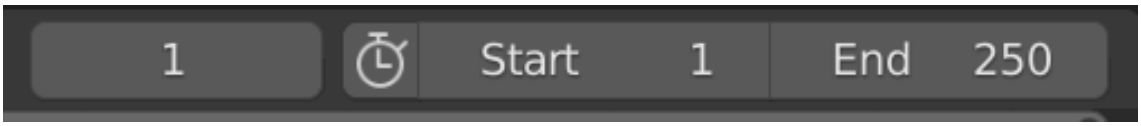
Lab 1

Setting Up

1) Open Blender
2) The default cube should already be selected (shown by a light orange outline). If it's not, select it. Press x on your keyboard to delete it.
3) Insert a sphere primitive.
    a. There are two ways to do this:
        i. On the toolbar on the left, click to the "Create" tab (second one down). Select UV Sphere
        ii. Press Shift-a on your keyboard, highlight Mesh, and select UV Sphere from the menu
4) Set the start of frame to 1 and the end of frame to 240. This will give you 10 seconds of animation.

    At the very bottom, you will see this:



The frame you're currently on (you start at frame 1, so this is at 1 at the beginning of your scene).

Starting Frame

Ending frame (this will be 24 x [however long you want your scene to be]. So if you want it to be 10 seconds:

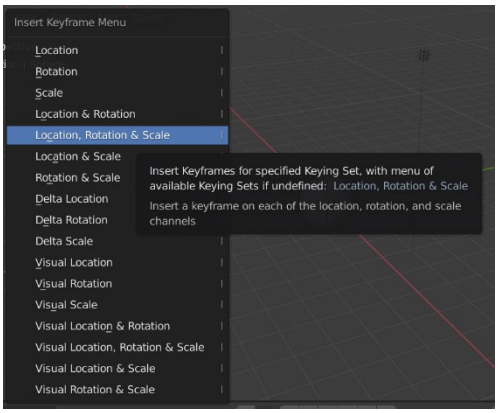
24 x 10 = 240

You put 240 here.

Note: multiple by 24 because we're doing 24 frames per second

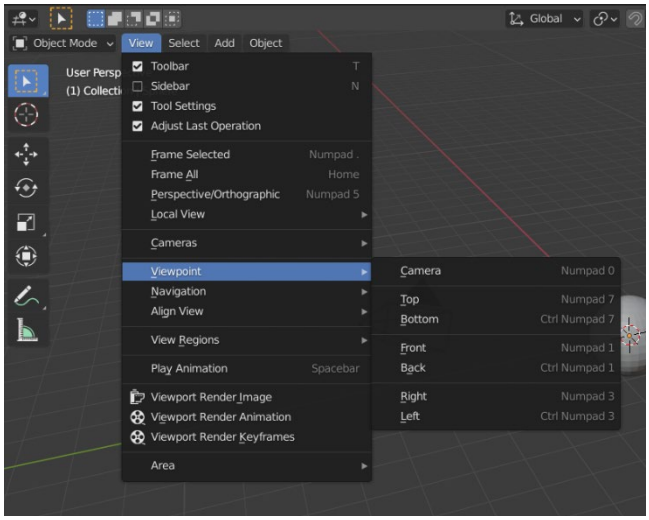
Animating

5) Move your sphere to the desired starting position (see Change Views and Move Geometry using Blender)
    a. Make sure your start frame is at 1
6) Press i to set a keyframe (click a keyframe and press Alt-i if you need to delete it) and choose the corresponding keyframe option (depending on what you did to the sphere)



Aside: How to change views

Option 1



You'll be changing views often as you work, and there are multiple ways to go about this:

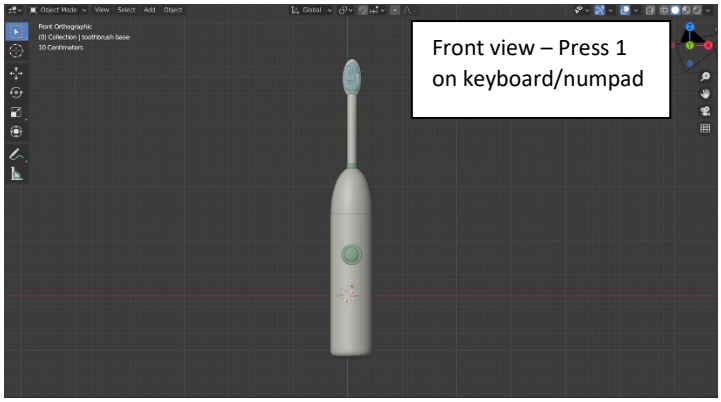
<u>Option 1) the View menu</u>

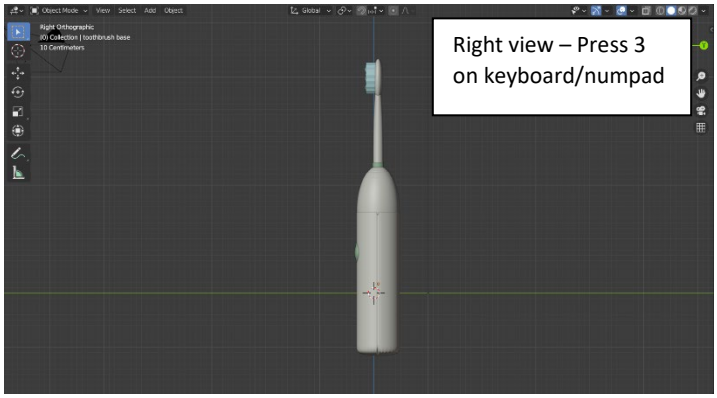
You'll find this on the top left of the screen, and you can manually select your view.

<u>Option 2) Hotkeys</u>

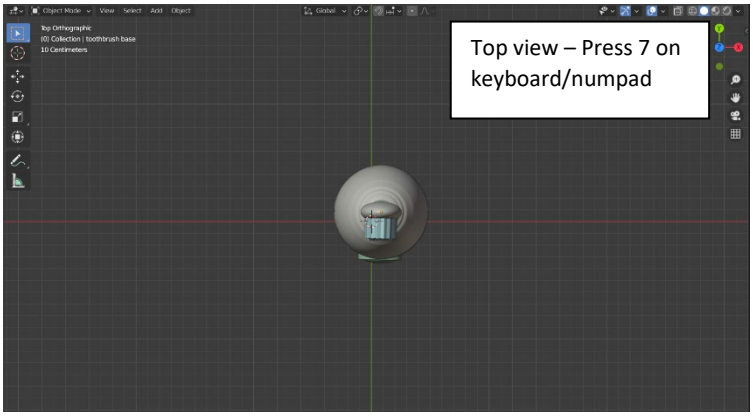
This option will take a little getting used to, but once you have it down, changing views will be a breeze. You can also always refer to this:

Top View	**Numpad 7**
Front View	**Numpad 1**
Side View	**Numpad 3**
Opposite View	**Ctrl + Numpad 1/3/7**





Option 2



If you want to see the "opposite" of any of these views (the back instead of the front, left instead of right, bottom instead of top), go to the view as you normally would, then press 9 (so for bottom, you'd press Ctrl-7, then 9)

