

You will learn how to:

- Remake the simple house with a new chimney
 - Create a window with shutters
 - Add a door with steps
 - Add a garage
 - Refine the chimney

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Tip: If working on a Mac, substitute the Option key for the Alt key.

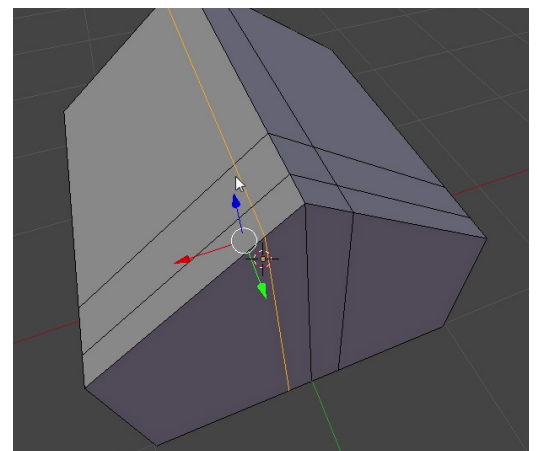
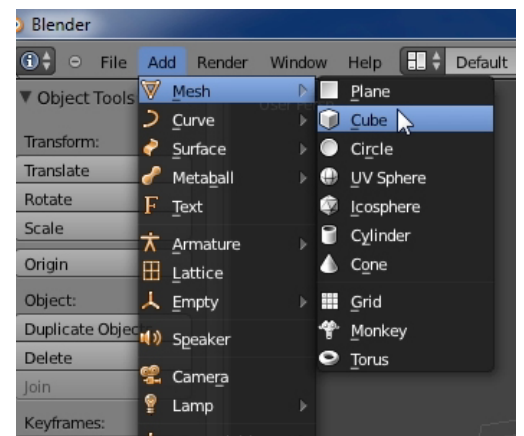
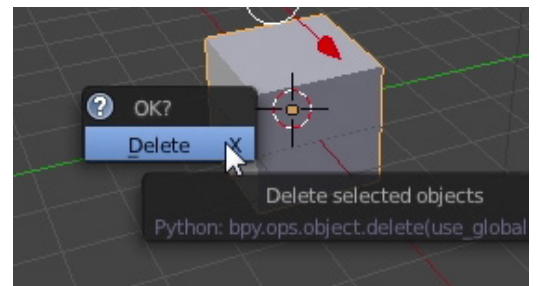
Remake the simple house with a new chimney

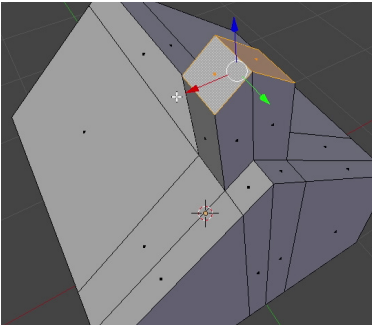
The chimney for this house will be placed on the center of the roof.

1. Open the Select menu at the bottom-left of the screen.
2. Choose "(De)select All," then open the menu and click it once more so that all objects are highlighted orange.
3. Hit the Delete key (not Backspace) and then hit Enter to delete.
4. Go to Add > Mesh > Cube to create a new cube in the scene.

Tip: Though you could build from the cube that Blender opens with, this shows you how to clear everything if you wanted to start with another object like a plane or circle, put in new lights and cameras, etc.

