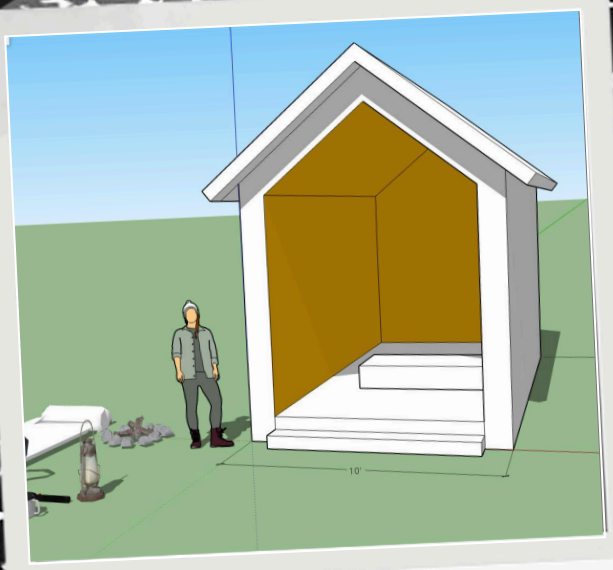
SketchUp for Schools

Design Your Own Cabin

Time to complete: 45 mins



Create your own custom cabin, ready to go for your next camping trip.

Outline

Learning Objectives

ISTE Standards for Educators

Intro to SketchUp for Schools

Chapter 1: Introduction to Cabin Building and SketchUp Basics

Chapter 2: Creating the Cabin

Chapter 3: Grouping and Organizing

Chapter 4: Materials and Personalize

Learning Objectives

In this lesson, students will learn how to use the following SketchUp tools:

 Select

 Rectangle

 Tape Measure

 Orbit

 Zoom

 Pan

 Scale

 Paint Bucket

 3D Text

 Move/Copy

 Zoom Extents

 Line

At the completion of this lesson, students should feel comfortable with the following on their own:

- [x] Navigate the SketchUp interface efficiently.
- [x] Use fundamental tools to create 3D shapes and structures.
- [x] Apply various editing techniques to refine your model.
- [x] Understand how to organize your model using groups and components.

SketchUp for Schools

ISTE Standards for Educators

2 Leader

Educators seek out opportunities for leadership to support student empowerment and success and to improve teaching and learning.
This lesson fulfills 2c

4 Collaborator

Educators dedicate time to collaborate with both colleagues and students to improve practice, discover and share resources and ideas, and solve problems.
This lesson fulfills 4b

5 Designer

Educators design authentic, learner-driven activities and environments that recognize and accommodate learner variability.
This lesson fulfills 5a, 5b

6 Facilitator

Educators facilitate learning with technology to support student achievement of the ISTE Standards for Students.
This lesson fulfills 6a, 6b, 6c,

SketchUp for Schools

Intro to SketchUp for Schools

Before we get started, let's go through some of the basics together.

Getting Access

- Go to https://edu.sketchup.com/app
- Sign in with the Google or Microsoft email address provided by your school.
- Note: If you have trouble logging in, check with your administrator that your school or district has installed SketchUp for Schools (Instructions for Google & Microsoft Admins)

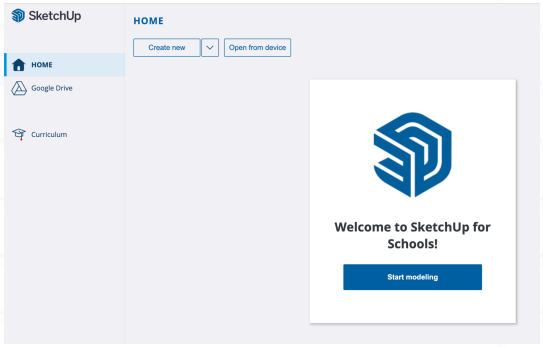
TIP

Save often!

If you get into the habit of saving your work, you'll be less likely to lose any progress if class ends and you close your laptop.

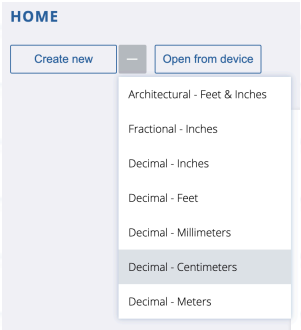
Creating a New File

- This is the SketchUp for Schools home screen. Here you can start a new project by clicking "Start Modeling" or "Create New". Both will open SketchUp's default template.



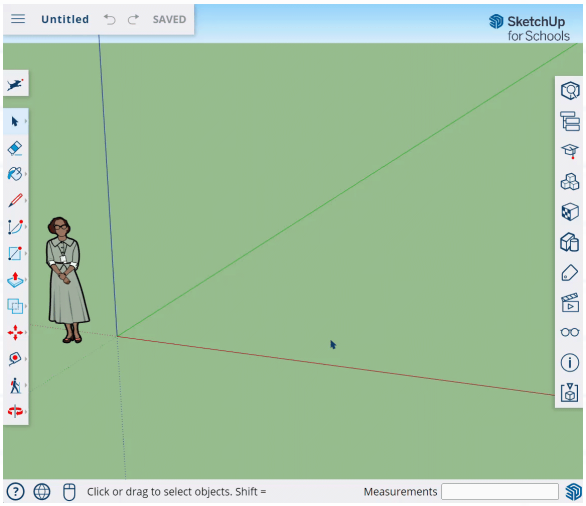
Choosing a Template

- Or you can choose a template in your preferred unit of measurement. For this lesson, we'll be using **Architectural - Feet & Inches**. Choosing a template will start a new project as well.



