

Introduction to SketchUp

Just one day to learn SketchUp for a lifetime!



Introduction to SketchUp¹ (tailored for Pusch Ridge Christian Academy)

Version: FINAL (2023-08-23)

Developed by Sophora Services LLC

support@sophoraservices.com

© 2023 Sophora Services LLC



¹ SketchUp is a Registered Trademark of Trimble Inc.

Table of Contents

MODULE 1: INTRODUCTION	5
REQUIREMENTS FOR THIS INTRODUCTION TO SKETCHUP	5
WHO IS THIS INTRODUCTION FOR?	5
GOAL.....	6
MODULE 2: GETTING UP AND RUNNING	7
OPEN A NEW MODEL	8
MODULE 3: THE TOOLBAR AND SHORTCUTS	9
KEYBOARD SHORTCUTS	10
MODULE 4: SKETCHUP TERMINOLOGY	13
MODULE 5: SOME SKETCHUP BASICS.....	15
BUILD YOUR FIRST MODEL!	15
CHANGING THE VIEW OF THE MODEL—ORBIT, PAN, ZOOM, ZOOM EXTENTS.....	16
THE SELECT TOOL (SPACE)	19
THE LASSO TOOL (⇧-SPACE)	21
THE ERASER (E): ERASE, SMOOTH, AND HIDE	22
THE ERASER (E) AND THE PAINT BUCKET (B).....	23
ON YOUR OWN	24
MODULE 6: MORE DRAWING TOOLS	26
DRAW WHILE SPECIFYING LENGTH(S).....	26
THE LINE TOOL (L)	27
THE CIRCLE TOOL (C)	30

THE TWO-POINT ARC TOOL (A)	31
THE ARC TOOL	32
THE PIE TOOL (I)	33
THE 3 POINT ARC TOOL	34
THE POLYGON TOOL (Y).....	35
ON YOUR OWN	37
MODULE 7: MOVE AND MODIFY TOOLS	38
THE MOVE TOOL (M)	38
THE ROTATE TOOL (Q)	42
SCALE TOOL (S)	44
OFFSET TOOL (F)	44
FOLLOW ME TOOL.....	46
ON YOUR OWN	48
MODULE 8: CONSTRUCTION TOOLS.....	49
TAPE MEASURE TOOL (T).....	49
THE TAPE MEASURE TOOL (T) CAN ALSO BE USED TO MEASURE DISTANCES.....	50
PROTRACTOR TOOL (').	51
AXES TOOL	52
SECTION PLANE	53
ON YOUR OWN	55
MODULE 9: COMPONENTS AND GROUPS	56
ON YOUR OWN	61
MODULE 10: MORE MODIFICATION TOOLS—INTERSECT AND SOLIDS TOOLS	62
OUTER SHELL TOOL	63

INTERSECT FACES WITH MODEL/SELECTION	64
ON YOUR OWN	66
MODULE 11: EXERCISES USING ADVANCED CONCEPTS	67
CREATE A SPHERE	67
BUILD A DECORATIVE FLOWERPOT	69
MODULE 12: CAPSTONE: MODELING A SOLAR OVEN	82

Module 1: Introduction

Requirements for this Introduction to SketchUp

This Introduction will get you up and running with SketchUp, by Trimble Inc. In this Introduction, **we will use the SketchUp Web product**. In order to use SketchUp Web, you will need exactly two things:

1. A computer with *a recommended web browser*¹ and an Internet connection, and
2. A user account at Trimble.com, or an Apple or Google account

Hereafter, whenever we use the term, ‘SketchUp’, it will refer to the SketchUp Web product.

Who is this Introduction For?

This Introduction to SketchUp is intended for anyone who desires to create beautiful, 3-D drawings of anything!

¹ According to Trimble, SketchUp for Web depends on WebAssembly, a new technology that requires cutting-edge browser support. For the best experience, Trimble recommends Chrome 59+, Firefox 52+ or Microsoft Edge 84+. Although SketchUp for Web will work in Safari, they cannot confidently recommend this browser at the time of this writing.

