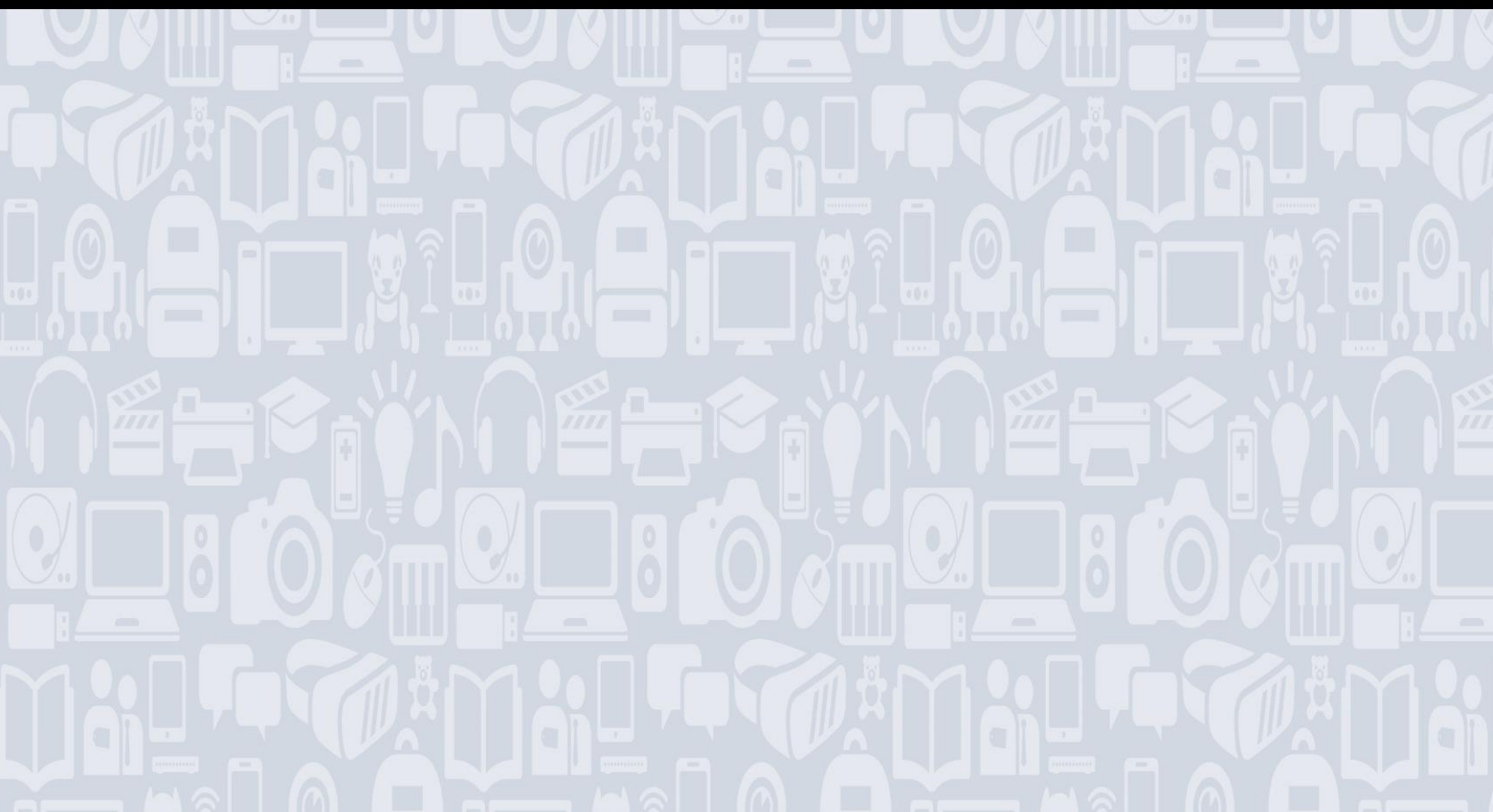# Geek Squad
Academy

BEST BUY | Geek SQUAD

GEEK SQUAD ACADEMY
3D DESIGN
ONLINE GUIDE

Welcome to 3D Design!
For best results, be sure to read the full guide first before you get to work!