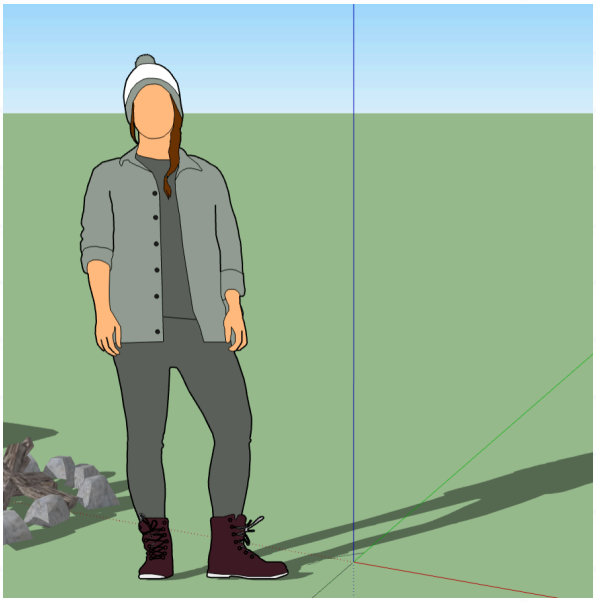
Saving Files

- Whenever you start a new model, it's a good idea to save your file first. Click on the menu icon on the top left of the screen, then click **"Save As**."
- Create a new folder by clicking on the New Folder Icon and give it a name.
- Give your model a name and then press **"OK."**
- If you've done everything correctly, you'll see your file name in the top left corner and a **"Saved"** message.



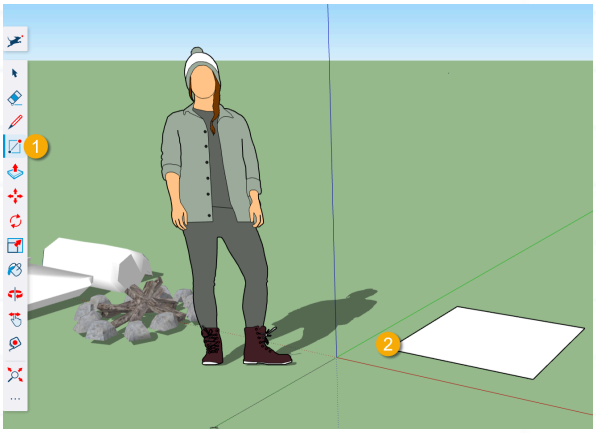
The Scale Figure

- Every time you open a new model in SketchUp for Schools, you will see a scale figure. This person's job is to give us a sense of the size of the objects we draw in our model.
- For example, this person is 5'8". If we draw a 3-foot cube next to her, the cube will be about half her height.



Drawing a Cube

- Select the **Rectangle** tool from the menu on the left.
- **Click** once on the ground near Katherine's feet to set one corner of your cube.
- Without clicking again, move your mouse on the screen, type **3', 3'** and press **Enter**.
- Select the Push/Pull tool from the menu on the left.
- **Click** once on the face you just drew. Without clicking again, move up to make a cube 3D.
- Type **3'** and press **Enter** to complete your cube.

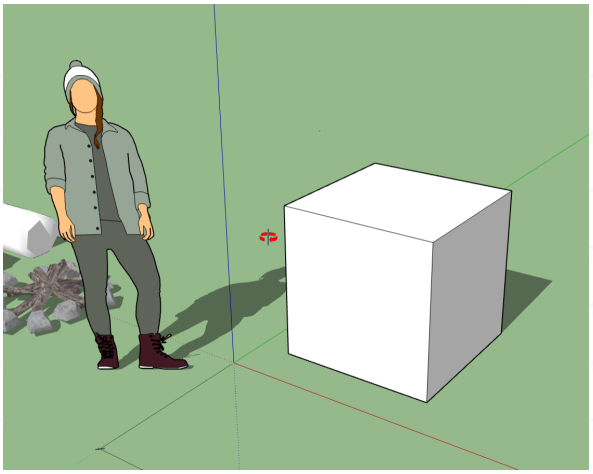


TIP

Unless otherwise specified, a click in SketchUp is executed as "**click and release.**"

Navigation Tools

- One of the most important things to learn in 3D modeling is how to move around in your model window.
- Click the orbit tool from the menu on the left to expand all the navigation tools.



Orbit

The **Orbit** tool allows you to rotate around your model.
Click on the Orbit tool, then left click-hold-drag your mouse from side to side in the model window.
Mouse shortcut: hold down the scroll wheel to activate the Orbit tool, then move your mouse in any direction to orbit.

Pan

The **Pan** tool allows you to move your model across your screen.
Click on the **Pan** tool, then left **click-hold-drag** your mouse from side to side in the model window.
Mouse shortcut: hold down the **scroll wheel**, then hold down the **shift** key at the same time. Move your mouse in any direction to pan.

Zoom

The **Zoom** tool allows you to look closer at the details in your model.
Click on the **Zoom** tool, then **left click-hold-drag** your mouse up and down in the model window.
Mouse shortcut: use the scroll wheel to zoom in and out.

Zoom Window

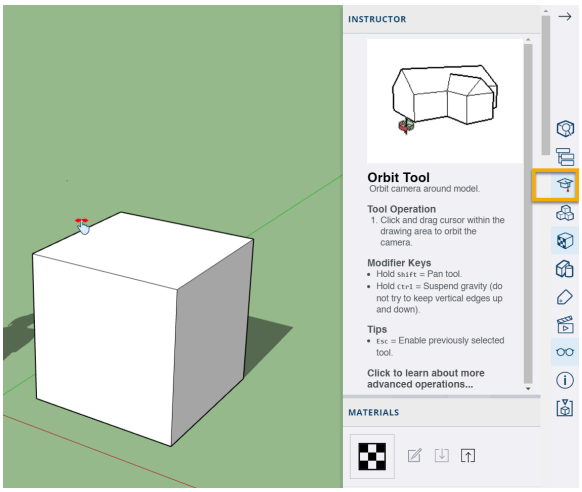
The **Zoom Window** tool allows you to select an area of your model to view closer. **Click** on the **Zoom Window** tool, then **left click-hold-drag** your mouse to highlight an area of your model.

Zoom Extents

The **Zoom Extents** tool allows you to see all the geometry in your model.
Click on the **Zoom Extents** tool and everything in your model will come into view.

