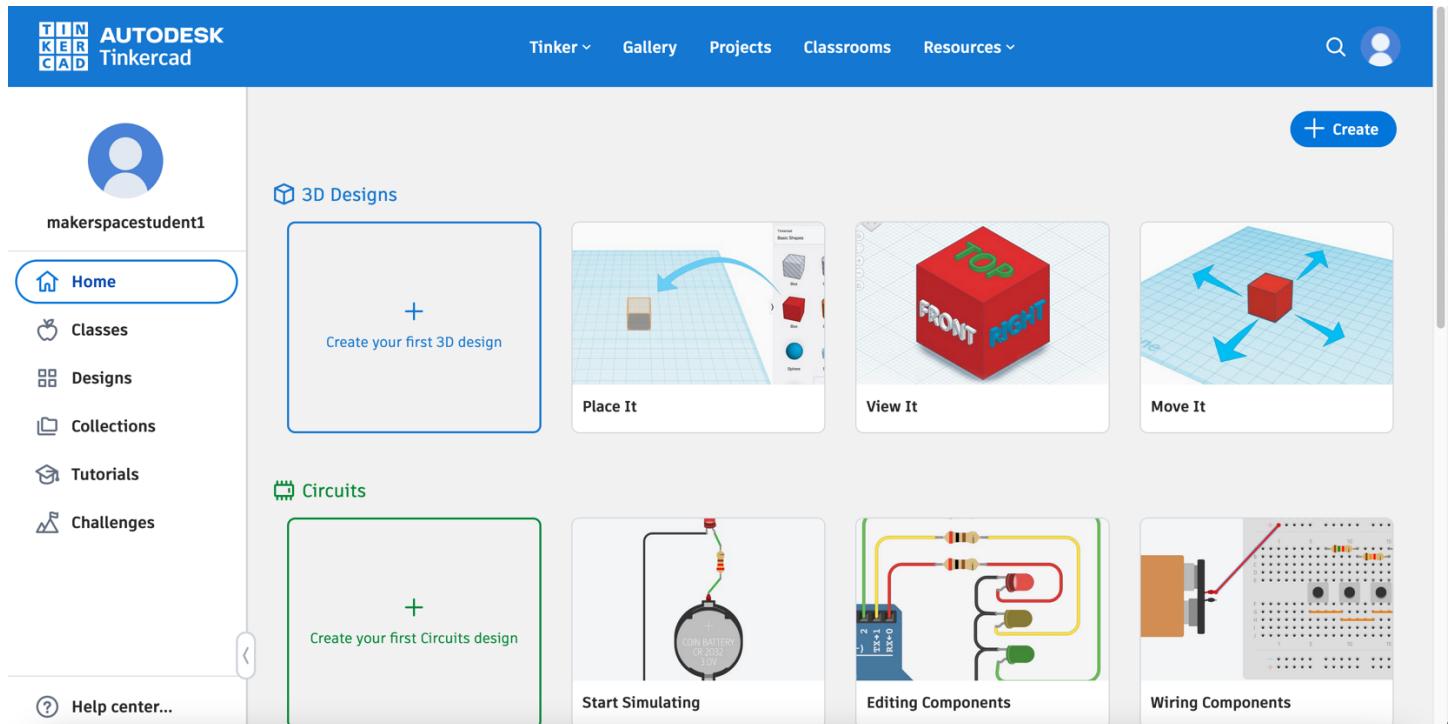
I agree to the [Autodesk Terms of Use](#) and acknowledge the [Privacy Statement](#).

Create account

Already have an account? [Sign in](#)

Finally, enter an email and password for your new account. Be sure to keep your password somewhere safe!

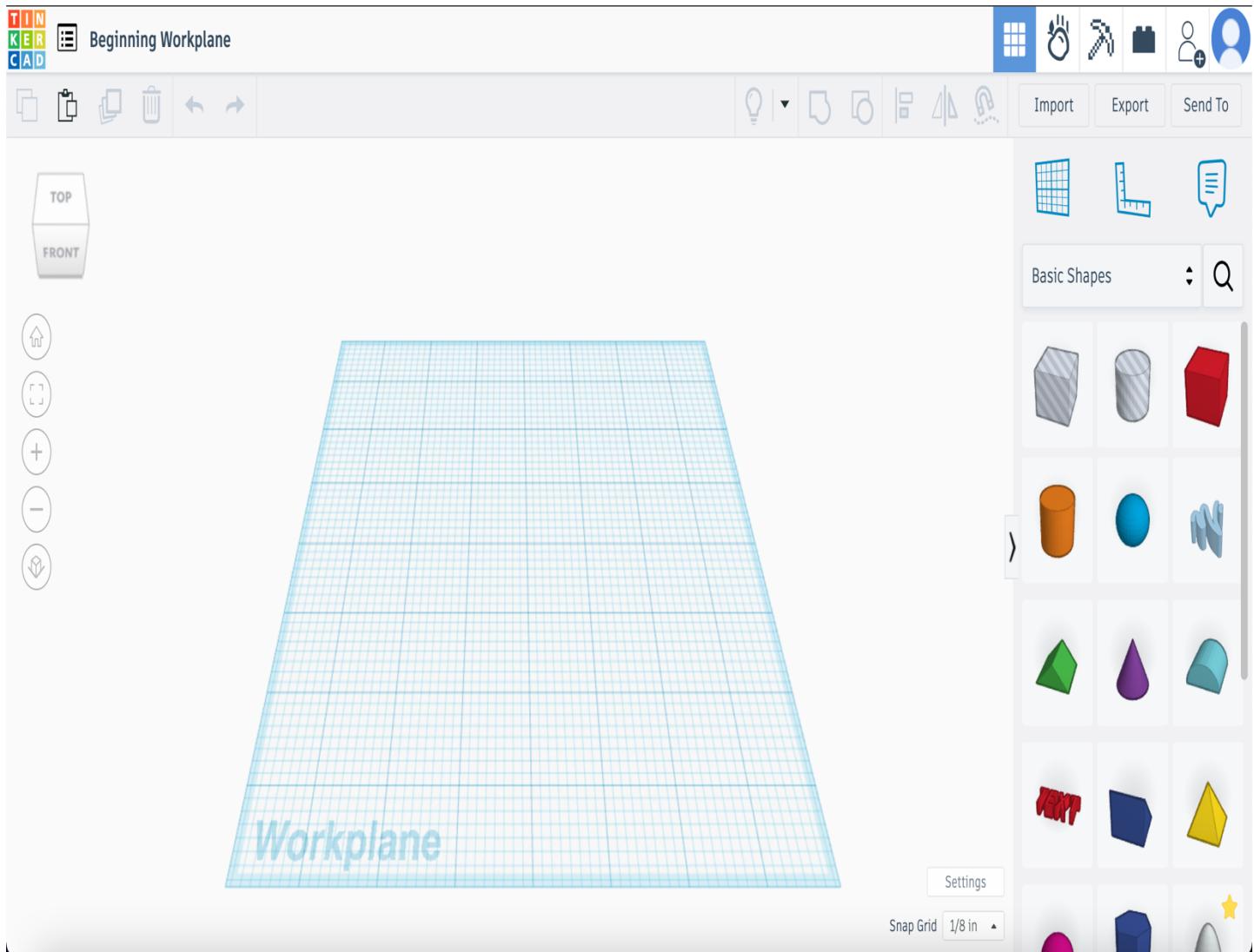
After creating your account, you should see a screen like this:



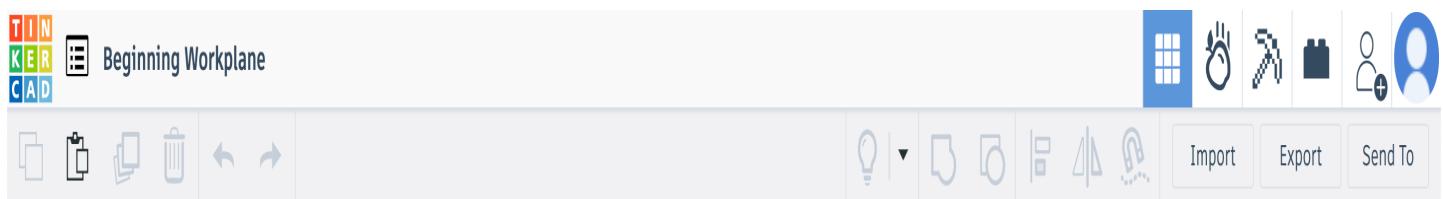
Click on the “Create” button on the upper right side of the screen, then click “3D Design” to start designing.