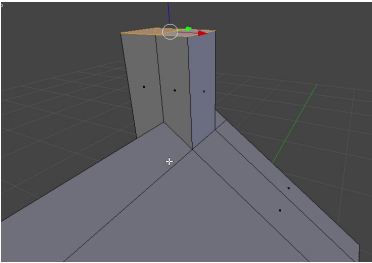
5. Using the first tutorial, rebuild the simple house roof and raise up the bottom edge of the house (if desired), skipping over the chimney.
6. Make the same initial two cuts perpendicular to the roof ridge as in the first tutorial. Remember to left-click both to start positioning and left-click to place it (right-click automatically centers it).
7. For the loop cuts parallel to the roof ridge, this time make one on either side of the ridge so the chimney will be centered over it.
8. Click on the Face Select button from the bottom of the screen.
9. Holding Shift, right-click on the two faces contained within the new cuts you made.
10. Click **Extrude Region** on the left side to extrude the faces





together, then start to drag your mouse so the chimney lifts up (it will automatically go straight up/down). **Do not click until after the next few steps.**

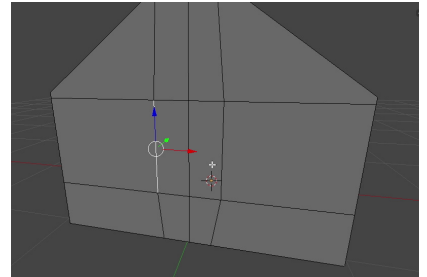
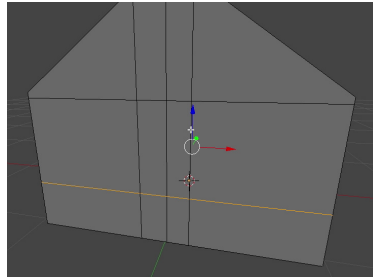
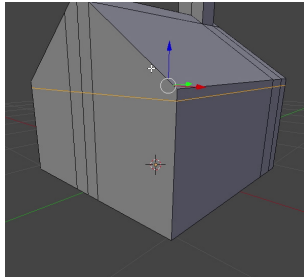
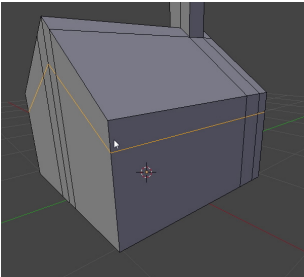
11. Hit "S" to start scaling, and the top faces of the house will begin to scale as you move your mouse.
12. Hit "Z" to snap to the vertical axis, and the faces will now only scale in the up/down direction.
13. Finally, hit "0" on the numeric keypad and then Enter. This will scale the faces to 0% in the vertical axis, making the top of the chimney totally flat.



Tip: If you don't have a numeric keypad on your keyboard, refer to the last tutorial for instructions on how to work around this.

Create a window with shutters

These can have as much complexity as you want to give them. In this tutorial, the windows will be very simple—just enough to give the representation of windows without adding extra detail.

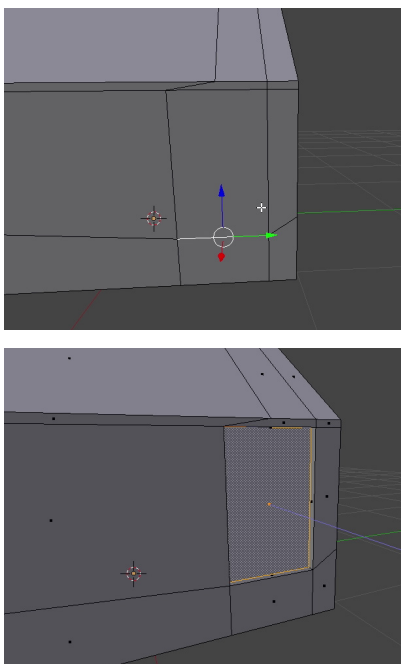
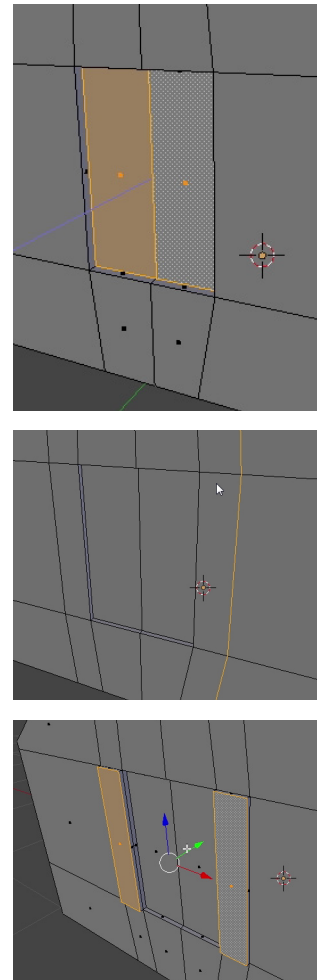


