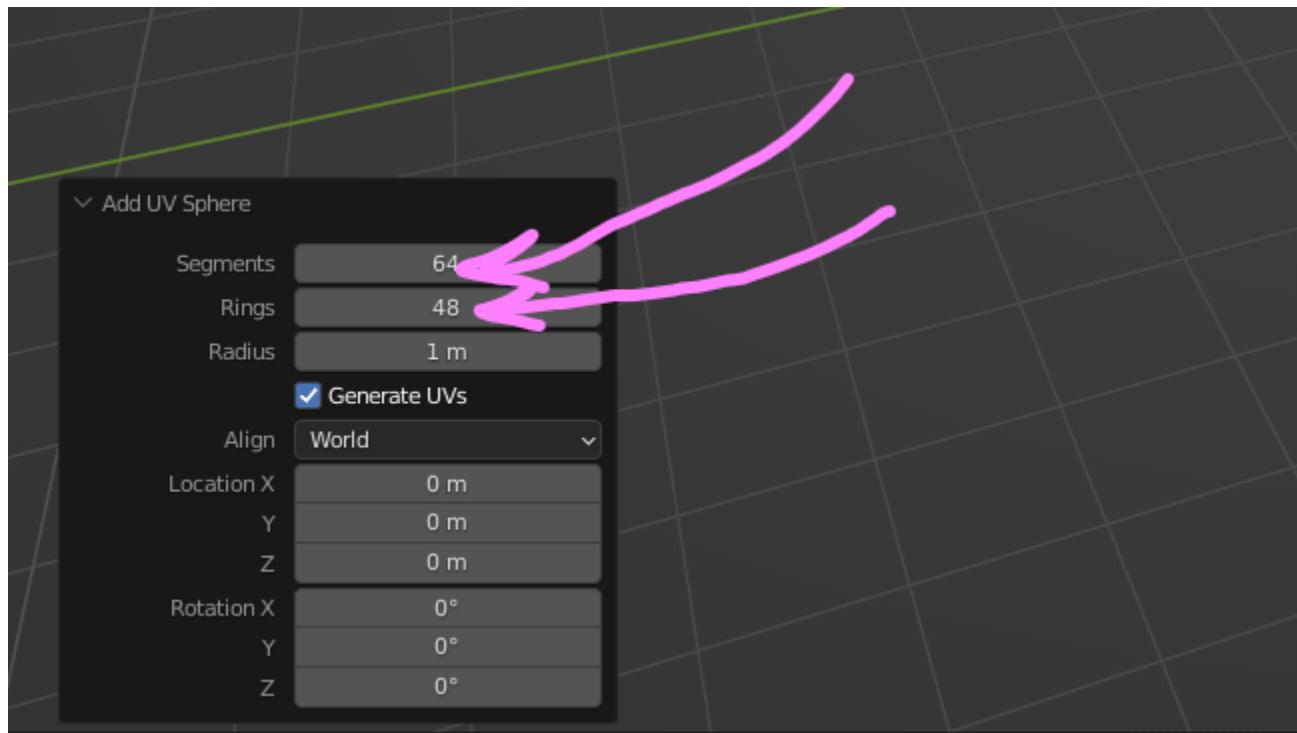


## Marble Shader

Starting with a blank scene, delete the cube and add a UVSphere

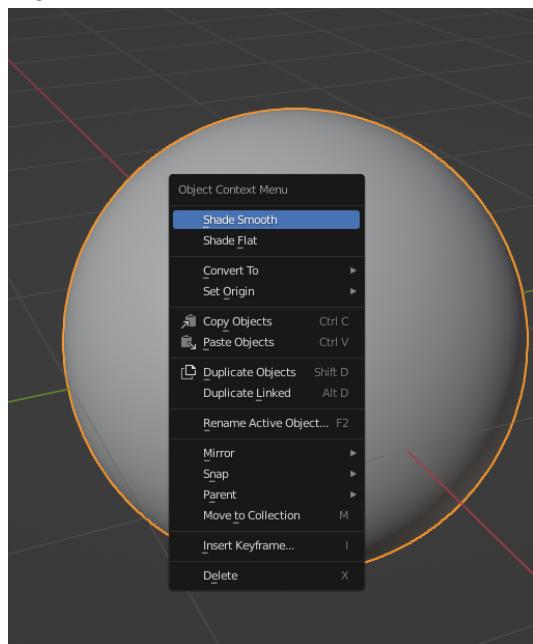
Save your scene !!

Increase the quality of the sphere by using the popup dialog box and increasing the values of the Segments and Rings options

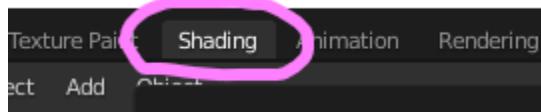


The sphere now has more polygons

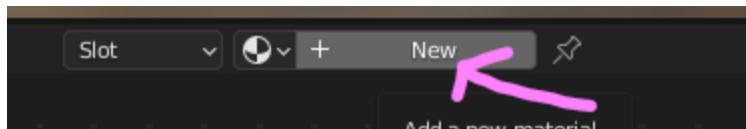
Right click the sphere and select “shade smooth” to give it a smoother appearance



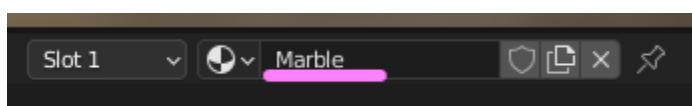
Enter the Shading workspace by clicking the tab at the top of the screen



Add a new material to the sphere by clicking the “new” button in the shader editor



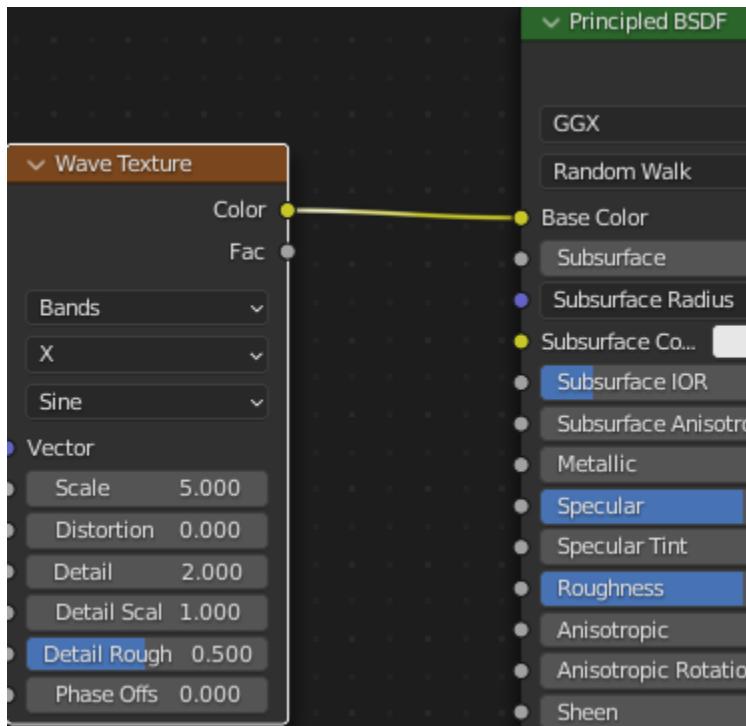
Rename the material to "Marble"



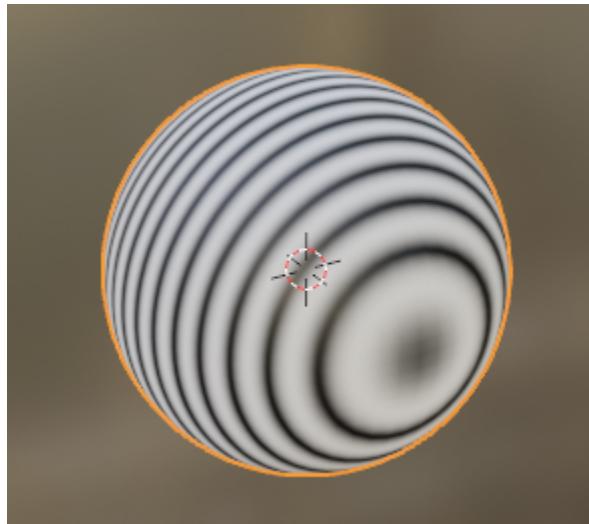
We are now ready to begin building the material

Press shift + a to add a wave texture: texture → wave

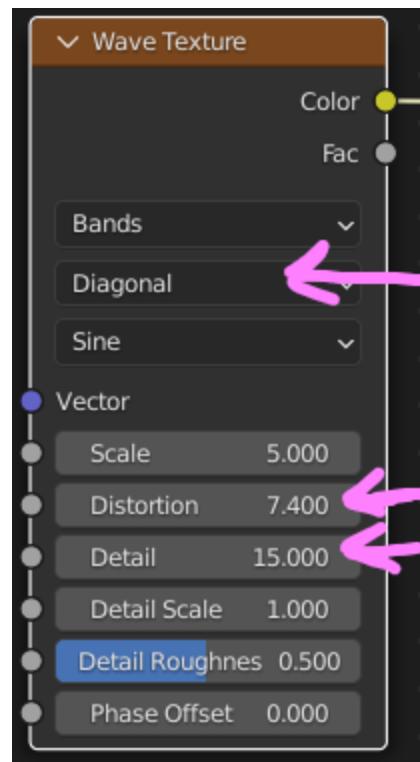
Connect the wave texture's color output to the base color input of the principled BSDF shader



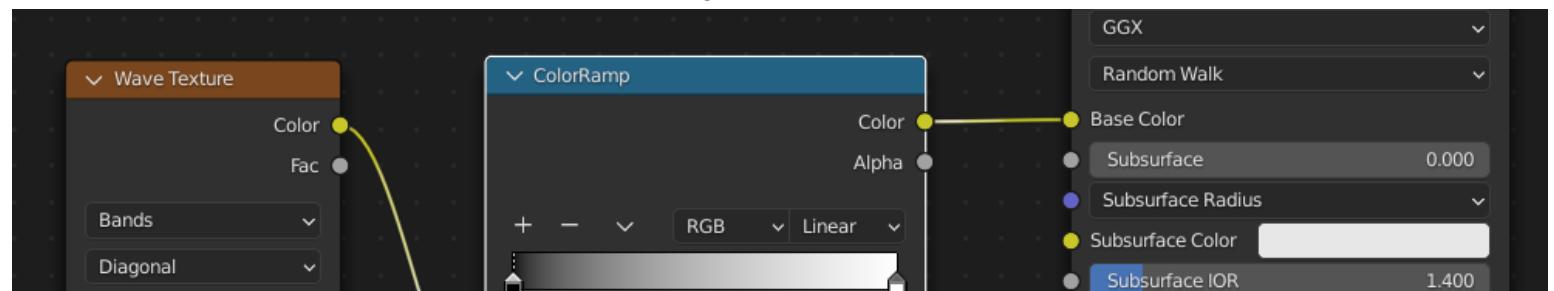
The sphere will now show the waves of the texture applied to its surface