Introducing TinkerCAD's Interface

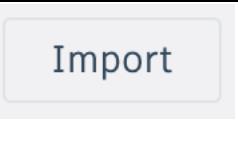
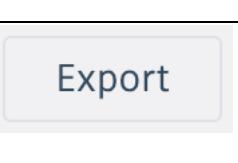
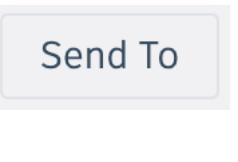
This is the work plane; it's where all of your designing will take place.



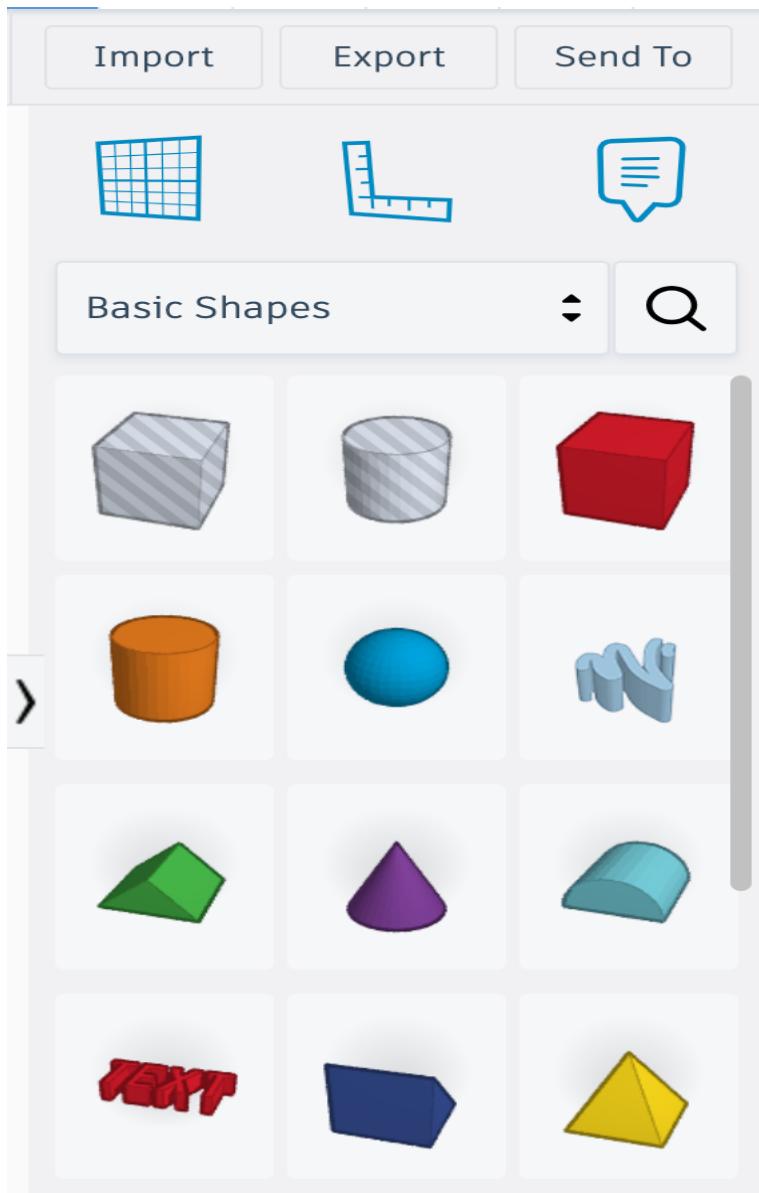
Let's take a look at the various tools and what they do.



The top of the screen is where you'll find the main toolbar. All the icons are listed below. Feel free to refer back to them if you need to!

	Copy Object(s)		Mirror Object(s)
	Paste Object(s)		Cruise
	Duplicate and Repeat		Import Shapes/Files into TinkerCAD
	Delete Object(s)		Export Shapes/Files out of TinkerCAD
	Undo and Redo		Send your design to another location/program (ex. Thingiverse)
	Show All (Notes/Objects)		Work Plane Tab
	Group Objects		Simulation Tab
	Ungroup Objects		Blocks Tab
	Align Objects		Bricks Tab

Over on the right is where you'll find the Shapes pane. You can choose from a variety of options by clicking on "Basic Shapes" and opening up the Shapes Library. You can also click on the magnifying class to search for a shape.



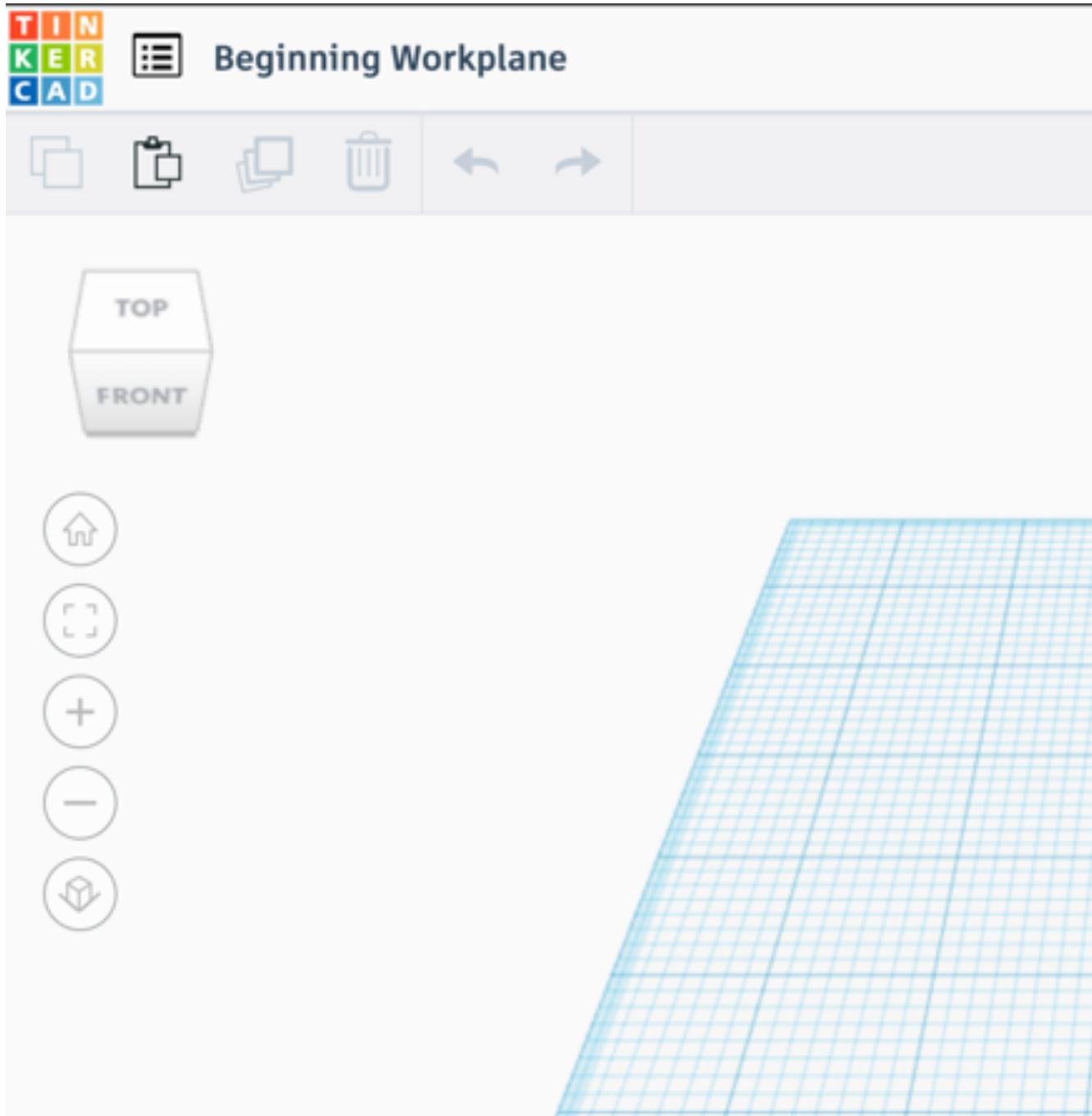
On the left is where you'll find the different views you can use on the work plane. The box will allow you to maneuver the work plane in any given direction, simply click on the box and drag your mouse to rotate the work plane.

