

PLANNING + REFERENCES

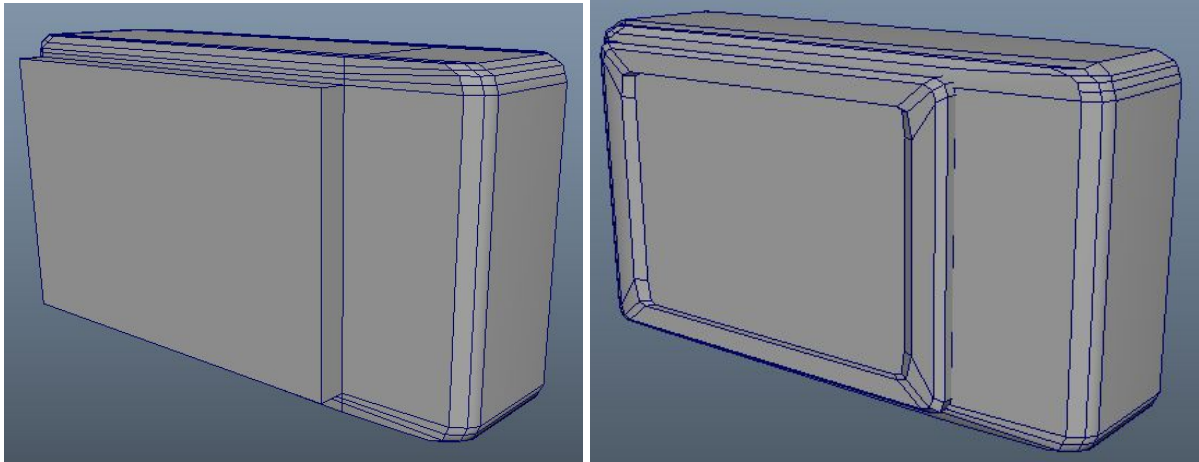


Quick sketch of the general shapes used in the camera, with the main ones outlined.

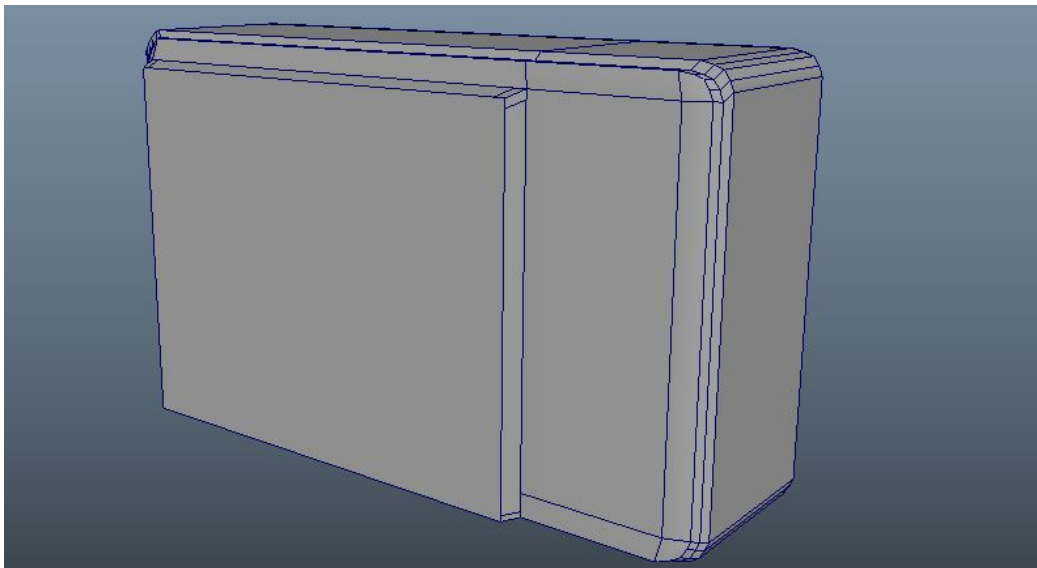
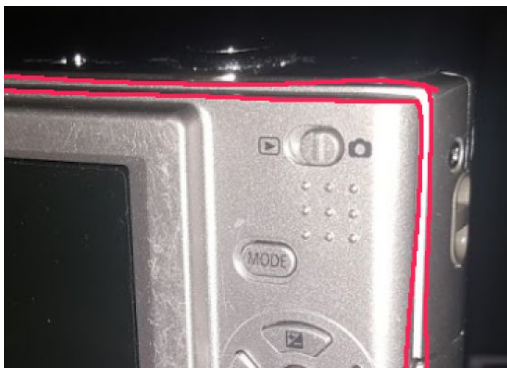


Some close up shots of the other side of the camera, shutter button, on/off button, and the underside of the camera.

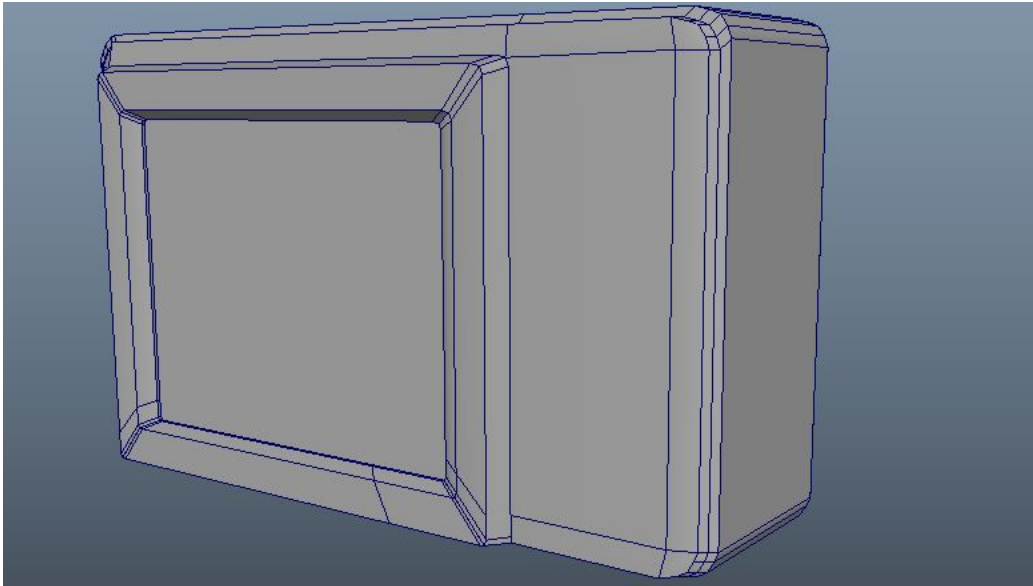
MODELLING:



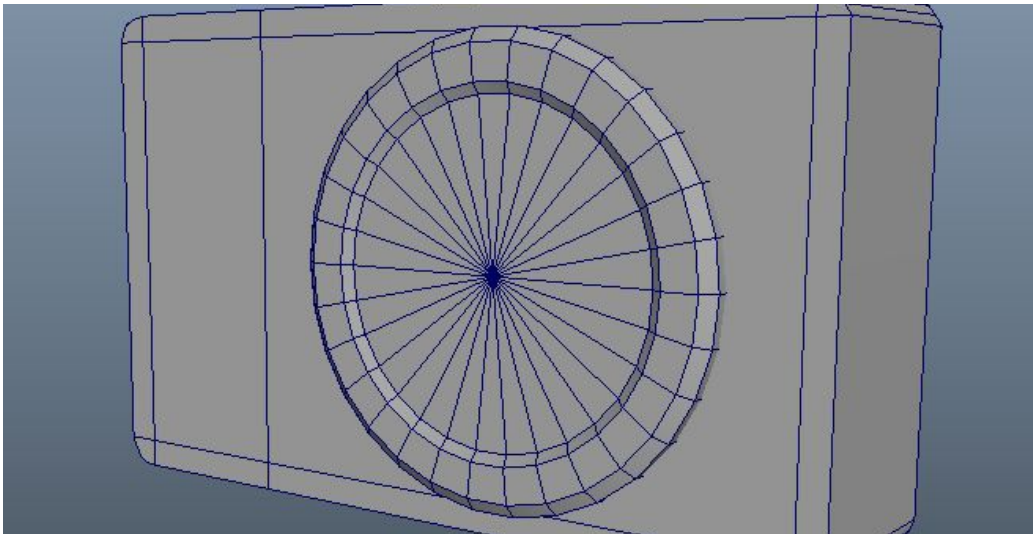
Attempt 1 of modelling the camera. I got up to this point, until I realised that I had missed an extra face on this side of the camera (refer to attached reference). Additionally, in this first model I had made the screen of the camera a separate object, and I wanted a smoother transition between the camera face and the screen.



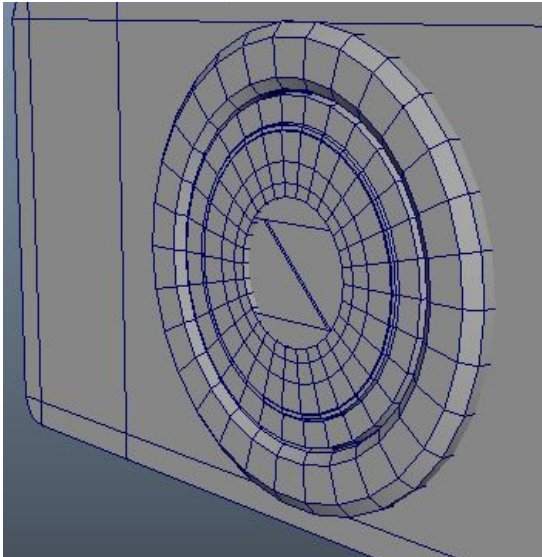
Attempt 2 of modelling, starting with the general framework. Started with a cube as a base, using edge loops and the extrude tool to pull out the rounded base (using edge loops, then deleting the edges and additional vertices to create the rounded edge), then dividing the face into a small square to pull out the screen.



Addition of the screen/rounding. I used edge loops and edges to round out the screen corners, then the extrude tool to pull the screen inwards, and finally creating inwards indentations and a small gap between the screen and its border.

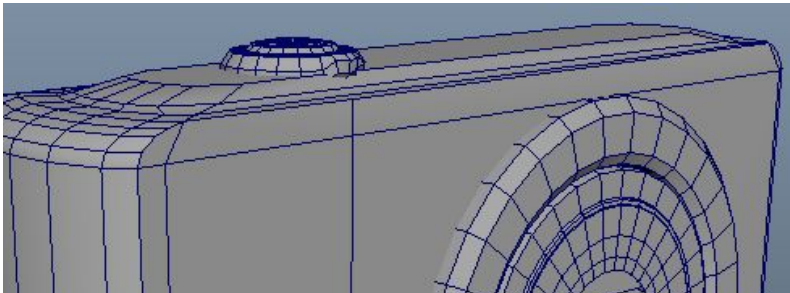


Modelling the lens, through the creation of a cylinder, reshaping using the extrude tool to create detail, and finally inserting it into the camera's body.

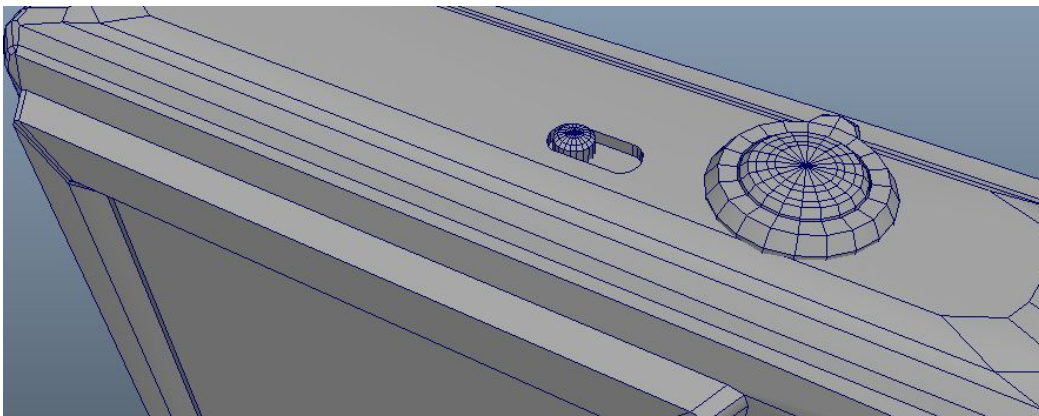


Inner lens details were made using the same method as above, using the extrude tool to create ridges, up until the centre where I cut a cylinder inwards.

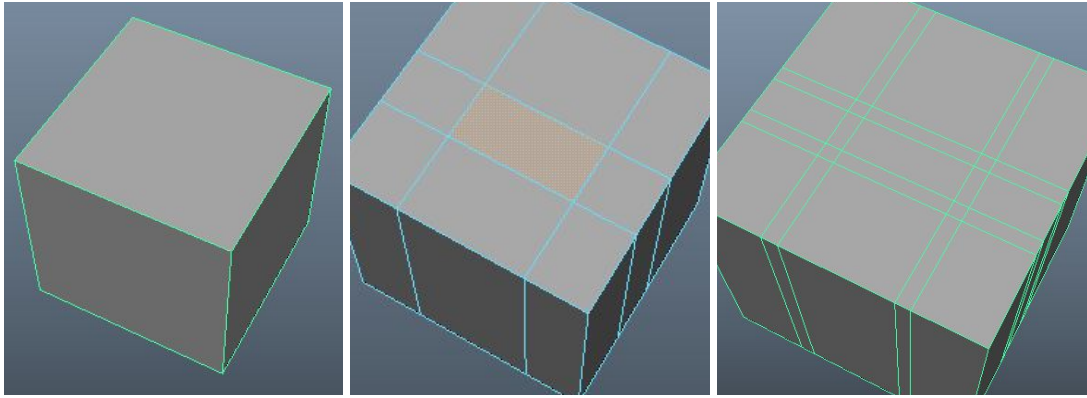
Then, I used two cube objects to create the most inner details, including the diagonal gap.



I simply used the extrude tool for the raised top. For the shutter button, I created a new cylinder, using the extrude tool to create the raised button in the middle, and extruding on the outer faces to create that raised bump.