The Instructor Panel

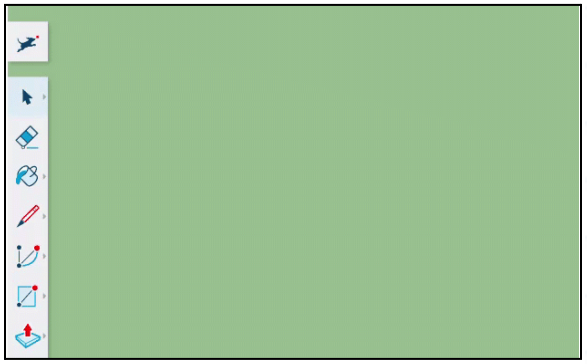
If you want to see how a tool works, use the Instructor Panel.



- You can open the **Instructor Panel** from the right side menu to find helpful tips on how to use any of SketchUp's tools.
- The way it works: **click** on a tool with the **Instructor** panel open and you will see a description of the tool and a step-by-step guide on how to use it.

Search for a tool

- All of the drawing tools can be found in the toolset along the left side of the screen. However, you can always use the Search function to find a desired tool more quickly. This search function is also where you will find all of SketchUp's default keyboard shortcuts, and where you can edit them or add your own.

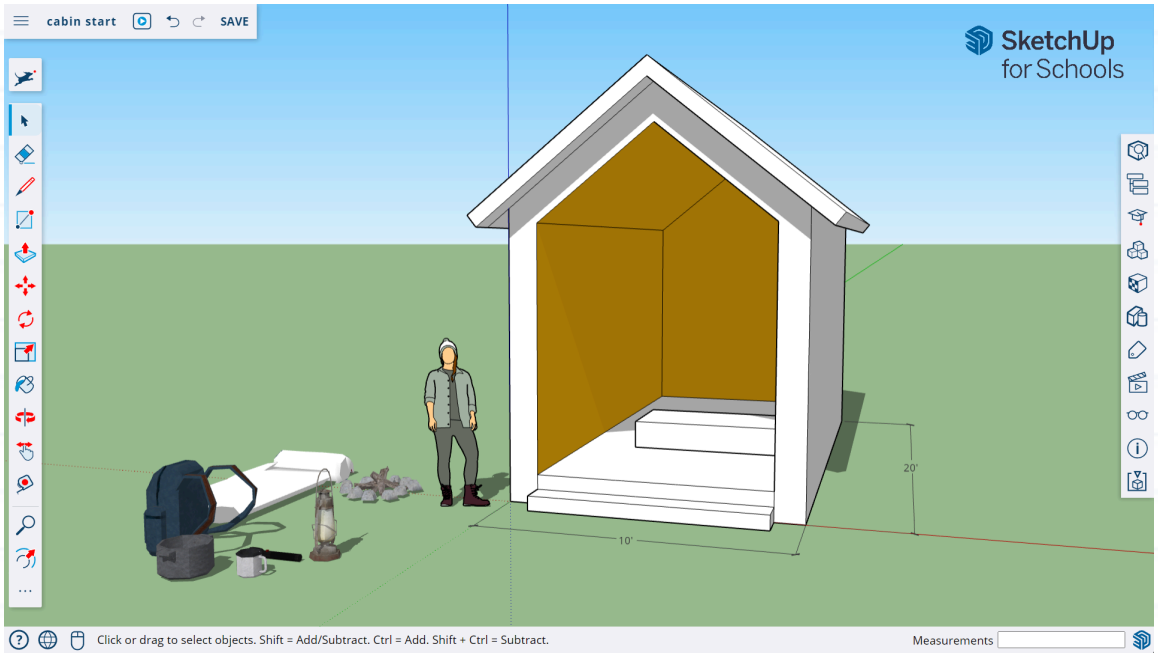


That's it for the intro.

You're ready to get started on modeling!

To follow along with the video for this lesson, click here.

Design Your Own Cabin Step-by-Step Manual



Introduction

Welcome to the "SketchUp for Schools: Design Your Own Cabin" Step-by-Step Manual. In this comprehensive guide, you will learn how to use SketchUp, a powerful 3D modeling software, to create a cabin from scratch. By following these chapters, you will gain a solid foundation in SketchUp's tools and functionalities, enabling you to bring your creative ideas to life.

Checklist before you begin this lesson.

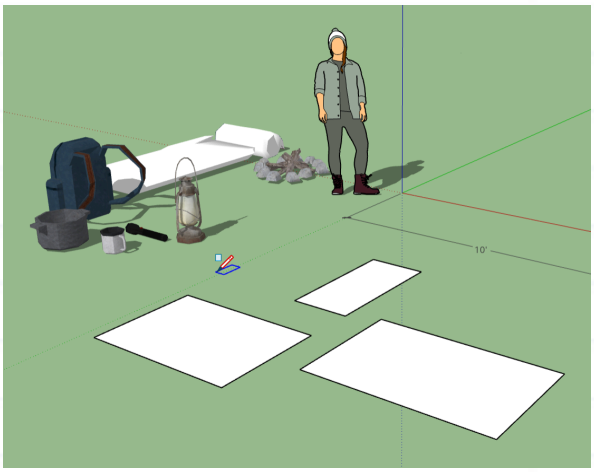
- ☑ You are logged in at edu.sketchup.com/app
- ☑ You've gone through the SketchUp for Schools intro and feel comfortable navigating around in the model window.
- ☑ You've created a new project in SketchUp for Schools and have saved it properly.

Chapter 1: Introduction to Cabin Building and SketchUp Basics

Chapter Overview: Learn about the goals of the tutorial and become familiar with the SketchUp interface. Start building a summer cabin and understand the fundamentals of navigating the 3D environment.