The "Home" icon will reset the view back to its original state.

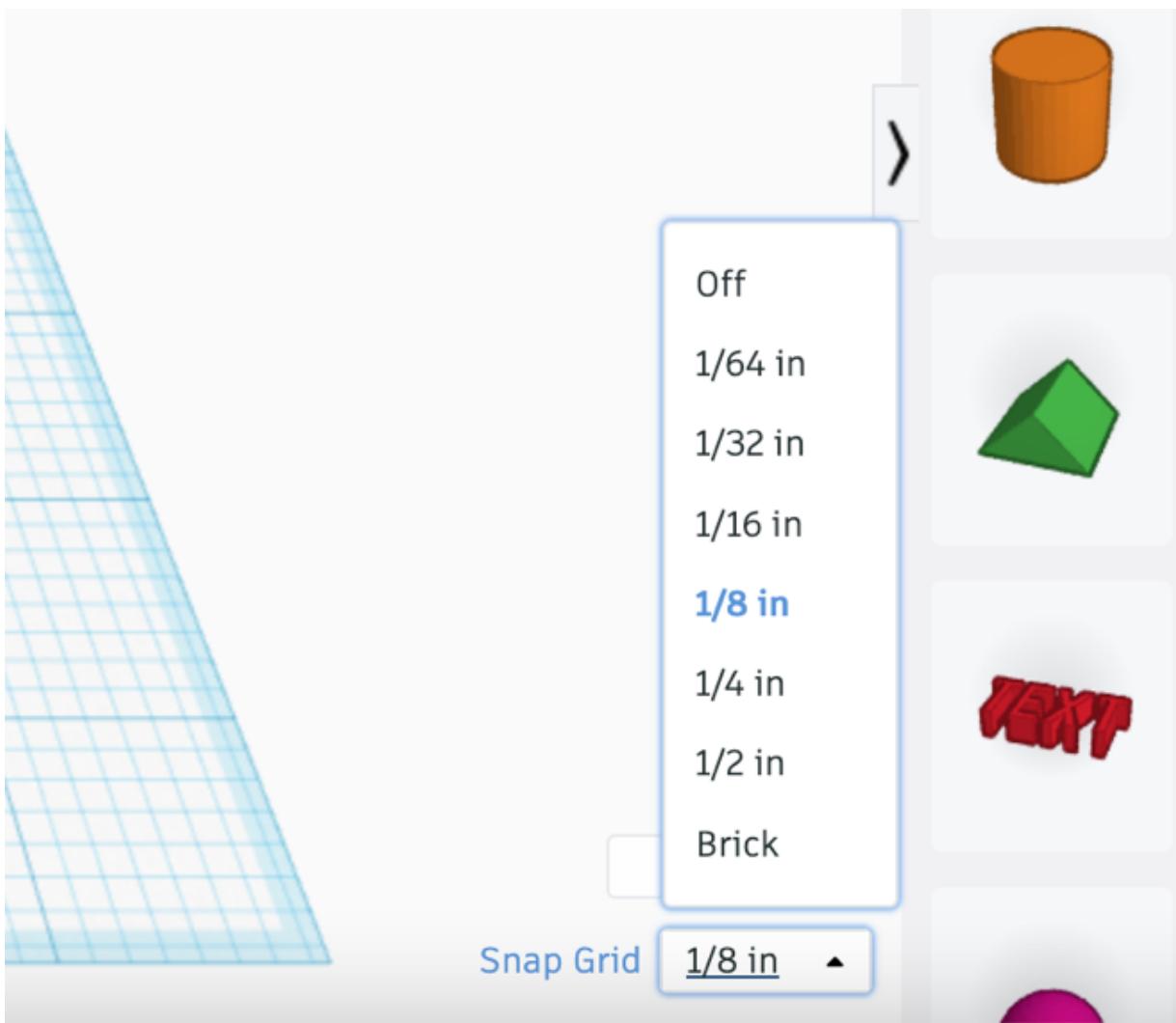
The square brackets will fit selected objects (or all objects if nothing is selected) on the work plane in the view.

The (+) and (-) icons will allow you to zoom in and out of the work plane.

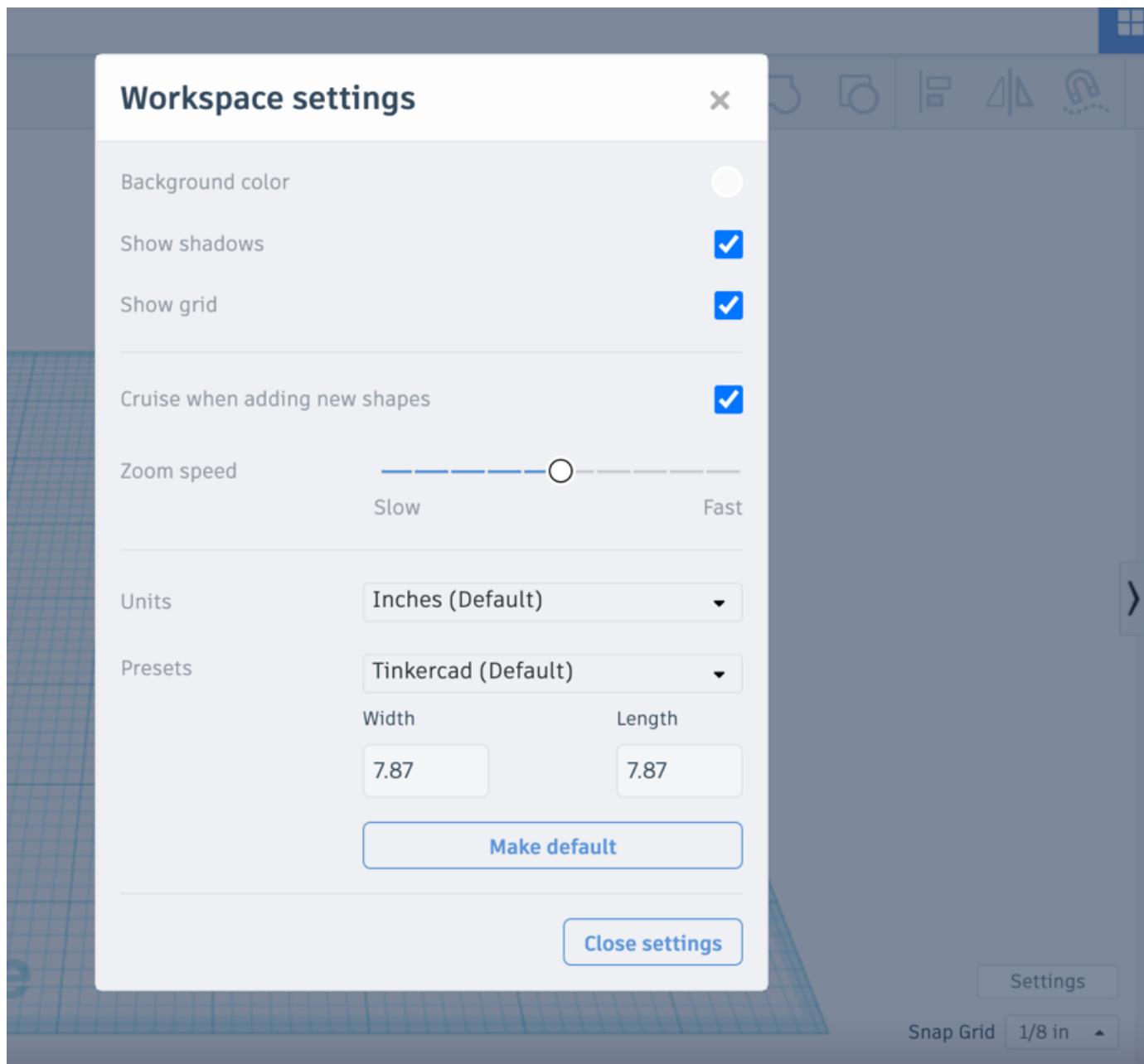
The cube at the very bottom will switch between Perspective (3D) view and Orthographic (2D) view.