3D Design is all about making things in 3D that represent the real world. In this course, we'll be making a house using real (and free) 3D modeling software. After you learn how to design something in 3D, we'll go over how to use the house you designed in other programs, or to potentially 3D print a smaller version.

During this activity, experimentation is key - take the chance to discover, change things, and make mistakes. This is going to be awesome!

WHAT YOU'LL LEARN:
- How to use the basic tools of SketchUp to design in 3D
- How to apply measurements to lines and shapes to make real-world scale models
- How to export your designs for use in other applications, or for 3D printing

MATERIALS NEEDED:
- ❑ Computer (Mac, PC, Linux, or Chromebook)
- ❑ Internet access
- ❑ SketchUp software – Free (https://app.sketchup.com/)
  - o NOTE: You will need to register to access SketchUp, either with an email address, Apple ID, or Google account.
    Please ask your parent/guardian before signing up!
- ❑ Mouse (Highly recommended)
- ❑ Geek Squad Academy Video Resources
  - o **Full Video Playlist: https://shortcut.pw/sketchuptools**
    - ▪ Undo Tool: https://www.youtube.com/watch?v=VH_bbRliSqo
    - ▪ Rectangle and Shapes: https://www.youtube.com/watch?v=ubB6oteuSFE
    - ▪ Measurements: https://www.youtube.com/watch?v=1lWohk_kuo8
    - ▪ Push/Pull Tool: https://www.youtube.com/watch?v=l1jMFt2jCmI
    - ▪ Line Tool: https://www.youtube.com/watch?v=iTtMLJGojiM
    - ▪ Move Tool: https://www.youtube.com/watch?v=GMKCsFMb1tw
    - ▪ Orbit Tool: https://www.youtube.com/watch?v=qaMPK6zmaaA
    - ▪ Offset Tool: https://www.youtube.com/watch?v=qQ1Wc0nJbho
    - ▪ Eraser Tool: https://www.youtube.com/watch?v=BR-xE5JbJ3M
    - ▪ Materials Tool: https://www.youtube.com/watch?v=XGUxKs5FDRc

MODULE 1: INTRO TO SKETCHUP

SketchUp is an easy to use and powerful 3D modeling software that can be used for a variety of projects. This real-world program is utilized by architects, interior designers, landscapers, and engineers. It's available as free web-based software (SketchUp Free) and a paid version with additional functionality (SketchUp Pro). It can also be used to create 3D models for other applications, such as 3D printing.

> **All of the tools that we'll be using in this course are available on the SketchUp Free version. It is a web-based software, with no download required.**

SET UP YOUR ACCOUNT
First, you'll need to sign in to SketchUp. If you've never used it before, you will need to register using an email address, Apple ID, or Google account.

> **STOP: Please consult with a parent or guardian before signing up for a SketchUp account!**

1. Go to **https://app.sketchup.com**.
   a. NOTE: If this URL doesn't work, go to www.sketchup.com, click Plans & Pricing > For Personal > SketchUp Free > Sign Up.
2. Enter an email address and click Next.
3. Sign up entering your first name, last name, and password.
4. Click Sign Up.
5. Activate the link sent to your email address.
6. Login to https://app.sketchup.com.