Becoming Familiar with SketchUp Interface

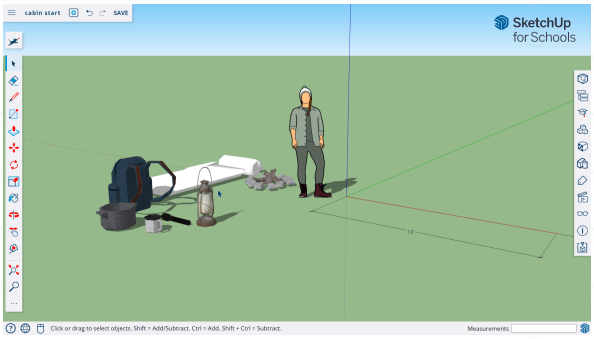
- Locate the **Rectangle** tool icon among the tools palette. Hover your cursor over the Rectangle tool to view its name and shortcut (R).
- Click the **Rectangle** tool icon to select it. Or Press the "**R**" key on your keyboard as an alternative to activate the tool.
- Practice drawing shapes with the Rectangle tool.
- Let go of the left mouse button while dragging to size the shape.
- Click the left mouse button again to finalize the shape's dimensions.



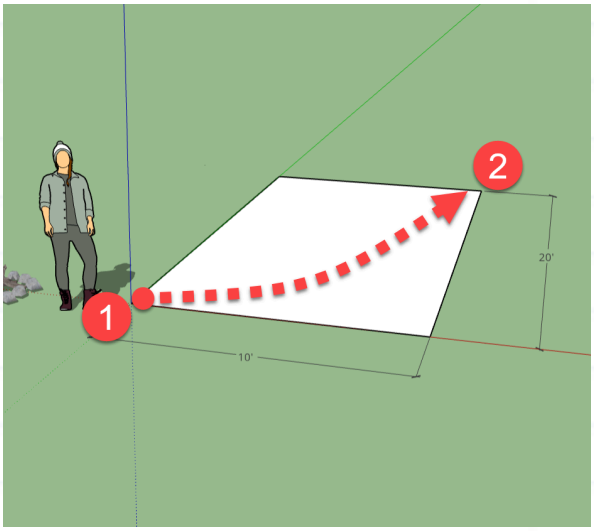
Chapter 2: Creating the Cabin

Let's dive into building the cabin. We'll start from scratch and create a detailed model using various tools and techniques.

Starting with the Outline

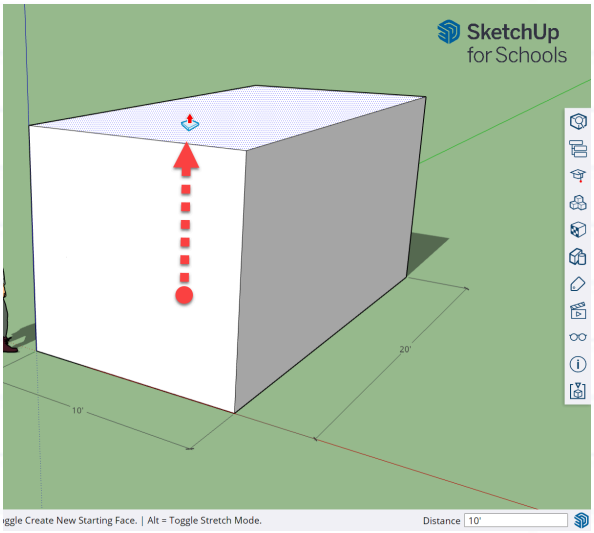


- If you haven't already, open the **project starting file** and ensure you have the same starting file displayed on the screen. The model will include some camping items and a scale figure.



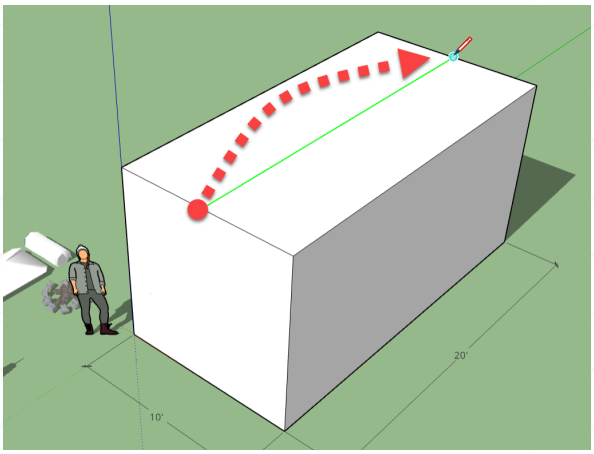
- Locate the **Rectangle** Tool in the tools palette or simply press '**R**' on your keyboard.
- **Click** at the intersection of the drawing axis to begin drawing the rectangle. This is where our cabin will take shape.
- Move your mouse to define the size of the rectangle and click again to finish drawing.
- To ensure precision, avoid eyeballing the dimensions. Instead, input the dimensions directly. Type **10'** (feet symbol or apostrophe) followed by a **comma**, and then **20'** (feet symbol or apostrophe) and press **Enter**.
  This sets the accurate size of the cabin.

Creating a 3D Shape

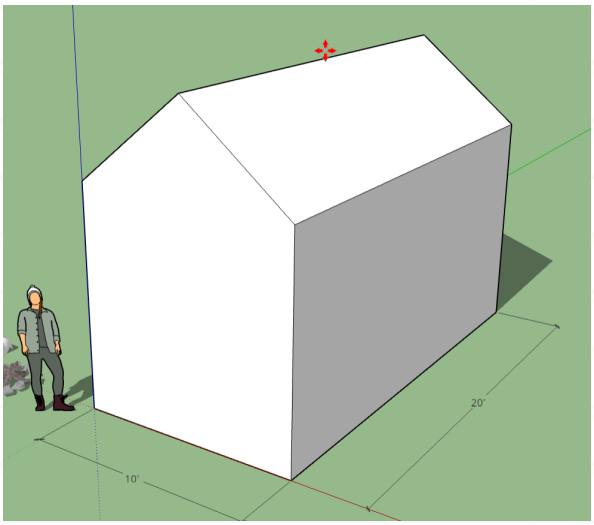


- Now, let's give our rectangle some depth. Switch to the **Push-Pull** Tool by clicking on the box with an arrow pointing up, or use the shortcut '**P**'.
- Hover your cursor over the rectangle, and click on its face to select it.
- With the face selected, **click** and move your cursor as you pull the face upwards. You'll see the rectangle transforming into a 3D shape.
- To set the height accurately, type **10'** (or **120** in inches) and press **Enter**.