1. Click "Loop Cut and Slide."
2. Hover over one of the four vertical edges of the house, and left-click.
3. Left-click again to place the edge somewhere partway up the house.
4. To flatten the edge loop out, hit "S" to begin scaling, "0" on the numeric keypad to scale to zero, and "Enter" to confirm the scale. Now the edge loop should be perfectly flat.
5. Tip: If the edge loop you just created becomes unselected, you can select it again by Alt+Left-clicking (Option+Left-click on a Mac) on one of the edges. This will automatically select all of edges connected in this loop.
6. Left-click and drag the vertical blue arrow to position this edge near the base of the roof. This edge will be the top of the window.
7. Use the same steps to create the bottom edge of the window, positioning closer to the bottom of the house. This loop should be perfectly flat when created because it is between two flat edges.
8. Rotate the view to one of the tall sides of the house, where the window will be placed. There should be three vertical loops in a row - one in the middle from the roof ridge loop, and a loop

on either side from when the chimney was created. Those two outer edges will become the outside of our window.

Tip: When possible, reuse existing edges created by previous cuts. This will keep the overall geometry simpler.

9. Go to Edge Select mode using the button at the bottom of the screen.
10. Right-click on one of the two outer loops and then left-click and drag the manipulator arrows to get your window shape to its desired width.
11. Go to Face Select mode.
12. Shift+right-click on the window faces to select all of them.
13. Click Extrude Region and then drag the mouse so the window shape recedes into the house just slightly, enough to give the impression of a window. Left-click to set it in place.
14. Tip: If you want to be able to print this on a 3D printer, don't push the window in too far. If you do, there may not be enough support in the middle and the top of the window could start to collapse.
15. Make a vertical loop cut on either side of the window. These will create contained faces to use for shutters, and you can choose how wide you want them to be. Remember to left-click both times to place the cut precisely.
16. Go to Face Select mode.
17. Shift+left-click on the two faces that will become our shutters.
18. Click Extrude Region or Extrude Individual and drag these out slightly to form the shutters. Left-click to set in place.

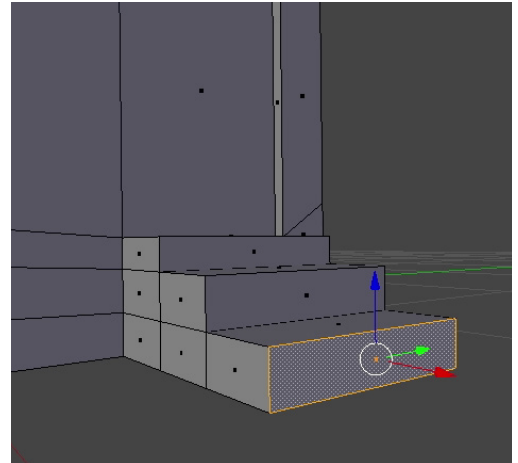
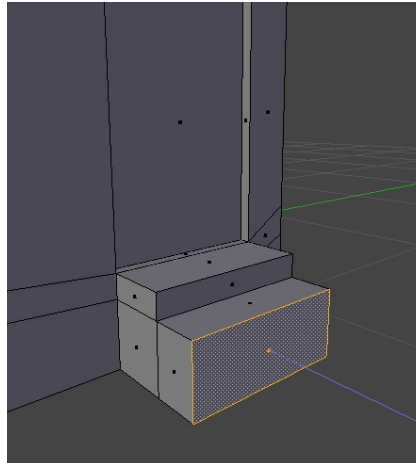
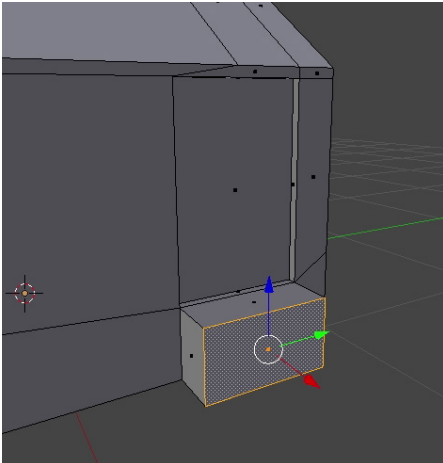


