TECHNIQUES FOR DRAWING IN SKETCHUP

Steps in SketchUp Drawing
These are good steps to develop a SketchUp Drawing
- Draw everything in Layer0.
- Draw a shape.
- Make it a component.
- Make sure the correct face is white.
- Edit component/shape to be the correct size.
- Erase any faces that will never be seen.
- Make a layer and place the component in the layer.
- Make a layer no-plot for edges that are not to be visible in the model (easier to manage than hide).
- Use the Materials tool to add color to the component.

Hints for Smarter Modeling in SketchUp
by Aidan Chopra, Google SketchUp 3D Basecamp 2008

ORGANIZATION
- Use the Entity Info dialog box to make sure your Groups and Components have meaningful names.
- Use Components for elements of your model that will be repeated.
- Use Groups for elements of your model that are unique.
- Use the Layers dialog box to control the visibility of large numbers of similar Components, like furniture, trees or people. Creating separate Layers for each of these types of things makes it easier to hide or unhide them all at once.
- Use the Outliner dialog box to control the visibility of large, unique chunks of your model, like terrain, floor levels and alternate design schemes. Using the Outliner instead of Layers makes it easier to hide or unhide exactly what you want. You can also use the Outliner to rearrange the nesting hierarchy of Groups and Components in your model.

MODELING
- Reduce the number of sides in your circles and arcs if you plan to use Push/Pull or Follow Me on them.
  1. Draw a circle with the Circle tool or an Arc with the Arc tool.
  2. Before you do anything else, type a number representing the number of sides, and the letter “s”.
  3. Press Enter.
    Example: To create a circle with only ten sides, you would type 10s, then Enter.
- Make multiple copies at once with the Move tool.
  1. Make the first copy.
  2. Before you do anything else, type a number representing the total number of copies you’d like, followed by the letter “x”.
  3. Press Enter.
    Example: To make five copies instead of one, you would type 5x, then Enter.
- When using the Follow Me tool, select your extrusion path first.
  1. With the Select tool, select the edge(s) you’d like to “follow” first.
  2. Activate the Follow Me tool.
  3. Click on the face you’d like to extrude.
- As you model, delete any edges and faces you don’t need.
- Subdivide any edge into any number of shorter edge segments.
  1. Right-click on the edge you want to subdivide and choose Divide from the context menu.
  2. Type the number of edge segments you’d like to end up with.
  3. Press Enter.

DISPLAY
- Switch to Wireframe mode when you’re using the Eraser tool to make sure you’re only erasing what you mean to erase.
- If you’re using Scenes, turn off Enable Scene Transitions to keep your computer from having to work too hard to render your model. This is especially useful if your model stutters while trying to transition from one Scene to the next.
- When you’re working on a big model, turn off Shadows, Profiles and any other edge effects to improve performance.
- When you’re working on your model, create a scene that only switches over to a simple rendering style. This allows you to jump into an “easy-modeling mode” very quickly, without having to mess with the Styles and Shadows dialog boxes every time.
  1. Open the Scenes dialog box.
  2. Create a new scene.
  3. Make sure Shadows and Fog are switched off.
  4. Create a Style with no edge effects (including Profiles), watermarks or any other fanciness. Name it Simple Style.
  6. Expand the Scenes dialog box by clicking the Expand toggle in the upper-right corner.
  7. Deselect all of the Properties to Save except Style and Fog and Shadow Settings.
Tips and Tricks for the New User
based on Tips by Grant Marshall
(edited/condensed by Lopez)

MODELING - APPROACH
Model as little as possible. Chances are you'll have to make changes to the model later and changes are easier on a simpler model. You can always add detail later.

IMPORTED CAD STUFF
Usually it's easier to redraw than import CAD because IMPORTED CAD STUFF simpler model. You can always add detail later.