On the bottom right, next to the Shapes pane you'll find the "Snap Grid" option. This option will "snap" a shape to the work plane's grid according to the option set. For example, the default is 1/8 inch and, every time a shape is moved across the work plane, it will move 1/8 of an inch at a time.



Finally, there is the “Settings” button located just above the “Snap Grid” option. Here you can set the background color of your work plane (not the work plane itself), show shadows, show the grid, set default units, etc.

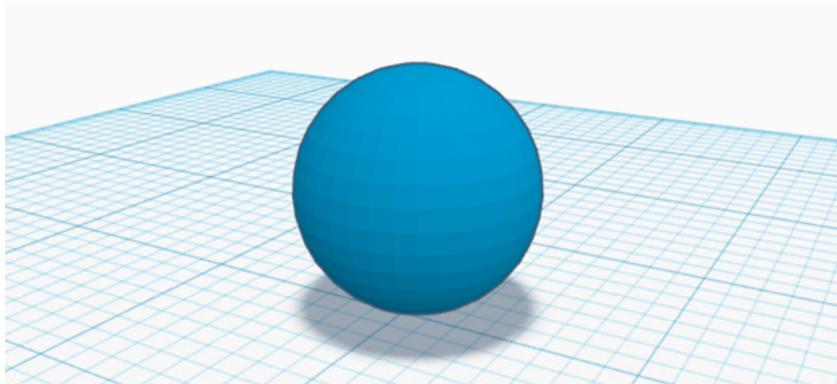


Now that you’re familiar with TinkerCAD’s interface, let’s make a simple project – a Snowman!

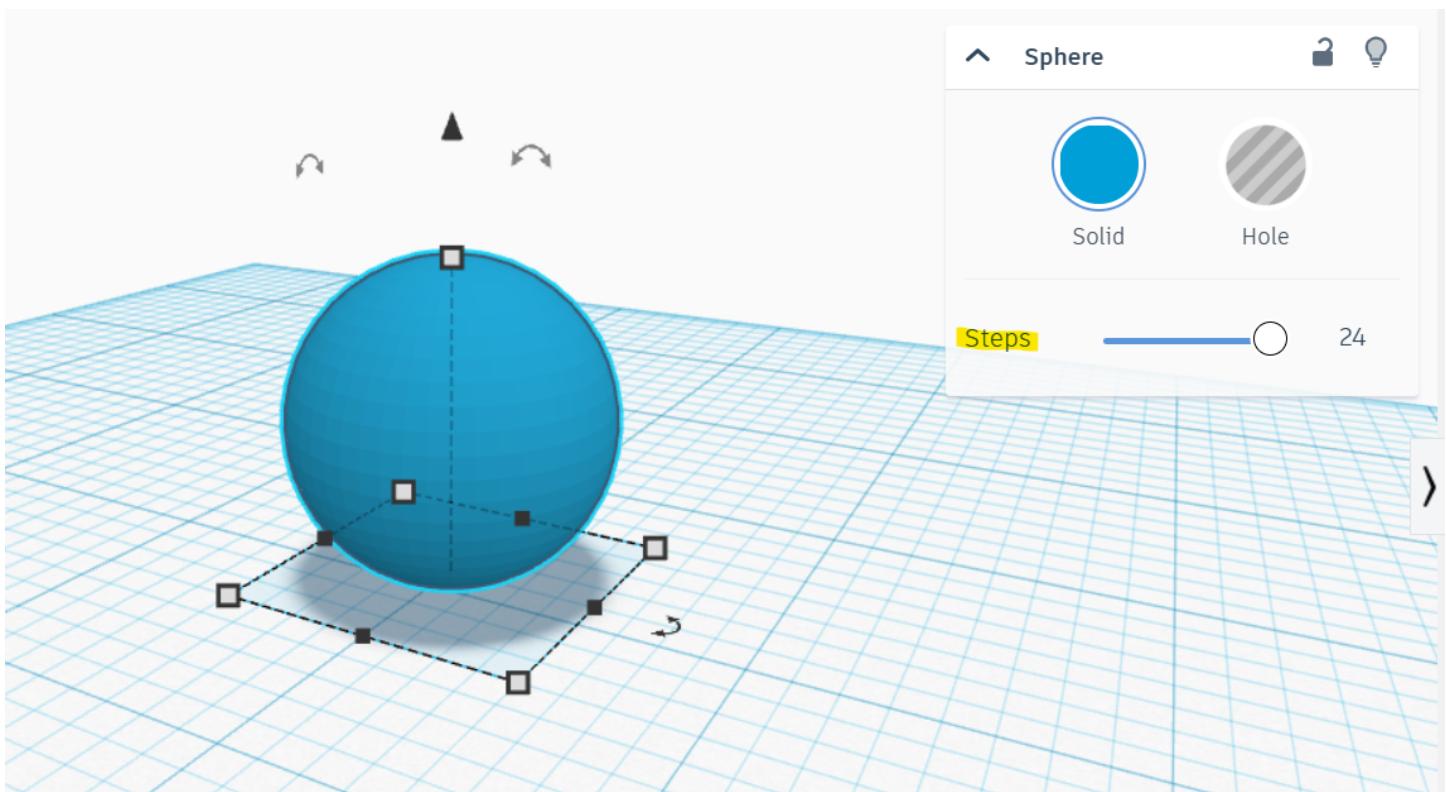
Project: Let's Build a Snowman

In this tutorial we'll build a snowman using some basic shapes. You'll learn how to add shapes to the work plane, attach shapes, cut them to a desired size, and how to customize their colors. Let's begin!

