

**Problem:** You need to create a model using the CAD software, Sketchup, to build a computer version of a Deck that will be big enough for a grill and a table with either four or six chairs.

You will use a spreadsheet to keep track of all the lumber, materials and tools that you will need to determine how much the deck will cost.

Build a Deck with stairs

<https://www.youtube.com/watch?v=xMGgQAYOiM0&t=320s>

<https://canvas.apps.chrome/>

After you build your deck using Sketchup you will [14:57](#)

I need to add up all the materials and figure out the total cost of the project using Google Sheets.

### **Google Sheets Portion of the Project:**

One worksheet will keep track of only the wood and decking material

One worksheet will keep track of all the materials other than the wood

One worksheet will keep track of the tools used to build the deck

- You must have four steps, just like the one in my example. The rise on the steps must be 7 inches and the run is exactly 10 inches. This will determine how high your deck will be
- Your railings must be exactly 36 inches tall and the [balusters](#) have to be 2"x2" and 4 inches apart (This is because of the safety code. Four inches is narrow enough so a child's head could not get stuck.)
- You will need 4x4 posts placed no farther than **5 feet** apart. Each post will need a [sonotube](#) and a [post base holder](#). You need to calculate how many bags of concrete you need to fill all the sonotubes.
- Your floor joists have to be exactly 16 inches apart. Each joist will have a [joist hanger](#) on each end. The decking material needs 1/8 inch spacing between the boards, this will allow water to escape and not sit on the deck.

Lumber sizes: Make a table in a Google Doc and copy down the actual dimensions of the lumber.

Google Sheets.

