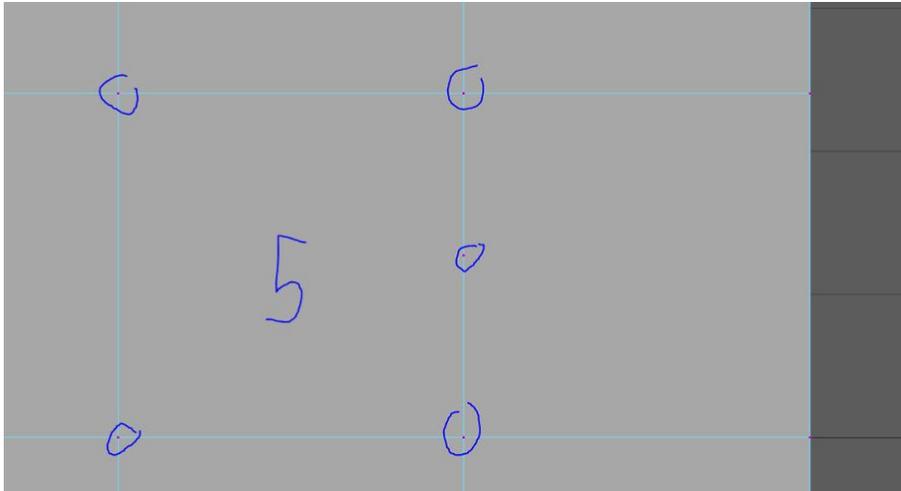


terms and language:

ngon- is a face or polygon that is made up of five or more sides or edges connected by five or more vertices. Anything over a quad (4 sides) is considered an ngon.(definition taken from pluralsight)
ex.

deformation: an act of changing or warping the geometry shape. this usually refers to animation and actions such as bending joints like elbows and knees or creating blend shapes for the face



TRIANGLES NGONS AND YOU:

triangles in modeling are perfectly fine in all honesty.
in fact all polygonal models are actually turned from quads to triangles on their final forms when they are sent either for rendering or to a game engine.

the reason people frown on them is that triangles tend to cause ugly deformations, sharp pinching or edge looping trouble when people create geometry without any regard on where they place triangles. and it makes it harder to select edges for texturing and unwrapping (its something you guys will have to do down the line)

a good rule of thumb if you have a triangle you just cant get rid is that:

- 1) it has to be a mesh that does not require deformations or are in areas where little to no deformations happen.
- 2) place them in crevices of flat area. usually a crevice creates a pinch already and in there you can hide a triangle. the opposite also works that in a non deformable flat area, whether it be triangle or quad, it doesn't really matter since its flat no pinching of weird deformations would be seen anyways.
- 3)if the object is never meant to smooth triangles are completely fine. examples of these are low poly meshes or non hero mesh's in film(*non hero means you don't see this close up to camera or require as much love and care*).

Ngons on the other hand are a big **NO** they can cause many errors and a lot of issues when cooperating with programs outside of maya. if your mesh has faces with more than 4 points. **FIX IT.**

triangles and zbrush?

zbrush actually works fine with triangles but due to the aforementioned deformation issues from above. sculpting with a triangle in your mesh may cause weird or ugly pinching and may even cause you to fight with your sculpt. it may even cause conflicts if you try to attempt rebuilding your topology from a dense mesh in the future.

what about ngons and zbrush?...**NO** just **NO!**

additional readings and takes on triangles by other artists:

<https://www.methodj.com/why-are-triangles-bad-when-modeling/>

<https://www.pluralsight.com/blog/film-games/ngons-triangles-bad>

with that said...

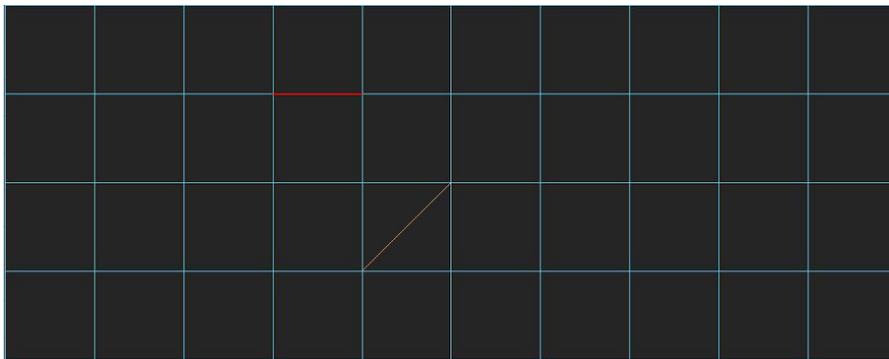
HOW TO DEAL WITH DEM TRIANGLES!

now that we've gone through the preface lets get to getting rid of triangles, shall we?