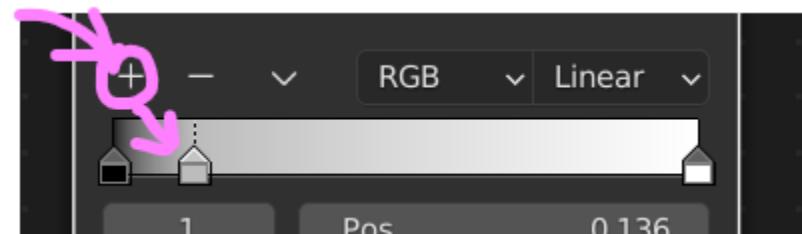
Let's modify the waves texture so that it looks more like marble bands. The following settings work well:



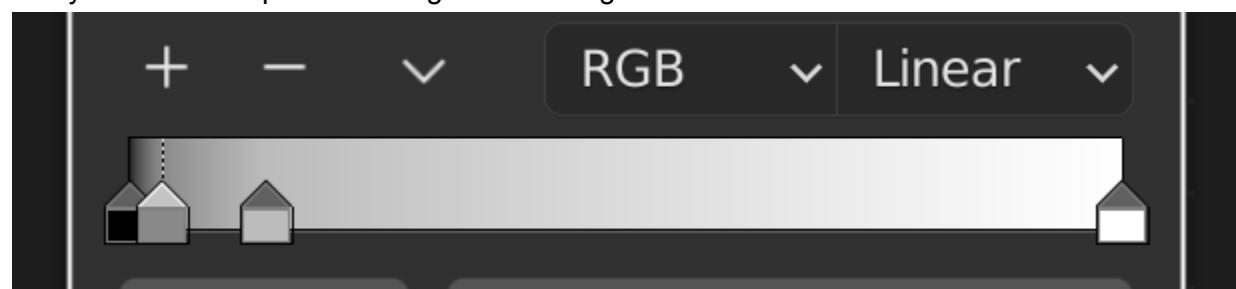
Next, let's tweak the contrast of the wave texture using a color ramp node. Shift + a → Converter → color ramp



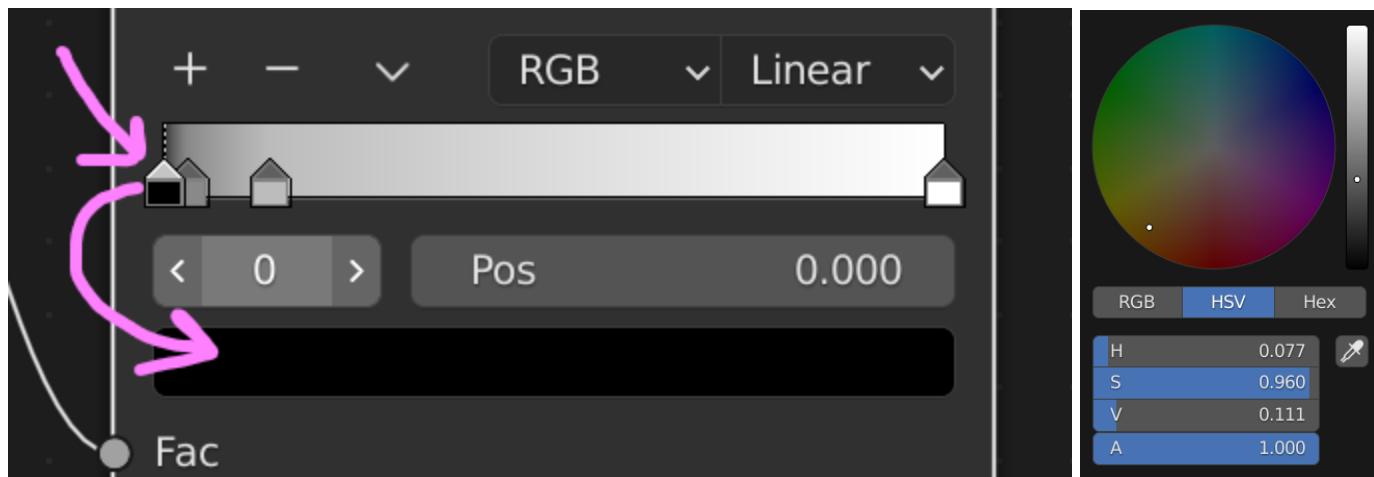
The color ramp can be placed between the wave and the principled BSDF node



Add an additional stop and slide it closer to the left. This will tighten up the midtones of the wave texture.  
Add yet another stop to further tighten the range



Change the black stop to a golden color

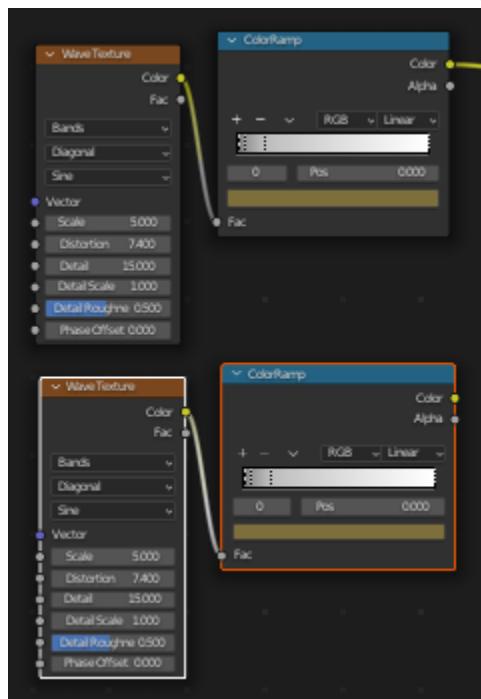


The result currently looks like this:

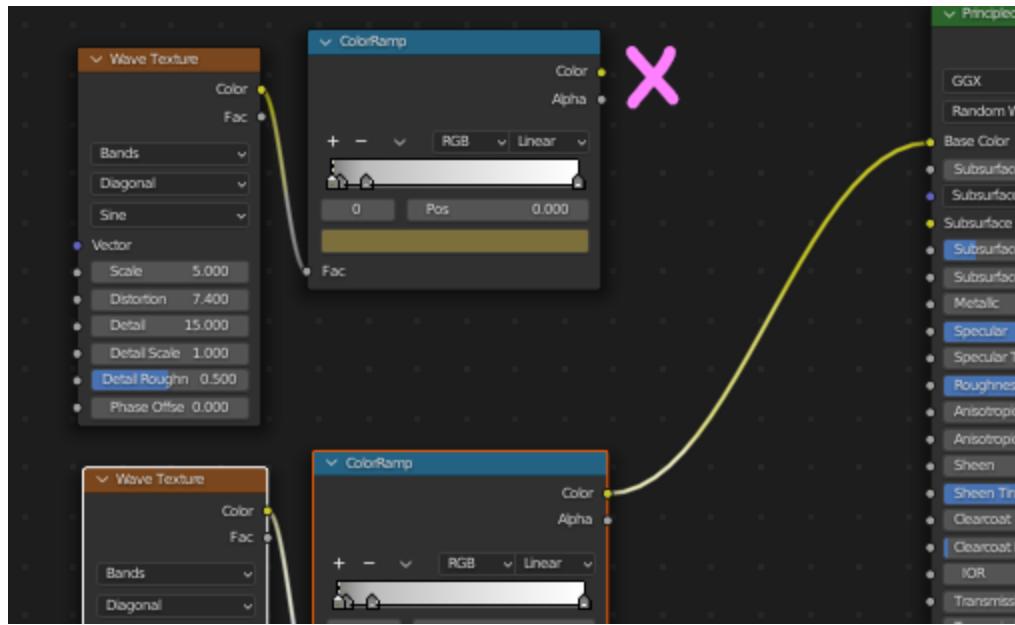


Save your scene !!

Let's duplicate the wave texture using shift + d and place the duplicate below



Let's connect the lower texture to the base color so that we can preview the changes we are about to make

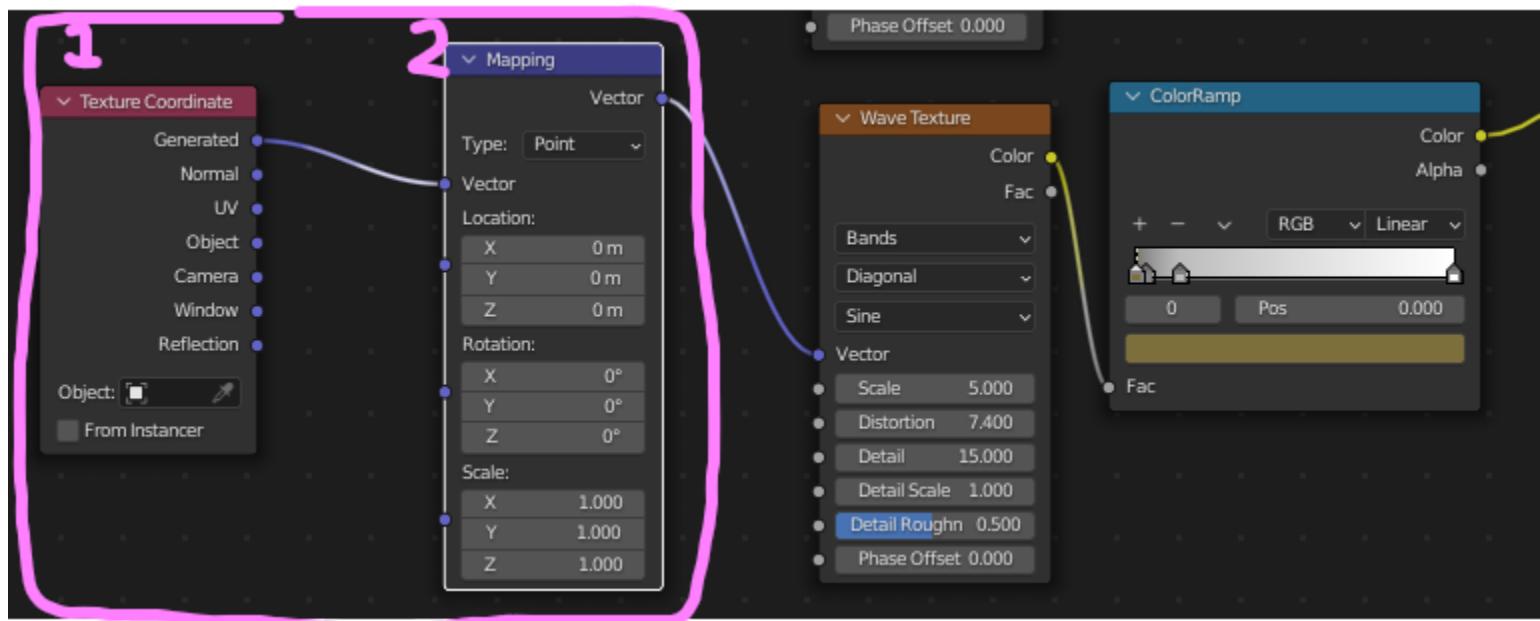


We need to add two nodes to control the position of the texture:

1- shift + a → input → texture coordinate

2- shift + a → vector → mapping

The two nodes should look like this once connected:



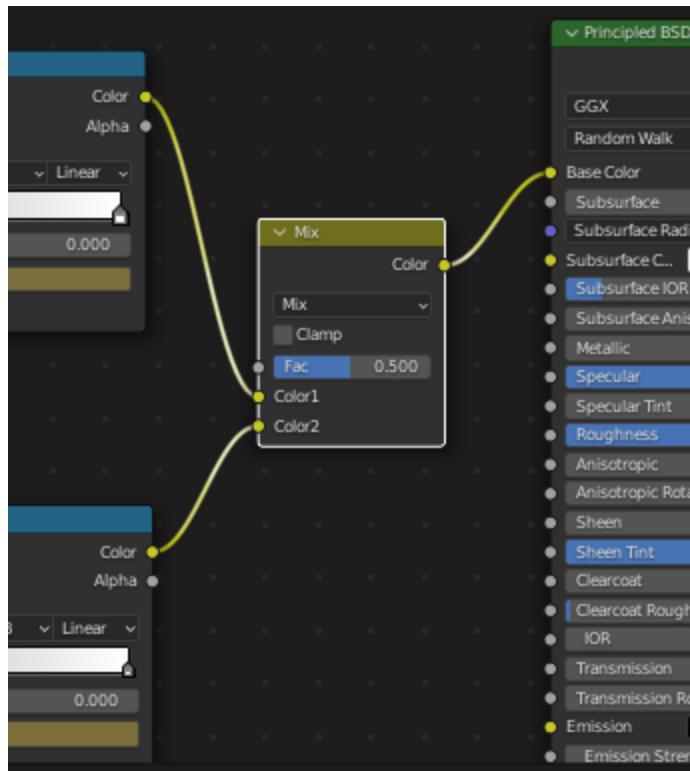
The mapping node allows us to modify the coordinates scale and rotation of the texture. Let's rotate the waves texture. Increase the x rotation to a larger number and do the same for the y and the z. Here are some example numbers:



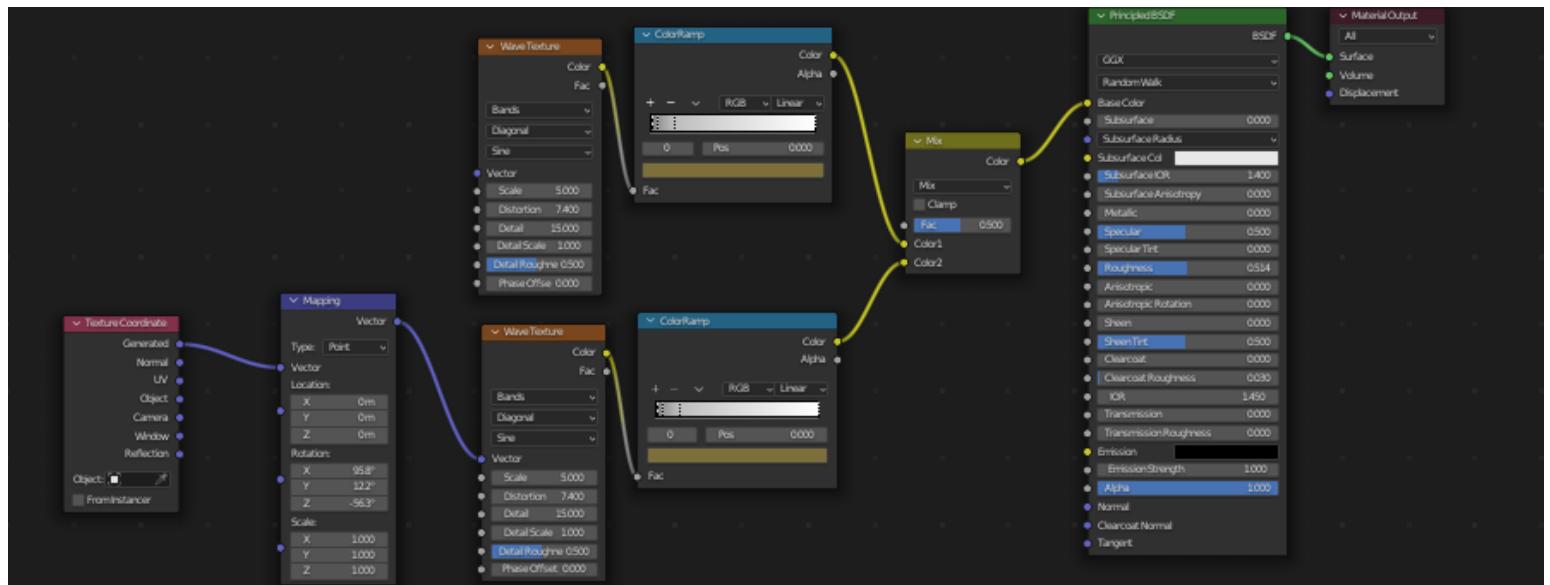
Next, let's mix the two wave textures together by combining their output with a MixRGB node

Shift + a → color → MixRGB

Place the mixRGB node after the color ramp nodes and connect the two color ramps to it. Connect the output of the mixRGB node to the base Color of the Principled BSDF shader



Currently the entire workflow looks something like this:



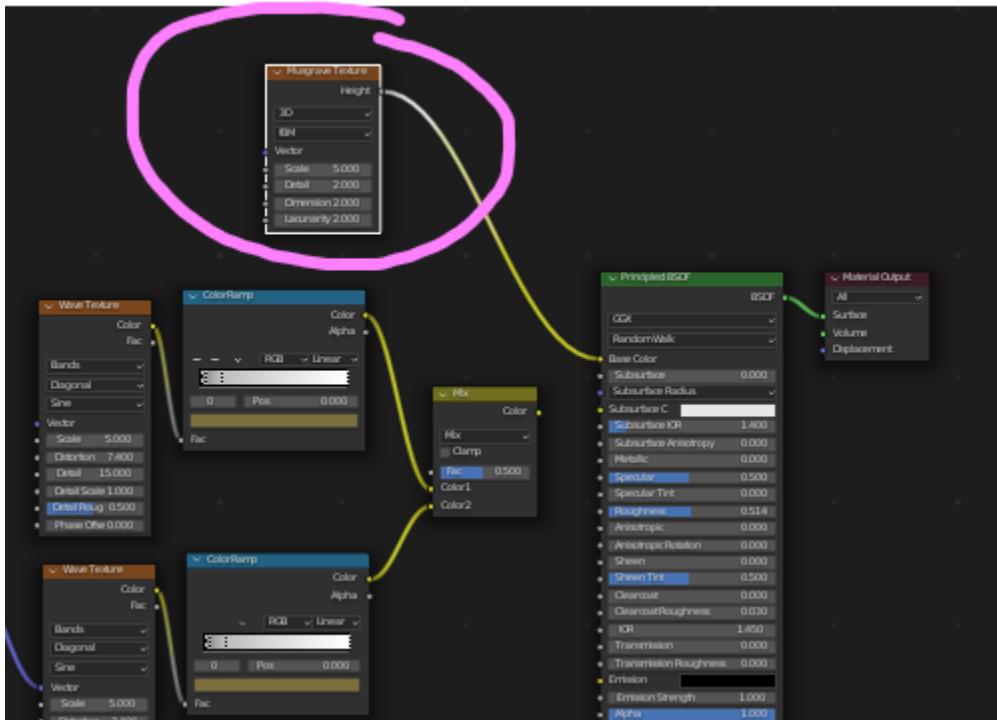
And the ball looks somewhat like this:



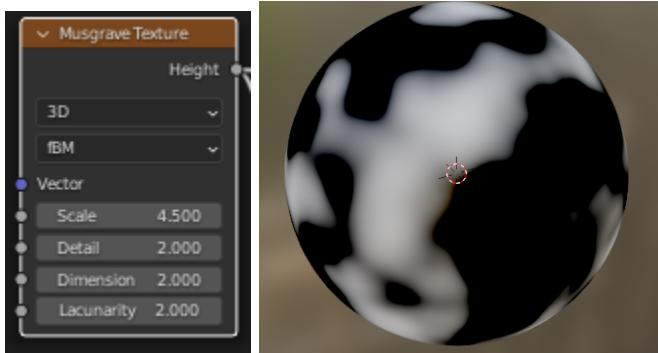
Save your scene !!

Next lets control how the two wave textures are mixed by using a mask via the Fac input of the mix node.

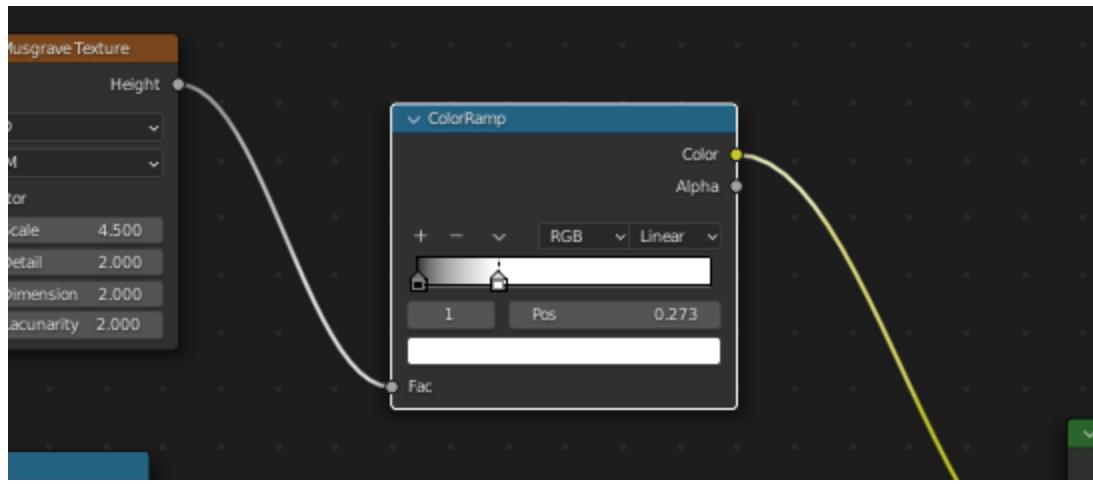
Add a Musgrave texture: shift + a → texture → Musgrave, and place it above the color ramps. Temporarily connect it to the shader so that we can preview the look of it.