THE FINAL PROJECT
In this course, you'll be designing a house! Let's start by going over the tools you'll need.
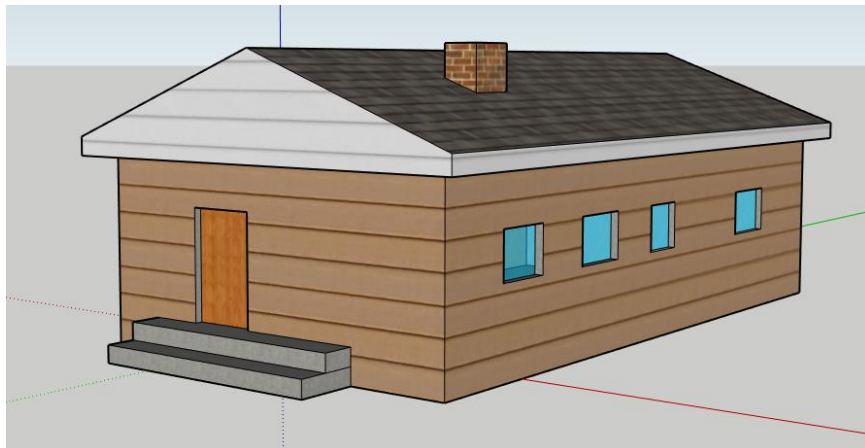
LET'S GET STARTED

1. Select "Create new".
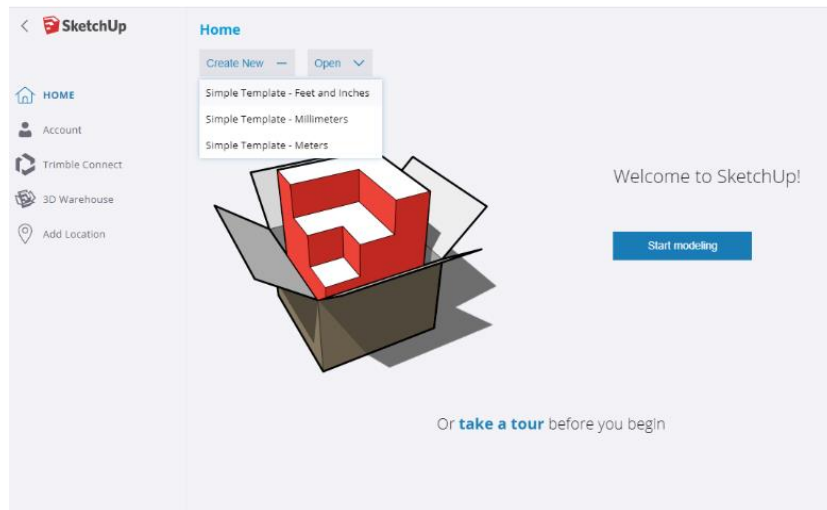2. Select the measuring system you'd like to work in (Feet and Inches, Millimeters, or Meters).

FIRST LOOK AT SKETCHUP

Get acquainted with what's on your screen! The tools that we'll be working with are all along the left menu. SketchUp opens with an on-screen character, which can help with scale. Scale is the size of one object, in relation to the other objects in a design. We're going to name our character Rachel, but feel free to call the character whatever you want.
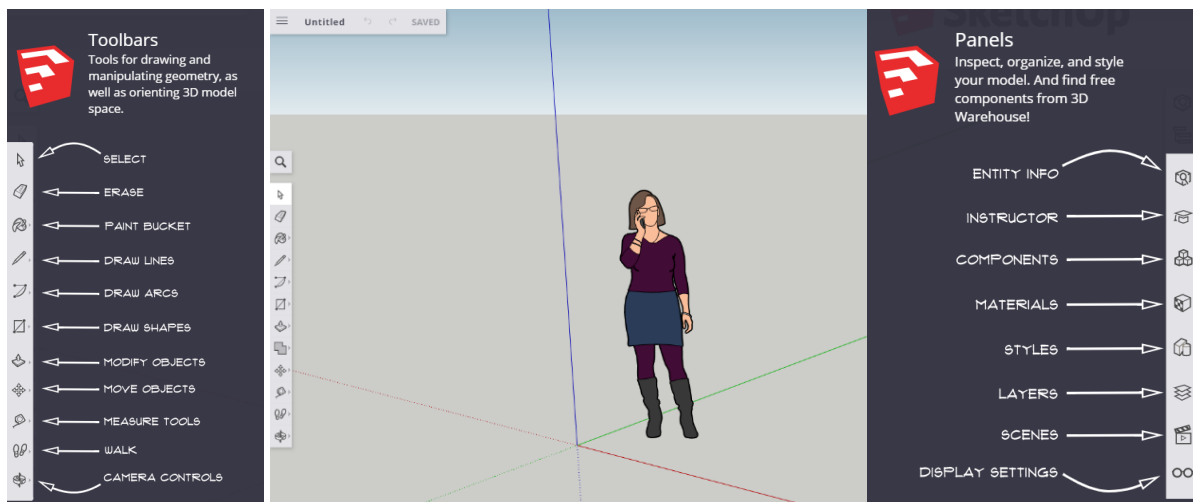
PRO TIP:
- If you've made a mistake, don't worry! The "Undo" tool is your friend. Found in the top left of SketchUp, you'll find this toolbar.