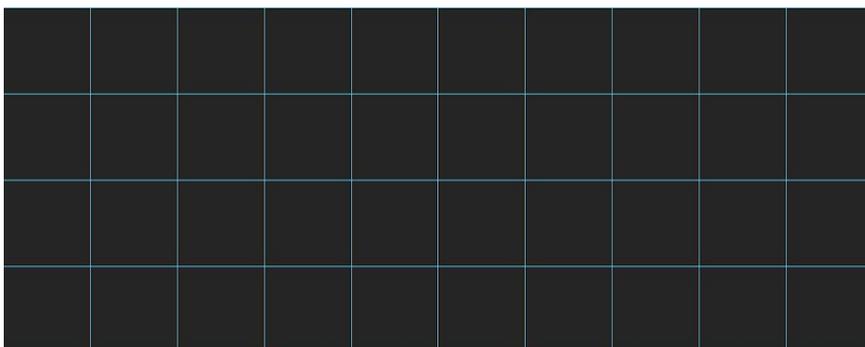
Generally speaking, mesh's naturally want to be quads. a triangle usually happens when a modeler merges points they should not have or drew lines on the mesh and forgot to clean up their mess. no triangle or Ngon happens by accident a person has to create them

a few good rules to ask yourself is

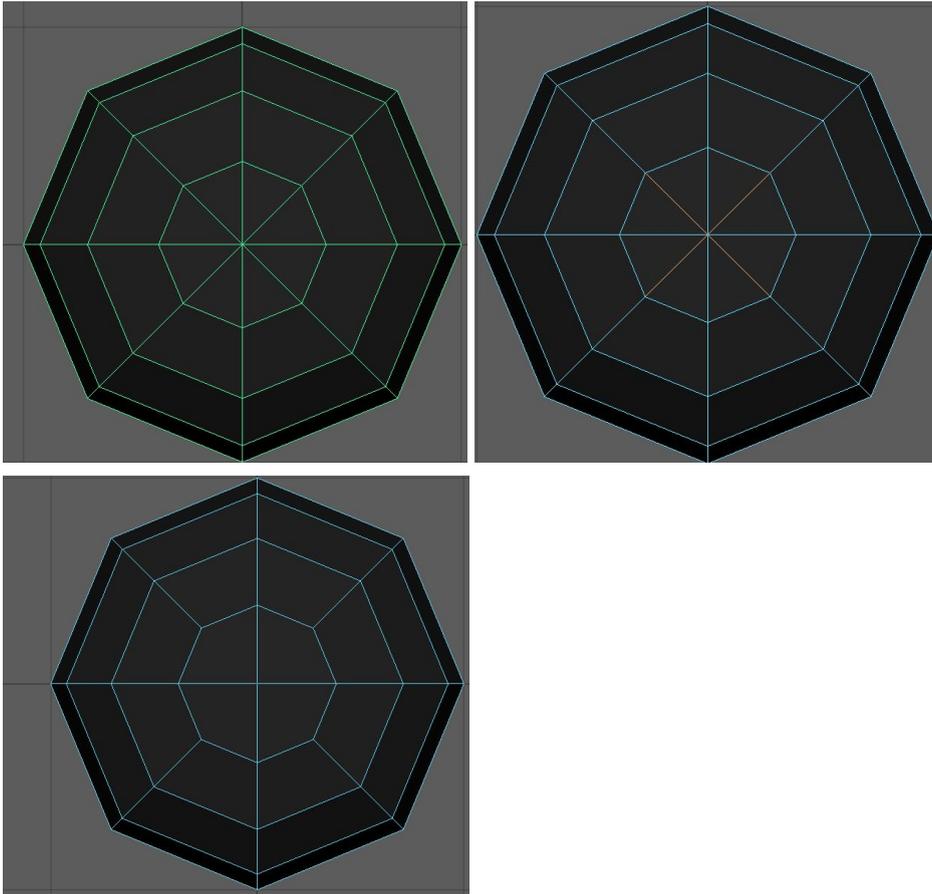
1) Is it needed? if i delete this will it just fix it?