This Introduction is intended for those who prefer to commit to a guided, cohesive, and immersive tour to arrive at an intended destination, rather than to “go it alone”, navigating through the myriad of YouTube! videos hoping you arrive there.

This guided tour will take approximately 8 hours, and is meant to be traveled in one or two legs. Rather than going it alone, for the price of this Introduction, you will benefit by having a tour guide on your trip! **Please, ask questions!!**

Goal

The goal of this Introduction to SketchUp is to develop skill using the basic tools within SketchUp to enable you to draw whatever you can imagine. In our particular case at Pusch Ridge Christian Academy, we will use SketchUp to model the solar oven for the UofA ENGR-102 course.

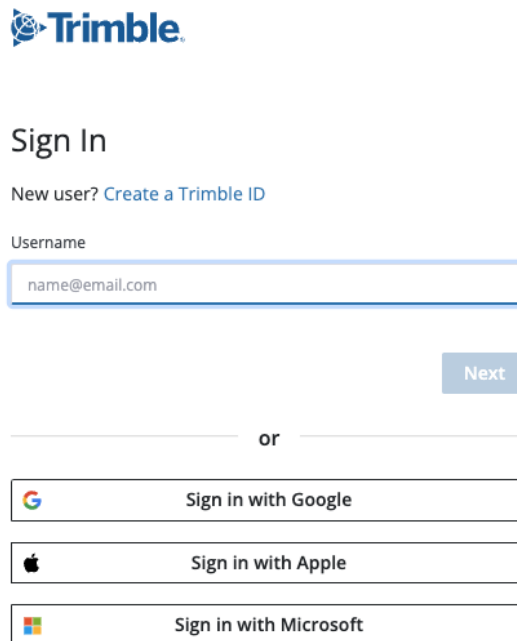
The tools that you learn in this Introduction will apply to the entire SketchUp product lineup. Should you choose to continue to use the free SketchUp Web product or choose to use a subscription product, whether online or on the desktop, the skills that you acquire in this Introduction will directly apply to those products.

Module 2: Getting Up and Running

There are a few simple steps to get you up and running in SketchUp.

1. In a web browser, navigate to <https://SketchUp.com>
2. Click on “Products” in the menu along the top of the page
3. Then select “SketchUp for Web”.
 - 3.1 Shortcut: click here to access the [SketchUp for Web page](#).
4. Now, click on the “Start Modeling” button.

This will bring you to the Trimble Sign In page.



The image shows the Trimble Sign In page. At the top is the Trimble logo. Below it is the text "Sign In". Underneath is a link: "New user? [Create a Trimble ID](#)". Below that is a label "Username" followed by a text input field containing "name@email.com". To the right of the input field is a blue "Next" button. Below the input field is a horizontal line with the word "or" in the center. Underneath the line are three buttons for social login: "Sign in with Google" (with the Google logo), "Sign in with Apple" (with the Apple logo), and "Sign in with Microsoft" (with the Microsoft logo).