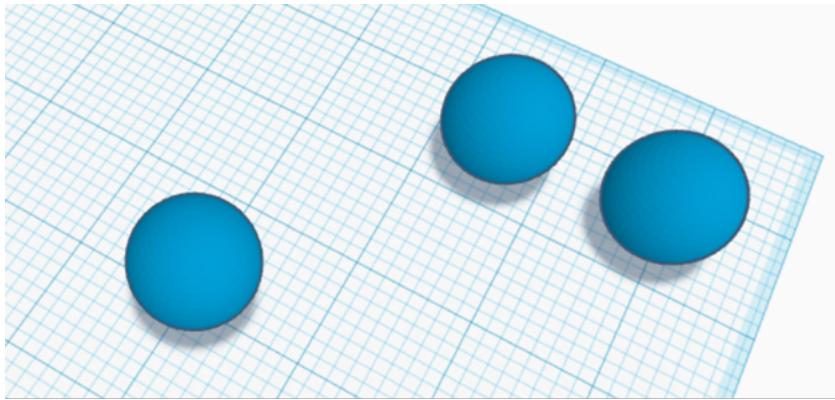
First, from the shapes pane, drag a sphere onto the work plane.



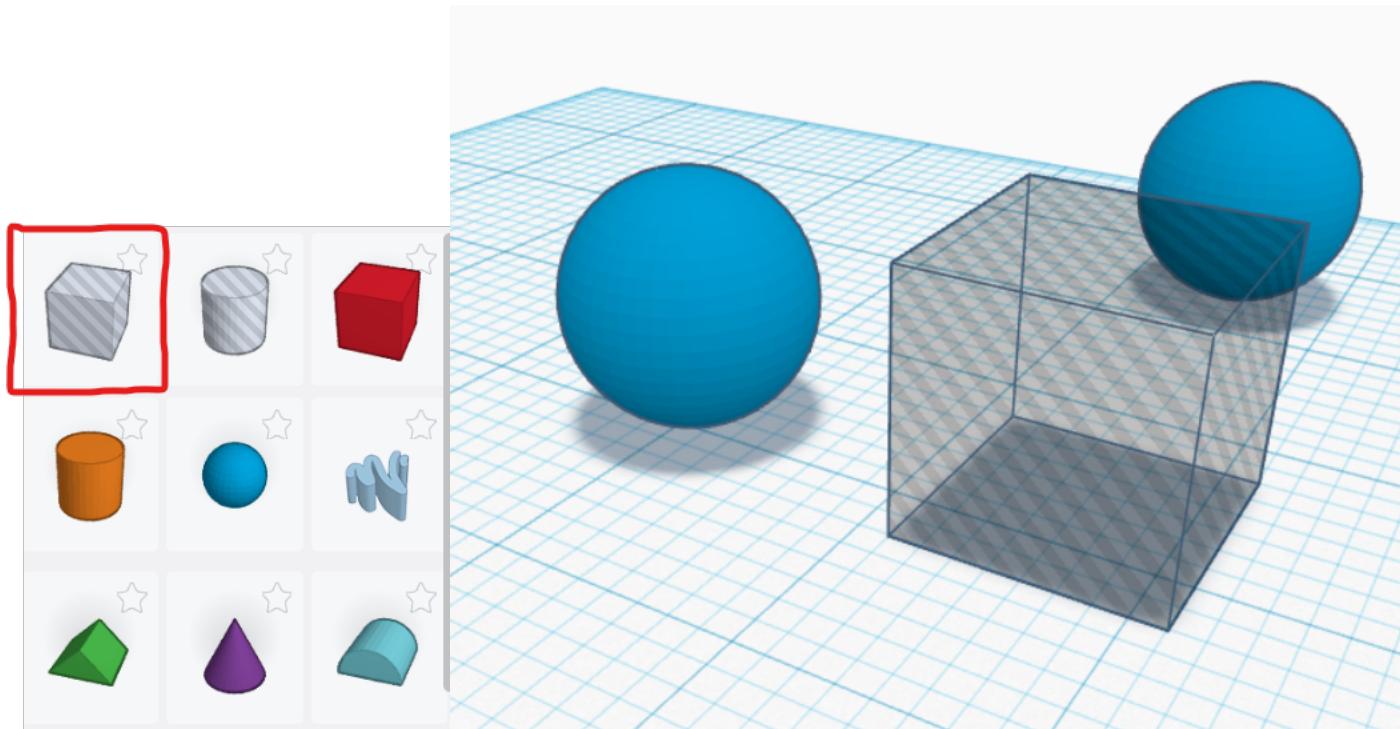
Adjust the sphere's 'steps' from 18 to 24 to make the sphere smoother.



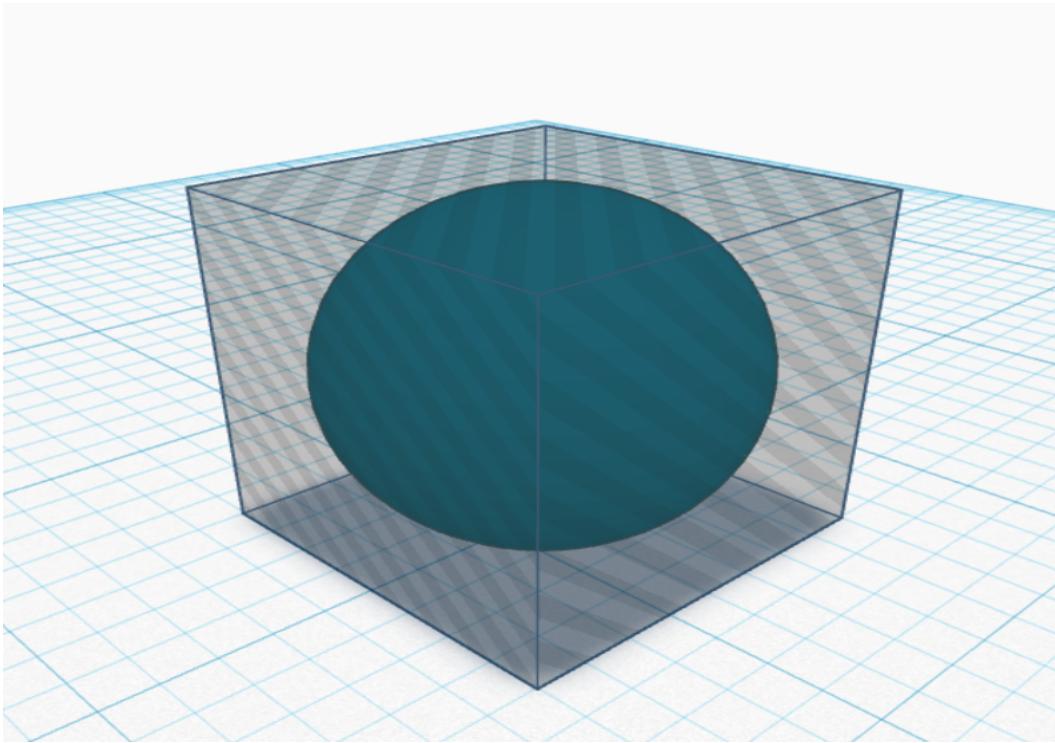
With the sphere still selected, click on the “Duplicate and Repeat” button  twice. (If you want to make a 2-tier snowman, only duplicate once). You should now have 3 spheres on the work plane. (Note: If the spheres do not appear you may have to click and drag the duplicate spheres away from the original). Move the duplicated spheres away from the original, they will make up the torso and the head of the snowman.