- You can also use CTRL+Z to undo any mistakes.
- Remember: Mistakes can be good, and a great way to learn!
- **HOW-TO VIDEO: https://www.youtube.com/watch?v=VH_bbRliSqo**

RECTANGLE TOOL

Just like it sounds, the Rectangle Tool makes rectangles (or squares) when you click and drag. These rectangles can be in any orientation, so going slowly is a good idea.
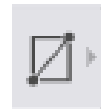
Make the foundation of your house
1. Use the rectangle tool on the left side of the screen to create a rectangle.
2. You can make it any size for now, but the corner should start in the far left corner (on top of the dotted lines, as shown below).

HOW-TO VIDEO: https://www.youtube.com/watch?v=ubB6oteuSFE
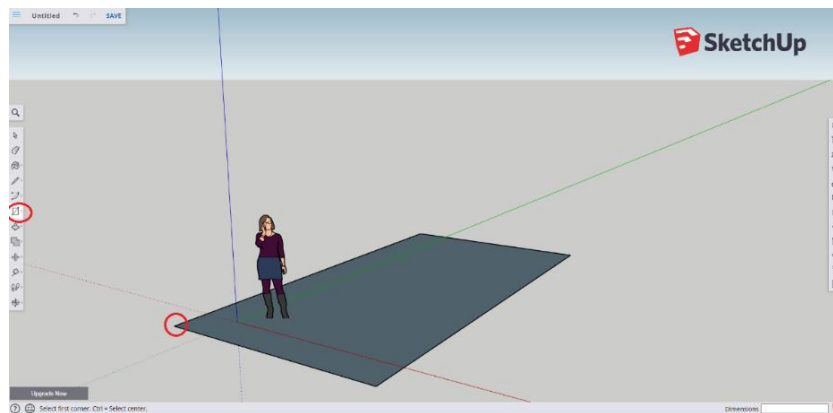
PRO TIP:
- If you'd like a certain size for your foundation, you can enter your measurements into the "Measurements" box after you draw your shape. For example, 32 feet by 45 feet would be written as 32',45'. If you type this and press enter, your shape will automatically resize.
- The dimensions for each shape or line can be seen in the Dimensions box, when you click on them.

