

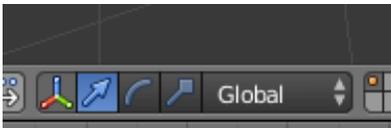
Blender “Cheat-Sheet”

I'll try and update this after each tutorial. I'm mainly focusing on hot-keys

Updated: 3/20/2017

Tutorial #1: Interface

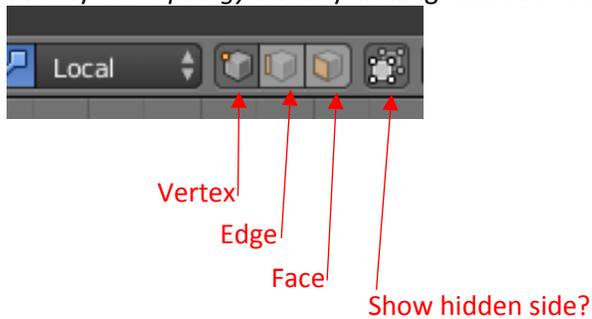
- **View Navigation**
 - [Middle-click] + Drag: **Tumble** the view
 - [Scroll-wheel]: **Zoom** in / out
 - [Shift] + [Middle-click] + Drag: **Pan** the view
 - [Numpad5]: Toggle **Orthogonal** and **Perspective** View
 - [Numpad7]: Top-view
 - [Numpad1]: Front-view
 - [Numpad3]: Side-view
- **Configuring Panels (each area is a 3d panel)**
 - Left click the fold (in the upper-right of a panel) and pull it away to make a new panel.
 - Push the fold the opposite direction to collapse a panel
 - Drag the dividing line between panels to change the size
 - Some panels (esp. the 3d panel) have side-panels
 - You can collapse these by dragging the inside border outwards
 - To bring it back, click the small plus to the side of the panel.
- **Moving the 3d cursor (the “life-preserver”)**
 - [Left-click]
 - All new objects spawn here.
 - (it does more than this...)
- **Creating objects**
 - Open the tool panel on the left side of a 3d panel
 - Click the create tab.
- **Selecting Objects**
 - [Right-click] toggles selection
 - [Shift] + [Right-click] selects multiple
 - [A] toggles all or none selected
 - [B], then [Left-click] + Drag to select objects in a box
 - [C], then [Left-click] + Drag to “paint” a selection ([Escape] to cancel selecting)
- **Transforming an object**
 - The “widget” buttons are at the bottom of a 3d panel and look like:



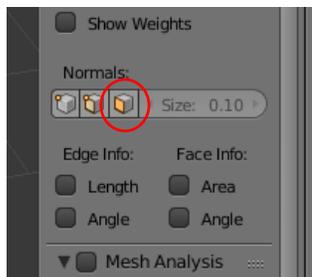
- Click the first button (the axes) to toggle the tool on / off
- Click the second to enter **translate** mode
 - [Left-click] + Drag an arrow-head moves along an axis ([G] + [X] is the shortcut to translate along x axis)
 - [Left-click] + Drag in the white circles moves relative to the camera ([G] is the shortcut)
- The third button enters **rotation** mode ([R] is the shortcut)
- The fourth button enters **scale** mode ([S] is the shortcut)
- The drop-down list chooses which space to transform relative to.

Tutorial #2: Geometry Manipulation

- **Object vs Edit Mode.** Object = manipulate entire object, Edit = manipulate geometry of selected object(s)
 - [Tab] to toggle between them.
 - Modify the *topology level* by clicking these buttons:



- Showing normals (optional, but helps identify mal-formed models) by opening right panel and under normals, click this button:



- **Creating new geometry**

- **Extrusions**
 - Select a piece of geometry and click [E].
 - The mouse will now be in move mode. Click to accept, Escape to cancel the extrusion.
- **Knife Tool**
 - Select a face (or faces) (*this will also work in edge mode*)
 - [K] Enters knife mode.
 - Click on / over edges to mark the cut line.
 - Enter to accept the cut line, Escape to cancel
- **Face creation**
 - Select multiple vertices (in counter-clockwise order!)
 - [F]: Create a face using those vertices.