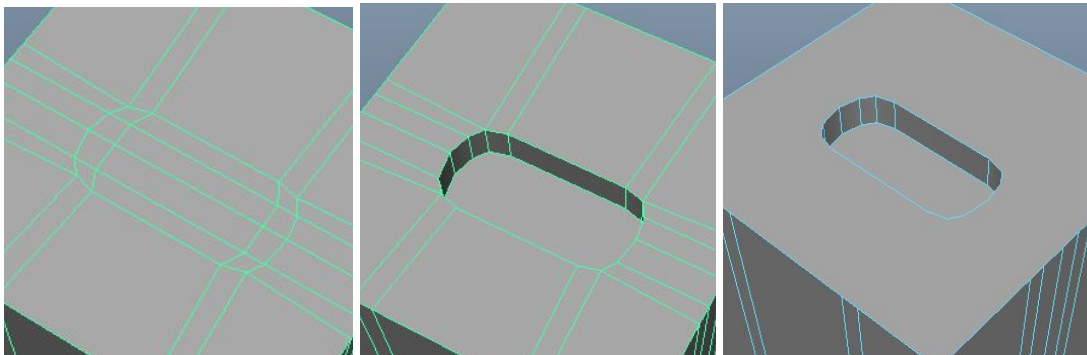
The power switch was created using the process below:



Step 1. Remaking the process of the switch channel on a simple cube.

Step 2. Using edge loops to create the desired channel.

Step 3. Double edge loops to allow reshaping for curved ends.

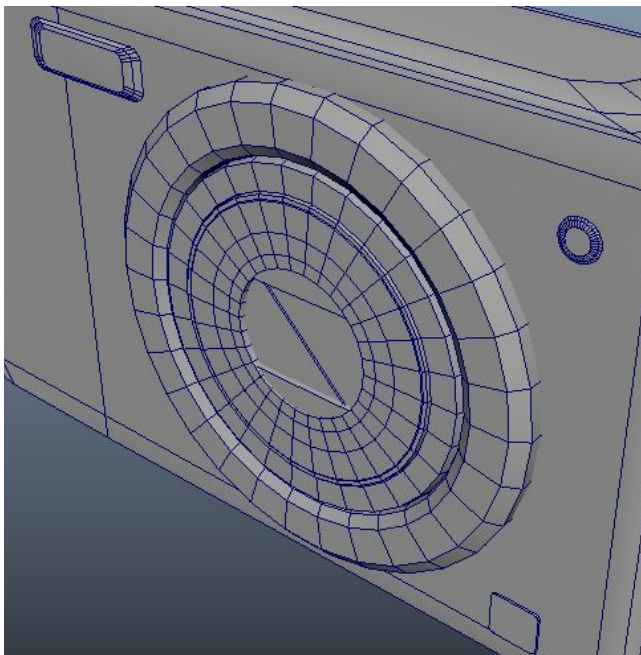


Step 1. Using the vertices to reshape the channel to be rounded.

Step 2. I then deleted the edges within the channel's face, and used extrude, pulling it inwards, to its desired depth.

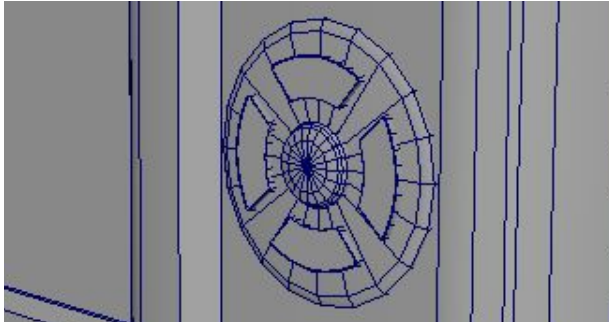
Step 3. Lastly, I deleted all surrounding edges.

Lastly, the button was a separate cylinder, shaped and sized down.



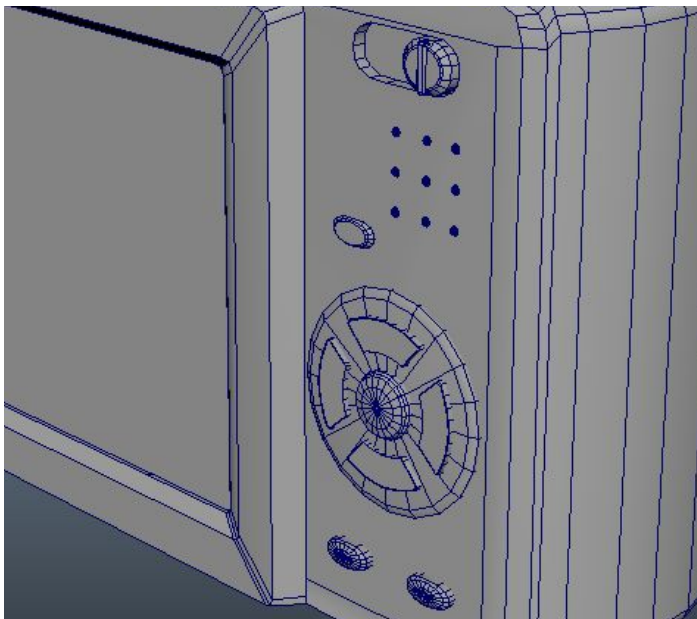
The flash was made from a rectangle with many edge loops to create a rounded shape, and extruded very slightly. Similarly, the 2nd lens (top right) was made in the same way, but with a cylinder instead of rectangle.

The logo at the bottom right was made similarly to the power switch, but with a rounded square instead of a rectangle with rounded ends.



The keypad was made of six separate objects, a cylinder for the base of the keypad, four cubes for the directional buttons (duplicated to maintain symmetry), and a cylinder, extruded outwards for a rounded centre button.

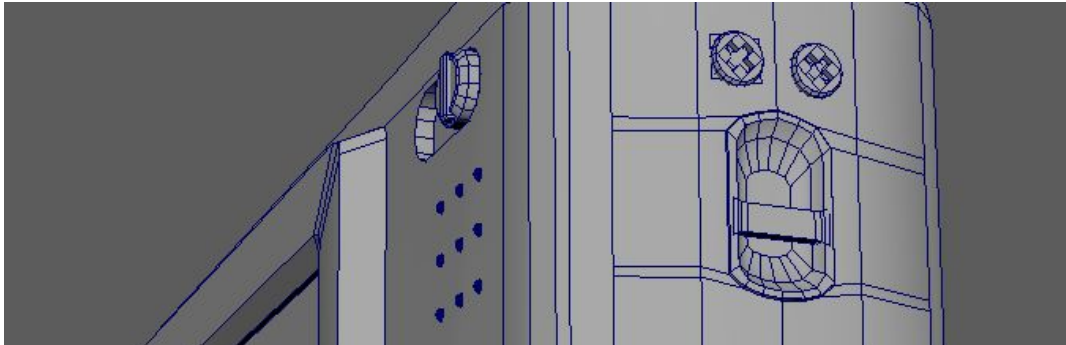
However, for visual preference, I made the circular base of the keypad slightly rounded (as the original shape is simply a flat cylinder), and made the directional buttons longer to reduce the 'empty' space within the rounded base.



The three oval buttons were made similarly, as a separate cylinder object, though the highest of the three has a flat face instead of a rounded one. This flat face is both in line with the object, as well as providing some contrast in comparison to the two below it.