Aside: Translation, rotation, and scale in Blender

Translation: Moving

Rotation: Rotating

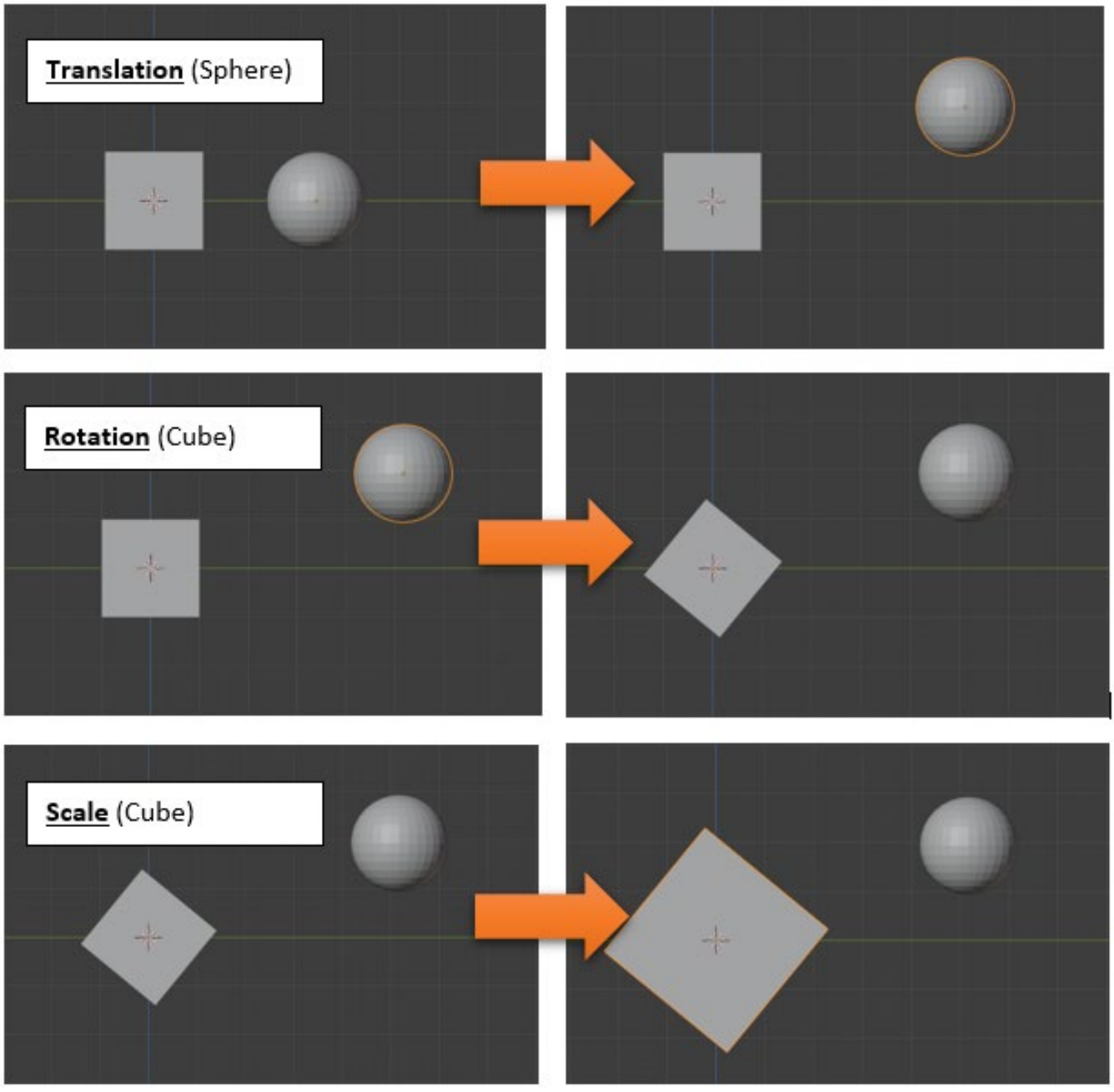
Scale: Sizing up/down

Hotkeys

Translation: g

Rotation: r

Scale: s



More on movement in Blender

Sometimes you want an object to move constrained to a specific axis (x, y, or z) so you don't have to worry about it moving around willy-nilly. Constraining an object's movements to an axis is just more hotkeys. You'll press the normal movement hotkey (g, r, or s depending on translation, rotation, or scale), and one more key:

Hotkeys

Translation constrain to:

x-axis: g then x

y-axis: g then y

z-axis: g then z

Rotation constrain to:

x-axis: r then x

y-axis: r then y

z-axis: r then z

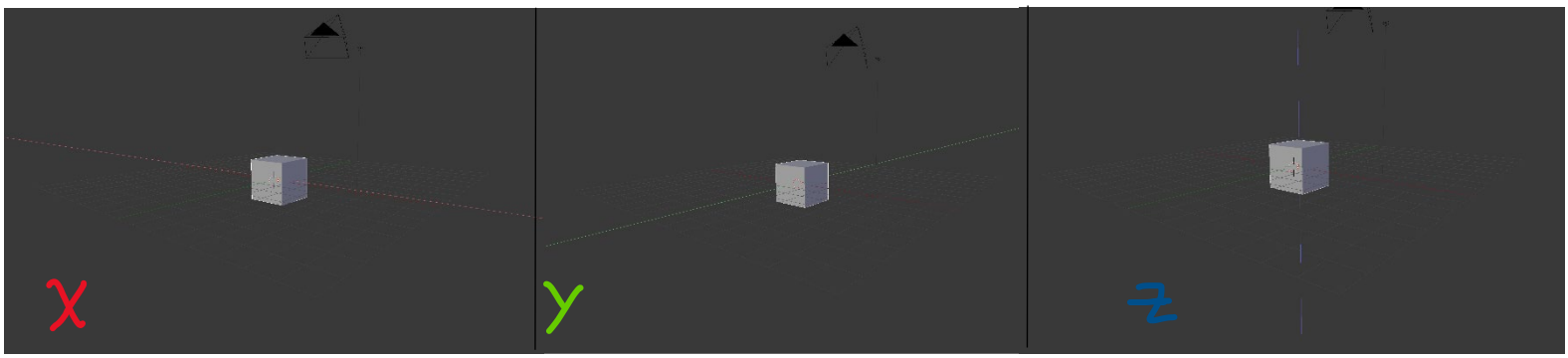
Scale constrain to:

x-axis: s then x

y-axis: s then y

z-axis: s then z

Note: when you constrain to an axis, you'll see a line corresponding to that axis running through the object (x – red, y – green, z – blue)



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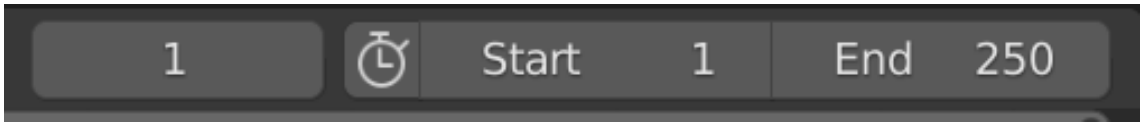

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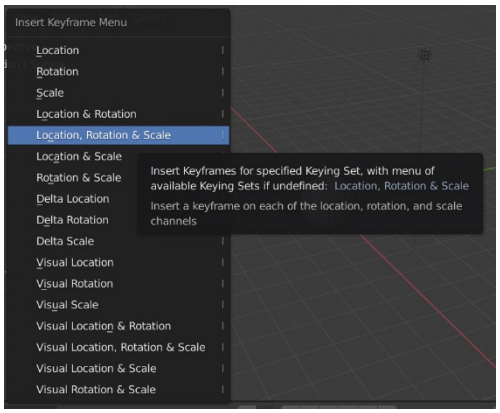
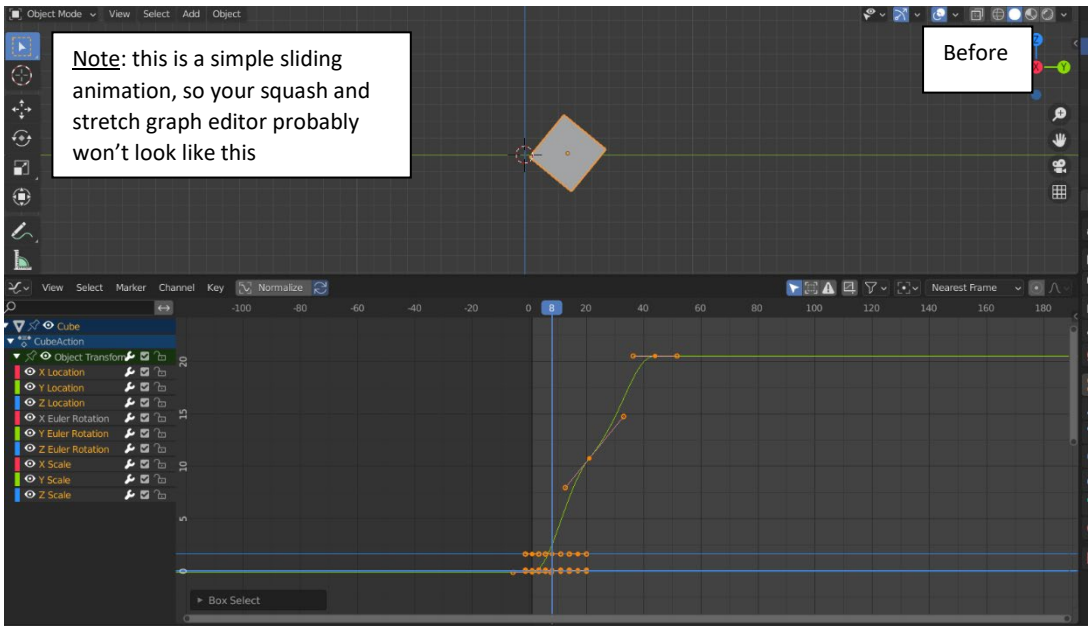