Trimble Sign In Screen

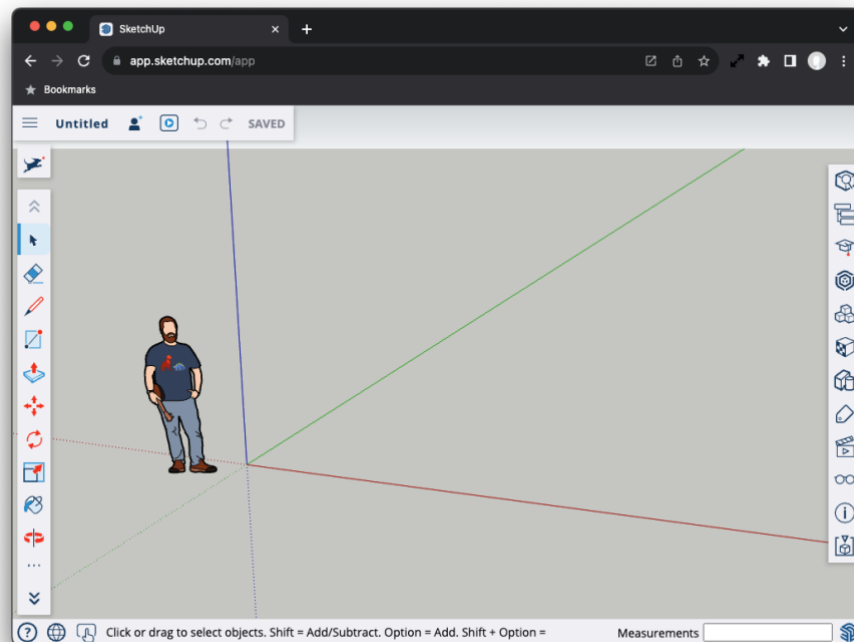
TIP: Whether you want to sign in as an existing user or create a new user account, just supply your email address. If creating a new account, follow the on-screen instructions (supply first name, last name, and a password; perform the reCAPTCHA validation).

Open a New Model

Once you are logged in to SketchUp, you will land on the “Home” view. From here,

1. Select the “Create New” pull-down menu.
2. Then, select the template “Decimal - Centimeters”.

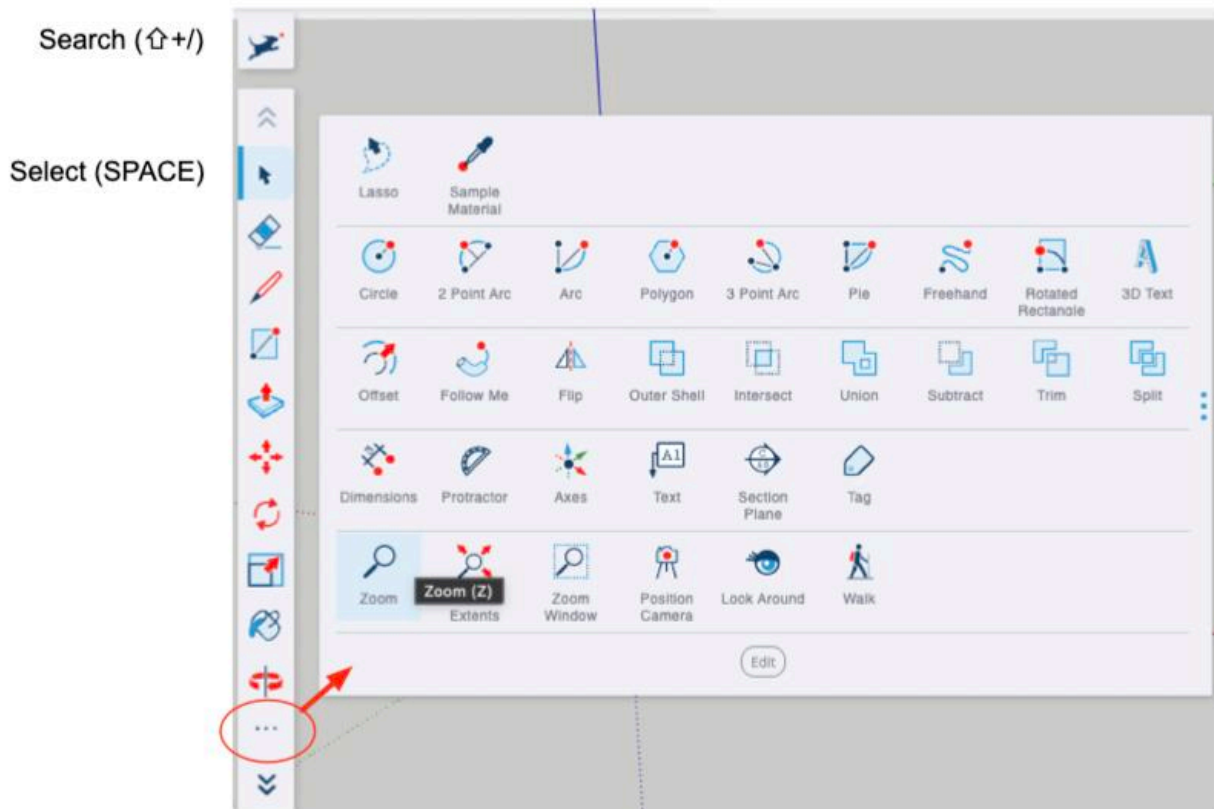
Once you have done the above, you will be brought to the SketchUp drawing window. Your browser should look something like this ...