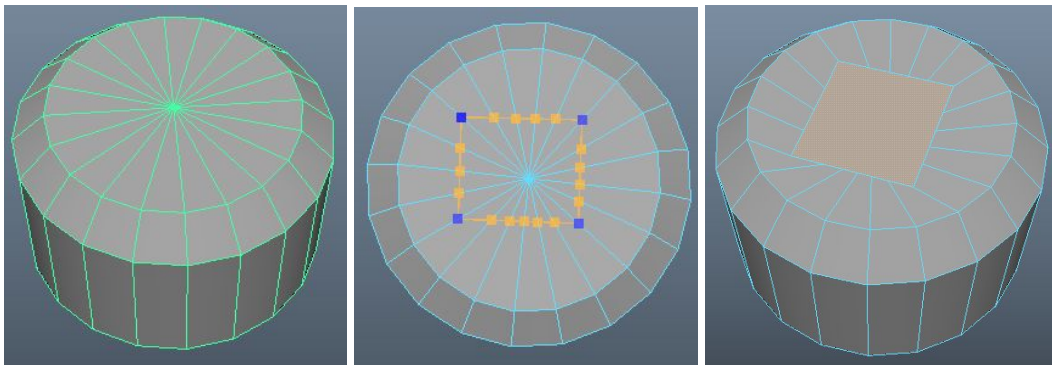
The switch above was made in the same way as the power switch, though its button contains a bevelled rectangle through its centre.

Lastly, the textured grid contains 9 small spheres.



The strap holder used the same method as the switch channels, with some extra extrusions for gaps between the holder, and small ridges. The bar was made by a separate bar, curved towards the corners.

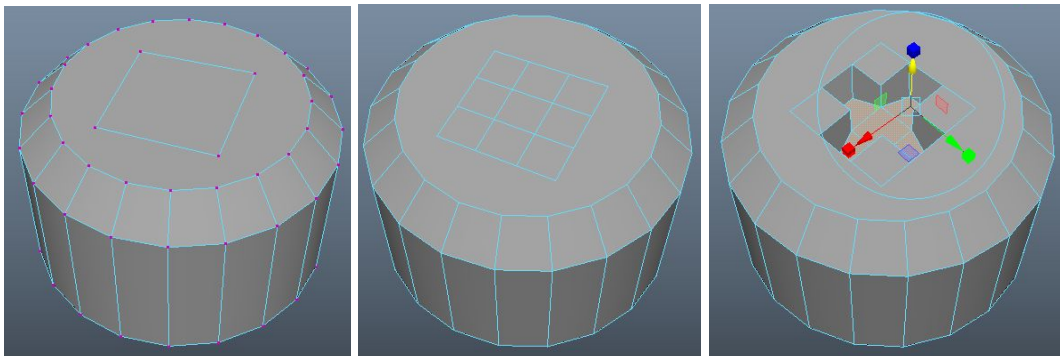
The screw took a lot of experimenting, and I could only manage to make it by:



Step 1. Creating a cylinder, and extruding the upper face and scaling inwards.

Step 2. I used the multi-cut tool to make a square-like face (to be fixed later).

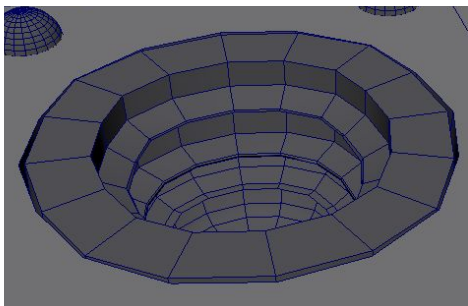
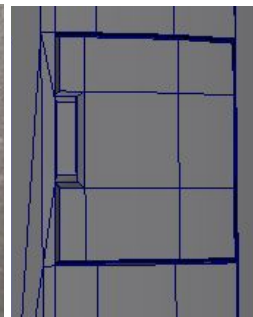
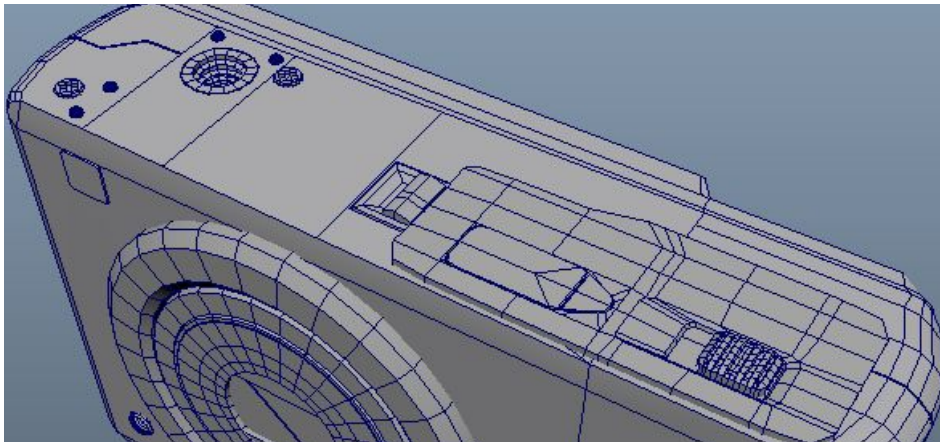
Step 3. I deleted all the edges within the square, then used the face to reshape the face, centering it in the circle.



Step 4. I then deleted all the edges connecting the face to the cylinder, and the vertices.

Step 5. I used the cut tool to create a 3x3 grid within the inner square

Step 6. Lastly, I selected the faces in a 'plus' shape, and extruded inwards, scaling down slightly. For extra dimension, I then selected the centre face and pulled it down.



The small, square flap on the side was created with edge loops, and the extrude tool to create a more 3D look.

The hole at the bottom was created with the same method as the power switch, to make a circular hole, then extruding inwards towards a flat base. I then used edge loops within the hole, then selecting every second row of faces, extruding outwards and scaling down to thin the outermost face.

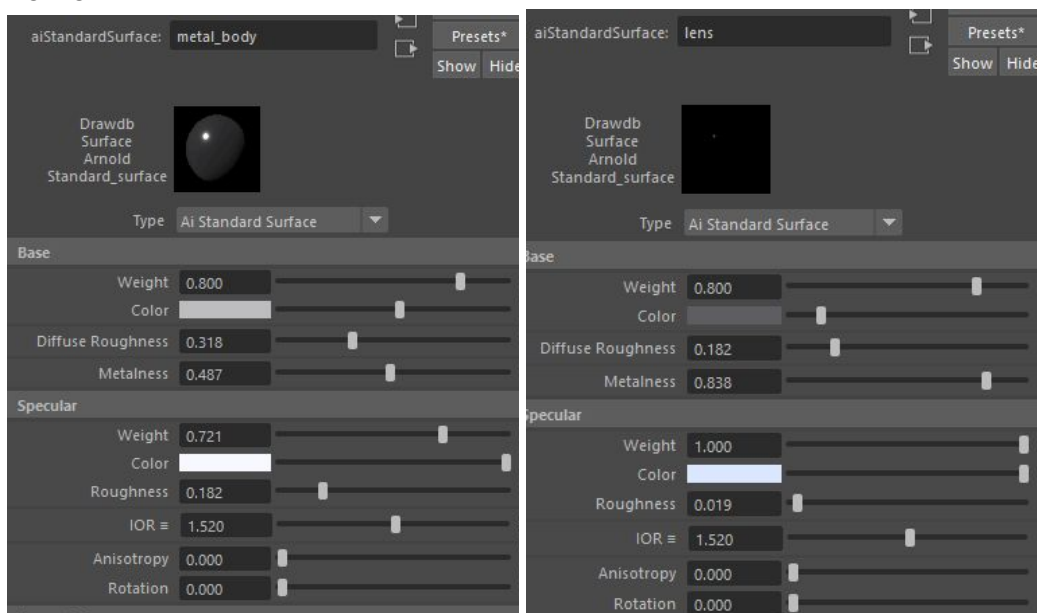
Lastly, the memory card/battery flap below the camera was made of a separate cube, using edge loops to create the various shapes. The button to open the flap was a cube, with every second row of faces raised for texture.