Adding a Pitched Roof

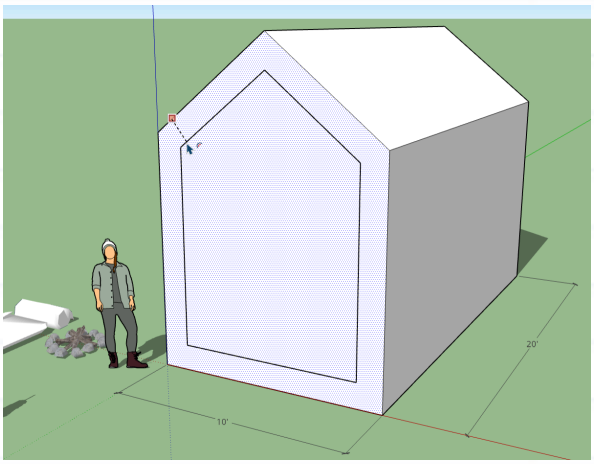


- To add a pitched roof, first **orbit** around the model to view the front and top of the cabin clearly.
- Choose the **Line** Tool from the tools palette or use the shortcut '**L**'.
- Start by drawing a line from the midpoint of the top edge of the front face to the midpoint of the back edge.



- Now, use the **Move** Tool. Select it from the tools palette or press '**M**'.
- **Click** on the middle line of the roof, hold down the mouse button, and move the line upwards to create the pitched roof.
- Input **4'** (or **48** in inches) and press **Enter** to set the height of the pitched roof.

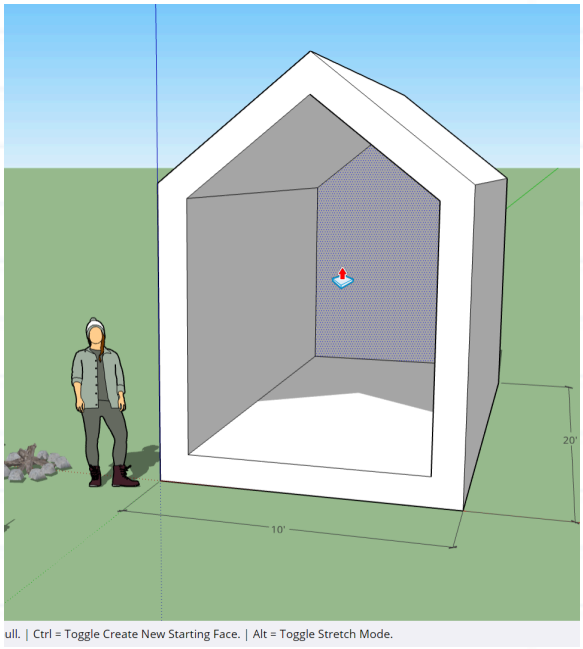
Adding an Opening



- The next step is to create an opening. Select the **Offset** Tool from the tools palette or use the shortcut '**F**'.
- **Click** on the edges of the front face and slowly move your cursor inward. This will create an offset or inset effect.
- For precision, input **12** (in inches) and press **Enter** to define the size of the inset.

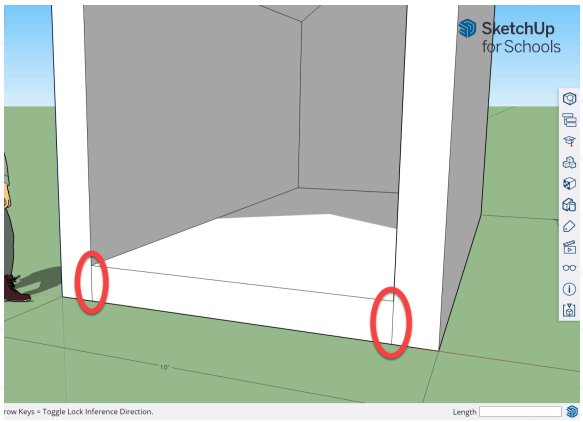
Adding the Interior

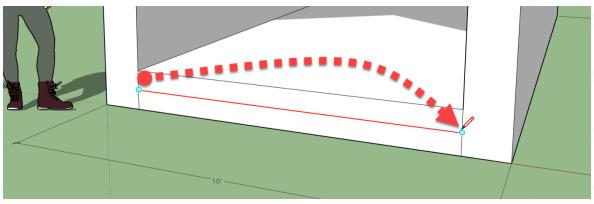
- Select the **Push-Pull** Tool again and **click** on the inner face that was just offset.
- Push the face inwards until it aligns with the back edge of the cabin.
- Type **19'** (or **228** in inches) and then press **Enter** to set the depth accurately.



Adding a Step

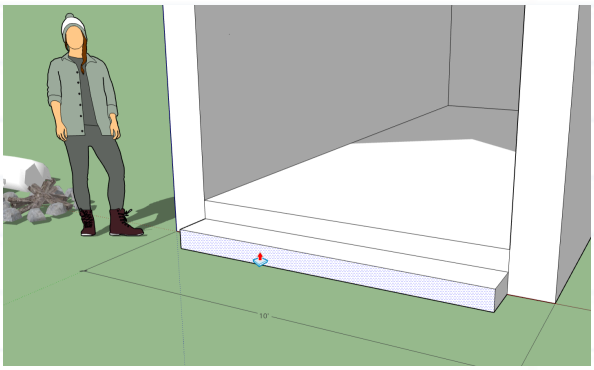
- Utilize the **Line** tool to draw edges for creating a step.
- Select the **Line** tool from the tools palette or press "**L**" on the keyboard.
- Hover over the bottom left inside corner of the cabin's front face.
- **Click** and **release** to establish the starting point of the line.
- Move the cursor downwards to create a vertical line for the step. Repeat this action on the right side.
- Next, from the midpoint of the vertical lines created, draw a horizontal line across the new face to divide it into 2 faces.