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off-axis lines, short lines, multiple lines, and such are usually imported. If you decide to import a CAD file to push-pull, turn off as many layers as you can and then trace over it, simplifying as necessary. For example omitting openings in walls, you can insert door/window components later. Use the rectangle tool wherever possible and inference-locking the rest of the time to make sure things are square. Also bear in mind that if the whole model is push-pulled up from a single plan layer, ALL geometry in the model will be connected. It will be difficult to edit one part without affecting other parts and difficult to separate geometry into groups.

SOME MODELING POINTERS
Under Window Pulldown>Model Info>Units set preceision to 1/64 and unselect length snapping. Allow inferencing to guide the pointer. Use construction lines. It's often quicker to 'slide' things along a construction line than it is to move them through space in the same direction. Be prepared to draw temporary lines and erase them later, it's often the quickest way to get things done.

INFERENCING AND INFEERENCE LOCKING (the snapping thing)
Here's how it works for simple operations like drawing a line or moving stuff: Establish DIRECTION first by moving the pointer boldly into open space where there's no model for it to latch onto (often WAY beyond where it needs to go), move it around until the correct axis color shows, hold shift to lock that direction. Then establish DISTANCE or POSITION, often this will be by picking a point on the model but sometimes, particularly for very short distances and when you don't wish to align with anything on the model, the best place for the cursor is out in open space, not over the model (again this is often WAY off to one side of the movement path).

COMPONENTS
It's never too early to make components. There are a few ways of moving geometry from one group to another. Use cut and paste. Open the first group for editing, select and cut the geometry to be moved, close the group, open the destination group, paste, and close the group.

THE AXES
Under Window Pulldown>Styles>Edit>Color>Color by direction while modeling. The colored edges in your model are square and parallel to the axes. Black edges are not. If a portion of your model has a different orientation (so all its edges are black) reposition the axes so you can check all edges. Change it back to All same after the edges are checked.

REMEMBER, IT'S A MODEL
Work in 3D perspective view. it's best to move things in 2 stages (once along one axis then again along another axis) rather than in one diagonal movement where you'd lose track of your position. Move around the model as you work. Start a line, move the model, finish the line. If the cursor keeps snapping to stuff in the background, turn the model so there's nothing in the background. If the cursor won't align with the green axis and keeps snapping to the nearby blue axis instead, rotate the model until they don't appear so close together.

MATERIALS
Delay painting your model with fancy textures for as long as possible. The default front/back colors are easier to keep track of during major editing operations (like push-pull and erase) where new faces are emerging and others merging, reversing etc. Painting too early can mean at best having to re-paint many faces later anyway, at worst puzzling complications like materials that can't be purged, faces that won't 'take' a new color etc.

WHEN IN DOUBT, RIGHT-CLICK
Right-click often, you'll find all sorts of interesting things in the right-click context menus. Did you know there is a powerful 'divide' tool? You can select it after right-clicking a line. The 'unglue' command is handy when an object will only move along the plane of a surface and you want to move it away from the surface.

SET UP KEYBOARD SHORTCUTS OR HOT KEYS
As soon as you realize that selecting a particular tool or function is becoming tedious, set up a custom shortcut to take you there directly. Make them as you need them so you don't have a whole lot to learn all at once. Here are some well-used ones:
Group/Ungroup
Reverse face
Show/Hide rest of model
X-ray view on/off
Perspective on/off
Erase all construction geometry
Show/Hide hidden geometry
Rendering preferences
Layer palette show/hide
Paint palette show/hide
Try working on a model while you're talking on the telephone. If not having a 'spare hand' available to work the keyboard makes no difference to the way you work, you are probably working inefficiently. Your keyboard hand should be at least as busy as your mouse hand, calling tools by means of hot keys, using modifier keys in conjunction with the mouse clicks and drags.

When saving scenes, uncheck EVERYTHING except the
property you specifically want that scene to change. Make a few scenes which save only different graphic styles, a few which save sun/shadow positions, a few which just hide and unhide layers and objects/levels of detail etc. Scenes are a great way to move around your model.