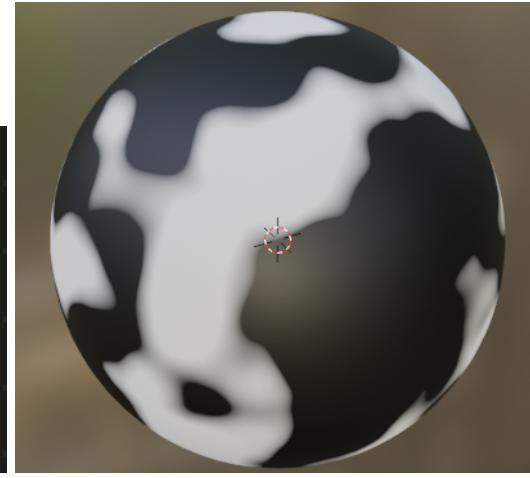
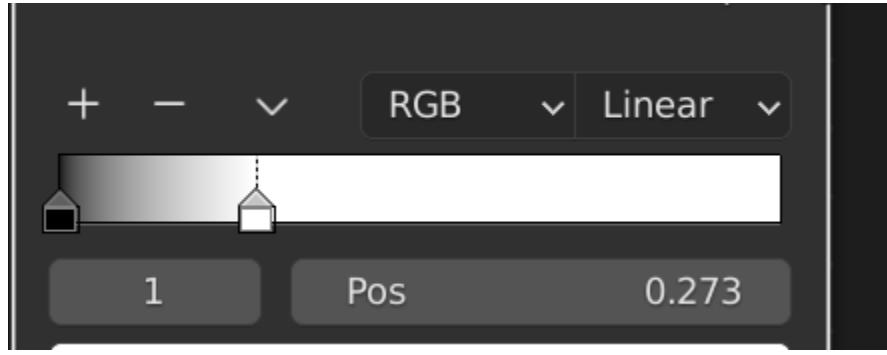
Modify the values so that the texture is larger and splotchy like this:



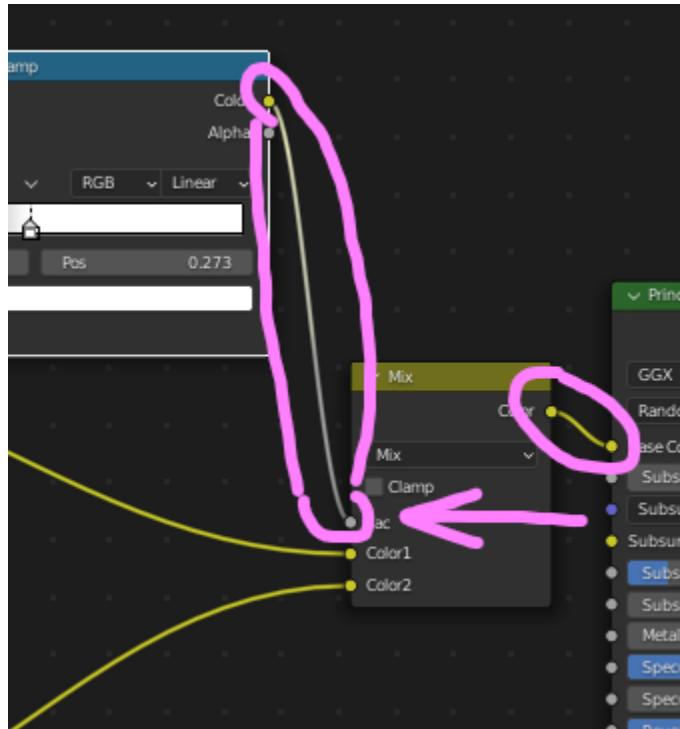
Let's sharpen the edges of the splotches using a color ramp. Shift + a → converter → colorRamp



Use the sliders to sharpen the contrast of the splotches



Now that we have good contrast, let's use this black and white pattern as a mask for our mixRGB node by plugging it into the Fac input.



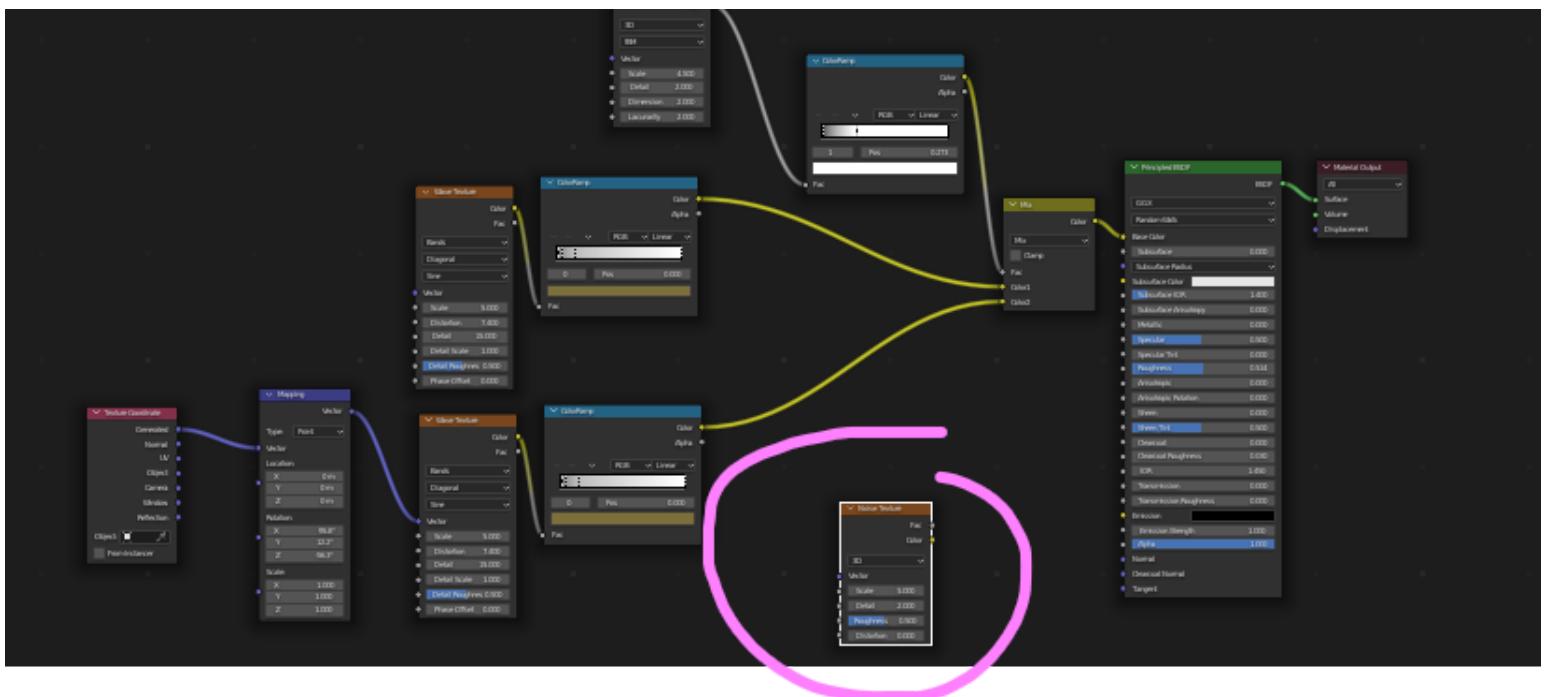
This results in a mixed effect that is directed by the black and white patterns of the musgrave texture... looking like this:



Our marble texture now looks more interesting. Let's add some surface detailing:

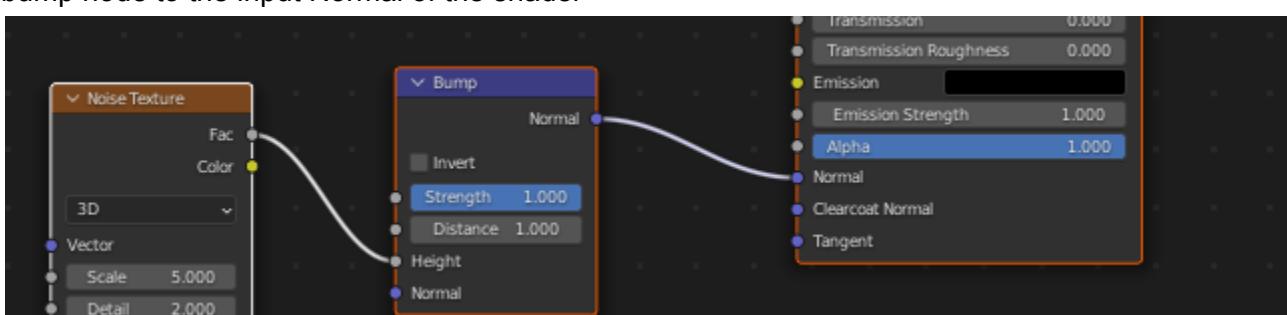
Add a noise texture: shift + a → texture → noise

Place the texture down below, separate from the node tree above.



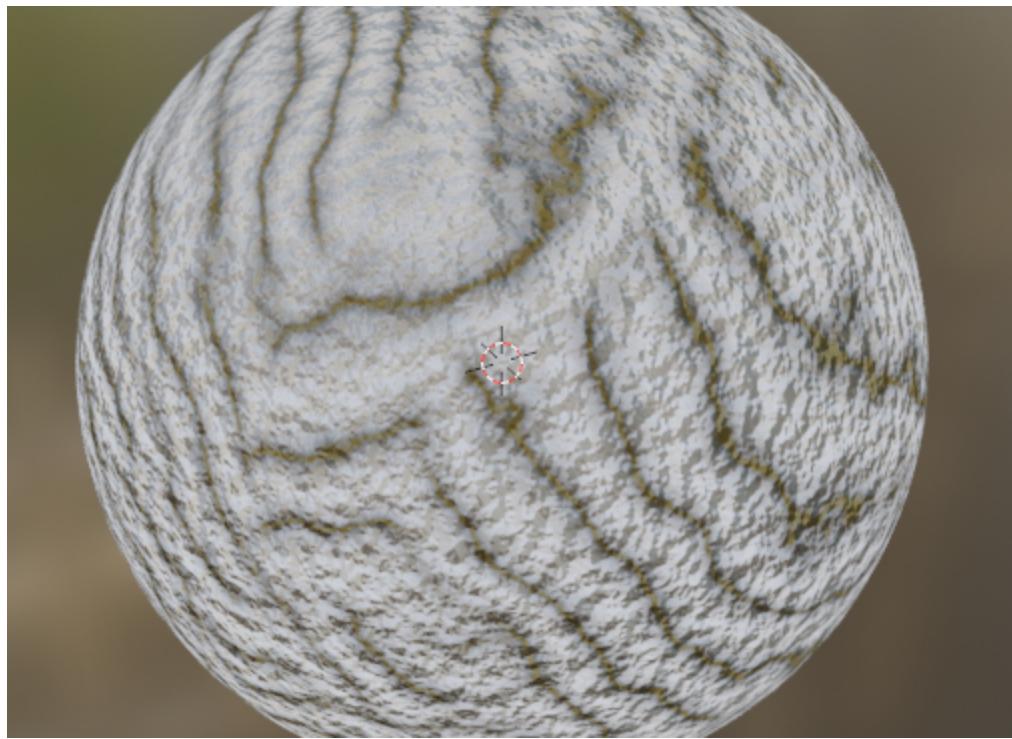
Let's connect this noise texture to a bump map to give our ball some relief texture. Shift + a → vector → bump.