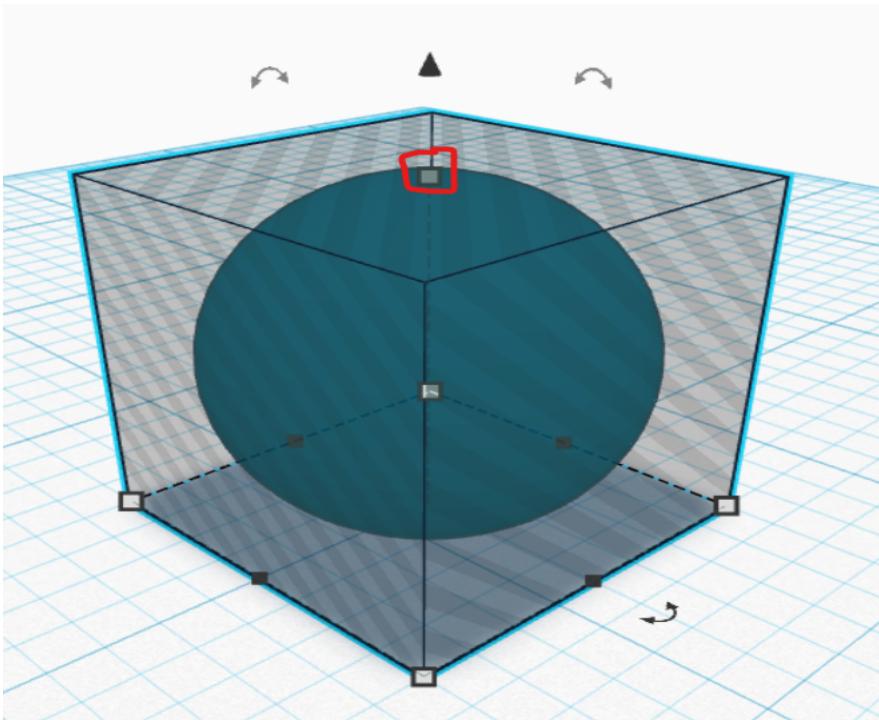
Focusing on the base of the snowman, we need to “cut” the sphere to give it a flat bottom. To do this, navigate to the shapes pane and drag a “hollow” cube to the work plane. The cube should appear see-through.



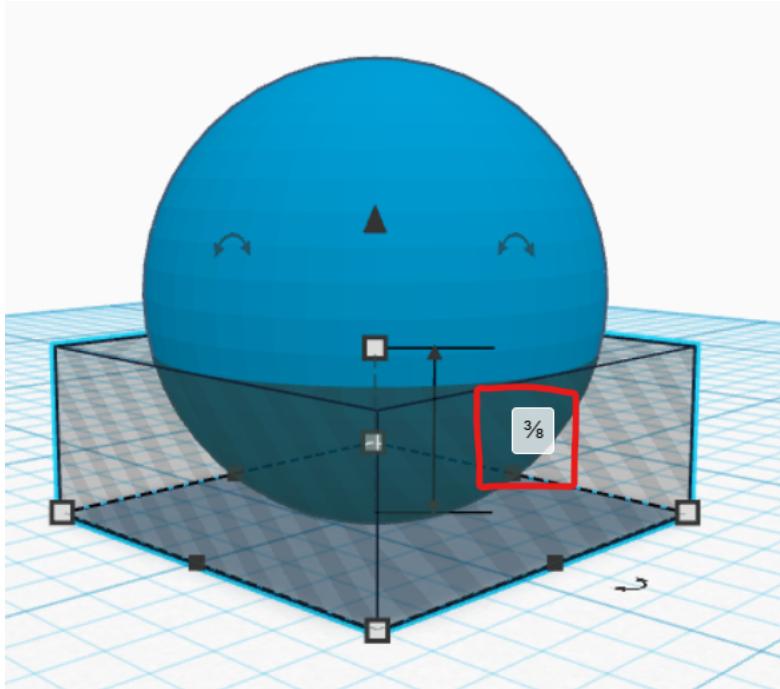
Drag the hollow cube over the sphere so it looks like the sphere is inside the cube.



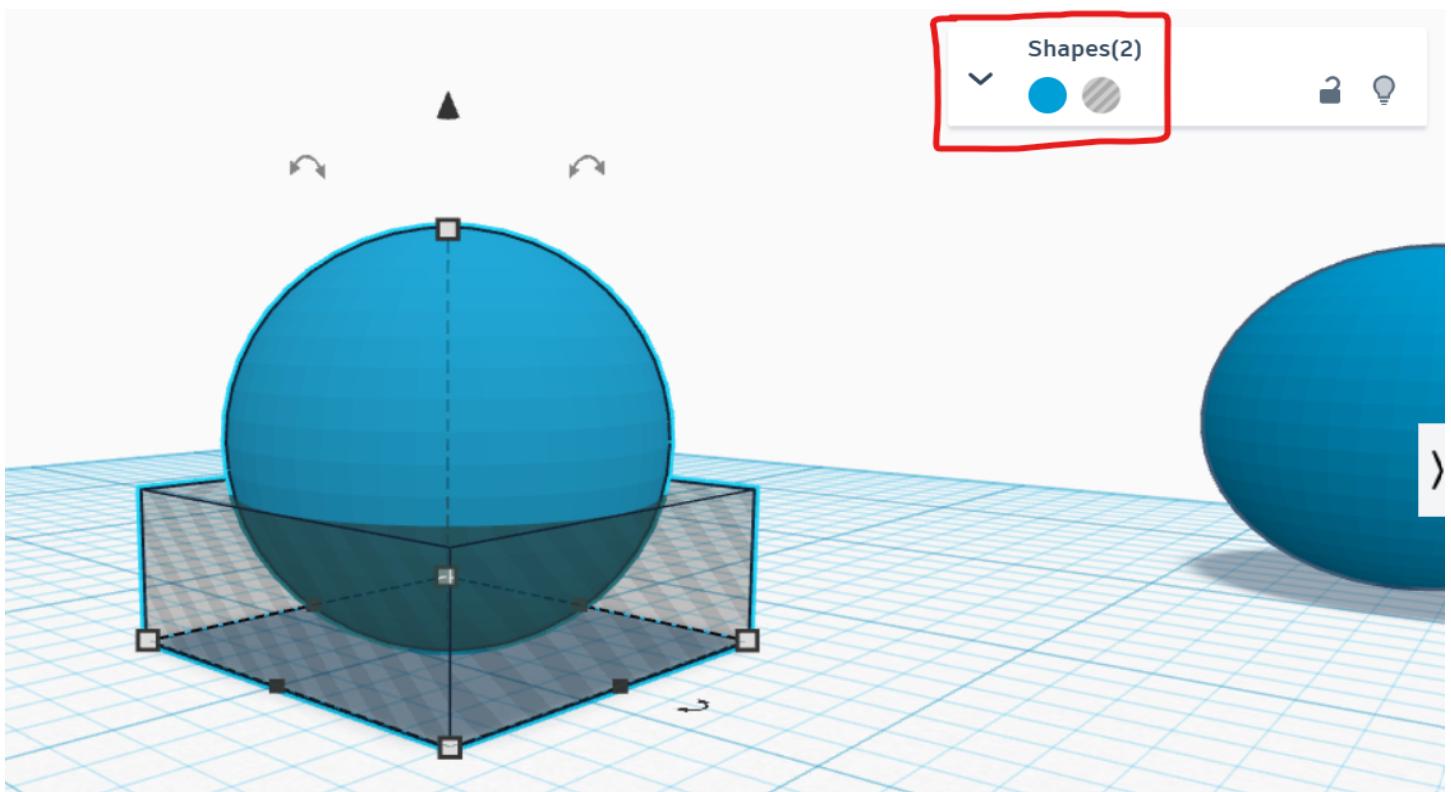
Select the cube to make the sizing options appear. Click on the top white square and drag down to shrink the cube. When shrinking the cube, aim for roughly $\frac{1}{2}$ of the sphere to show atop the cube, this will create the base of your snowman. Feel free to adjust the size to your liking!