## Materials:

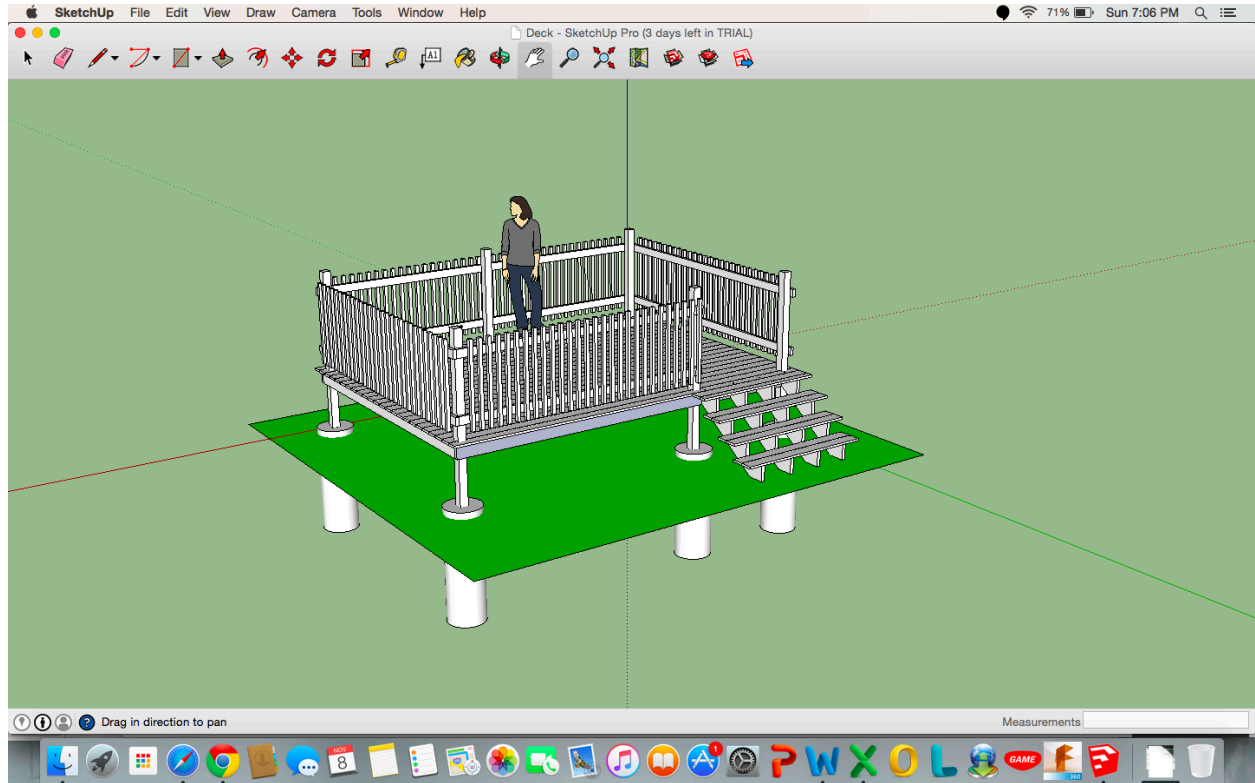
1. 2 x 10 x 16 Frame  
<https://www.homedepot.com/p/2-in-x-10-in-x-16-ft-1-Ground-Contact-Pressure-Treated-Southern-Yellow-Pine-Lumber-106001/206937524>
2. 2 x 6 x 12 Joists  
<https://www.homedepot.com/p/WeatherShield-2-in-x-6-in-x-12-ft-2-Prime-Ground-Contact-Pressure-Treated-Lumber-253921/206967802>
3. Joist Hanger  
<https://www.homedepot.com/p/Simpson-Strong-Tie-LUS-ZMAX-Galvanized-Face-Mount-Joist-Hanger-for-2x6-Nominal-Lumber-LUS26Z/100375105>
4. 4 x 4 x 8 Posts  
<https://www.homedepot.com/p/4-in-x-4-in-x-8-ft-2-Ground-Contact-Pressure-Treated-Southern-Yellow-Pine-Timber-194354/205220341>
5. 4x4 Post Base holders  
<http://www.homedepot.com/p/Simpson-Strong-Tie-Z-MAX-4-in-x-4-in-16-Gauge-Galvanized-Adjustable-Post-Base-ABU44Z/100375358>
6. 10" Diameter Sonotubes 4 feet long  
What are sonotubes??? [https://www.youtube.com/watch?v=MCa\\_87Dkw1M](https://www.youtube.com/watch?v=MCa_87Dkw1M)  
<http://www.homedepot.com/p/SAKRETE-10-in-x-48-in-Concrete-Form-Tube-65470006/100350260>
7. Concrete - Calculate how many bags (1-80 lb bag = .6 cubic feet)  
<https://canvas.apps.chrome/http://www.homedepot.com/p/Quikrete-80-lb-Concrete-Mix-10180/100318511>
8. 2 x 10 x 10 Stair Stringers  