Initial SketchUp Drawing Window

Module 3: The Toolbar and Shortcuts

The Toolbar



The Toolbar - Expanded

Tip: Each time you select a tool in SketchUp, the tool-modifier keys are presented at the bottom, left of the SketchUp drawing window.

Keyboard Shortcuts

In order to be efficient with SketchUp, it is imperative to use the built-in keyboard shortcuts for the SketchUp tools and features, and to develop “muscle memory” for those shortcuts. Below is a list of the keyboard shortcuts. You will memorize these over time.

General Tools:

- Search (⇧S)
- Select (Spacebar)
- Eraser (E) / Hide (⌘E)

Paint Tools:

- Paint Bucket (B)

Drawing Tools:

- Line (L)
- Rectangle (R)
- Circle (C)
- Arc (A)

Modify Objects:

- Push/Pull (P)
- Offset (F)

Move Objects:

- Move (M)
- Rotate (Q)
- Scale (S)

View Tools:

- Orbit (O)
- Hand (H)
- Zoom (Z)
- Zoom Window (⇧W)
- Zoom Extents (⇧Z)

Measure Tools:

- Tape Measure (T)

Common Keyboard Shortcuts


Creating Your Own Keyboard Shortcuts

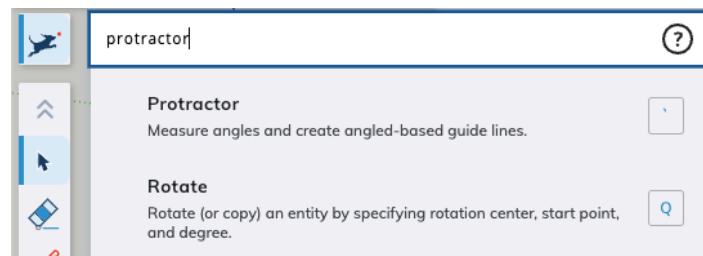
A really great feature of SketchUp is the ability to set your own keyboard shortcuts. We will take advantage of this feature before we start using SketchUp. A few simple shortcuts will make our lives easier as we begin to model.

Creating a keyboard shortcut is a two-step process:

1. Search for the tool for which you would like to add a keyboard shortcut
2. Modify the Keyboard Shortcut in the Search result

Let me show you how.

1. On the SketchUp Toolbar, click on the Search icon , or press $\hat{u}+/\$.
2. Type, 'protractor'. The Protractor tool appears. To the right of the Protractor field, there is a faint box. You can type into that box to add a keyboard shortcut (or modify the shortcut, if one is already defined).
3. Click in the shortcut box.
4. Type, "`" (backward tick character) into the box.



Search Result: Modify Keyboard Shortcut

Repeat this process for a few more tools.