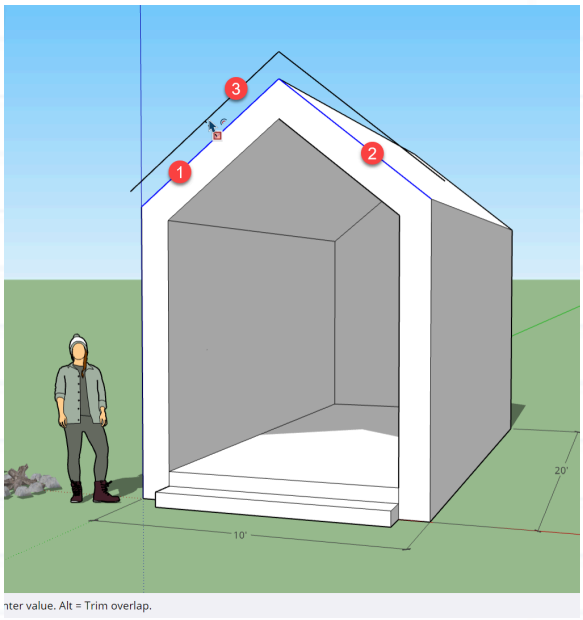
Extruding the Steps

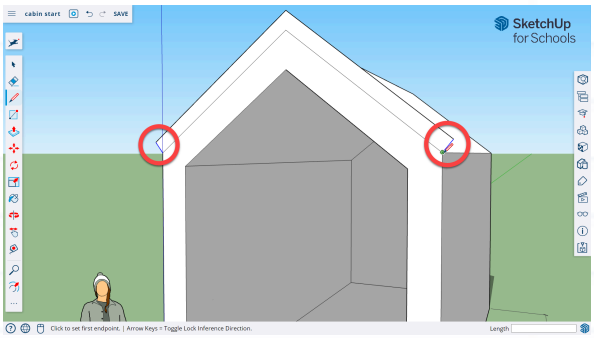
- Activate the **Push/Pull** tool and hover over the face of the bottom surface.
- Click and move the cursor away from the cabin.
- Type **1'** or **12** (inches) and press **enter**.
- Clean up the remaining 2 vertical lines above the step by using the Eraser tool and clicking on them.



Creating Overhangs

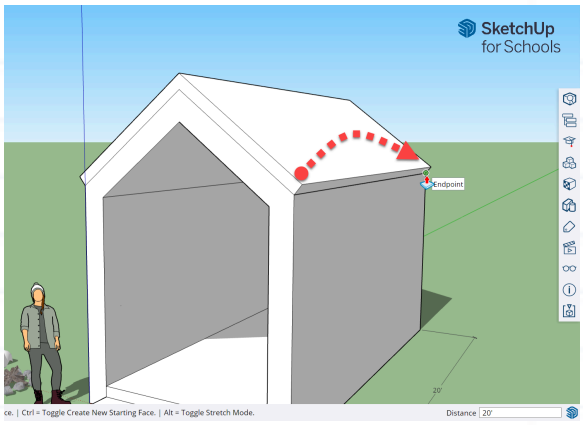
- Activate the **Select** tool.
- Hold down shift while clicking on the two top sloped edges of the roof. This preselects them so they are ready for the next step.
- With the **Offset** tool, click on the edges and move the cursor out.
- Type in 6 and press enter.
- Using the **Line** tool, draw two lines that go from the existing building corners to the ends of the new offset edges.
- After creating both lines, a face will generate, making it ready to extrude.





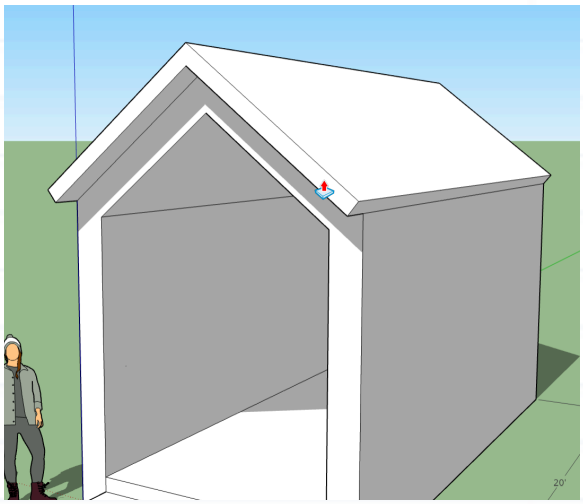
Extruding the Overhang

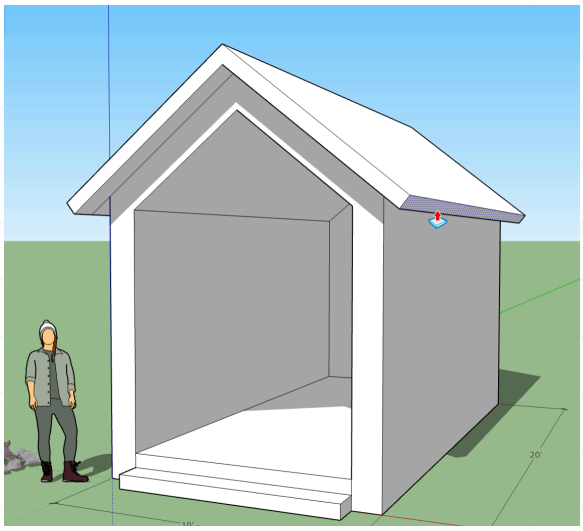
- With the **Push/Pull** tool active, click on the new face and move the cursor back.
- Click to finish when the cursor snaps to the endpoint of the back wall edge.



Extend the Overhang

- Finish by clicking on the front face again but moving away from the house to create an overhang.
- Type **1'** or **12** and press **enter**.
- Repeat this for the sides and back to extend the roof pitch out. SketchUp remembers the last Push/Pull dimension. Simply **double-click** on the face with Push/Pull active to repeat the previous distance.