Connect the Fac of the noise texture to the input Height of the bump texture. Then connect the output Normal from the bump node to the input Normal of the shader



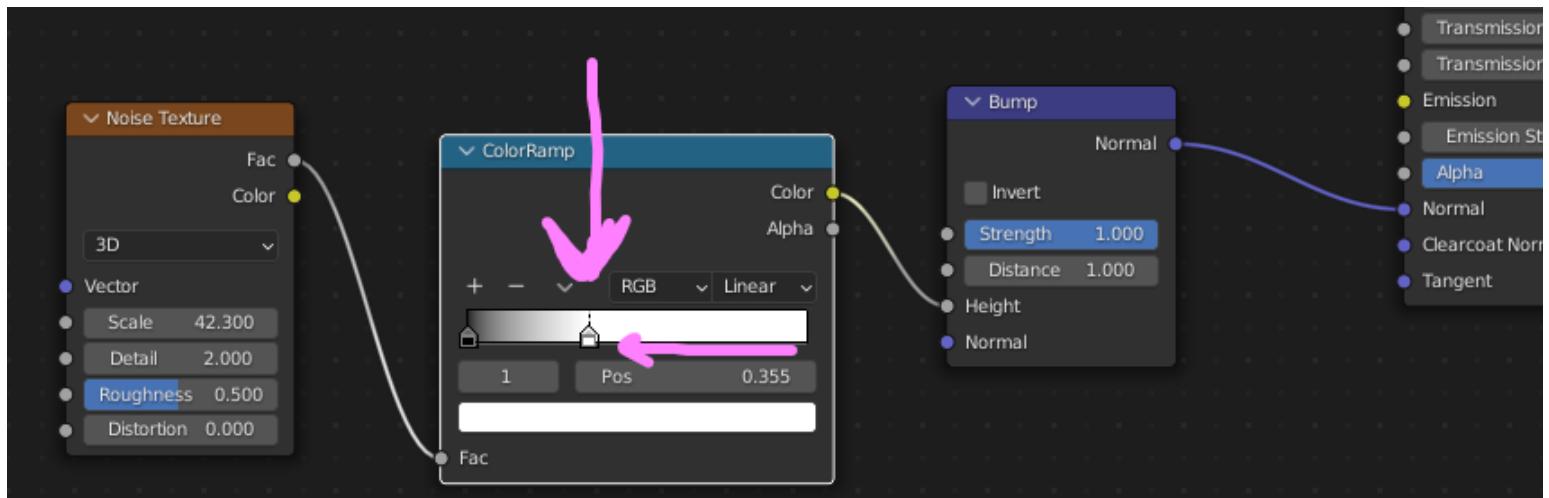
The effect is visible on the ball now. Let's increase the scale value of the noise texture so that the noise becomes smaller. Try setting the scale to something like 42.

The ball now has a consistent noise texture applied as a bump map and looks like this:

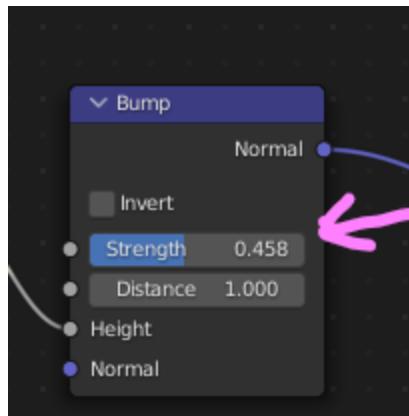


Let's refine the noise texture by using a color ramp.

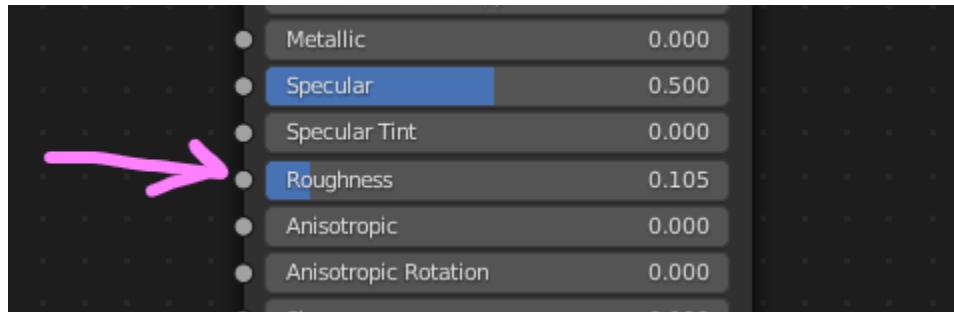
Shift + a → converter → colorRamp. Place the color ramp between the noise texture and the bump map  
Drag the white slider to the right to increase the contrast of the noise texture. Notice the effect on the ball



Let's drop the strength of the bump texture to make the effect more subtle. Set the strength to something like 0.5

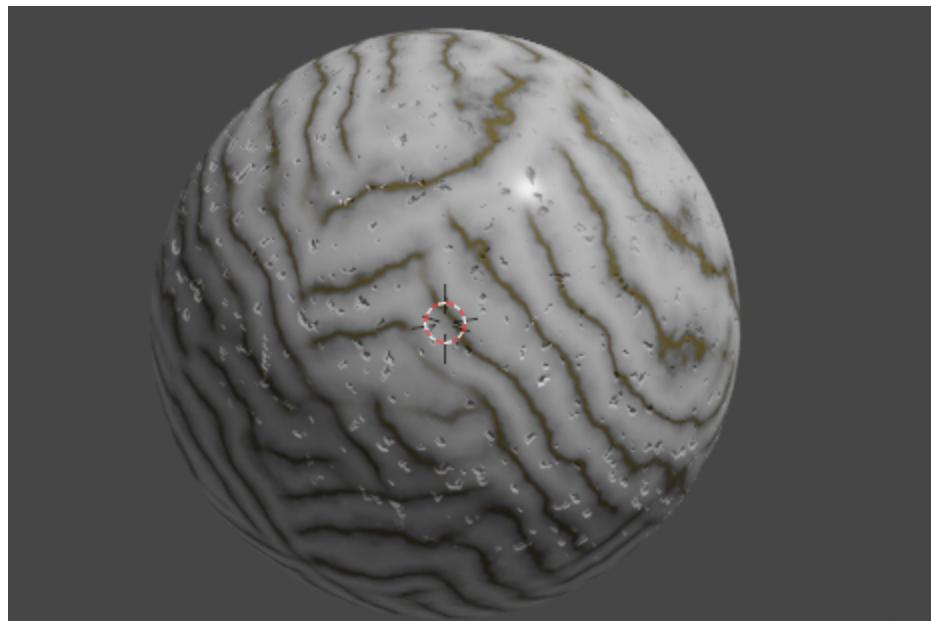


Our marble ball now looks more natural. Let's now decrease the roughness of the ball to make the material shine like polished marble.



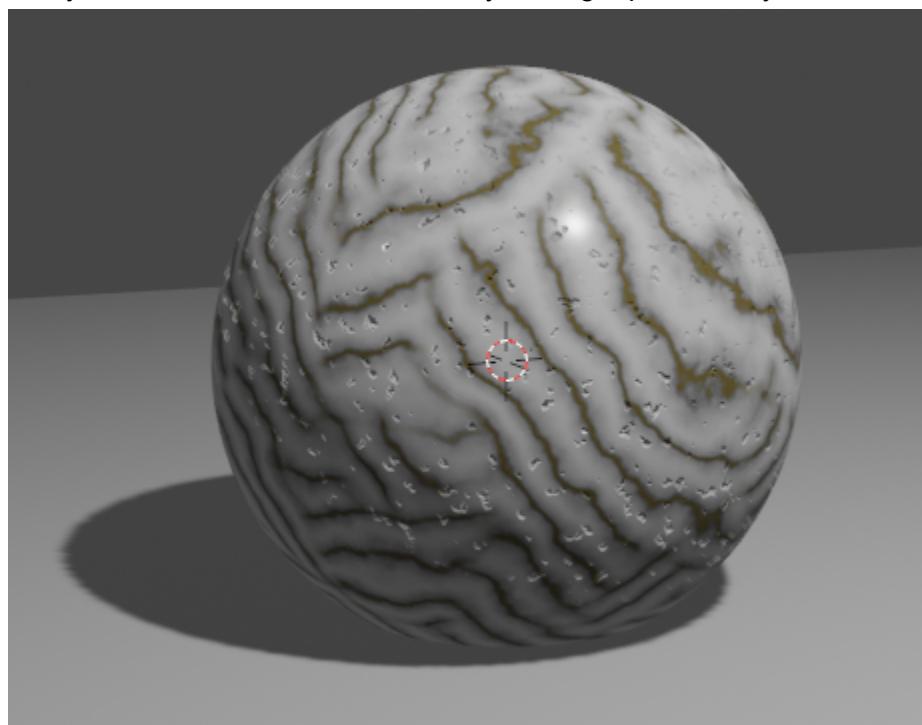
Now we can preview the ball in rendered mode by pressing the Z key and switching it to "rendered" (your mouse needs to be hovered over the 3d view when pressing Z)

This is the result:

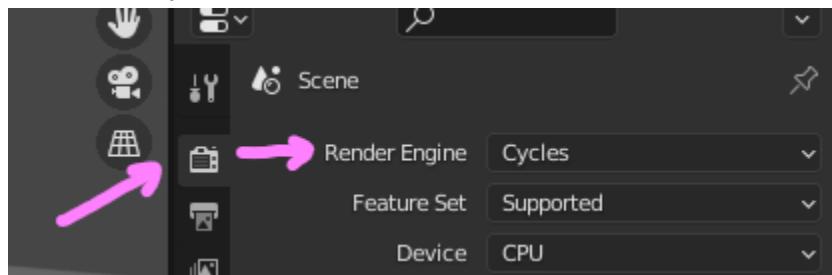


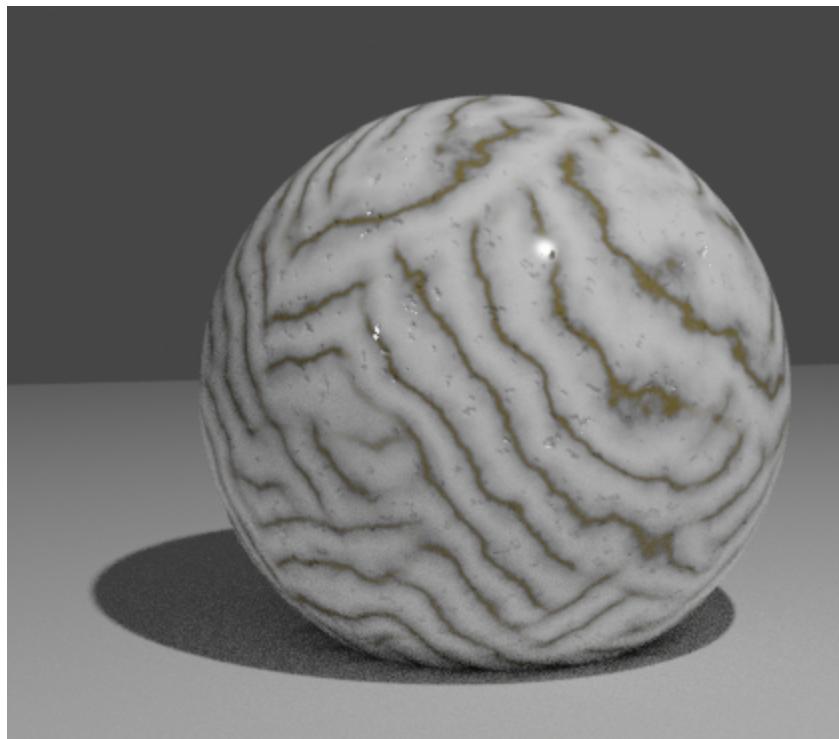
Save your scene !!