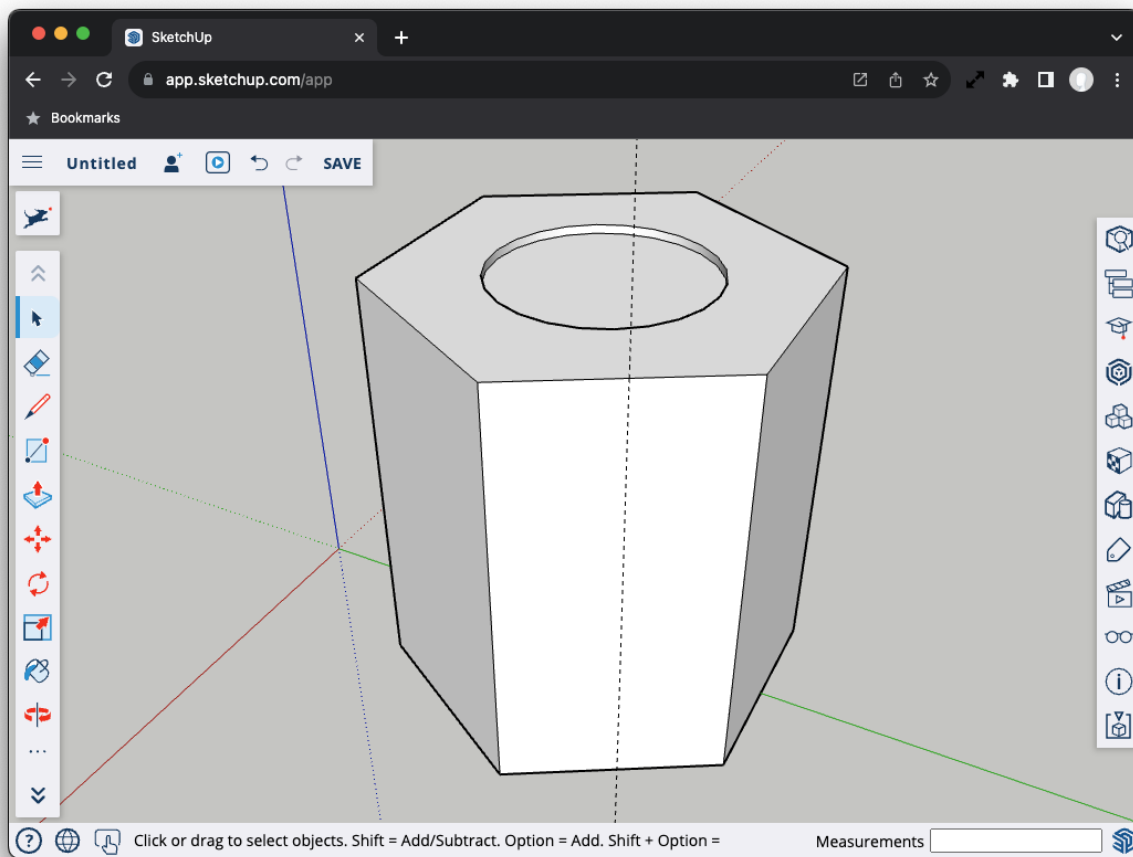
- Type "pie" into the Search text field; Type "i" into the shortcut text box.
- Type "polygon" into the Search text field; Type "y" into the shortcut text box.
- Type "follow me" into the Search text field; Type " $\hat{u}F$ " into the shortcut text box.
- Type "group" into the Search text field; Type " $\hat{u}G$ " into the shortcut text box.

Now, let's setup shortcuts to the built-in views in SketchUp, which you will use later in this Introduction. Note that in the desktop version of SketchUp, these views have pre-assigned keyboard shortcuts by default. Unfortunately, those pre-assigned keyboard shortcuts will not

work in the browser-based SketchUp, because they conflict with built-in keyboard shortcuts that the browser uses for browser functions.