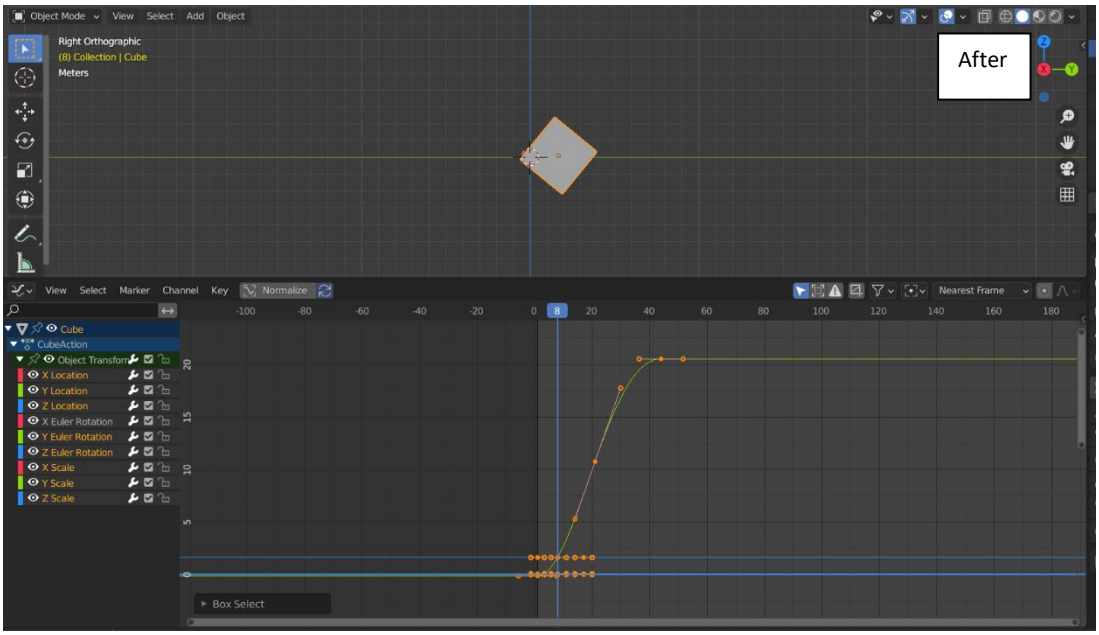
7) Right click on the time slider or manually enter a frame number for the next keyframe. Then move/rotate/scale your sphere, and set another keyframe.
8) Continue in this way with your squash and stretch cycle until you've reached 240 frames.

Graph Editor

9) Make sure your graph editor is a smooth curve.

