Using TinkerCAD - What I've Learned

TinkerCad
email: kmyersefo@mac.com
password: xxxxxxxxxxxxx

Started using TinkerCAD on Saturday, August 3, 2024.

It appears that I do not need to use my log-in when opening TinkerCAD. Just clicking on the following link or going to TinkerCAD and clicking on Login opens the program.
https://www.tinkercad.com/dashboard

I used my TurboCAD mac to help in storing my measurements and creating the parts in TinkerCAD.

I needed to start thinking more in 3D and creating the parts differently than when using 2D.

I found several useful videos.
Instant Grid in Tinkercad | Create a Collab doc in Minutes
https://www.youtube.com/watch?v=ldwh9ztYQxU
Just what the title says

Using the ruler and dimension tools in Tinkercad
https://www.youtube.com/watch?v=aQ9aRFZK8oI
Make changes to dimensions by putting ruler anywhere and click the object.

I spent a lot of time looking for the video showing how to get objects on, above and below the drawing plane/workplane and and couldn't find it. I know I watched it but searched and searched my history and can't find it.

This video is even better than the one I found yesterday about raising and lowering objects compared to the workplane.
Raising objects in TinkerCAD
https://www.youtube.com/watch?v=7PslMT2MOSQ

04. New TinkerCAD - Edit Grid, Snap Grid
https://www.youtube.com/watch?v=3VnYPsbSmeA
Need to watch again. Not really clear.

25. New Tinkercad - Returning Objects Flat on the Workplane
https://www.youtube.com/watch?v=15T3JkEQWLc
This could be useful when I mess up.

While creating the Cap Cod Small Dormer in TinkerCAD, I did not take good notes on the sizes of the original dormer and how I did things in TinkerCAD while learning it.

I realized I'd made a mistake by layout out the whole outline of the bottom portion of the dormer, as the bottom panes were not the correct distance and the two panes were not in the correct place.

After seeing Dave's prints, I also decided that the muntin width could be reduced.

Careful inspection showed that the windows, top and bottom, actually overlapped making the top window higher than the bottom window. The outside of the frame is clearly visible before the frame starts.

There are also horizontal lines running across the face of the front of the wall that indicate siding. The lines are depress and about 3mm apart.

Thickness of the wall: 1.73mm
Width of the wall: 16.82mm
Height of the wall: 12.5mm
I calculated the siding width as 3.09mm and the lines at 0.03125mm. That only came out to 12.485mm using TurboCad. Changed line width to 0.0313mm. It still came out to 12.485mm. Changed the line width to 0.032mm. Changed siding width to 3.1 and used line width of 0.032. It came out to 12.428mm. that makes no sense! Changed the siding width to 3.2mm and used 0.032 as the line width. It came out to 12.928mm. What??? Tried 3.1mm for siding and 0.03. It worked on my spreadsheet. It came out at 12.32mm.
This is making no sense. 3.1 * 4 = 12.4 and 0.03*5 (this is what was wrong. It should have been times 4 NOT 5! But it is still not working; 3.1 * 4 = 12.4 and 0.03 *4 = 0.12, 12.4 + 0.12=12.52 not 12.32 as measured in TurboCAD.
After carefully measuring the four sections of siding in TurboCAD that should have been at 3.1mm, two were found to be only 3.0mm. Dang.
The lines were redone for the umpteenth time using siding at 3.1mm and line at 0.03 and it came out correctly at 12.52mm: FINALLY!!!
Bottom of wall to peak: 20.47mm
Height of peak section: 20.47mm - 12.5mm = 7.97mm
Three more siding pieces were added using 3.1mm and 0.03 and then the roof triangle drawn.

Making the Triangle Peak part with lines

The View is set to top

Search for Trapezoid and move it onto the workplane

Set view to Front

Use the workplane tool and set it on the face.

Copy or cut, close workplane tool

Return to Top view and paste.

Set Top Width to 10.261

Set Height to 3.1

Set Thickness to 1.73

The piece is the correct size, but it was hovering above the workplane.

I did a cut and then paste and I “think” it is now back on the workplane.

Copied new trapezoid and did the workplane cut and paste described above.

Base width 10.261

I learned two things when I was not able to create the second, tiny, 0.03 trapezoid to form the line.

1. 0.05 is the small distance available in TinkerCAD
2. The trapezoid I made would not fit onto the first panel even though the new piece base was 10.261 and the top of the original was 10.261.

I found out that by going to Front view I can raise and lower to the work plane, therefore if the new piece is above the workplane, change to Front view and lower it.

Redid the TubroCAD Drawing using 3mm for the siding and 0.13mm for the “gap”. Came out to 12.52, the same as the other one.