<https://www.homedepot.com/p/2-in-x-10-in-x-10-ft-1-Pressure-Treated-Southern-Pine-Lumber-2520154/319879707> How to make a stinger  
<https://www.youtube.com/watch?v=iALK0-n-81c>
9. 2 x 4 x 12 Horizontal Railing supports  
<https://www.homedepot.com/p/WeatherShield-2-in-x-4-in-x-12-ft-1-Ground-Contact-Pressure-Treated-Lumber-1001787124/207096351>
10. 2 x 2 x 3 Balusters  
<http://www.homedepot.com/p/WeatherShield-2-in-x-2-in-x-36-in-Wood-Pressure-Treated-Square-End-Baluster-16-Pack-102596/204836993>
11. Decking (Check Specification for Actual Size)  
<https://www.homedepot.com/p/Trex-Enhance-Naturals-1-in-x-6-in-x-16-ft-Rocky-Harbor-Grooved-Edge-Grey-Composite-Deck-Board-RH010616E2G01/310569119>
12. Deck Screws - 435 per box (How many boxes will you need?)  
[https://www.homedepot.com/p/Deckmate-2-1-2-in-Green-Exterior-Self-Starting-Star-Flat-Head-Wood-Deck-Screws-9-5-lbs-435-pcs-212DMG5/305418468?MERCH=REC-\\_pipin\\_stock-\\_203696286-\\_305418468\\_-N&#overlay](https://www.homedepot.com/p/Deckmate-2-1-2-in-Green-Exterior-Self-Starting-Star-Flat-Head-Wood-Deck-Screws-9-5-lbs-435-pcs-212DMG5/305418468?MERCH=REC-_pipin_stock-_203696286-_305418468_-N&#overlay)
13. Lag Bolts - Two bolts wherever the base touches a 4x4 post  
<https://www.homedepot.com/p/Everbilt-1-2-in-x-6-in-Hex-Galvanized-Lag-Screw-803996/>