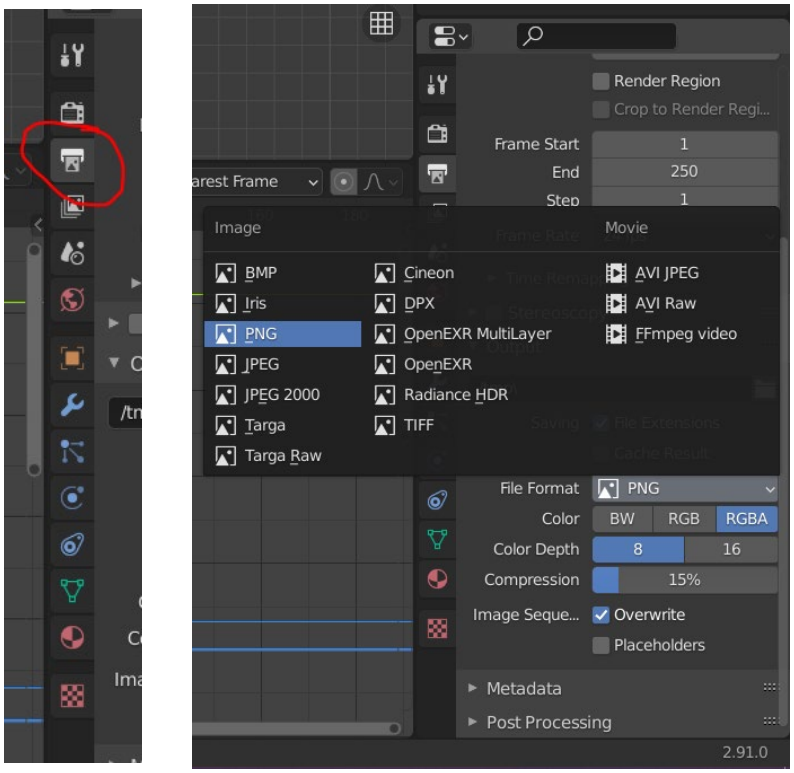
Grab the orange handles on the graph (seen here at the first and last curves, and the middle slope) to adjust them to create a nice curve.



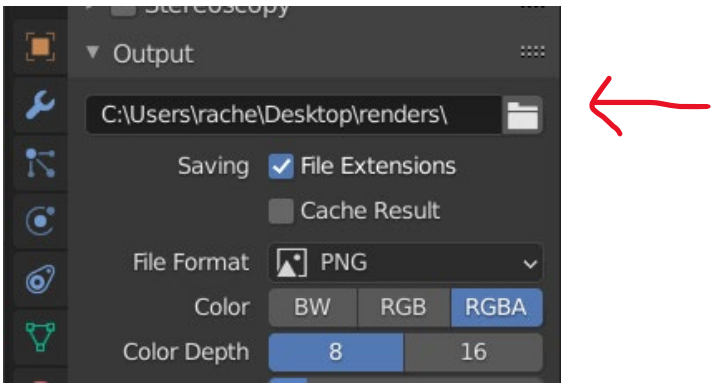


Rendering

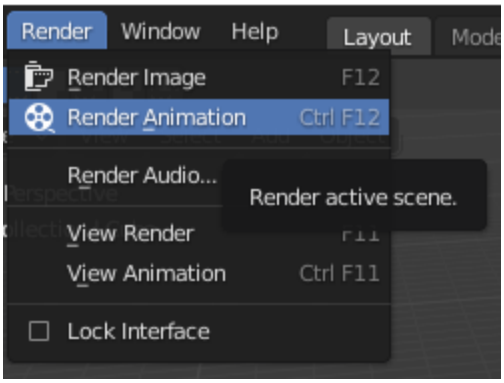
10) First, position your camera to where you want it
    a. Press 0 on the keyboard/numpad to view what your scene looks like through the camera at its current position
    b. If you want to move the camera, just exit the camera view (press 0 again to exit), and move your camera as you would any other object until your view is to your liking.
11) Go to the Output Properties tab in the right toolbar (printer icon, circled in image below).
12) Scroll down and click one of the image settings in which you want your scene to render