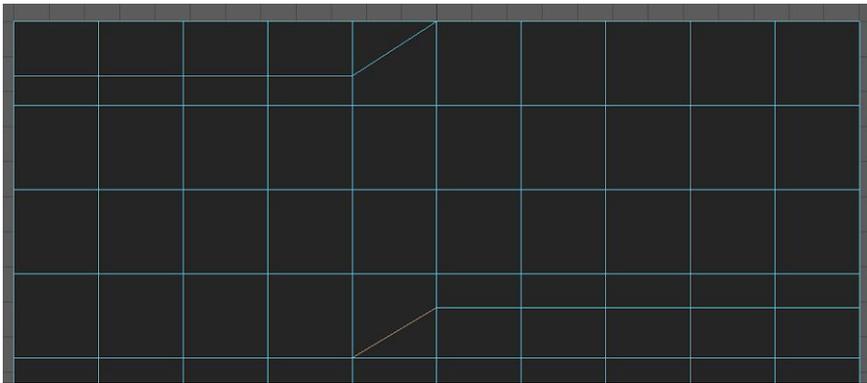
in this case yes,



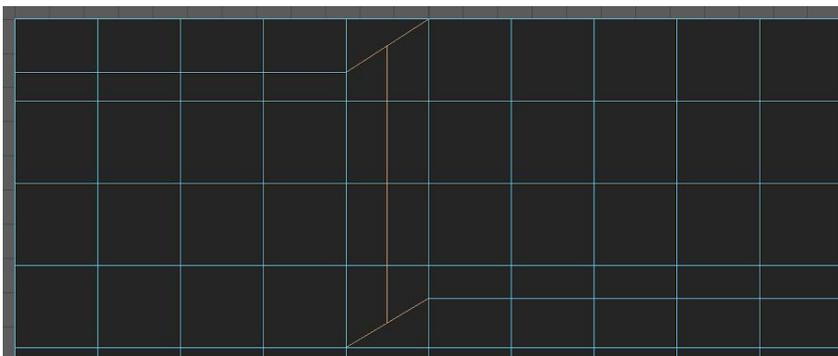
another example



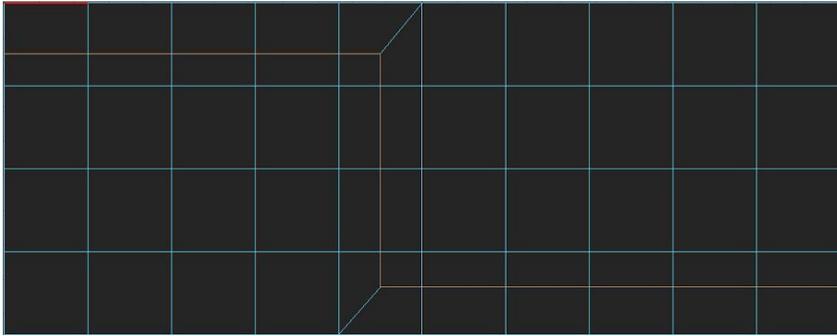
2) Is there another triangle I can connect this to?



yes

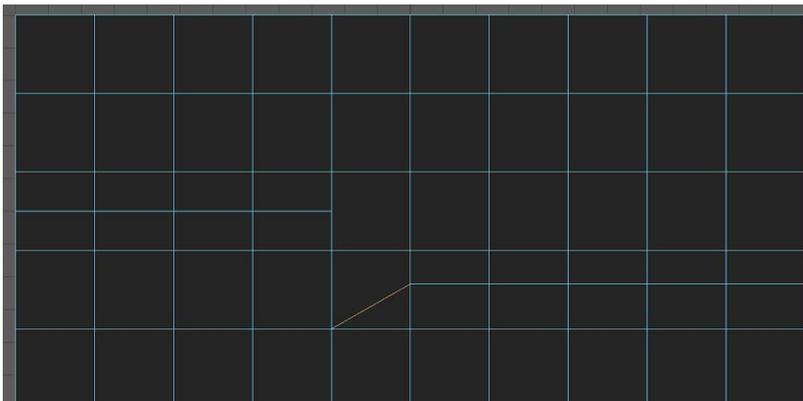


and with some minor cleanups

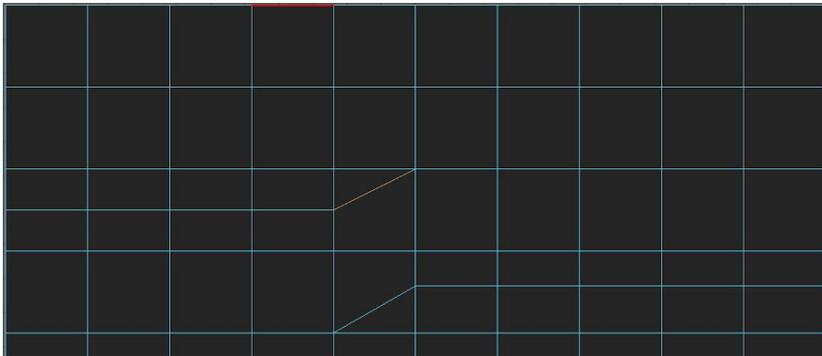


hey look it made that edge turn ohhh! ahhhh!

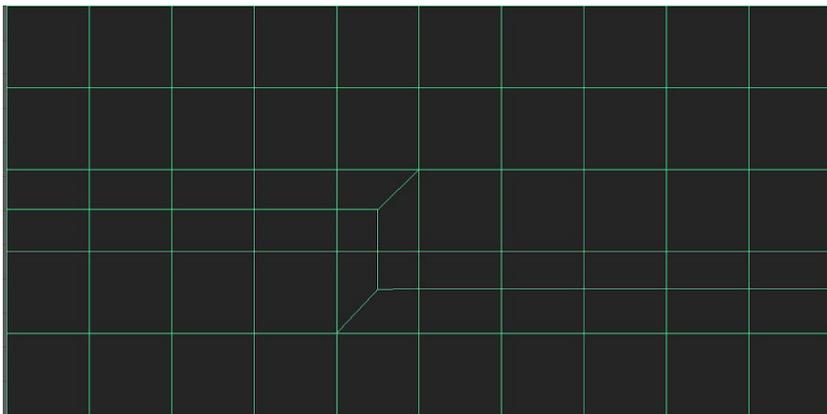
alternatively other triangles in the mesh may not reveal themselves as triangles at first often they hide as *Ngons*.