Add a door with steps

Like the windows, the door will be a simple rectangle, slightly receded into the house. The steps will be created sequentially, using alternating loop cuts and extrusions.

1. Rotate to view one of the short sides of the house.
2. Find the two edge loops created by the chimney and, in Edge Select mode, select these two edges and reposition them as desired to set the width of the front door.
3. Raise or lower the bottom edge of the door so that three steps will fit beneath it.
4. Go to Face Select mode.
5. Right-click on the door, click Extrude Individual, and push it slightly into the house, similar to the window. Left-click to set in place.
6. Right-click on the face below the door and extrude it away from the house. This will be the top step.

7. Create a loop cut roughly 1/3 of the way down the face beneath the door.
8. Go to Face Select mode.
9. Right-click on the taller face beneath the door and extrude it away from the house again to form the second step.
10. Create a loop cut halfway down the face you just extruded. To do this precisely, first left-click to initiate the loop cut, then right-click to place it exactly halfway between the two edges.
11. Go to Face Select mode.
12. Right-click the bottom face and extrude outward to form the last bottom step.



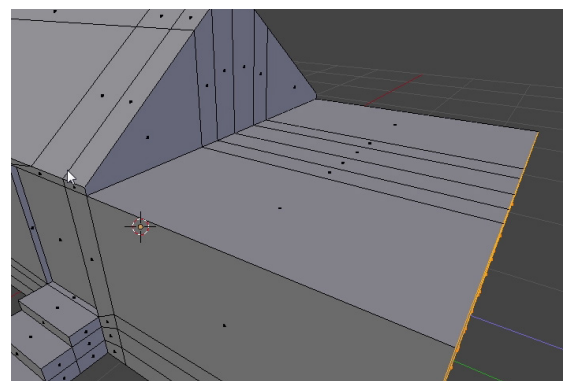
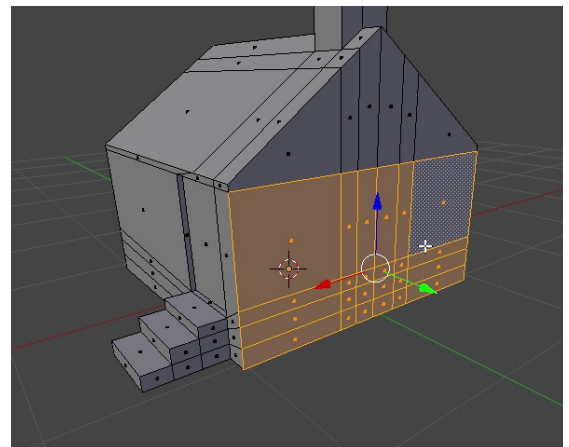
Add a garage