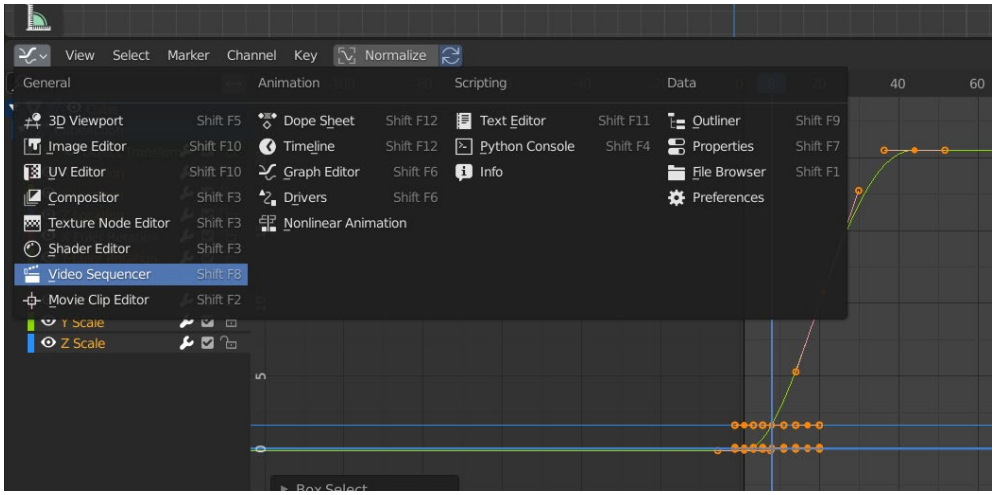
    a. *Don't* choose one of the movie settings – this will make it way more difficult if it somehow corrupts halfway through rendering and you have to start all over (versus you just having to start midway through the images if you're rendering it through jpegs or pngs).
13) Create a file on your computer (doesn't really matter where, as long as it's easily accessible for you) for your rendered images to go.



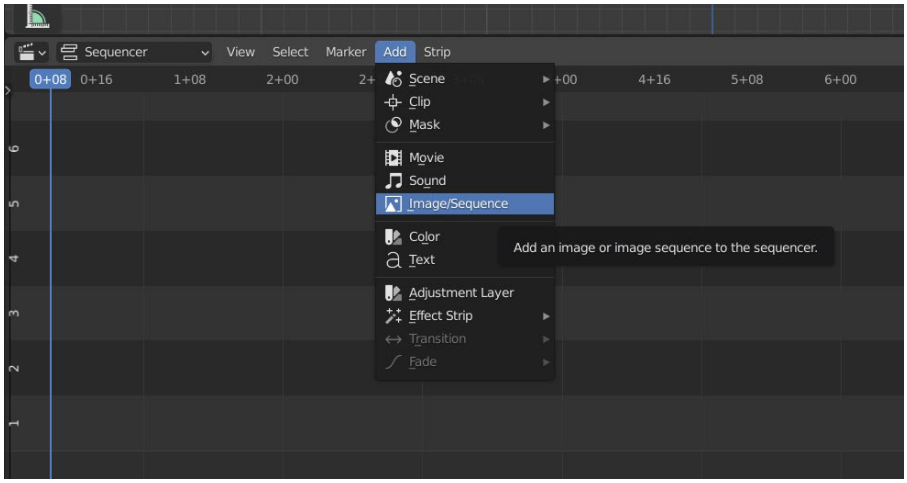
14) Near the bottom of the Render tab, look for the “Output” section, click the file icon and select the file you want to use for your rendered images.
15) Save your project!
16) Near the top of the Render tab, click the render Animation button.