- **HOW-TO VIDEO: https://www.youtube.com/watch?v=1IWohk_kuo8**

PUSH/PULL TOOL

But wait, that's not a 3D shape! Enter the Push/Pull tool, which can be used to push (or pull) a shape and give it dimension. In other words, it can move from 2D to 3D.
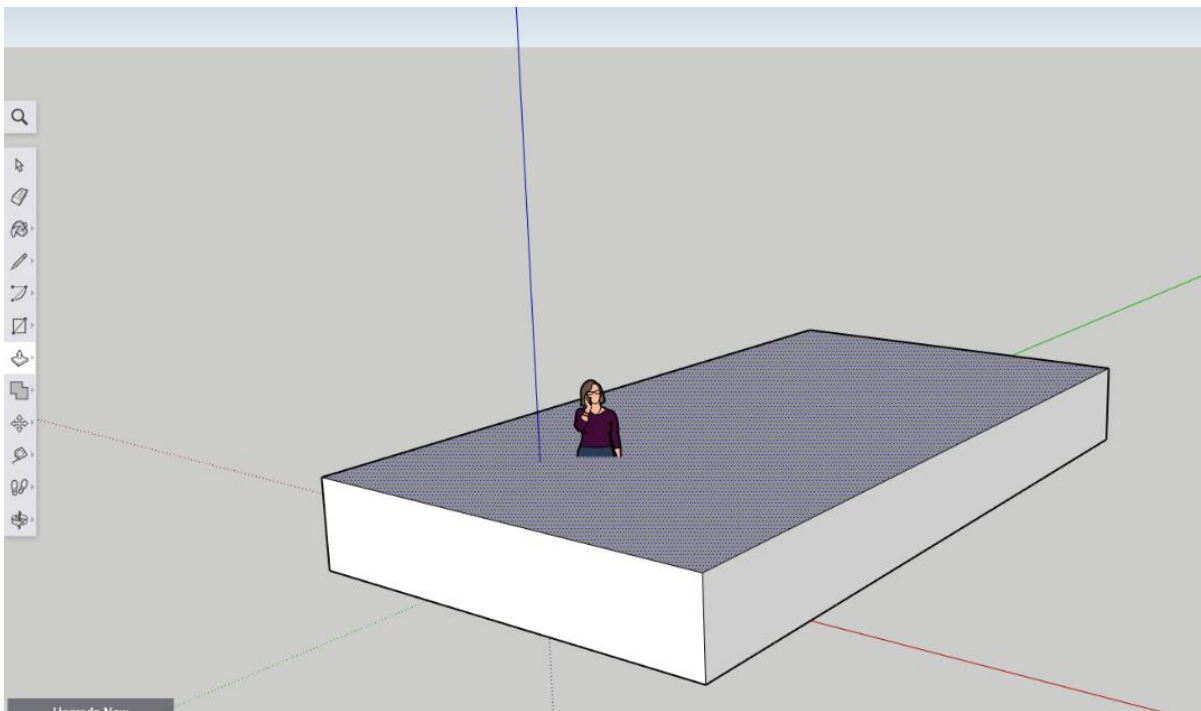
Make it 3D
1. Using the Push/Pull tool, hover your mouse cursor over the top of the rectangle.
2. Left click once, then move the mouse to pull the rectangle up. It should start to cover up Rachel. Make it as tall as you like!
3. Left click again to finish.

The Push/Pull tool can be used on any face, like the front or side of the house. A "face" is the most basic part of a 3D shape. It's where three or more edges are connected.

HOW-TO VIDEO: https://www.youtube.com/watch?v=l1jMFt2jCmI

PRO TIP:
- After you've given your shape dimension, you can make it an exact measurement by typing in a measurement.
- For example: To make this box 10 feet tall, type in 10' and press Enter.

LINE TOOL

The Line tool is incredibly useful in helping to make faces. Right now, we can see three faces: the front of the house, one side of the house, and the top.

In total, this shape (our house) will have six (6) faces: the top, bottom, front, back, and two sides. You can also use the Line tool to make a roof for your house.

1. Find the midpoint of the house. The midpoint, as you may have guessed, is a spot in the middle of the house on one of the edges.
2. After selecting the Line tool, hover the mouse over an edge at the top of your shape.
3. The red square should turn to a blue dot when you are over the exact middle of the edge of the house. This is the midpoint.
4. Find the midpoint on the front of your house, and left click once.
5. Move your mouse to the opposite side of the top of the shape, and left click again on the blue dot.
6. This should make a line exactly across the middle of the shape. This isn't a roof yet, but it's about to be!