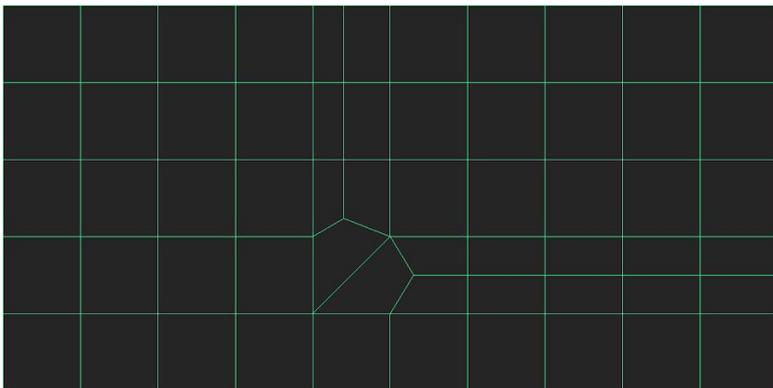
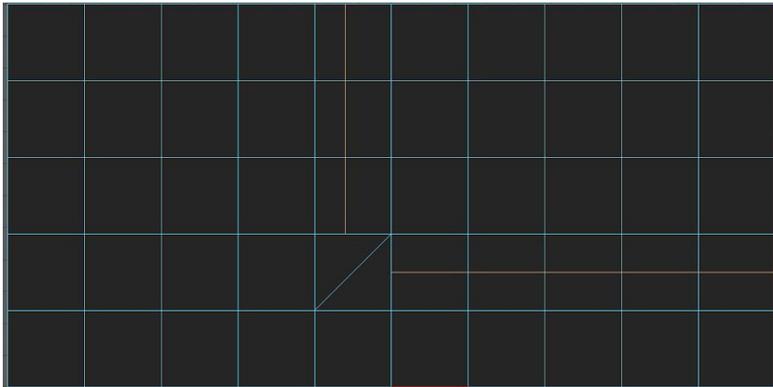
ohh triangle where are you? THERE YOU ARE! i just needed to add the cut myself!



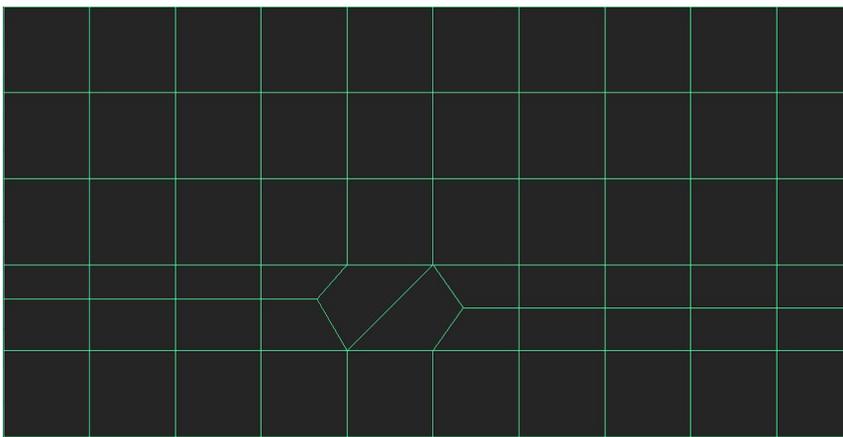
FIXED!