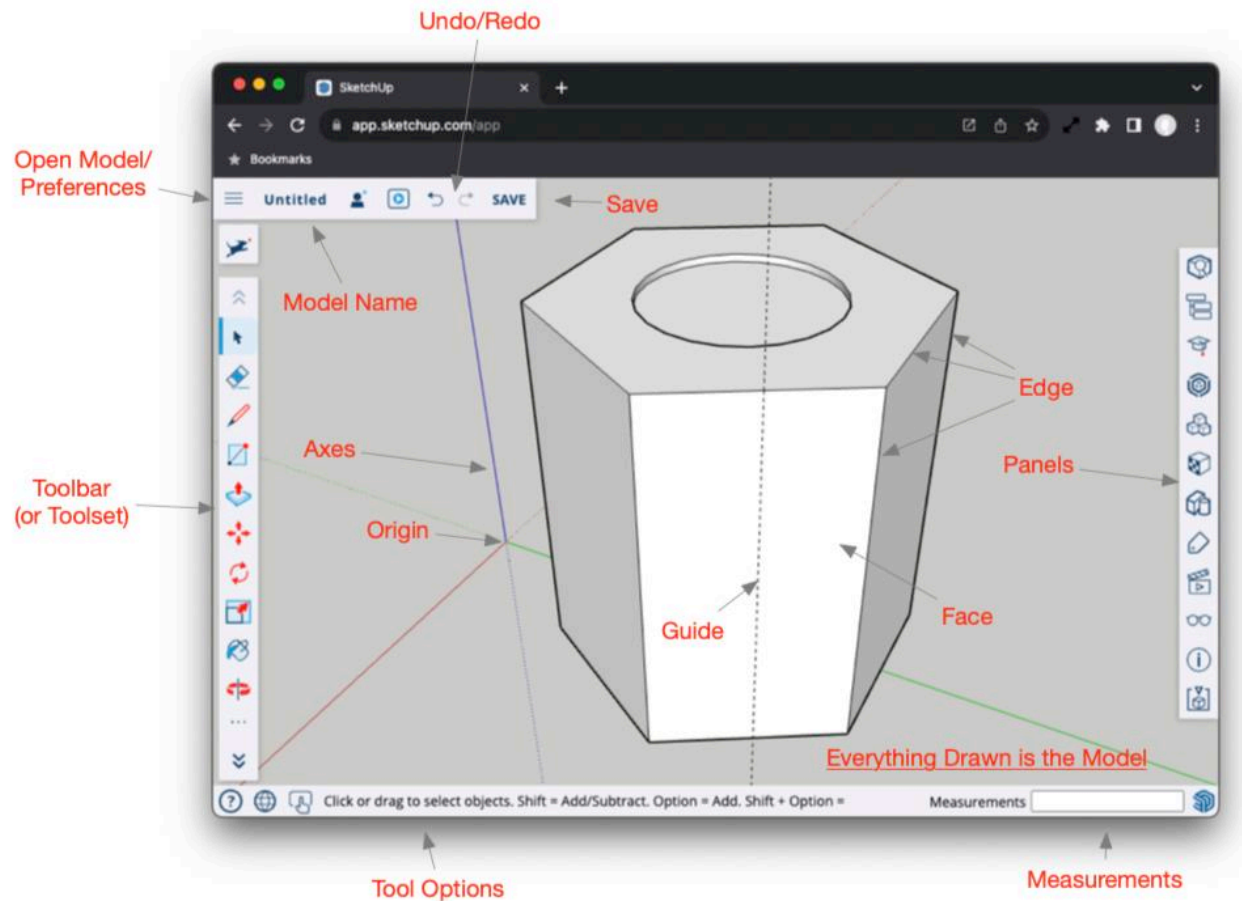
Module 4: SketchUp Terminology

There are a few terms that are used in SketchUp that we must understand, so we will take a minute to learn them. Below is a typical SketchUp drawing window shown in a Chrome web browser.



Typical SketchUp Drawing Window with a Model

Now, here is the same window with all the elements in the SketchUp window and model identified.



The Elements of the SketchUp Drawing Window and Model

We will use these terms throughout this Introduction.

TIP: Everything drawn in the SketchUp Model consists of Edges and Faces. Anything that appears in the SketchUp window besides Edges and Faces is a drawing aid.