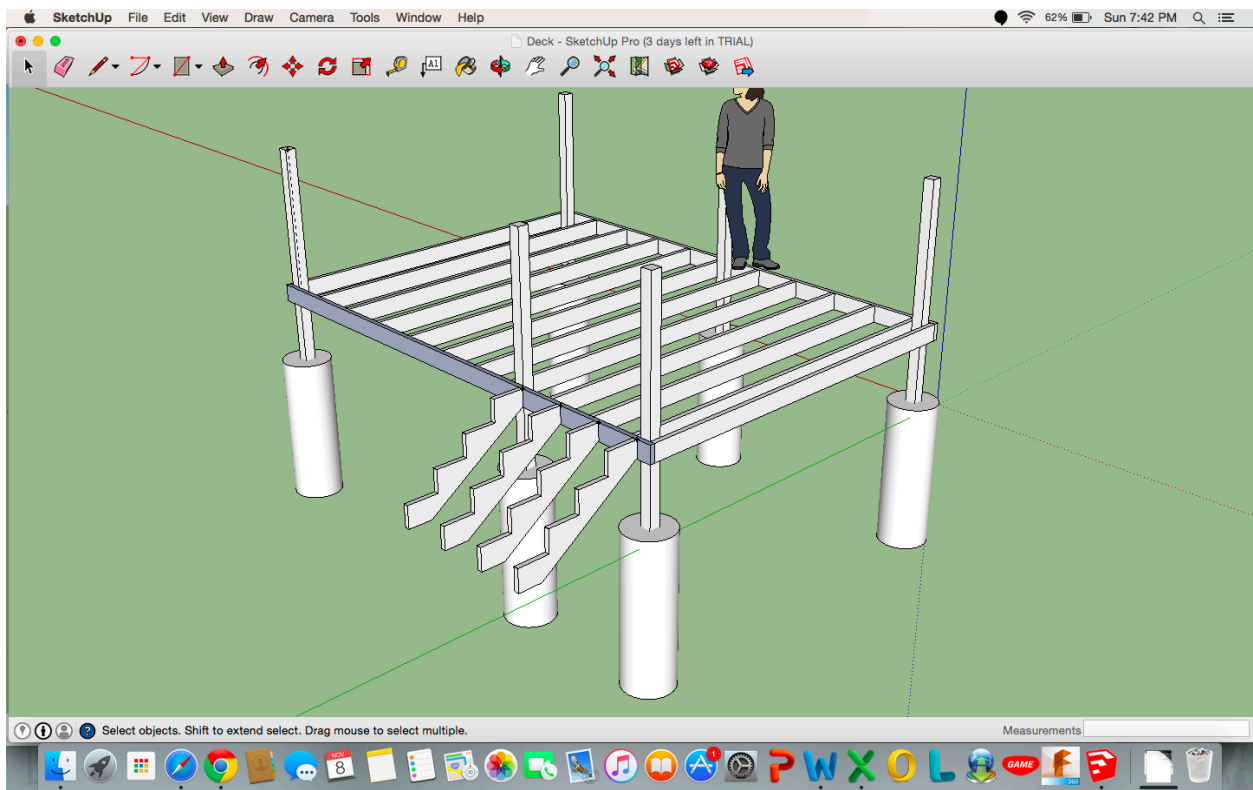
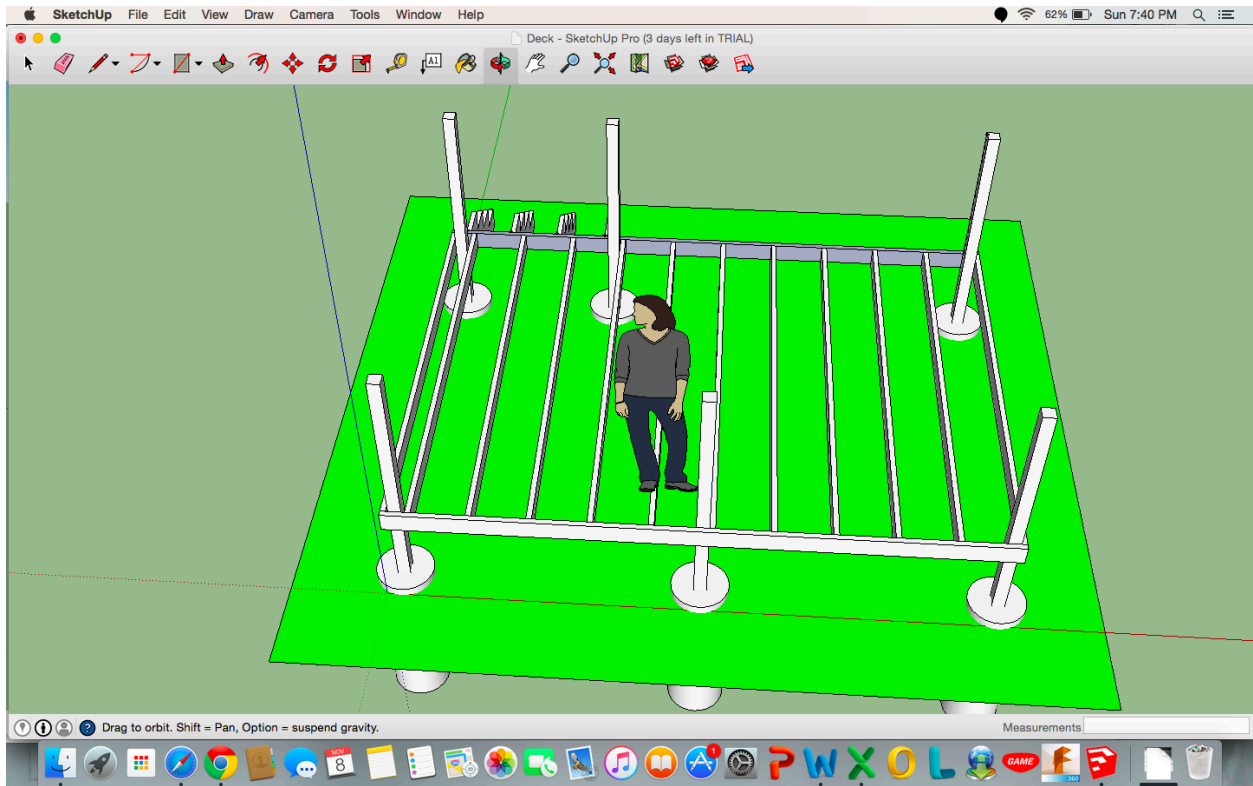
[204647865](https://www.homedepot.com/s/lag+bolts?NCNI-5) are need for each 2x8 that is attached to the 4x4.