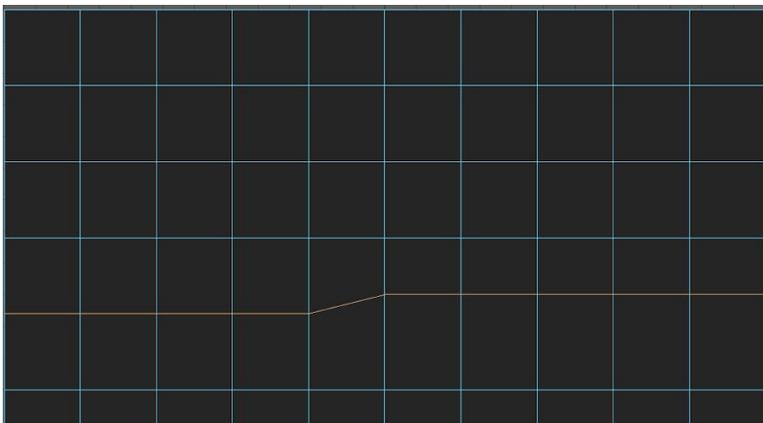
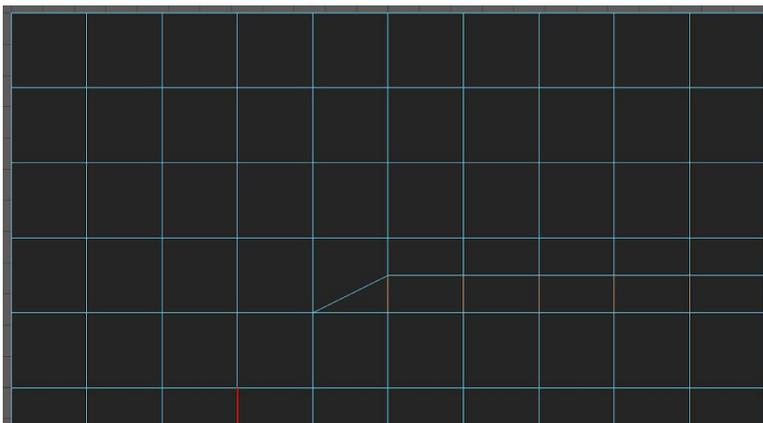
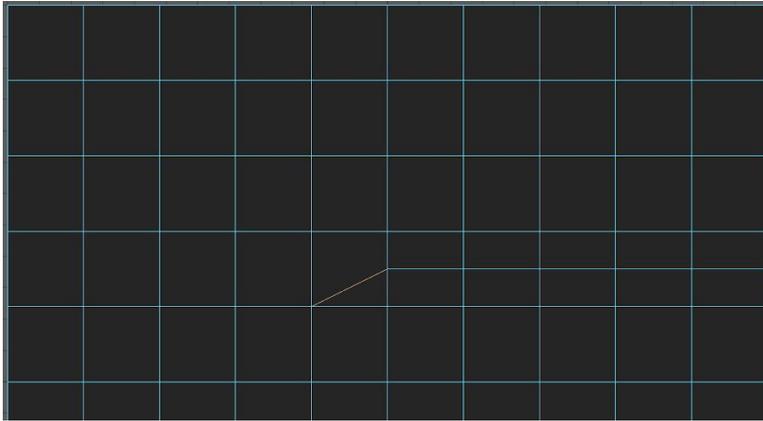
3) can I add a loop that would close this?



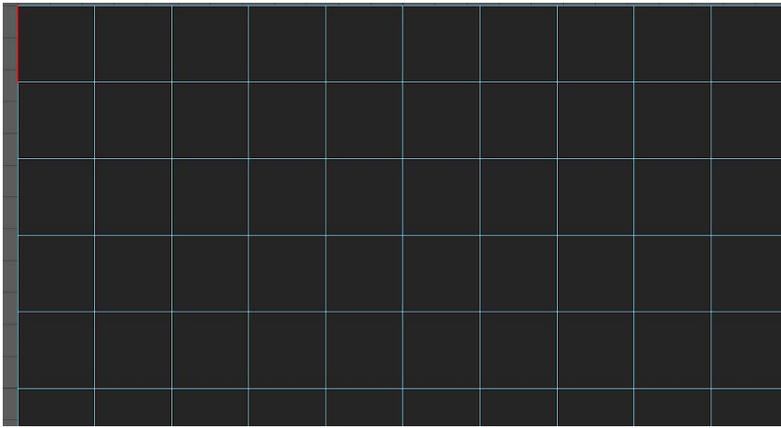
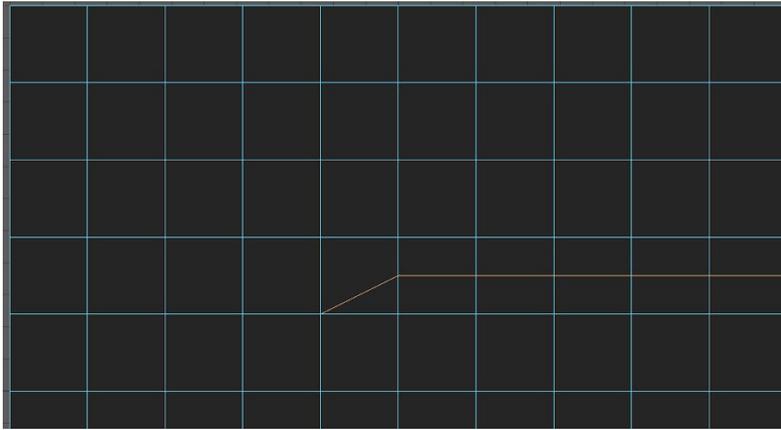
or alternatively...



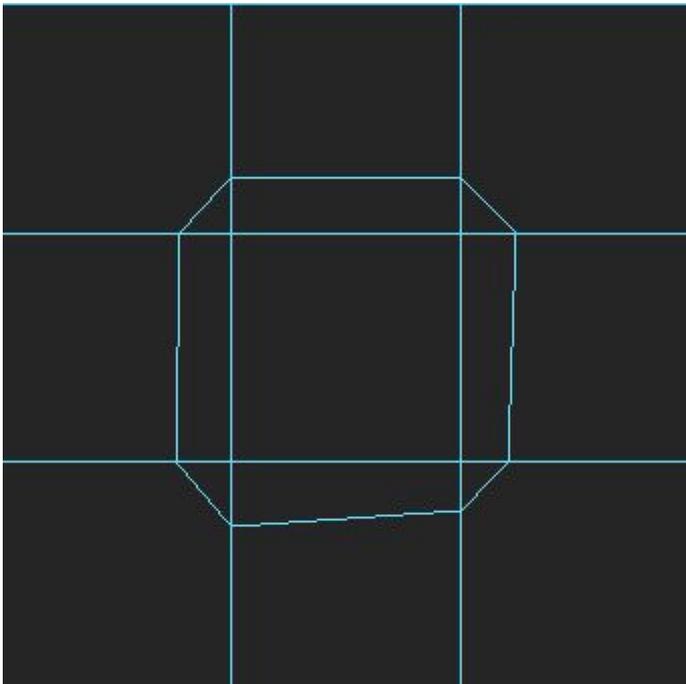
4)will collapsing/ deleting edges fix this?