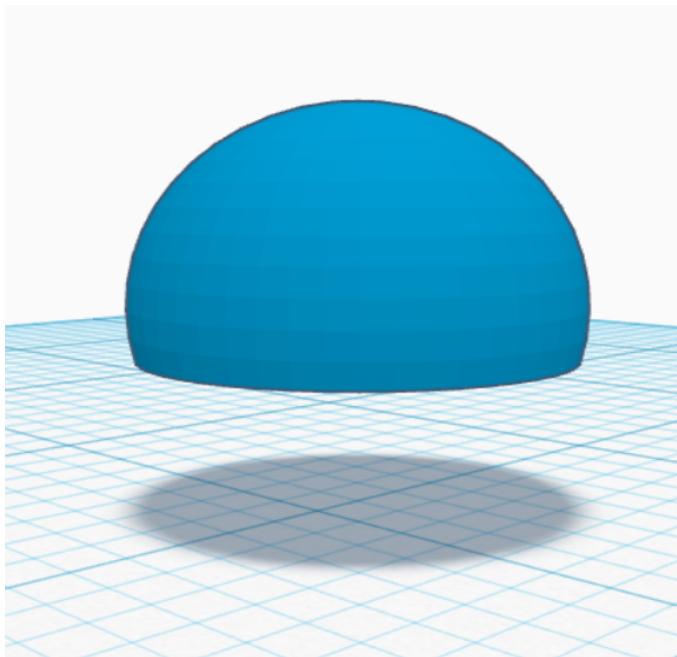
As you can see from my example, the overall height of the cube is shown at 3/8.



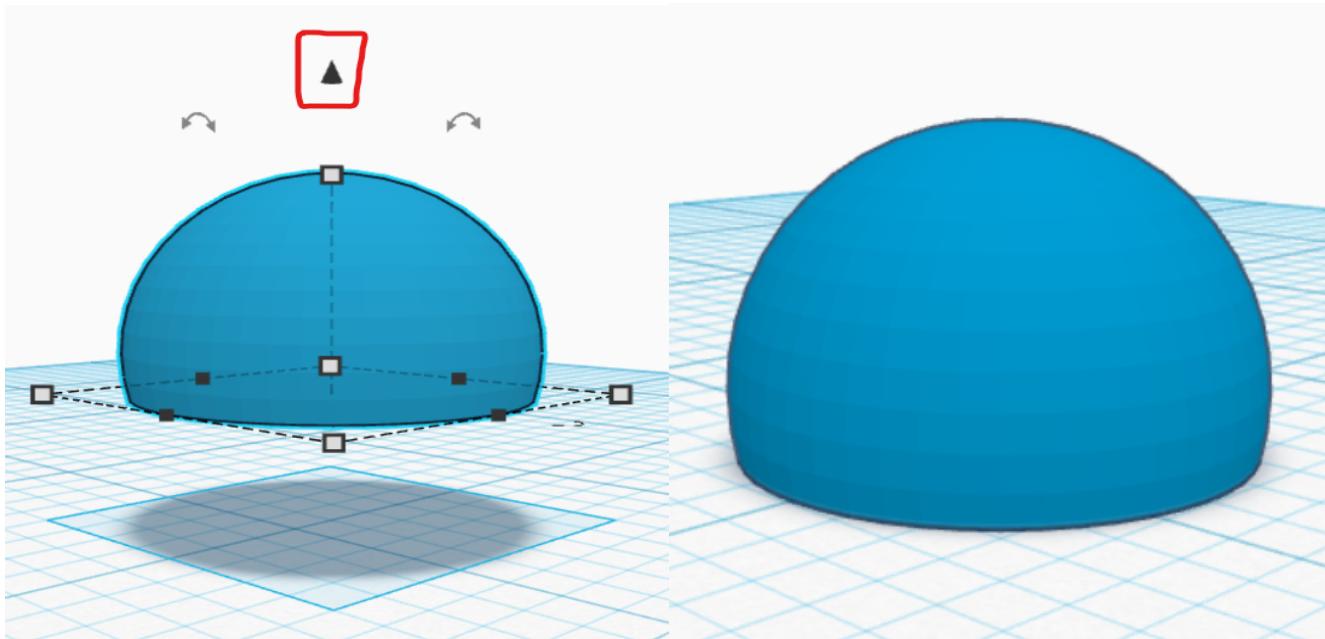
When you're satisfied with the height, highlight both shapes by clicking away from them and dragging your mouse over both shapes. A red selection box should appear while you're moving the mouse. To confirm that both shapes were selected, check the shapes dialog box on the upper right – it should say Shapes (2).



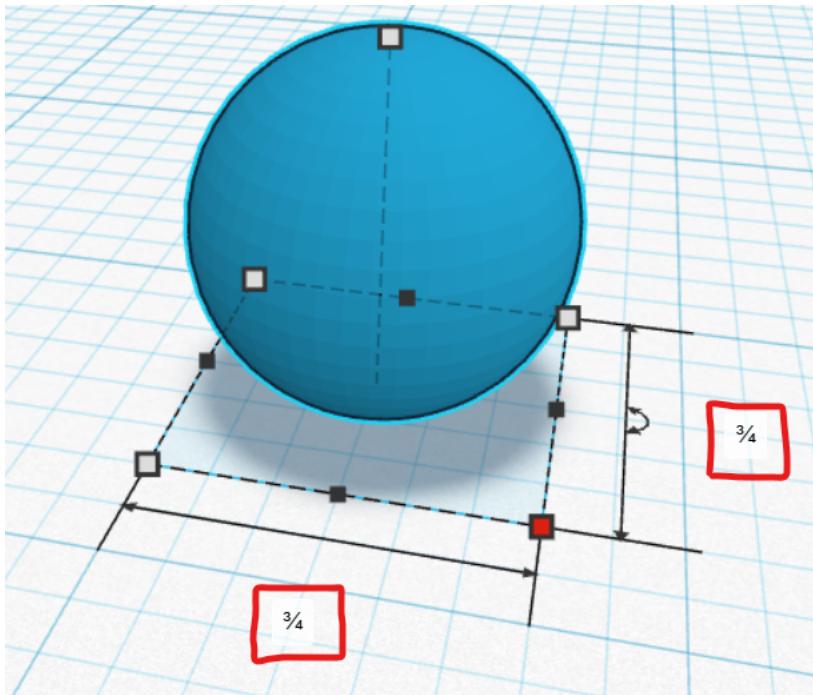
With the two shapes selected, click on the “Group” button  , located on the upper right. Once the shapes are joined, you will see something like the example below.



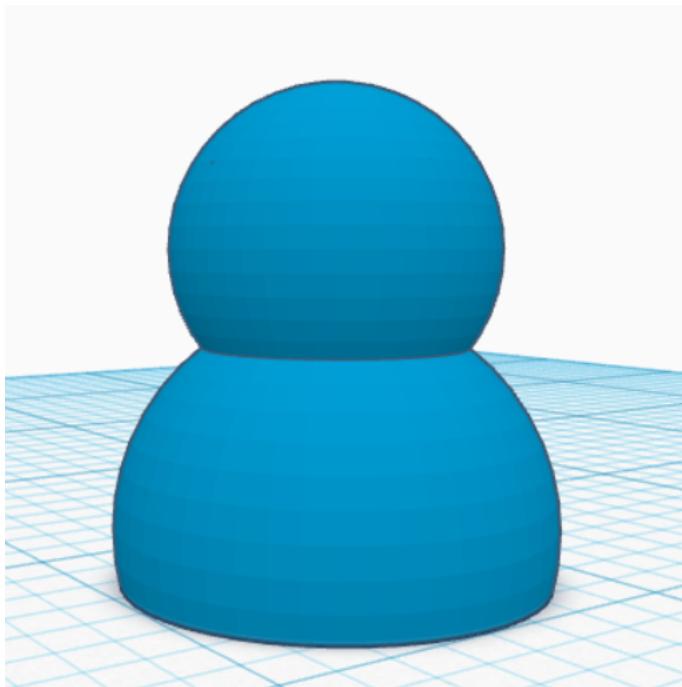
Highlight the sphere to bring up its options. Click on the black arrow at the top of the shape, which will let you maneuver a shape vertically on the work plane. For our purposes, we want to set the shape back down. To do so, click on the black arrow and pull the shape down toward the work plane.