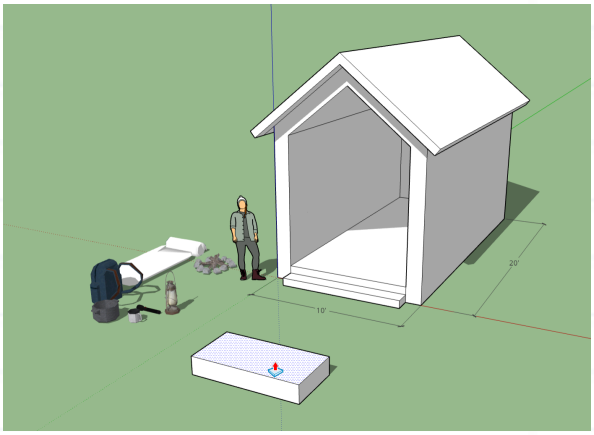


Chapter 3: Grouping and Organizing

Now, let's move on to grouping and customizing elements of our cabin.

Create a Bedframe

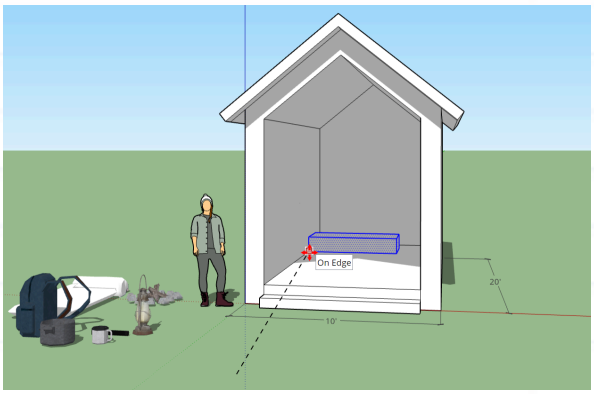
- Using the **Rectangle** tool, draw a box on the ground to represent a bed.
- Click to start the rectangle and type **6',3'** and press **enter**.
- Using the **Push/Pull** tool, click on the face you just created and extend up **1'** and press **enter**.

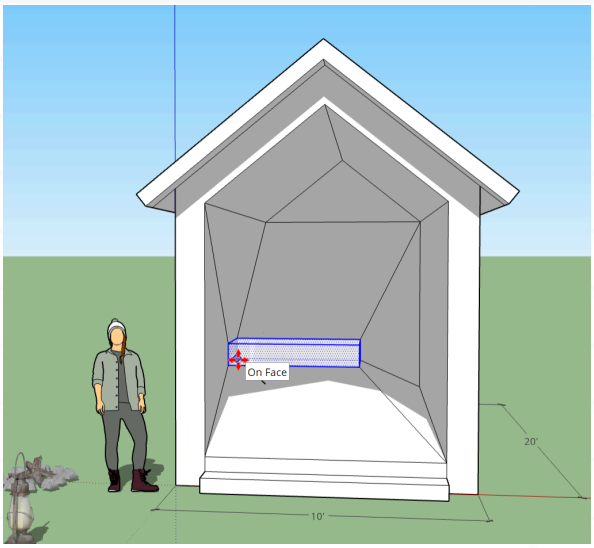


Why Group?

- If you were to select the bedframe and move it into the cabin, the geometry would stick to the existing cabin and become one piece of geometry. This sticky effect would make it difficult to move later on.

  A good habit to have when modeling in SketchUp is to group objects or make them components. This keeps them separate from each other and makes them easier to work with.

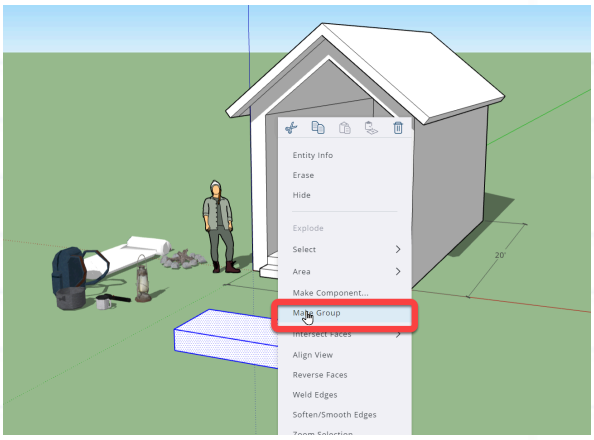




Making a group

- With the **Select** tool, drag a window around the entire bed frame. You can also triple click the frame to select all of it.
- **Right-click** and select **Make Group**.

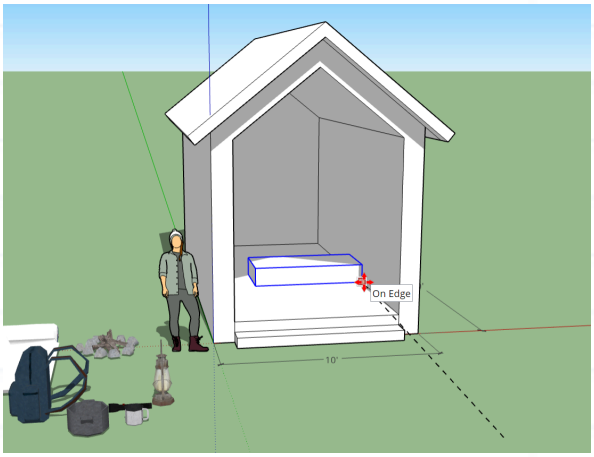
  This puts a blue bounding box around the object and now isolates it from any other geometry.



Move the bedframe

- Now with the **Move** tool activated, click on the bedframe to begin moving it.

  Hover the cursor inside the cabin and place it on the floor in a desirable location.

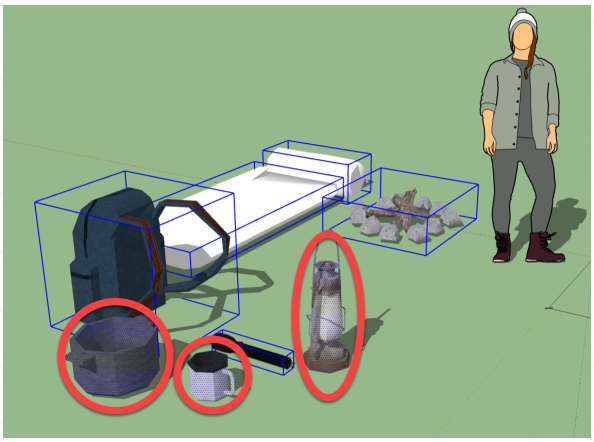


Move in

- Notice the other items outside the cabin.