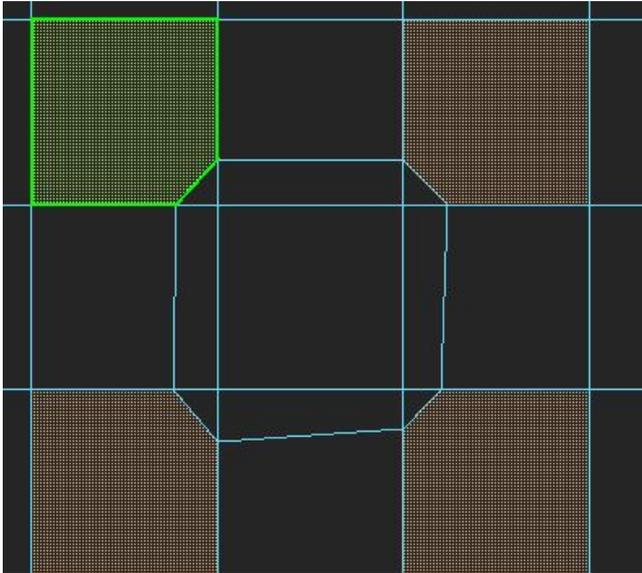
alternatively you can choose and select an edgeloop and take it away



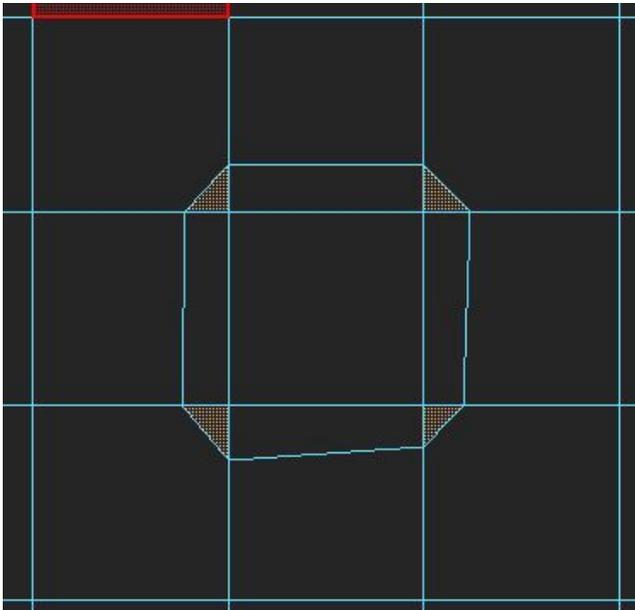
or another example



these are *Ngons*



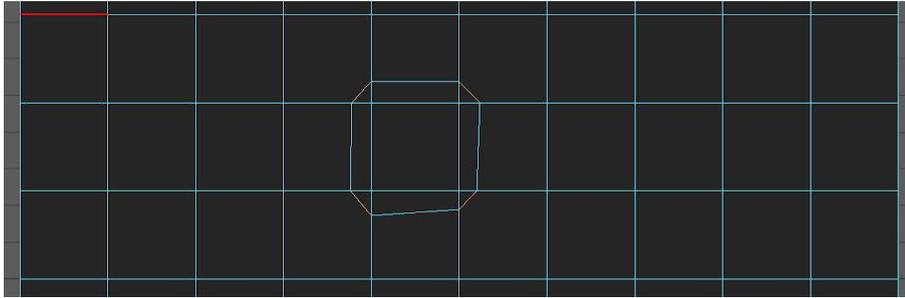
these are *triangles*



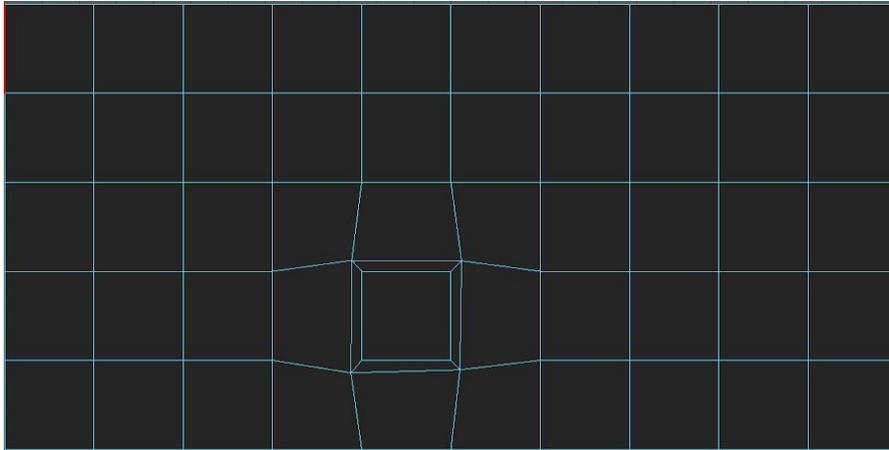
^there are several ways to tackle the example above. in fact non of what you are thinking are wrong. but there are of course more efficient ways to tackle the problem.