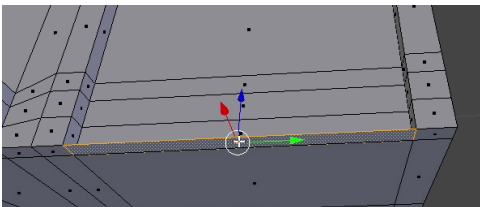
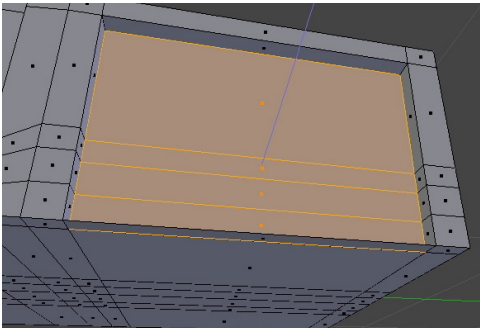
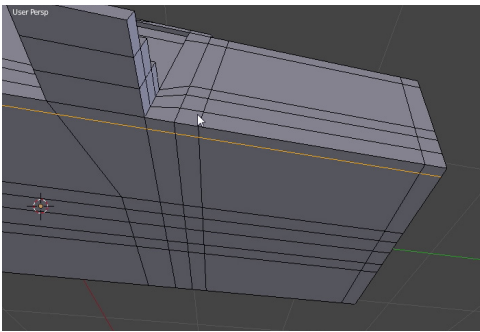
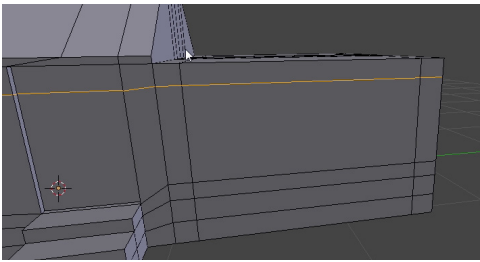
The extrude tool can be used to pull out larger portions of the house and create new additions to the house, such as a garage.

1. Rotate the view to the tall side of the house, opposite the side with the window.
2. Making sure you're in Face Select mode, Shift+right-click to select all of the faces on the wall beneath the edge loop from the top of the door and window.

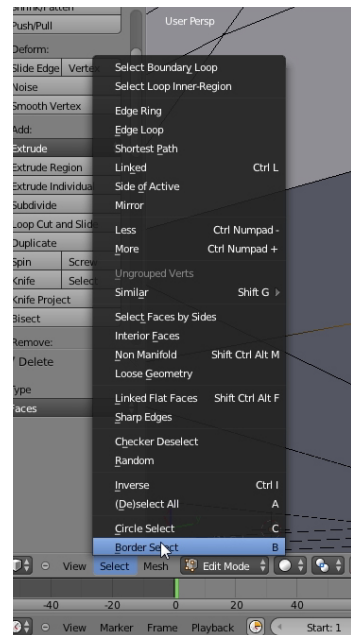
Tip: One method of easily selecting larger numbers of faces is to go to Select > Circle Select or Select > Border Select (from the Select menu at the bottom of the screen). Circle Select allows you to click and drag across the faces you want. Border Select allows you to drag a box around the faces you want, much like you would drag a box around multiple icons on your desktop to select them.