  Use the select tool to draw a window around one of the objects.

  If you see the faces (dots) on the surface of the object, then it is not a group or a component, but if it has a blue bounding box, it is.
- Using the technique above, make the cup and the lantern groups before moving them into the cabin.

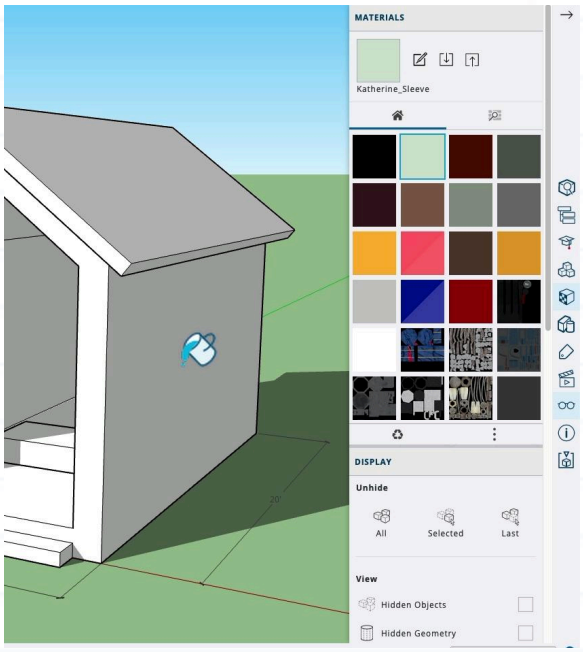


Chapter 4: Materials and Personalizing

Add some final touches to personalize the cabin.

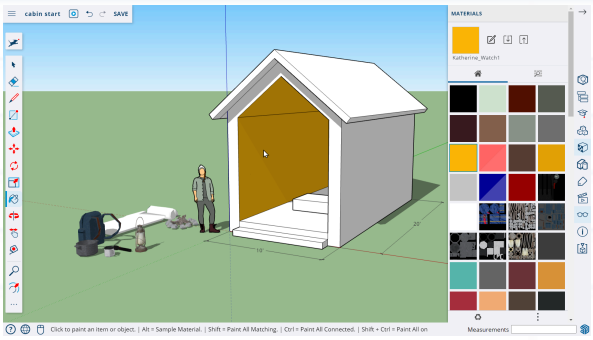
Applying Materials

- Access the panels menu and open the "**Materials**" Palette.
- Browse materials and click on a desired color. If you don't want to use the materials that already exist in your model, try clicking on the magnifying glass icon to open up the full material library.
- Select your preferred material and click on a face to apply the material.



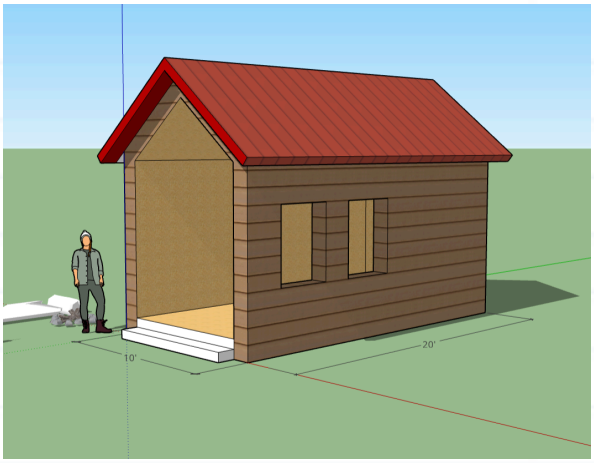
Personalize

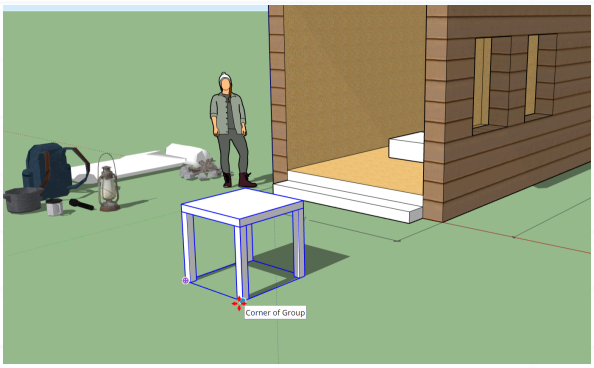
- Repeat this step using other colors and textures to make your cabin your own.



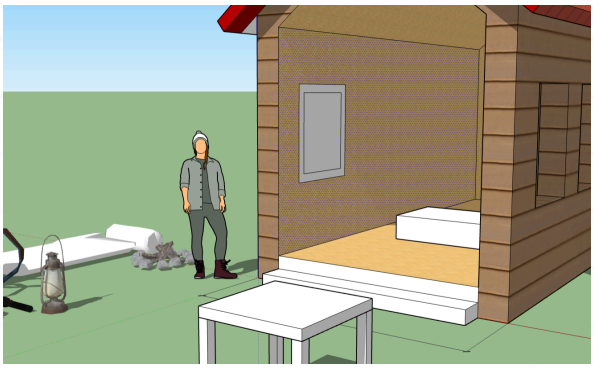
Keep going...

- Explore other ways that you can customize and personalize the model.
- Create some window openings





- Make your own furniture...



- Create a picture frame. All of these examples make use of the same tools we've already learned in this lesson, so feel free to get creative with your new skills!

Congratulations!

You've successfully created a cozy summer cabin using SketchUp's basic modeling tools. You've gained a solid understanding of creating, modifying, grouping, and customizing objects. Remember that SketchUp offers endless possibilities for your creativity, so continue exploring and building your skills.

Keep Going...

Feel free to customize your cabin further by experimenting with colors, materials, and additional details. Enjoy the process and have fun designing in SketchUp! If you're ready for another lesson, check out the curriculum page and select another tutorial.