Lastly, let's add a floor to the scene by adding a plane in layout mode

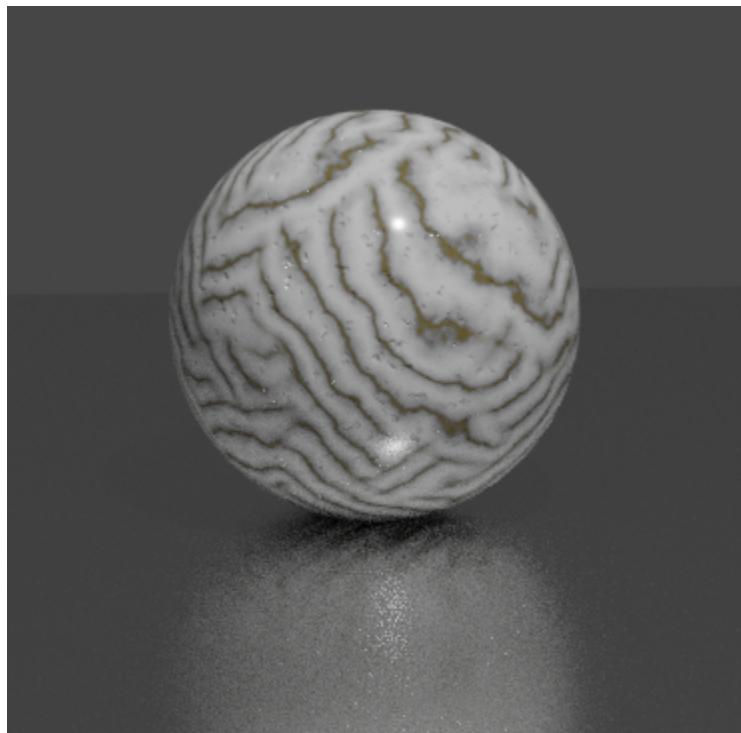


Switch the Cycles renderer and notice the difference in realism



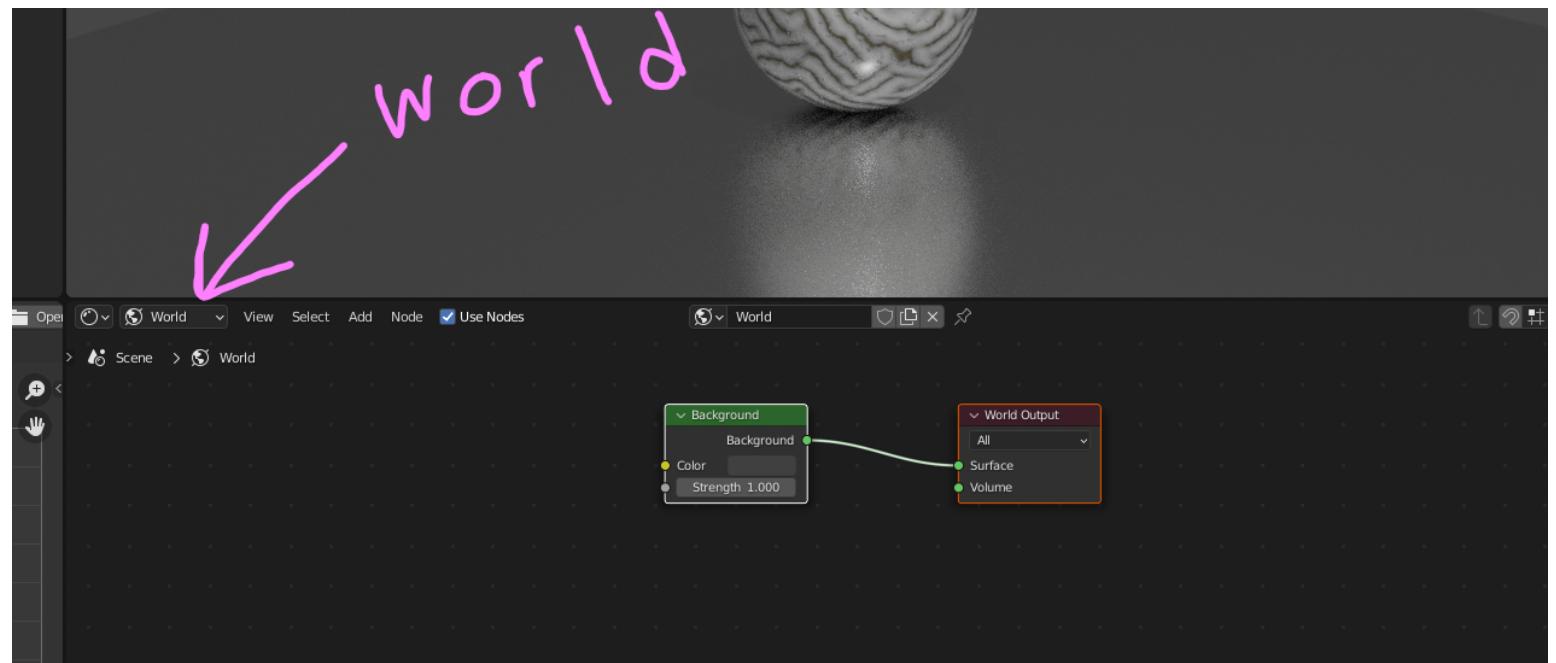


Try adding a reflective material to the floor for a nice effect

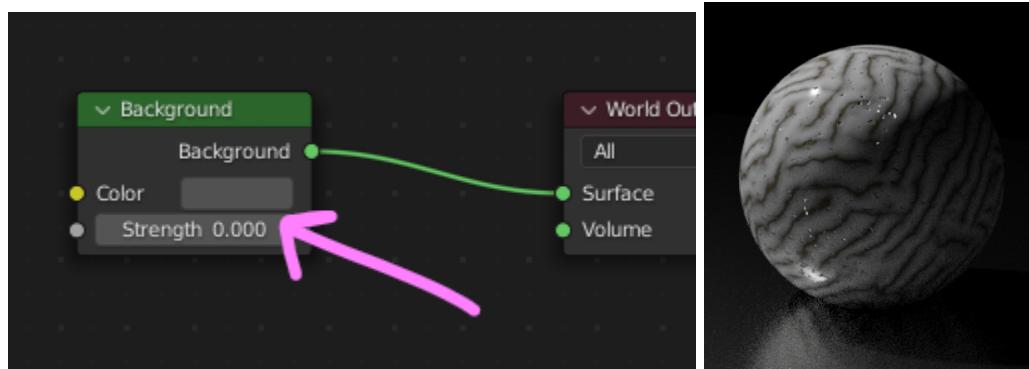


Let's now look at the World Shader editor.