remember when I mentioned above that geometry naturally want to become quads? here is a perfect example of geometry naturally wanting to become quads by collapsing triangles to eliminate the problems of both tri's and Ngons

select the edge bordering triangles and Ngons



collapse them and...



TADAAAAAAAAAAAA!!!!!!!!!!!!!! OMGWTFBBQ!

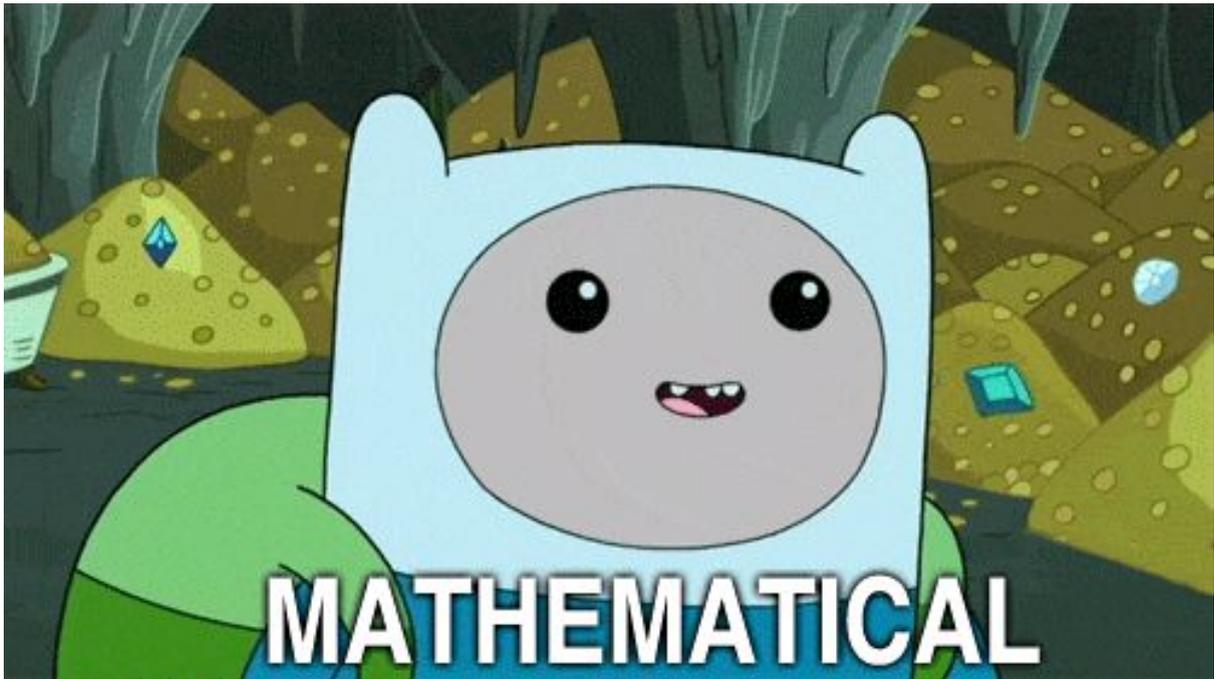


keeping this in mind will aid you in figuring out what's the best way to deal with those dang tricky triangles.

...

"wait but what about Ngons?!"

same rules apply, normally Ngons are 5 sided meshes and when you cut a line to divide it you create a triangle and a quad and when it's more than 5 sides..well you know math" it ;)