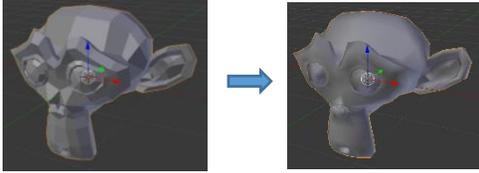
- **Destroying existing geometry**

- **Merging**
 - Select multiple vertices (or a face)
 - [Alt] + [M] and pick (usually) Merge Center.
- **Deleting**
 - Select geometry
 - [X] to delete
 - You'll usually be prompted to identify whether you want to delete the existing faces, vertices, or edges.
 - Destroy faces is usually more "destructive" than edges, which is more "destructive" than vertices.

Tutorial #3: Old-skool (i.e. not node/cycles-based) Materials

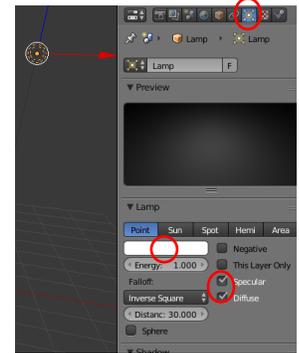
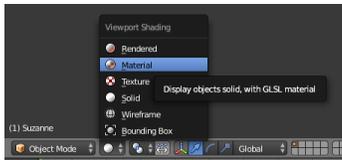
• Smoothing Normals

- One important aspect of lighting is the normals located at each vertex. By default these vertex normals are the same as the face normal (which is what makes the model look “chunky”).
- To average (smooth) the normals quickly, under the **Tools tab** (in the left-hand 3d panel), under “Shading”, click “Smooth”



• Influence of Lights

- The color and position of light sources greatly affect the final render color.
- Select a light source in object mode, and under the light tab...
- ...you can click the color swatch to modify the diffuse and / or specular color of the light.



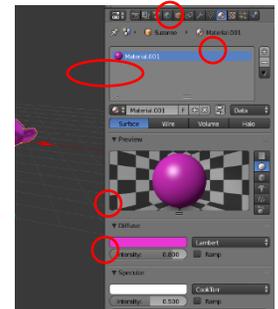
- Make sure you select “Texture”, “Material”, or “Rendered” in the shading mode selector (above) to see the effect of your lighting and materials on the object.

• Creating a material

- Select the object you wish to apply a material to in object mode.
- Click the Materials tab, and then “New”, which will open up the panel shown.
- You can modify the diffuse and specular *material* properties by clicking on their color swatches.

• Adding material slots

- Click the “+” to the right of the material slots to add a new slot.
- You can then create a new material to go with that slot.
- Select faces (in edit mode) and then click “Assign” to assign them to that slot.



• Applying a texture

- Create a material as normal. Make sure the new material is selected.
- Then click the “Texture” panel, and click the “New” button
- Leave the texture type at “Image or Movie” (the default)
- Click the open button and find your image.

• UV Unwrapping

- I find this easier to do if you split your workspace – make one the 3d view and change the other to a “UV/Image Editor” (there’s a drop-down box in the lower-left corner of the panel)
- Click the drop-down box just to the left of the “New” button in the Image Editor and select your image.
- Move your mouse over to the 3d panel and click [U]nwrap. I generally pick “Unwrap” from the context menu that pops up, but experiment with the others.
- In the Image Editor, you can now select vertices individually or as a group, and then [G] / [S] / [R] to translate / scale / rotate them.

• Procedural Textures

- Very similar to Image-based textures, but when creating the texture, use one of the other options (Voronoi, Magic, Wood, etc.)
- Most will use the diffuse color of the object and modulate between that and a color that you can select at the very bottom of the Texture options.
- These will only show up in rendered mode.