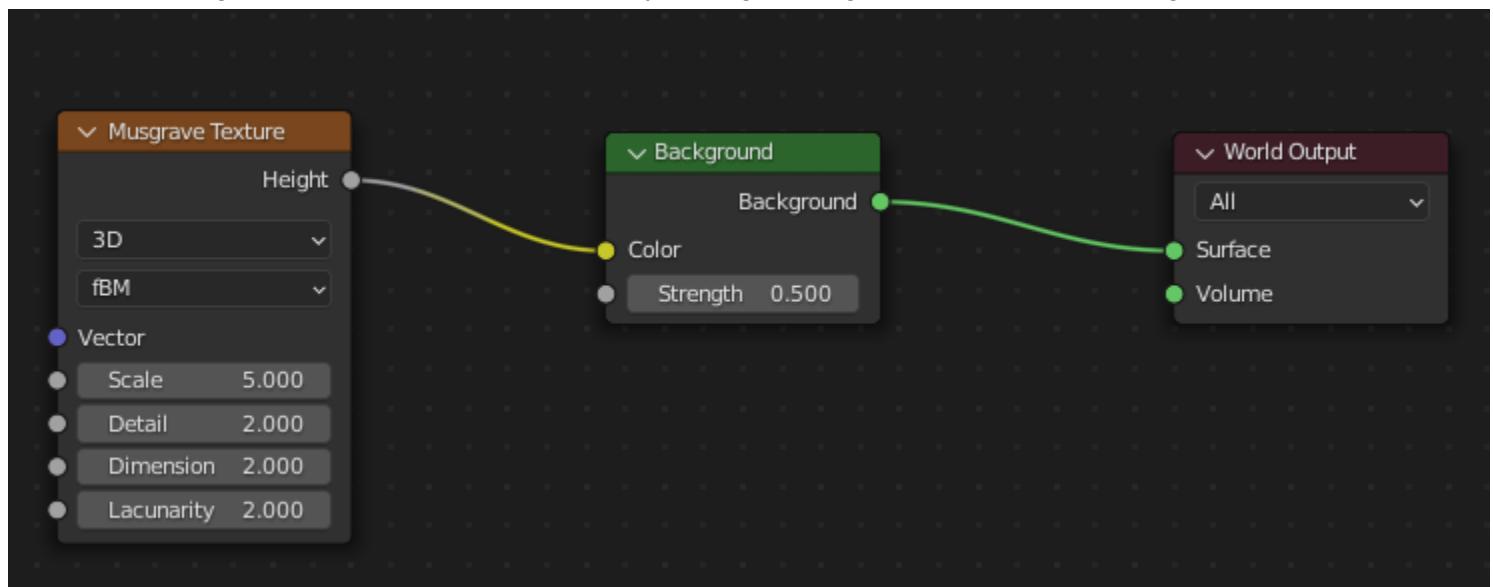
Switch the shader window to world mode



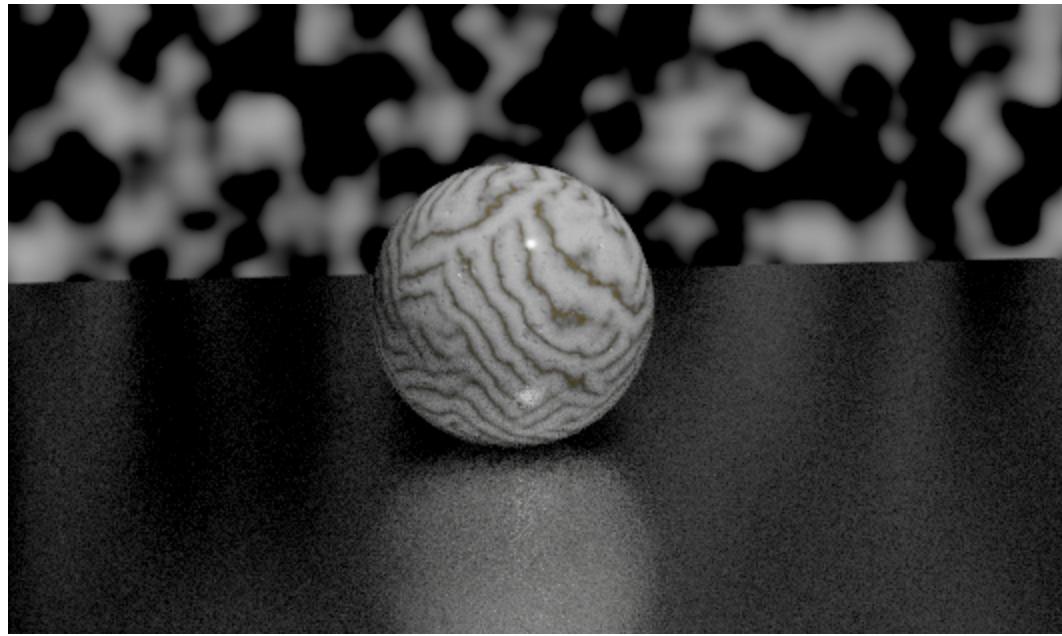
This allows us to edit the surrounding environment using shader nodes as well  
 Try dropping the strength of the background to zero



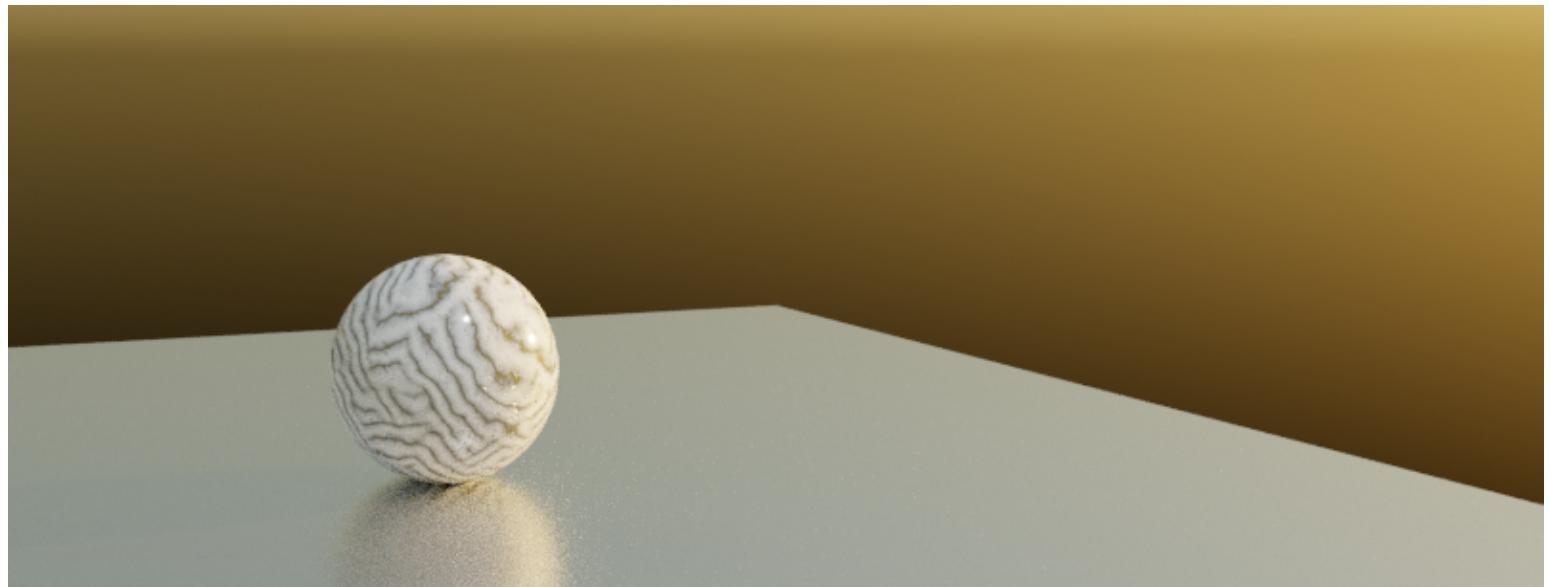
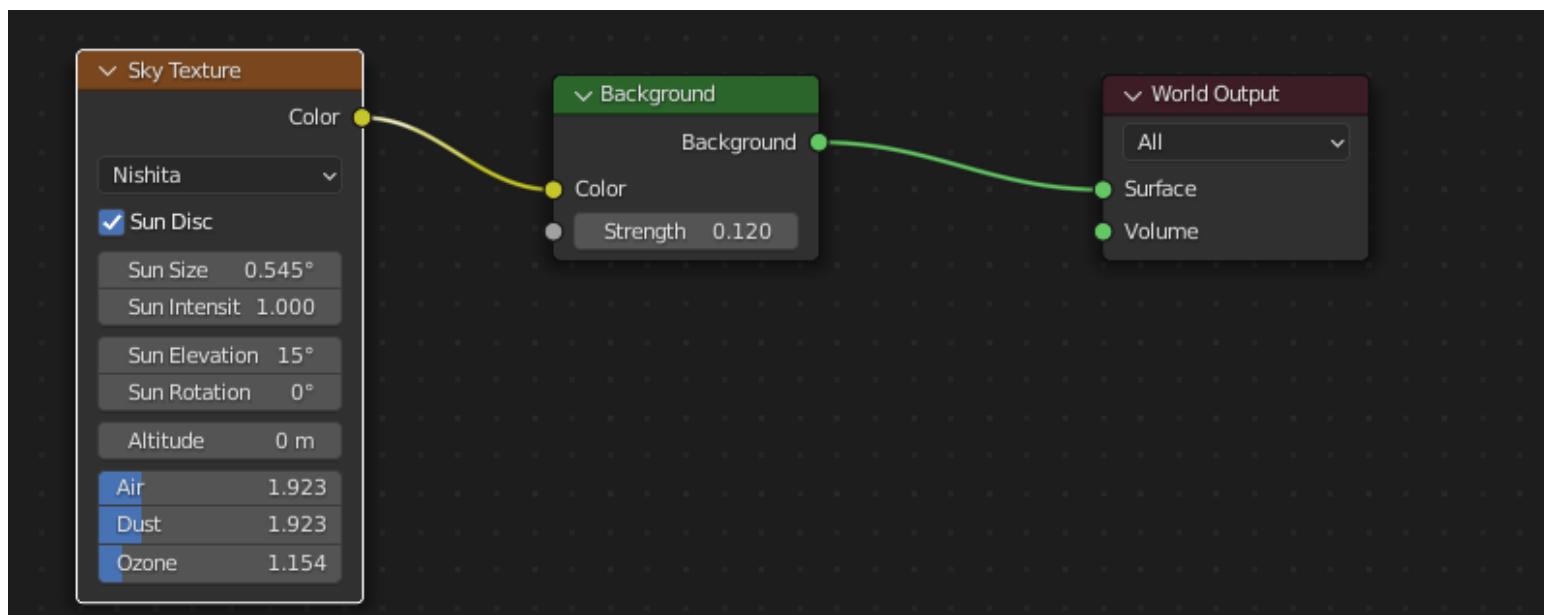
Notice how the environment gets darker  
 Return the strength to a reasonable value. Now try adding a musgrave texture to the background



Notice how the background texture affects the lighting and reflections of the scene

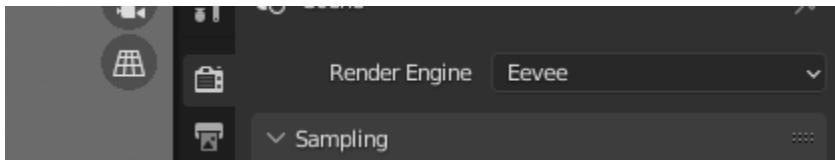


Remove the musgrave texture and try adding a Sky texture. Play with the settings and the strength values to see the effects on the scene



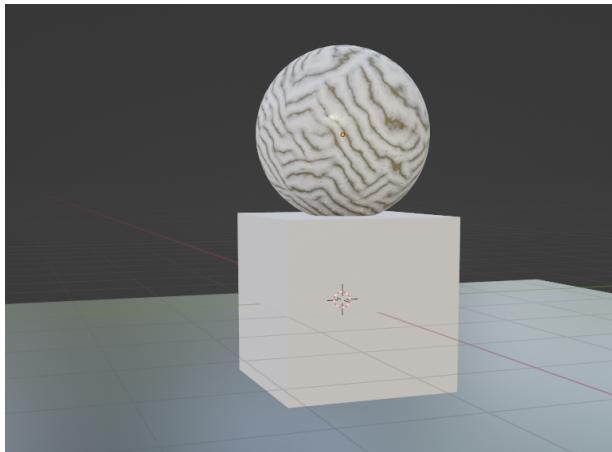
Notice that these effects are visible in the Cycles renderer mode, but not the EEVEE renderer mode

This can be seen by toggling between the two modes



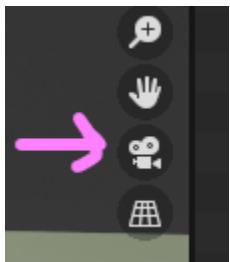
But return the mode to Cycles so that we can continue.

Let's hop into layout mode and add a cube to the scene. Position the marble sphere on top of the cube

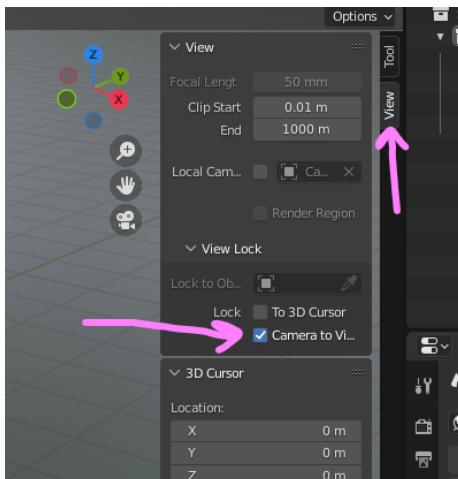


Let's delete the light in our scene, since most of the lighting is coming from the environment sky texture that we created moments ago.