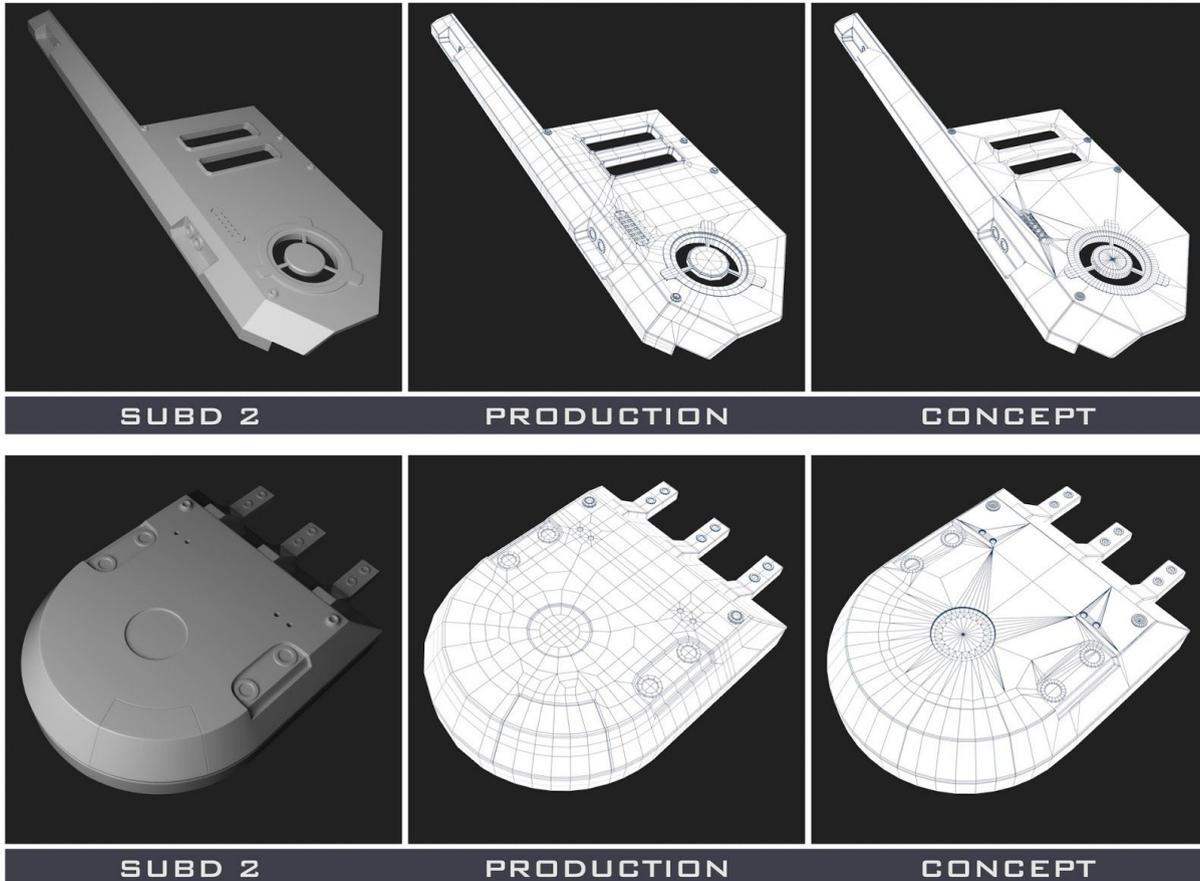
50% of modeling is solving problems and the best way to view it is solving a puzzle like Sudoku. if you focus too hard on the problem in front of you, you will be too blind to be open to see the many different ways you can solve the problem. and only see the problem and nothing else. if you step back though...

you will see a world of solution.

Hope you found this informative
-Manuel Armonio

P.S. additionally i found this useful breakdown by Andrew Hodgson on how he tackles lineflow and what production linflow is vs concept lineflow

<https://www.artstation.com/artwork/mYVE1>



THE BIGGEST DIFFERENCE BETWEEN A CONCEPT AND PRODUCTION MESH IS HOW CLEAN THE PRODUCTION MESH IS AND HOW FAST THE CONCEPT MESH IS.

WITH CONCEPT THE QUALITY OF THE TOPOLOGY DOESNT MATTER AT ALL AS LONG AS YOU GET THE SHAPES YOU WANT, THIS MEANS YOU CAN JUST HACK TOGETHER AND BODLEON SHAPES AS YOU PLEASE. MOST LIKELY NO ONE ELSE WILL BE PICKING IT UP AFTER YOU AND ITS JUST FOR STILL RENDERS.

A SUB D PRODUCTION MESH TAKES MUCH MUCH LONGER TO MAKE AS YOU HAVE TO PLAN OUT AHEAD AND WORK OUT THE FLOW OF THE TOPOLOGY CORRECTLY AS IT WILL BE SUBDIVDED AT RENDER TIME. A FEW STANDARD RULES TO "FENCING" OR "TRIPPLE EDGING" A MESH IS...

- EVERYTHING SHOULD BE QUADS (A FEW TRIANGLES ARE FINE BUT TRY MAKE EVERYTHING QUADS)
- REDUCE THE AMOUNT OF POLES IF YOU CAN (TOO MANY EDGES FLOWING IN TO A SINGLE POINT)
- NO NGONS (5 OR MORE SIDED POLYGONS)
- HAVE AN EVEN SPREAD OF TOPOLOGY (IF THE MESH IS TAKEN IN TO ZBRUSH AND SUBDIVIDED THE MESH WILL GET HEAVY QUICK AND YOU DONT WANT ALL THAT TOPOLOGY TO GO IN TO SMALL AREAS AS IT MAY LIMIT YOUR ABILITY TO SCULPT ON THE MORE BARE PARTS.
- SUPPORT EDGES (WHEN THE MESH IS SMOOTHED THE EDGES WILL MOVE SO YOU NEED TO HAVE SUPPORTING EDGES TO HELP PRESERVE THE UVS FROM SPREADING TOO MUCH.

THERE ARE LOTS OF RULES FOR PRODUCTION MESHES AS THEY GO IN TO A PIPELINE AND WILL BE USED BY OTHERS