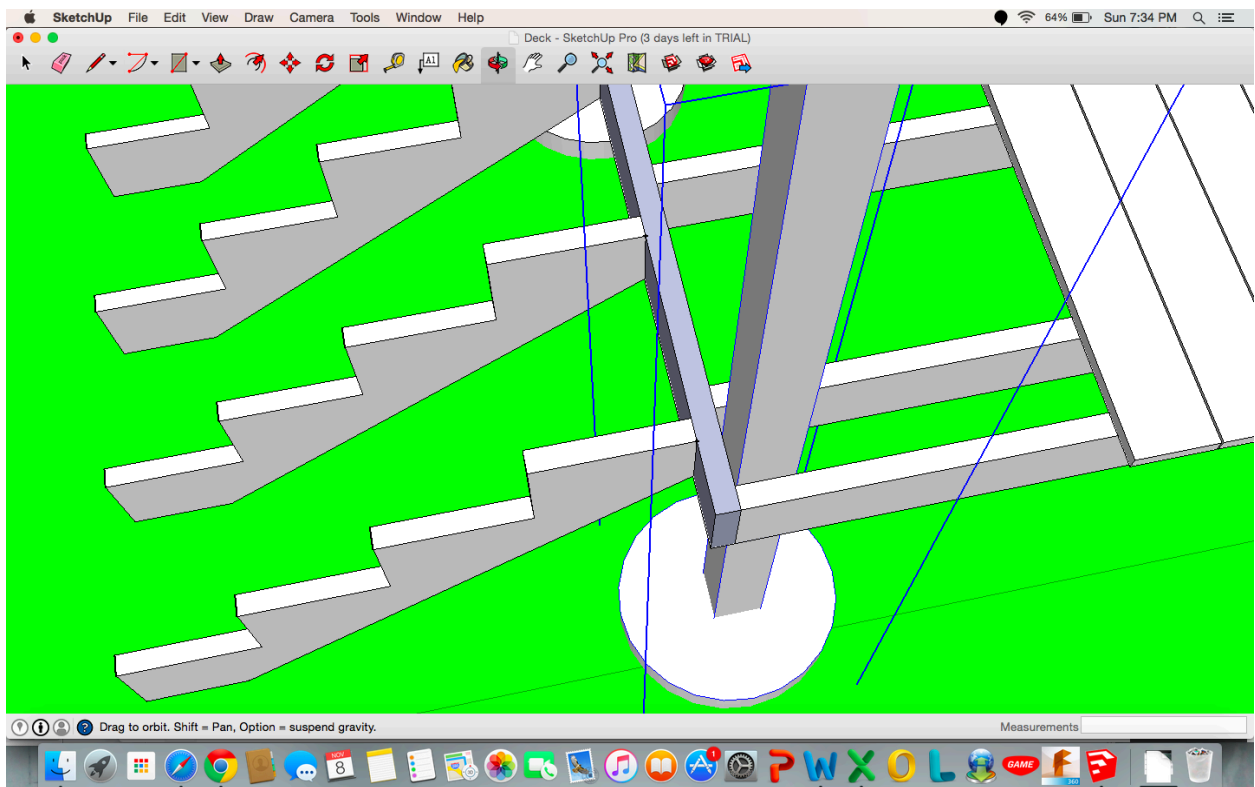
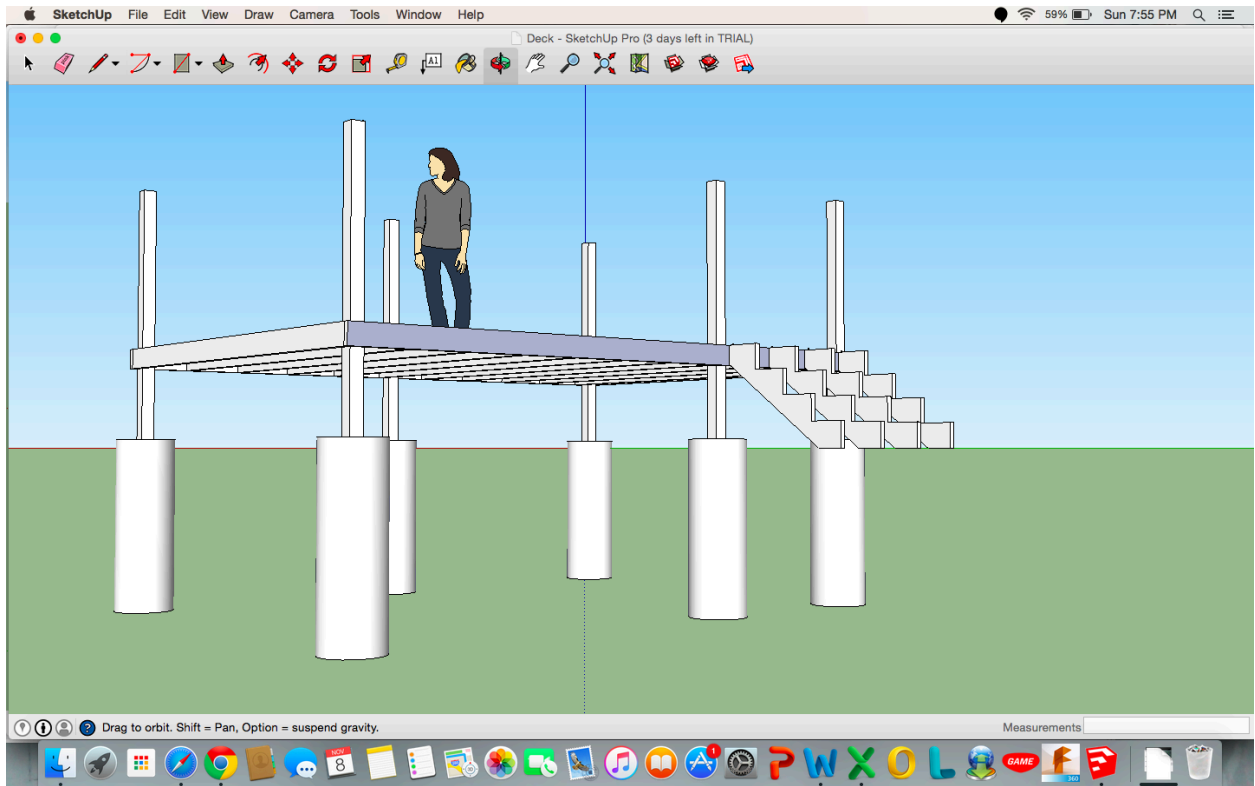
<http://www.homedepot.com/s/lag+bolts?NCNI-5>