Rotated as before and then;
Base Width: my CAD 11.28
Top Width: my CAD 10.225 Tinker CAD 10.3
Height: 0.5 (minimum)
Thickness: 1.23 (1.73-0.5)

No good because the smallest dimension is 0.5mm NOT 0.05mm.
The panel under it:
Base Width: 16.82
Top Width: 11.28
Height: 2.625 (it made me do 2.63
Thickness: 1.73

Panel above the “gap”

Base Width: 10.225 (made me do 10.23)
Top Width: 4.685
Height: 2.625 (it made me do 2.63)
Thickness: 1.73

I had a problem trying to align the parts. I searched YouTube for help.

The title of this video surprised me, as I was looking more for alignment, but this is helpful, I think.
The Power of Precision: Tinkercad Ruler Tool Tutorial
https://www.youtube.com/watch?v=hN6VjipyXs4

This one may also be useful.
Unlocking the Secrets to Perfect Object Placement in Tinkercad
https://www.youtube.com/watch?v=dXo5XNUGTuQ

and another
Unleash Tinkercad Super Powers Ruler & Align Tips in Minutes! Beginner Ready
https://www.youtube.com/watch?v=LFfZ_b7OdRc

I finally got the peak done using the “Unleash …” video from above. I used the roof for the triangle at the peak. I set some of the distances before changing its workplane and finishing.

I had to careful align the vertical heights of each piece to the workplane. The whole peak section was grouped.

I also had to use my CAD drawing to calculate the distances. I couldn’t do it without my drawing first in TurboCAD to get the linear distances.

I had previously created a spreadsheet titled “HO Scale Inches.ods” and it’s in the folder titled “temp-building”

I remember that I used 1.23mm as the height of the gap pieces. That was the wall thickness of 1.73mm - 0.5mm. Therefore the 0.5mm gap is 0.01968505 inches. That is close to, but just a bit more than, 1/64” which is 0.015625 inches.

I started by creating a 16.82W x 2.625H x 1.73(Thick), when viewed from the top, in TinkerCAD. I made four more copies of it. One copy was changed to 16.82W x 0.5H x 1.23(Thick) to have it drop down.

I messed with aligning it using the ruler, as was done with the peak. I was not successful at first. I noticed that when I input the numbers on the workplane, the dropdown menu does not change and reflect the numbers that I input.

This has some huge implications. It means that the peak part may be a bit off because I only used values to the hundredths place. When inputing the “real” numbers, from the CAD drawing, on the Workplane, it took them. How accurate that is, I don’t know but that could make a difference and I need to be aware of that.

The ruler was used to assemble the rectangular wall. The spreadsheet was also used to calculate the center to center distances of the alternating pieces of the wall.

I had gotten the wall thicknesses wrong on the rectangle. I used 1.73 instead of 0.173. It was a pretty easy fix and I double-checked the peak, which was fine.
This was a HUGE error! 1.73mm was correct. I had to go back and redo the drawing the following day and correct all the thicknesses. It was a bit of a task, but I got it done.

The ruler was used to align the peak to the rectangle.

The new object was checked to see that all the sections were lying flat on the Workplane, and they appeared to be.

The Windows
1” muntins = 25.4mm / 87 = 0.291953865mm

Can I make something 0.292mm?
After my first attempt at making a window using the grid method, I found that I can make something 0.29mm, at least when using the grid. Unfortunately, it resulted in a window that was too small.

I should have realized that as the muntins I was trying to make were much smaller than on the original piece.

As a test I made a 3mm x 0.29mm x 0.173mm block, and it seemed to work.
Again this was a mistake and it should have been 1.73mm. All further references to 0.173mm should have been 1.73mm.

This is going to be much harder to do now.

I measured the opening the back side of the windows.
High: 10mm
Wide: 7.5mm
I created a 7.5mm x 10mm x 0.173mm rectangle that will become the hole.

Copied and enlarged the hole and then added 0.58mm to the height and width.
It is 8.08mm x 10.58 x 0.173mm

I added 0.116mm to a copy of another rectangle that will be the frame.
It is 8.196mm x 10.696mm x 0.173mm (that needs changing to 1/2” in HO scale which is 0.15mm)

Middle bar: 10.58 / 2 = 5.29

It was very complicated and I got it done.
I did not log all of the steps, but I did make a copy of the finished windows and frame and took it apart to show the individual parts.

Adding the completed window to the rectangular Wall

I had two copies on the rectangle and peak on the workplane.

I unlocked one and separated the two pieces.

I had to create a hole for the window.

The Ruler was used to align the completed window and rectangular wall.

The peak was added back on.

Adding the back pieces

Width: 0.95mm
Height: 2.57 - 1.73 = ~2.4
Distance between the outsides: 14.52mm
14.52+0.95+0.95=16.42
16.82 - 16.42 = 0.40 / 2 = 0.20
Box size: 0.2+0.2+0.95 = 1.35
Thickness: 2.4

Oh crap!
I sent Dave the file yesterday. The thicknesses were totally wrong! I should have been using 1.73mm, as remeasured this morning, not 0.173mm.

For something to print, 0.5mm is the minimum and that is about 0.02 inches. That is barely just more than 1/64” in HO scale.

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