**HOW-TO VIDEO: https://www.youtube.com/watch?v=iTtMLJGojiM**
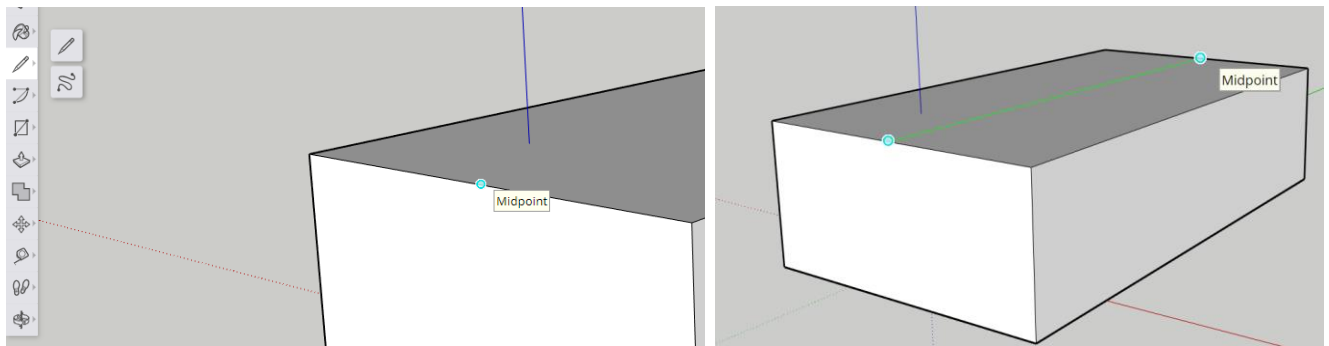
MOVE TOOL

To raise the pitch of the roof and make our shape look more like a house, we're going to use the Move tool

1. Select the Move tool.
2. Move the mouse until you are right on the new line. The line should turn blue.
3. Left click once on the line.
4. Move the mouse up until you've created a realistic looking roof. Watch out – if you accidentally move one of the top two faces, you could end up with a strange looking cube. Remember, you can also use the Undo tool if you make a mistake.

HOW-TO VIDEO: https://www.youtube.com/watch?v=GMKCsFMb1tw
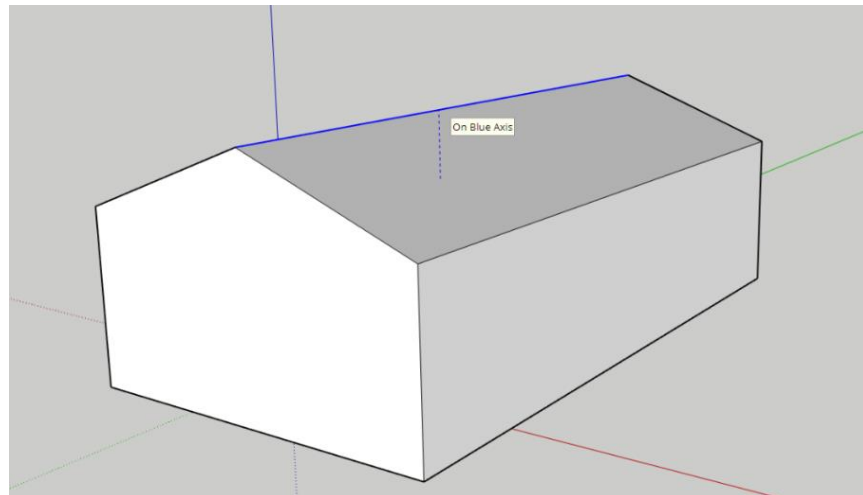
PRO TIP:
- Just like the Push/Pull tool, you can enter an exact measurement to raise your roof after you've used the Move tool.
- For example: 4 feet and 6 inches would be 4'6".

Take me to more 3D Design modules!
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Take me back to Geek Squad Academy Online Learning!