MATERIALS:



Two materials were applied:

- 'metal_body' using aiStandardSurface. In this material, diffuse roughness, metalness, and specular were all tweaked with.
- 'lens' (the screen), also using aiStandardSurface. In 'lens', metalness was high, for high reflections. Specular was at its highest value and not rough for the cleanest highlights.

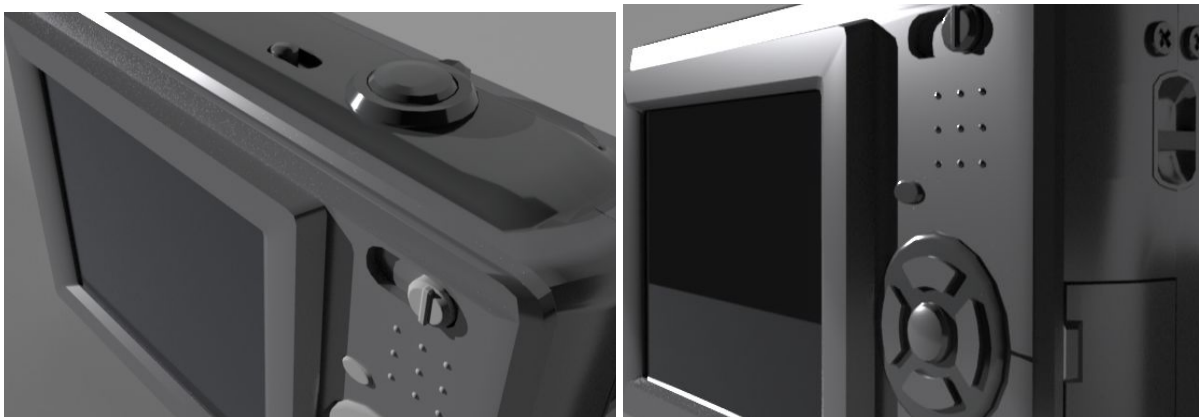




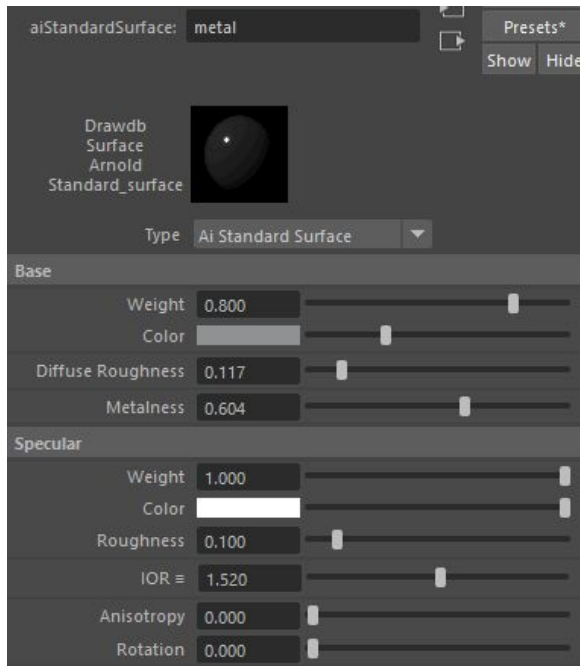
I continued to tweak with the settings of 'metal_body', metalness and specular in particular. I also added a curved plane behind the camera model for shadows.



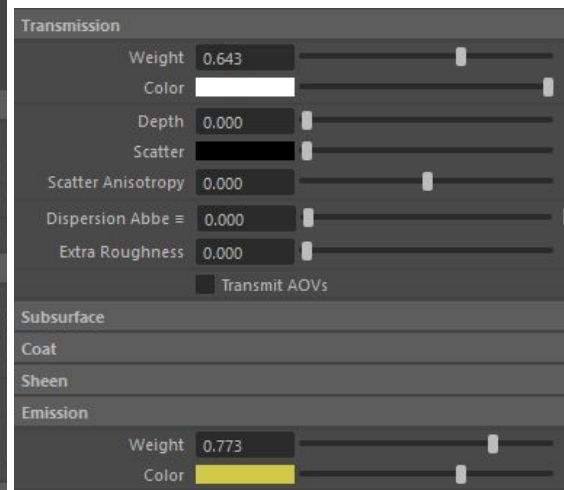
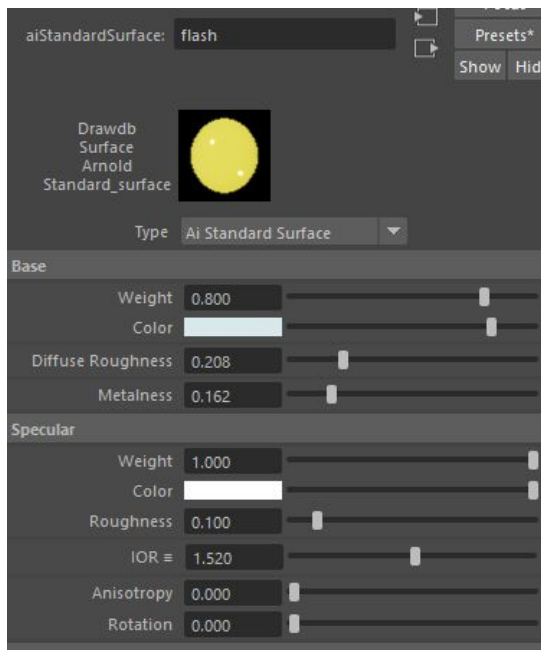
Pictured is the process of tweaking all settings (specular roughness, diffuse roughness and metalness) to make the body appear more shiny, though a bit rough.



I then made the material 'metal' with aiStandardSurface, with a high metalness and maximum specular value, while diffuse roughness and specular roughness was kept low to reflect lights cleanly. This material was used for darker, more metallic elements.