WHEN THINGS GO WRONG
When a model goes bad and won't do as it's told the sooner you can track down the problem the sooner you can fix it. When a face won't fill try drawing a diagonal between 2 corners. If it fills, try erasing the diagonal. Sometimes it will stay filled but usually it won't, indicating out-of-plane edges. If adding the diagonal causes it to fill on only one side of the diagonal it usually indicates an open corner on the other side. When the push-pull tool won't push-pull it's usually because something's not parallel in the model. Sometimes a model gets into such a mess that it's quicker to start from scratch than to fiddle about in the mess.

Use the Value Control Box (VCB) to enter specific values. As soon as you type your value will appear in the VCB. The VCB allows you to re-enter values until you move on to another tool. When using the rectangle tool, the VCB will display two values separated by a comma. You can enter both values using the format: number,number ( #,# ). To enter just the first value type a number ( # ). To indicate the 2nd value type a comma before your number ( ,# ). When using the circle, polygon or arc tools you can use the suffix S at any time to change the segmentation of the arc, circle or polygon. When using the arc tool use the suffix R to indicate a radius dimension instead of an arc bulge distance. When using the Rotate or Protractor tool, angle values can be entered as degrees or in rise over run format - 5:12. When using the Move tool to copy, use X to indicate External Arrays ( #X ) or the / for Internal Arrays ( #/ ). The initial copy distance will be used as the array distance. An external array will make new copies at that same array distance. Internal arrays will make copies evenly spaced along the initial array distance. The Scale tool accepts values as scale factors (plain numbers) or overall distances (#). When specifying overall distances it is best to do it one dimension at a time using the 1D scale. Use a --1 (negative) scale factor to mirror objects.

WAYS TO IMPROVE SKETCHUP PERFORMANCE WITH LARGE & HIGHLY DETAILED MODELS from https://www.sketchup.com/index.php?id=35&fcid=18
An indication of what will tax SketchUp is the face & edge count at Window pulldown>model info>statistics>make sure entire model is showing in the drop down list & show nested components is checked. It is the face & edge counts here that tell the true story of how heavily SketchUp is being taxed. The higher the face & edge count, the slower SketchUp will feel. The most important factor for improving performance is to make sure that you have a good video card & have enabled Use hardware acceleration and use fast feedback under your sketchup open gl settings. To check your settings go to Window pulldown>Preferences>OpenGL

Use layers & putting high poly count components on a layer & turning off the layer's visibility when the components are not being needed for client presentation purposes. Consider the use of 2d rather than 3d entourage like trees, vehicles, & people where appropriate. Create components for any geometry that is repeated in the model. Shut down SketchUp & relaunch it after a few hours of use. SketchUp's undo queue is held in RAM. Don't design with shadows, transparency & edge effects turned on except when absolutely necessary. Apart from shadow studies, shadows, edge effects & transparency should be largely limited to client presentations. Don't use high polygon count 3d entourage when simpler, lower poly count entourage will suffice. The designer should be aware that every leaf on a 3d tree slows the SketchUp application as much as a 1000 feet long roof slab. Computationally, a polygon is a polygon regardless of size.

IMPORTED IMAGE RESOLUTION LIMITATIONS IN SKETCHUP from https://www.sketchup.com/index.php?id=35&fcid=18
When importing an image as a texture, or importing an image, SketchUp will resize any image that has a dimension larger than 1024 pixels so that the largest dimension is 1024 pixels. It is much better to do the resizing yourself in PhotoShop. To resize an image in PhotoShop, select Image>Image Size from the main menu, check the box to "Constrain Proportions", check to resample image using the bicubic method, then set the larger of any value larger than 1024 pixels to 1024 pixels. The document size and resolution in pixels/inch are not important. The resulting image will lose some resolution because it is smaller, but the resulting image, saved as a high quality JPEG, will look much better in SketchUp than if the original image was imported. If you are placing the large image as a texture (for example a digital camera image intended for use as a building facade) and don't need the entire image, it is best to select only the part of the image that you need, copy it, and paste it into a new blank image. This method will preserve as much of the original resolution as possible.