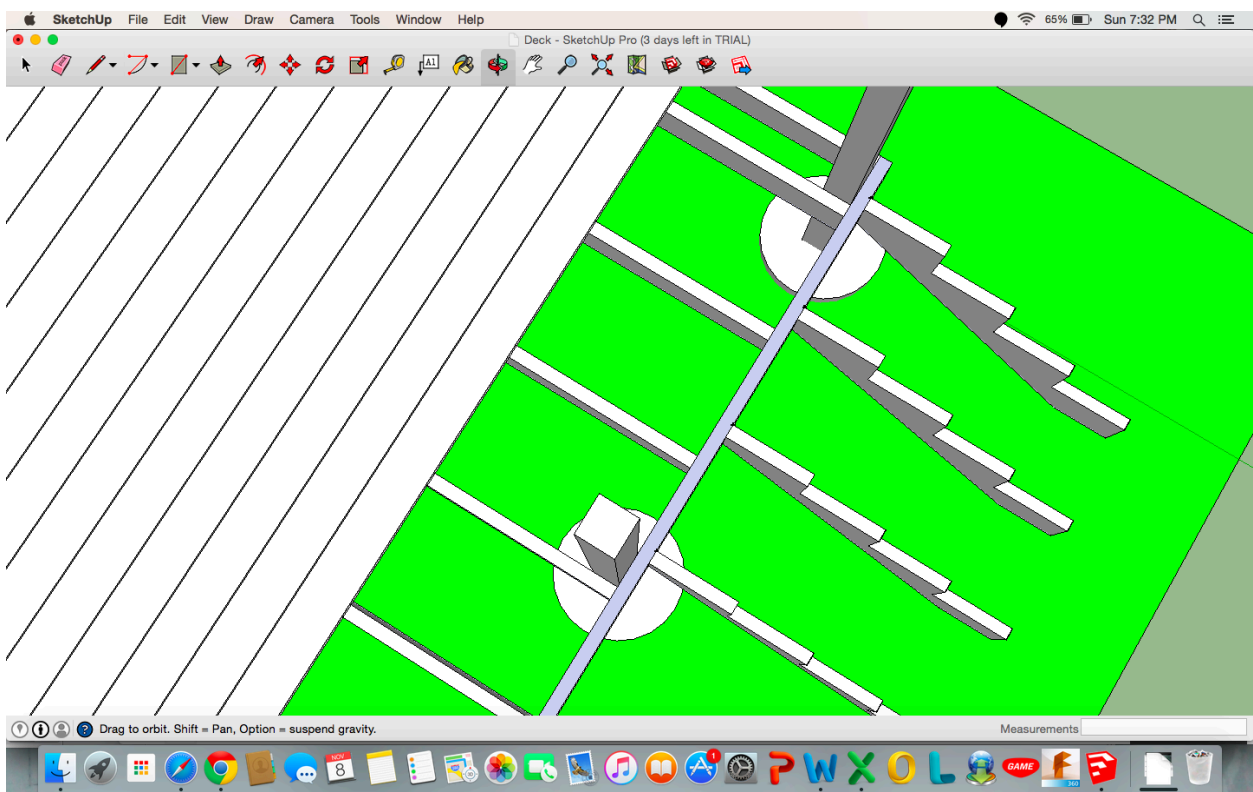
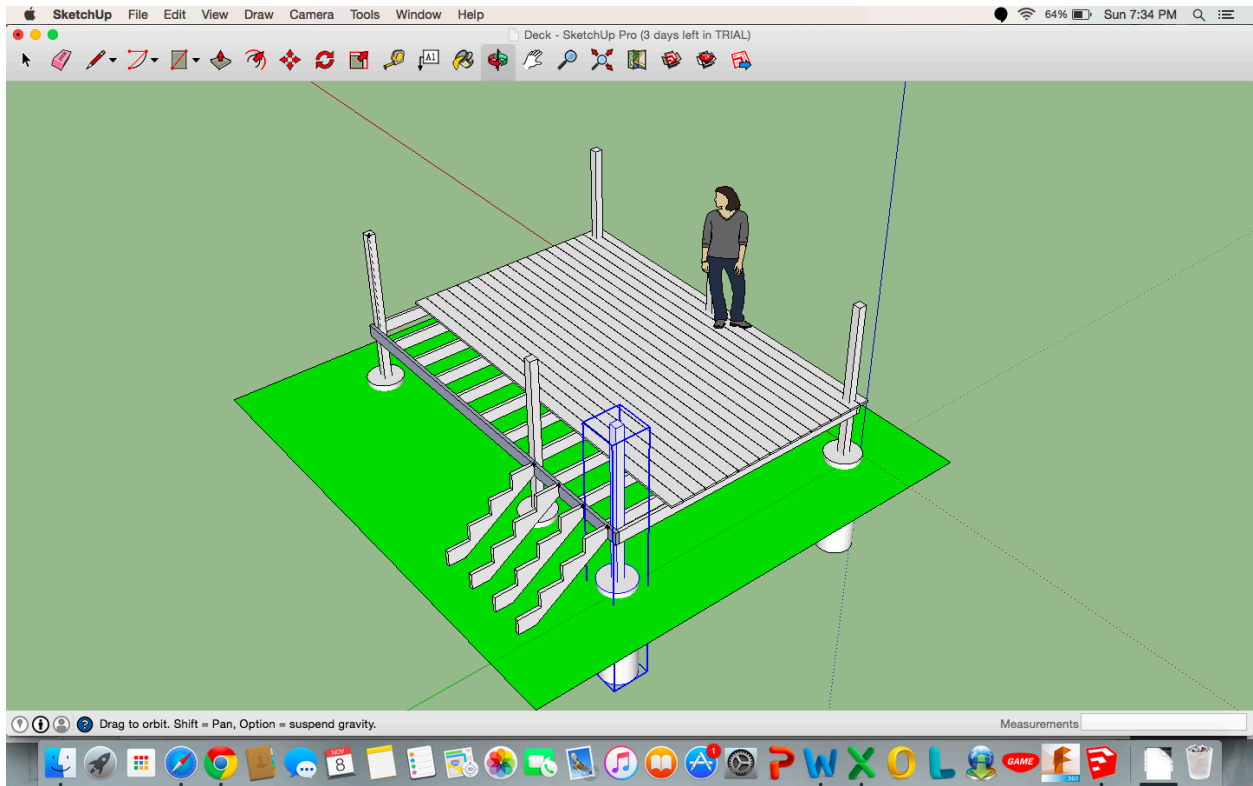
14. Common Nails (How many boxes- 235 per box)