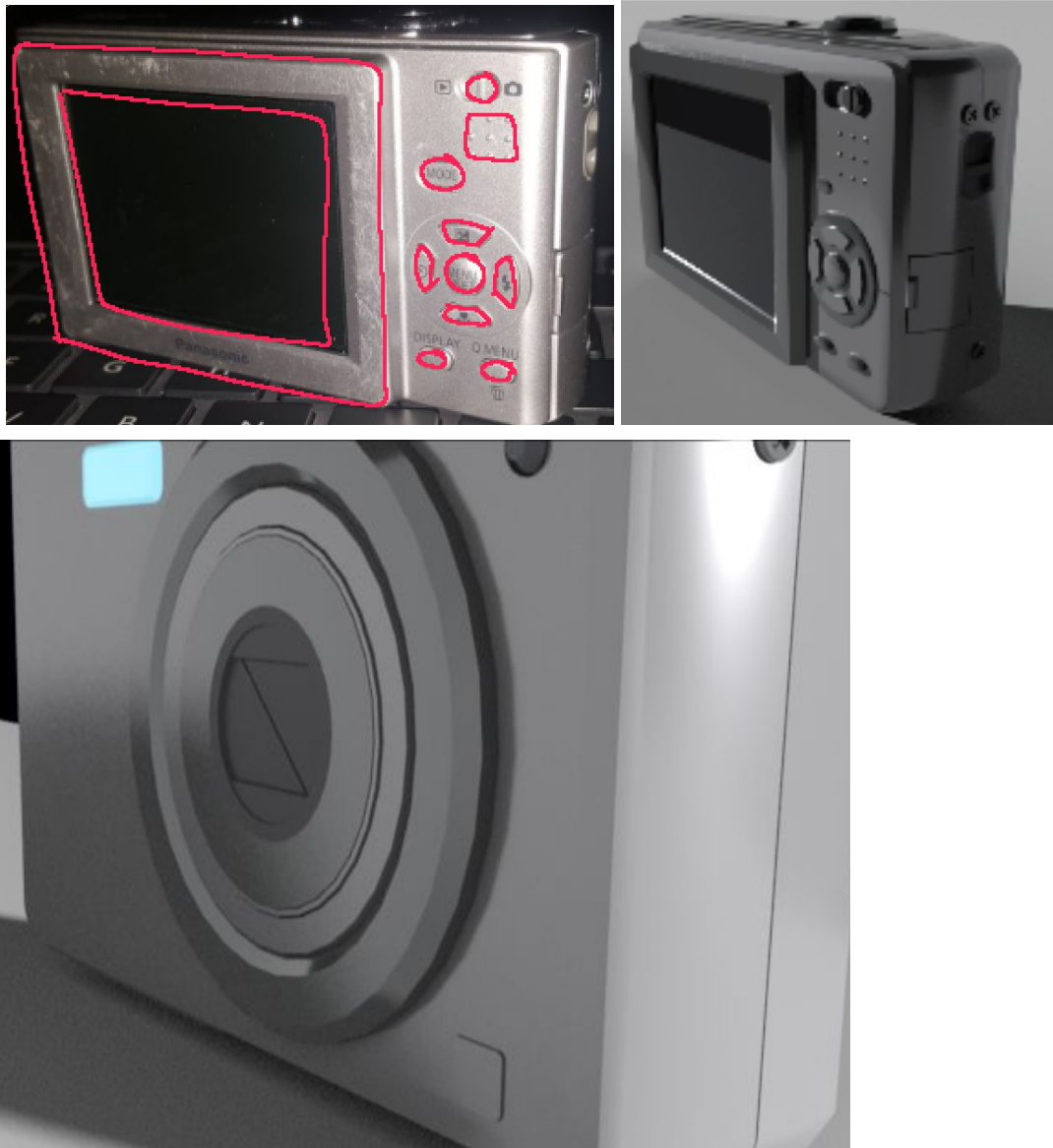


Lastly I added 'flash', in aiStandardSurface. This involved high specular, a bit of transmission for a more plastic appearance, and high emission in blue (later changed to yellow) for a source of coloured light, aiding visual interest.



The final model with all materials ('flash', 'lens', 'matte_dark', 'metal', 'metal_body', and 'lambert1'). However unlike the actual camera, I've used the shinier, darker material more liberally, applying this material to many objects for the sake of contrast.

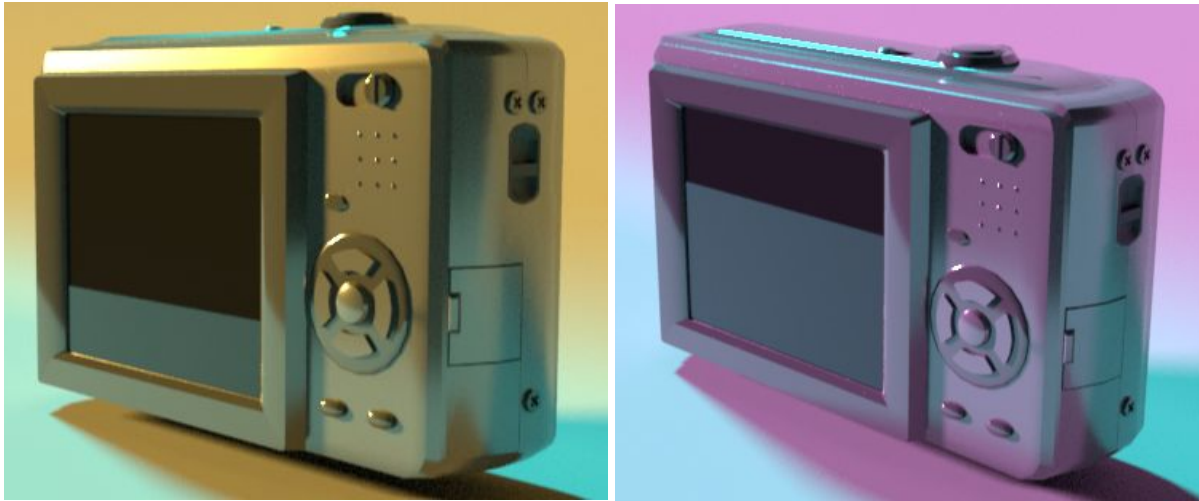
Attached are comparisons of the original camera colours (largely light gray with text as contrast), and my altered version, with more 'metal' faces of material for more contrast.



I also rendered a back view of the camera, with all materials assigned to all objects. This back render makes me realise that I should change the colour of the flash from blue to yellow, as the rendered blue doesn't work very well with the already blue-tinged gray of the material 'metal_body'.

Additionally, this render emphasised the need for a three point lighting system, to provide more light sources for the metal materials to reflect off of.