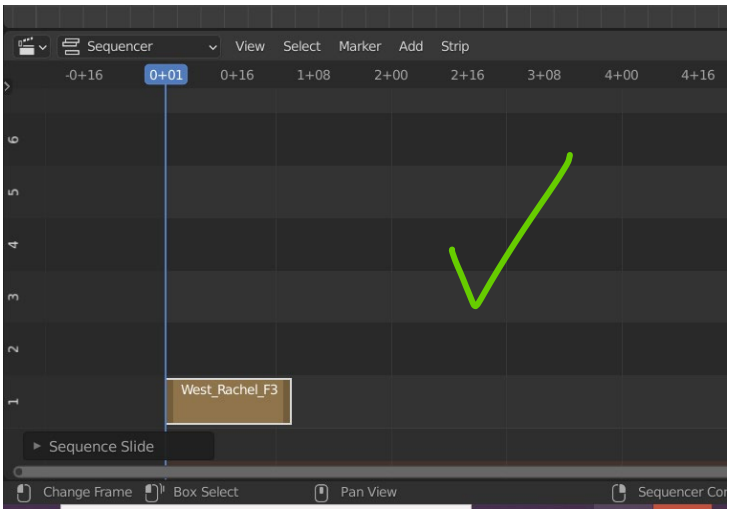
17) Switch from Default to Video Editing view at the top toolbar.

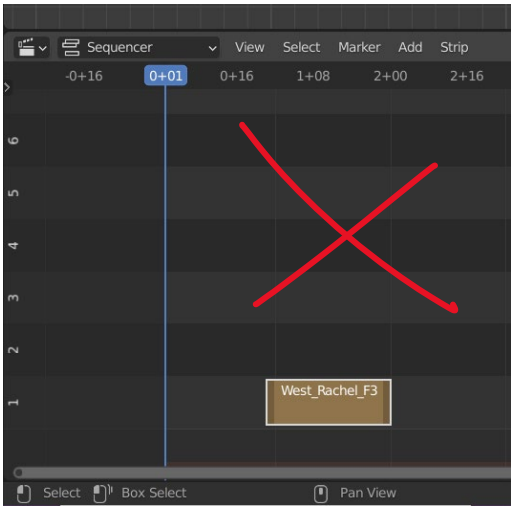


18) Once you’re in Video Editing mode, look at the bottom toolbar, select Add then select Image

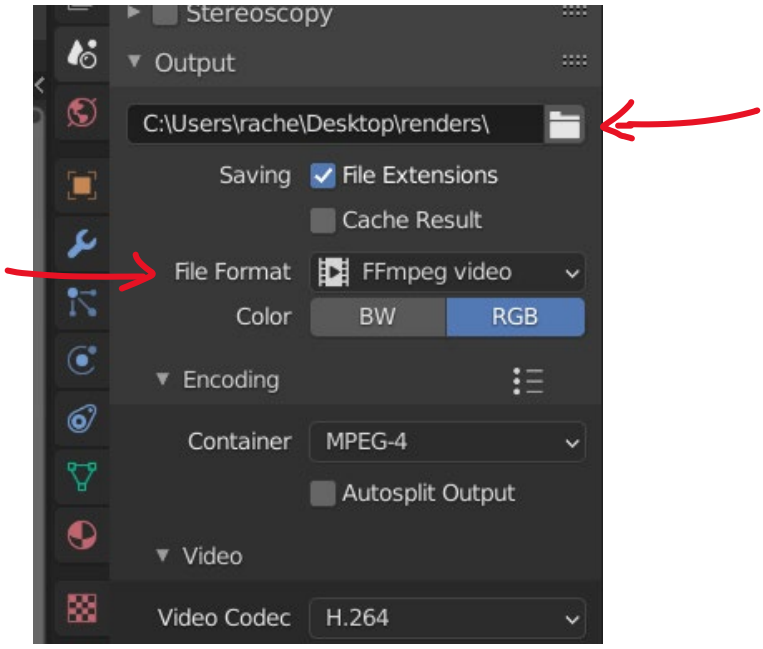


19) Locate the file your rendered images are in, then in the top right, select Add Image Strip.
20) Make sure the image sequence is set at the first frame (you can just click and drag if it's not).





21) Return to Default mode (top toolbar dropdown menu)
22) Now reselect the file you want your final render to be in and change the file format to AVI JPEG (or whichever movie format you like.) The example below is using FFmpeg with MPEG-4 encoding (this will create an mp4)



23) Render Animation again (same button as step 16).
24) Find your rendered scene in your folder and enjoy!