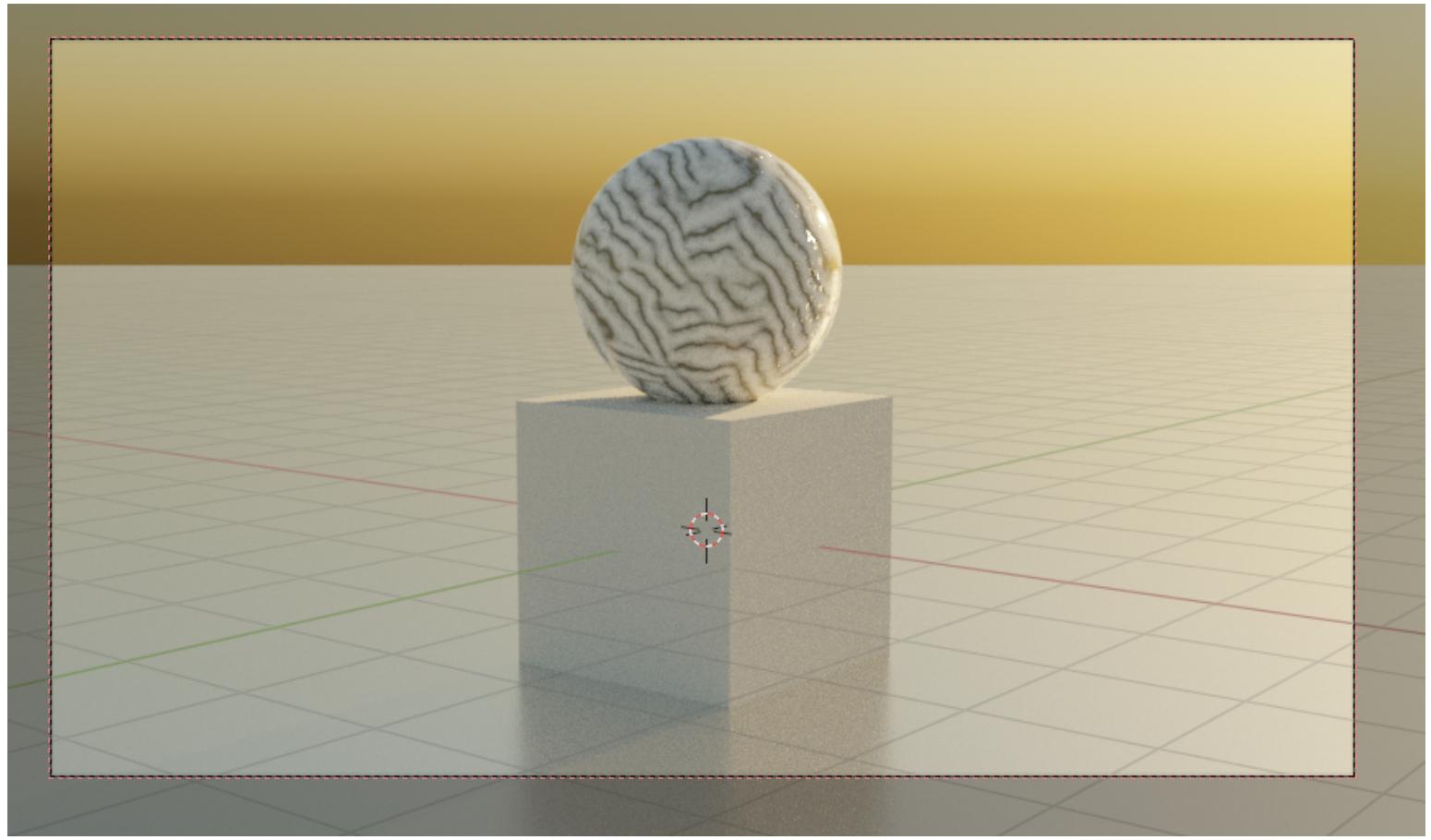
Switch into camera view by clicking the camera icon



Enable the "camera to view" checkbox to control the camera using the orbit controls of the mouse

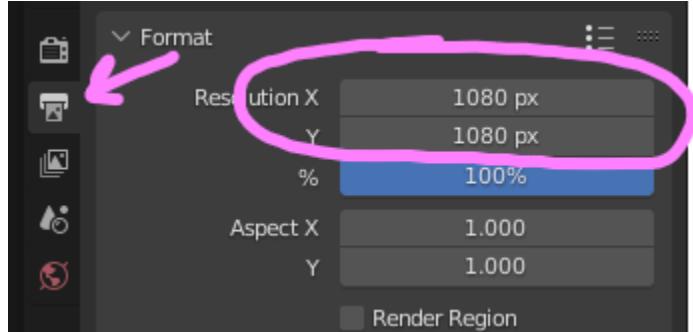


Switch to rendered view and position your camera in a good position



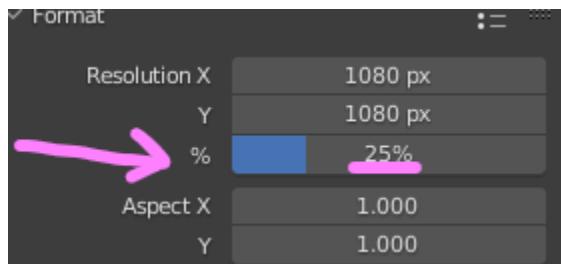
Let's look at some of the options we have regarding the camera

In the resolution settings, we can set the aspect ratio and final render size in pixels of the image



Set the x and y value both to 1080 for a square frame

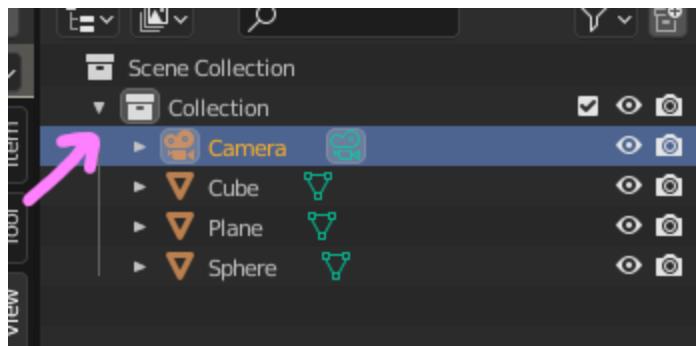
Slide the % slider down to a low value such as 25%



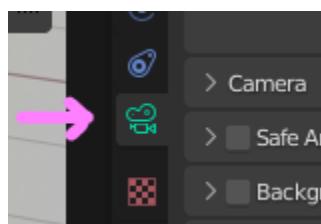
Save your scene !!

Now render the scene by pressing the f12 key or by going to the render menu above and clicking Render Image. You will see the render image popup appear and the progress of the rendering happening in real time. Wait for the rendering to complete. This render is 25% of the original size of the final render. Rendering small can be a good way to preview the result before committing to the longer render time of the full size rendering

Press escape to exit the render preview window. This image is not saved to your computer and is only temporary. Click on your camera in the hierarchy.

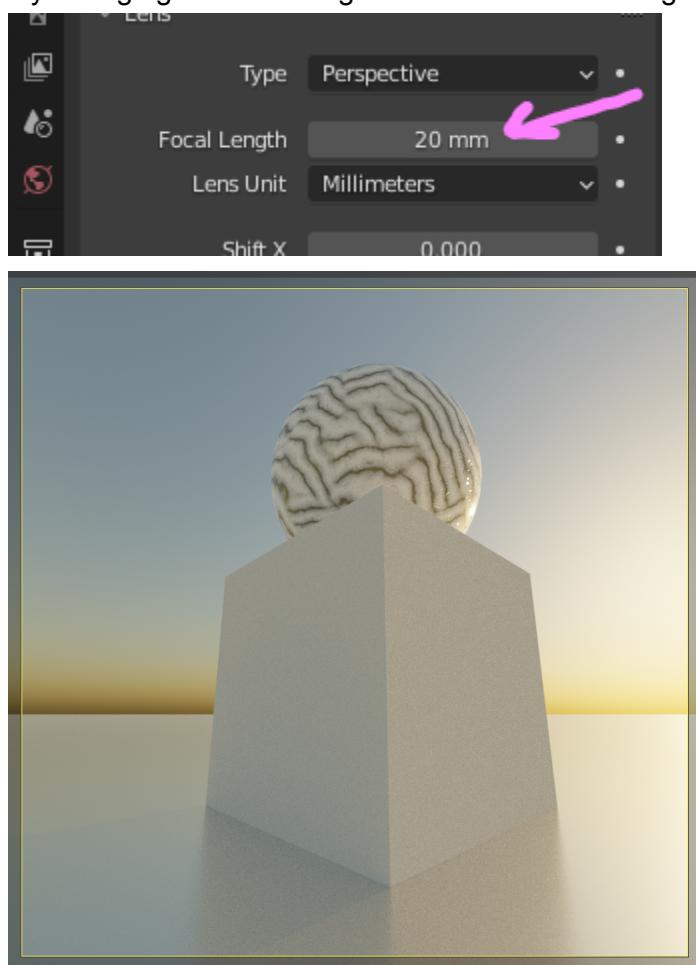


Next click the camera settings tab in the properties area

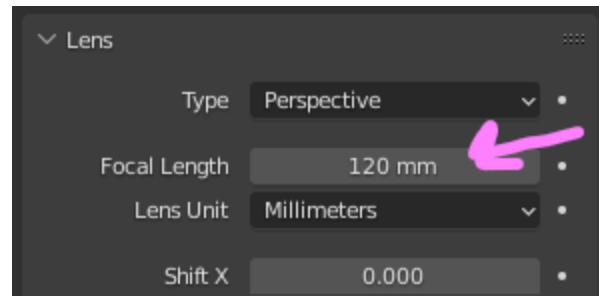


This area has extra settings that allow us to apply to our camera object.

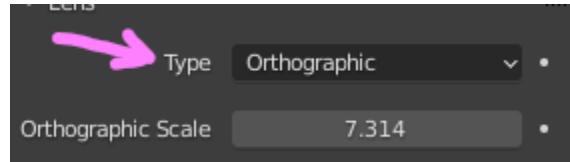
Try changing the focal length to 20mm and zooming in on your subject for a towering effect



Next try setting the focal length to a high value such as 120mm and readjusting your camera for a more isometric effect

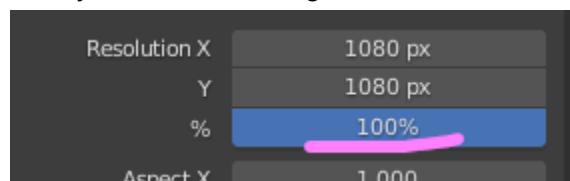


The orthographic settings allows for a fully orthogonal perspective



Save the file!!

Finally, set the % setting of the render to 100% and render a final image



This may take a while.

Do not use your laptop while it renders

When it is complete, save the image to your harddrive by selecting Image → Save As from within the rendered image dialog box

Blender Render