COLOURED LIGHTING:



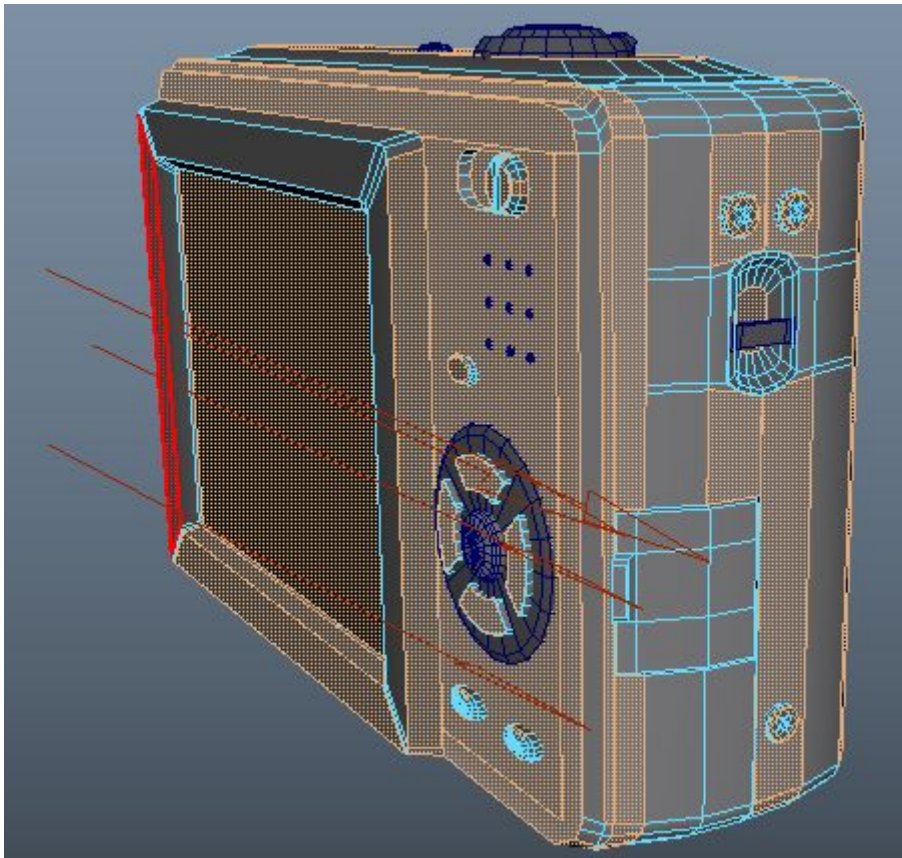
A sidetrack to experiment with possible coloured sources of light, to make my largely silver camera a bit more visually exciting.

Consists of two directional lights, of orange/pink and blue. The blue works for interesting lighting, while the orange gives the body a golden/rosy hue.

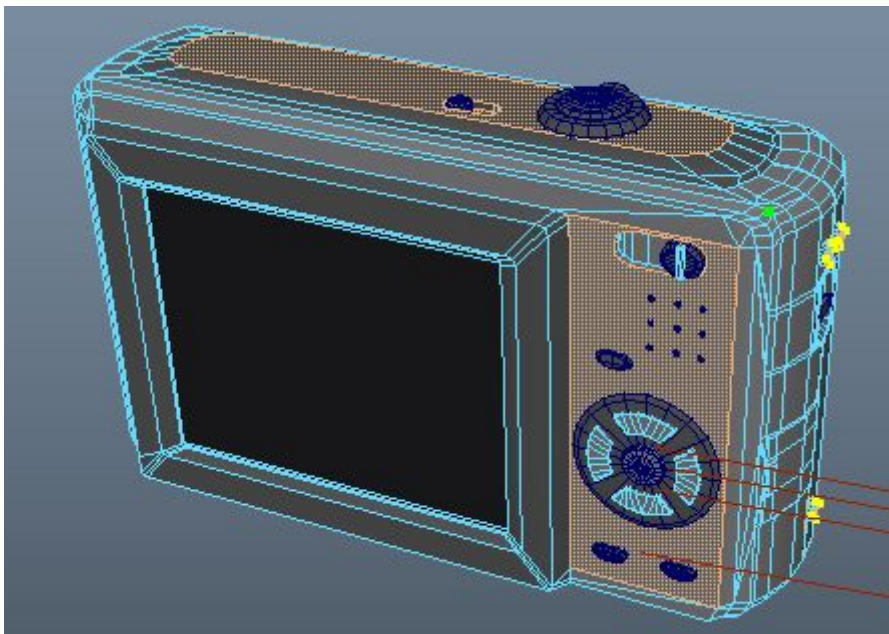


A toned down render of pink and blue, as I wanted to focus on the model over the coloured lights, while still trying to retain its actual silver colour.

C L E A N U P :



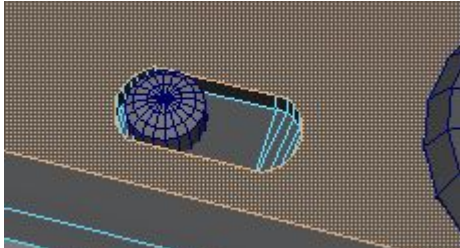
The model before cleanup. The biggest issue currently is the existence of numerous n-gon shapes, from repeated deletions of edges and their vertices for personal readability, but unfortunately creating many n-gon shapes.



The model after cleanup, and an attempted 'fixing'. The issue of n-gons was fixed through the multi-cut tool, to create new faces with less than 4 edges and vertices. Scanning the object with the cleanup tool lead to the detection of one hidden extrusion, which was deleted, and its vertices fixed with the target weld tool.

Additionally, I used the merge tool to combine many vertices and edges that had been placed over each other.

However, one issue remains, the cleanup tool detecting the faces with button channels in them as 'faces with holes'/isolated faces. Maya also wouldn't allow me to use the multi-cut tool, to connect the "hole" to an outside vertex, thus making the cleanup tool consider it as a filled hole.

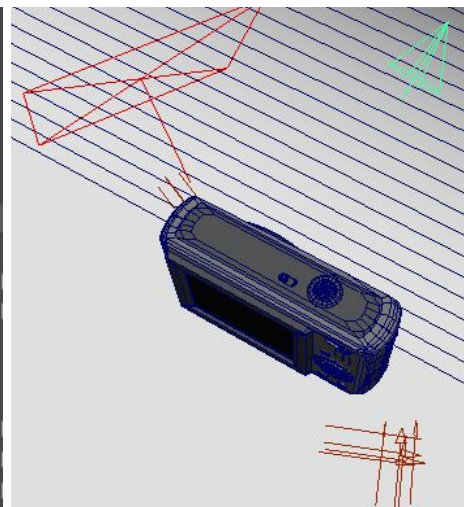
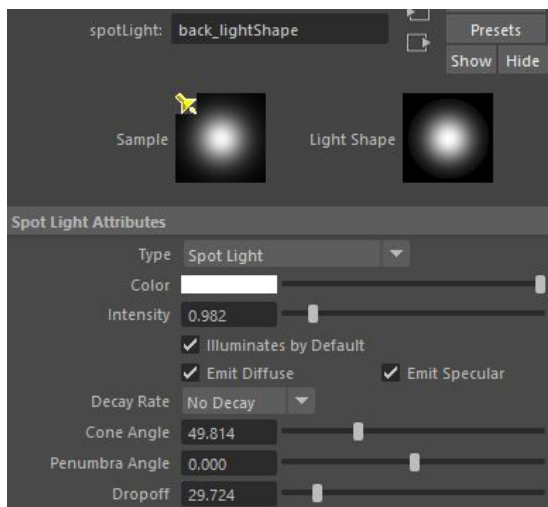


3 - POINT LIGHTING:



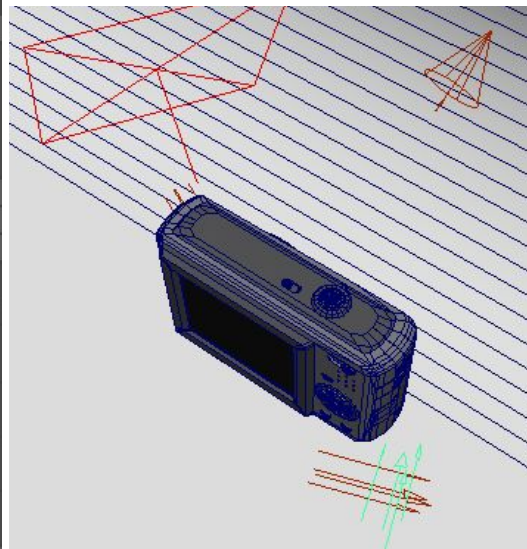
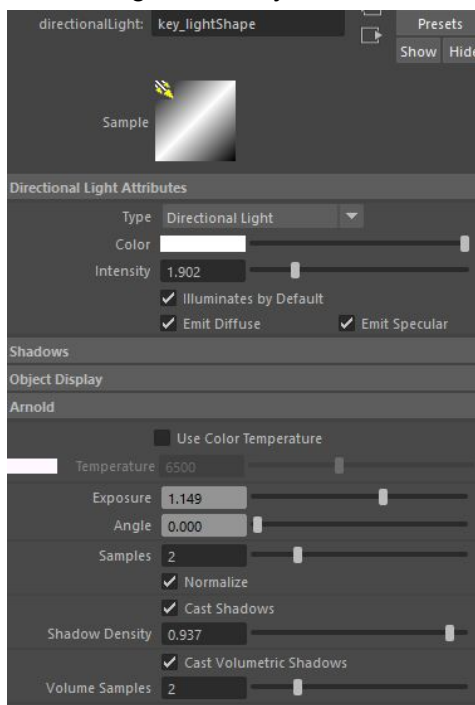
To try and achieve three-point lighting, I tried to follow the guide from the 'Creating Custom Lighting' tutorial from week 4.

This system begins with the back light, created with a spot light. The initial light was very grainy and too far forward, to the point where the light was projected in front of the camera.



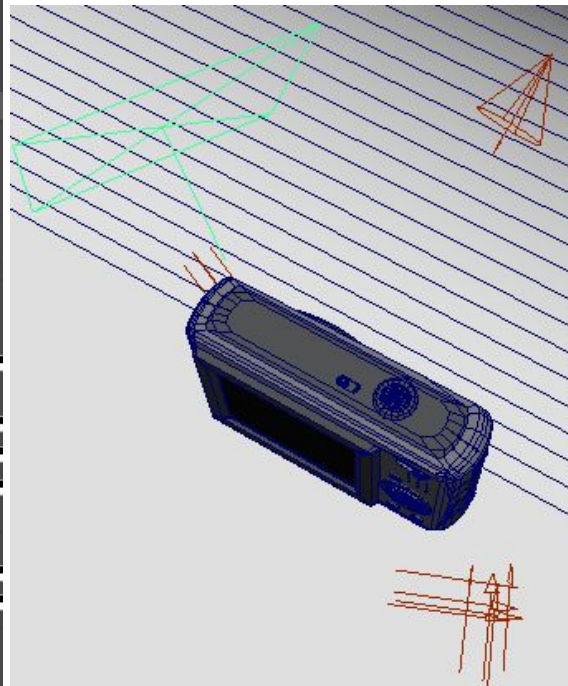
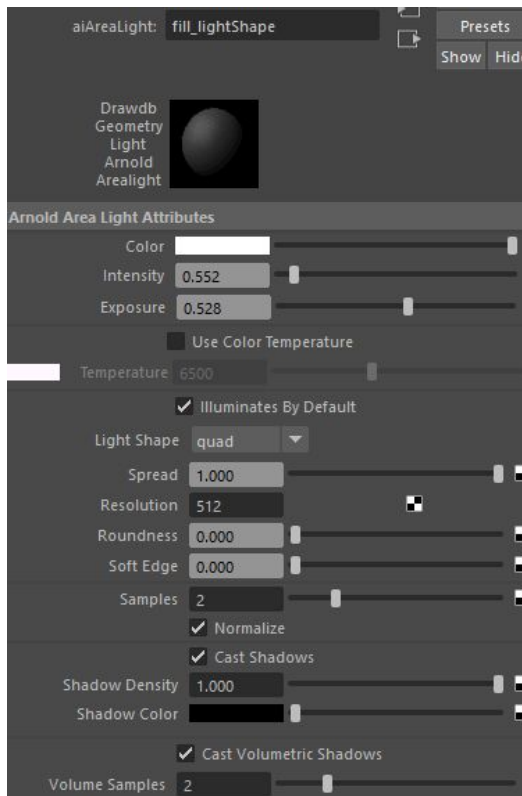


The key light was made with a directional light. I found that the exposure was too low, leading to an image with very little contrast.





The fill light used an area light, placed opposite the key light. I found that the exposure and scale of the area light was too high. Changing the rotation also reduced exposure.





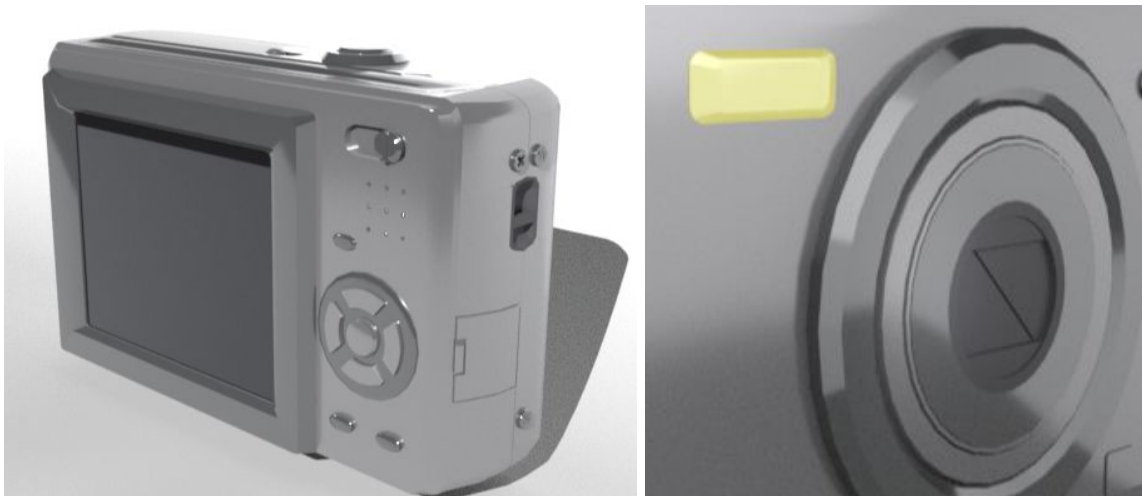
Three-point lighting, with all three lights together. I noted that exposure was a bit high when all three were put together, and shadows and colours (the gray of the body in particular) now appear too light.



Three-point lighting with coloured directional lights. At this point, I prefer the orange and blue tint, as I like the 'gold' looking finish of the camera's body, with the bright blue highlights.



Finalised 3-point lighting, reducing the exposure of both the back and fill lights, and using scale and rotate.



Since most of my object is a metallic light gray, I've changed the plane to an almost pure white to contrast against it.

Rendering the back angle to check reflections. Also, I then changed the flash to a yellow colour, which I feel suits the orange and blue coloured lights better.



A final render of all previous elements put together: Directional coloured lights and the edited three point lighting system.