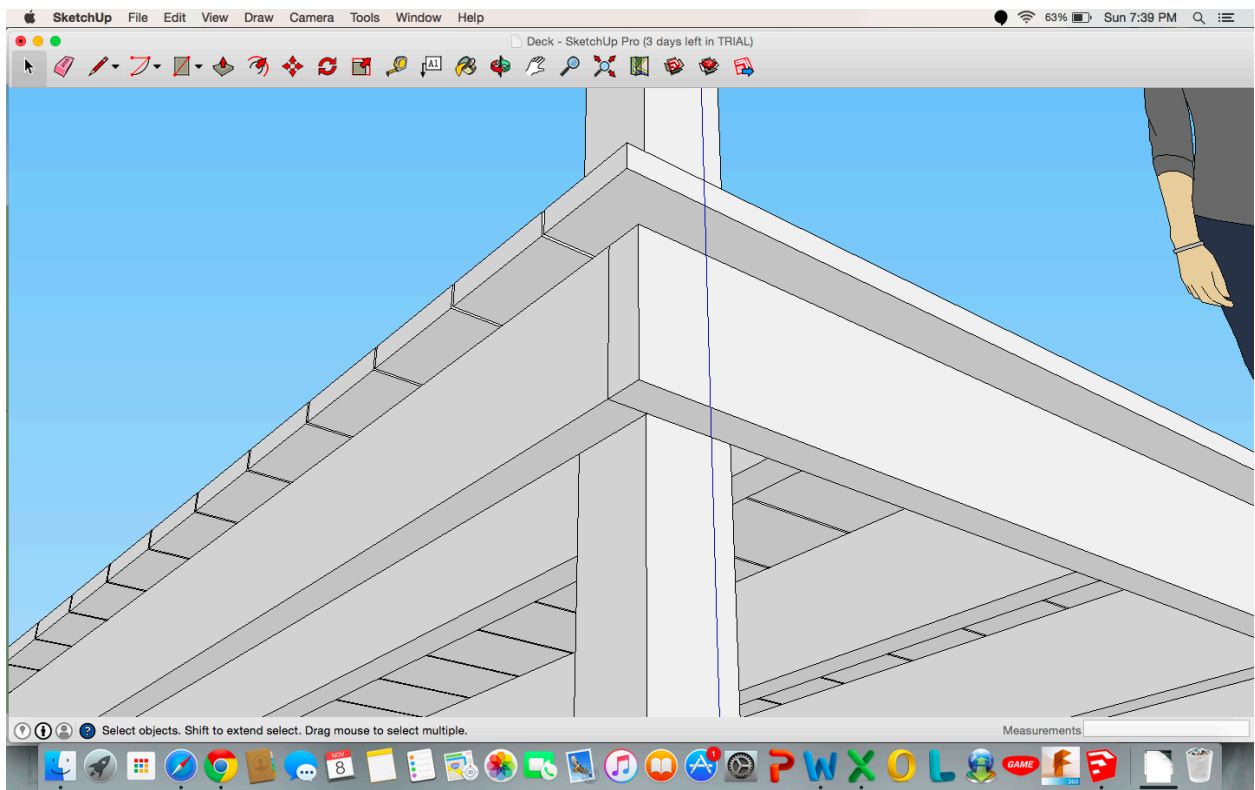
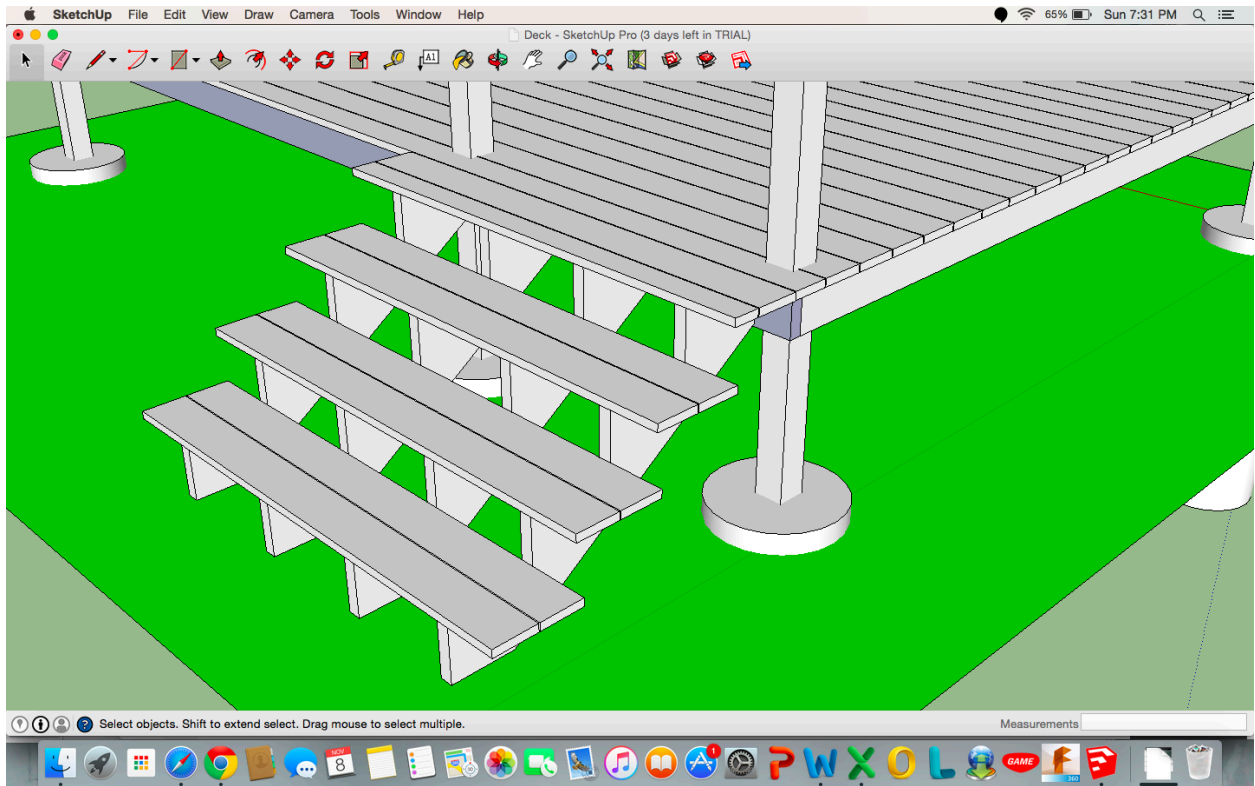
<https://www.homedepot.com/p/Grip-Rite-8-x-3-1-2-in-16-Penny-Bright-Steel-Smooth-Shank-Common-Nails-5-lb-Box-16C5/202308546>











The 2x4x12 (1.5x3.5x12') boards are horizontal and attach to the 4x4 posts. The 2x2x3 (1.5x1.5x3') balusters have a 3 inch gap from the deck boards and there is a 3 inch space between the balusters.