3. Click Extrude Region and pull these faces out far enough to form a garage.



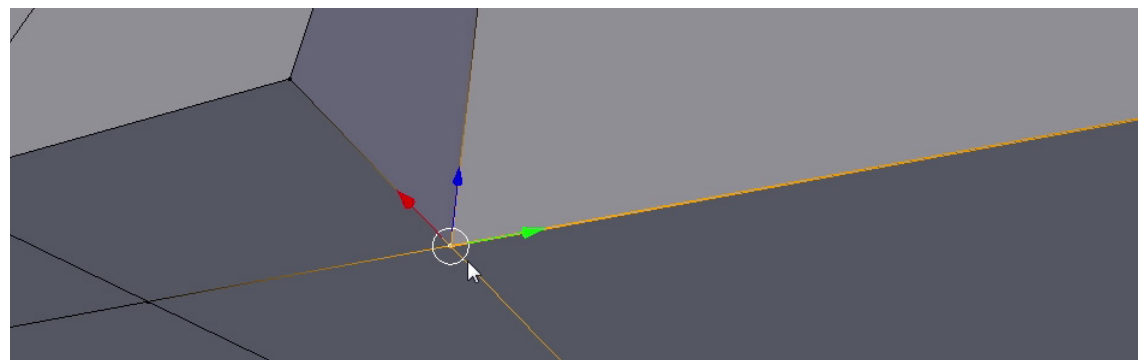
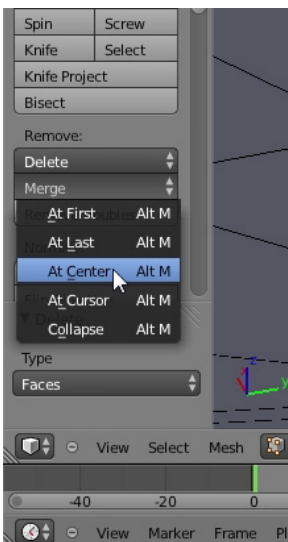


4. Create two vertical loop cuts near the left and right edges of the garage, to form the edges of a garage door.
5. Create one horizontal loop cut, a bit below the top of the garage, to form the top edge of the door.
6. Rotate to the underside of the garage and make one horizontal cut just a little bit in from the front side of the garage and house.
7. Go to Face Select mode.
8. Shift+right-click all the faces of what will become the garage door.
9. Click Extrude Region and drag until the door has gone as far back as the horizontal cut you created on the underside of the house.
10. Right-click on the thin horizontal face that was created at the bottom of the garage door when you extruded it inward. Hit Delete and select Face. You will need to repeat this once more for another face that was created there.
11. The bottom corners of the garage door are currently unconnected, so we'll merge the vertices together to seal everything up. First go to Vertex Select Mode, then go to the Select menu (bottom of the screen) and select "Border Select." Drag a small box around one of the corner vertices to select both.
12. Find the Remove tools underneath the Add tools on the left side of the screen (you may need to scroll down if it's not visible). Click



Merge > At Center to merge the two vertices.

13. Go through the same process on the opposite bottom corner to finish sealing the house shape back up.



Refine the chimney

3D modeling, like actual sculpting, is a process of starting with basic shapes/forms and then refining them as you go along. We're going to take our simple chimney shape and add a bit of extra detail to make it more interesting.

Tip: Don't hesitate to seek out reference imagery online when creating a 3D model. This can help when considering how to build something or what details to add.

1. Create a horizontal edge loop between the bottom and top of the chimney.
2. Without clicking again, hit "S" to enter scale mode, "Z" to snap to the vertical axis, "0" on the numeric keypad to set to 0%, and Enter to finish.
3. Slide this new loop to the desired height (leave some space to add another loop above it).
4. Add one more loop cut in between the top of the chimney and the one you just made.
5. Go to Face Select mode.
6. Shift+left-click on all of the top vertical faces of the chimney, essentially selecting the space between the top of the chimney and the loop cut directly below.

Tip: When selecting multiple faces, you can let go of Shift (for example to move the camera) without losing the previously selected faces. Just be sure to start holding down Shift again before you resume clicking on faces - otherwise it will clear the previously selected faces.

7. Click Extrude Region and drag so that the top of the chimney extends further outward than the bottom.
8. Now select the two faces on top of the chimney.
9. Tip: Be sure to start by selecting one face by itself without the Shift key, then hold Shift and select the other. Otherwise you may still have the previous faces selected.
10. Click Extrude Region and right-click once.
11. Hit "S" to start scaling and drag it a bit so that you end up with an inner border on top of the chimney.
12. Select the faces contained within this border.
13. Click Extrude Region and pull these faces down into the house a little bit to hollow out the chimney.