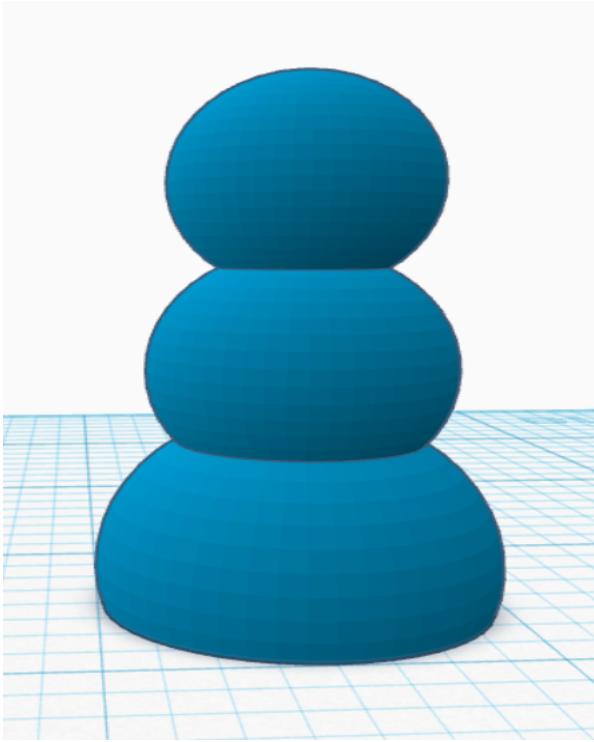
Now the base of our snowman is done! Let's create and attach the torso to the base. Click on one of the spheres we duplicated earlier. Adjust the size so that it's smaller than the base. In my example, the spheres are all 1 inch in size. I'm adjusting the size of the torso to be $\frac{3}{4}$ " in size – don't forget to adjust the sphere height-wise too!



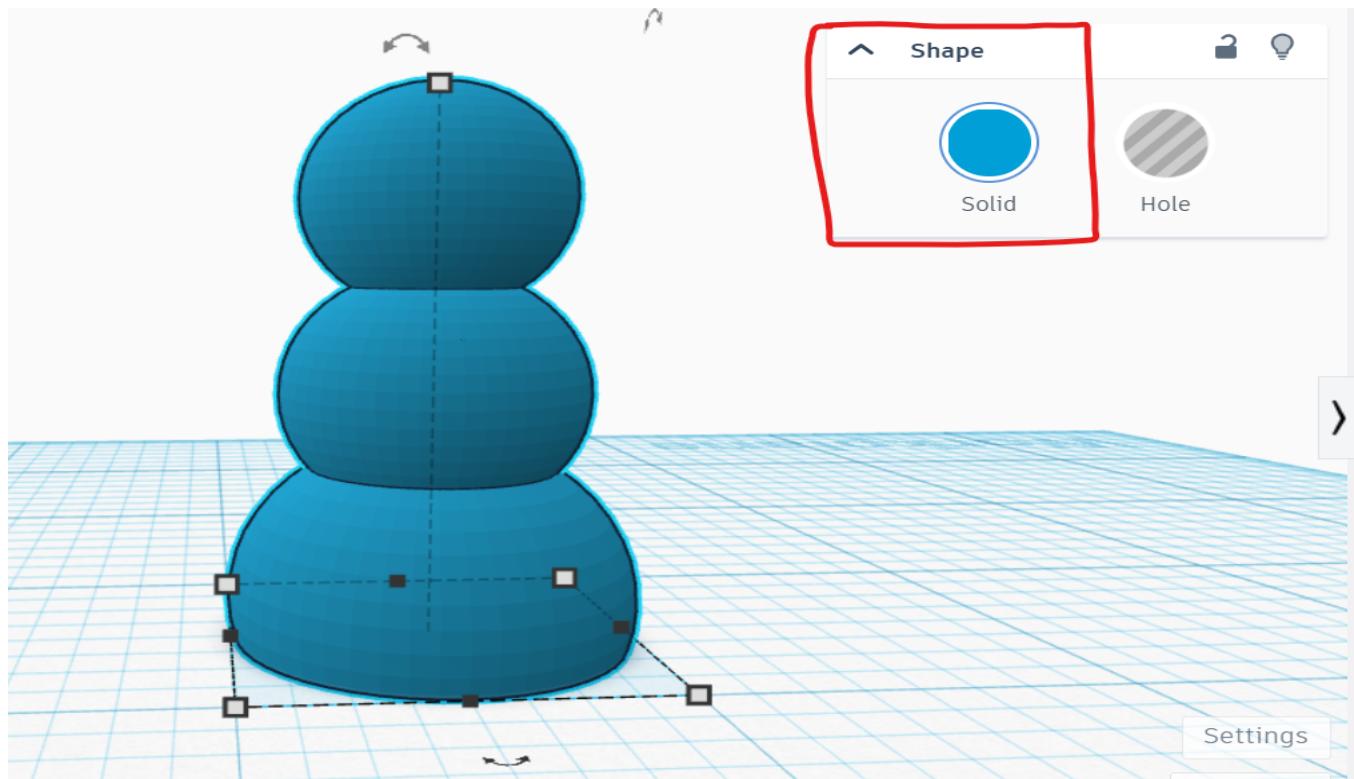
Once sized, drag the torso over to the base and center the shapes. Click on the black arrow on top the torso and lift the torso off the work plane. Once you're satisfied with how the torso sits on the base, join the two shapes together. See below for an example.



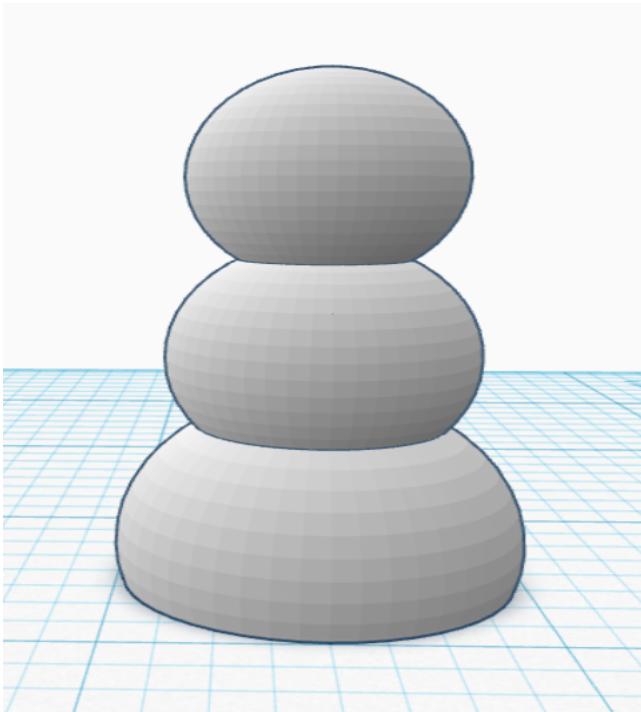
Repeat the previous step for the head of the snowman. I made the head $\frac{1}{2}$ " in size in my example.



To make our snowman seem more like a snowman, we can change the color of the spheres to white. To do this, select the snowman and look at the Shape dialog box. Click on the “Solid” circle and, once the color palette comes up, select white to change the color of your snowman.



Here is the finished snowman body:



From here, you can experiment with the shapes and add different accessories to your snowman. Try adding the eyes and the nose next. After that, maybe you can give your snowman a smile, some buttons, a hat, and arms. Here is my finished snowman – what does yours look like? 😊

