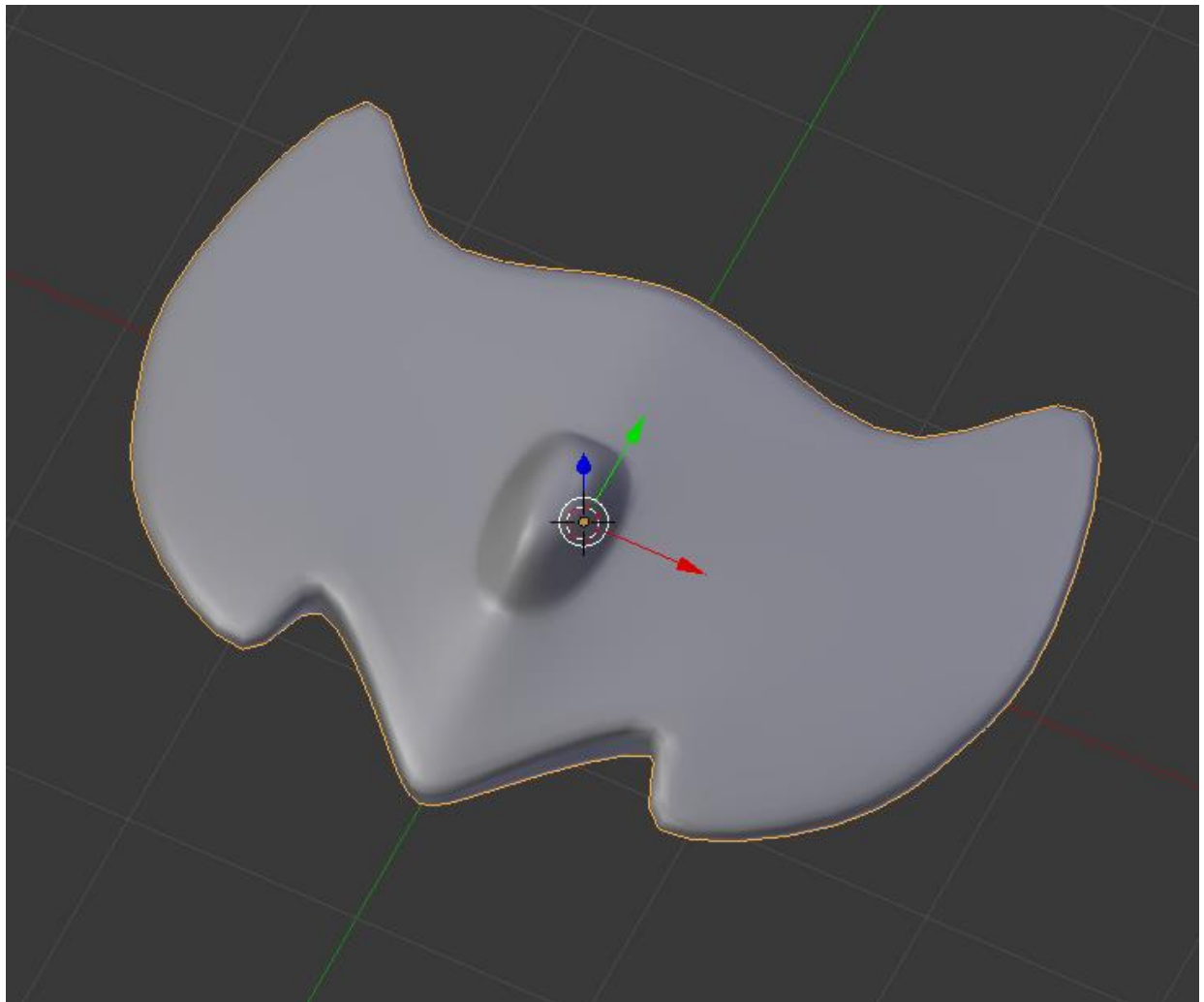


CHAPTER 1:

MODELING A SPACESHIP



LEARNING TO MODEL IN BLENDER IS THE FIRST STEP TOWARDS MAKING YOUR VIDEO GAME.

WE WILL START BY MAKING A HERO SPACESHIP. THE HOTKEYS USED IN THIS CHAPTER WILL SOON BECOME MEMORIZED THROUGH CONSTANT USE, SO DON'T WORRY IF THEY SEEM CONFUSING AT FIRST. MODELING THREE DIMENSIONAL OBJECTS IS AN ART, SO YOU'LL NEED TO PRACTICE IF YOU WANT TO BECOME PROFICIENT.

HELPFUL HINTS:

-SAVE YOUR PROJECT OFTEN! IN 'FILE', SELECT 'SAVE AS' AND SAVE YOUR .BLEND FILE TO SOMEWHERE YOU'LL REMEMBER, LIKE THE DESKTOP OR A FOLDER ON THE DESKTOP.

-IF YOU MESS UP AND YOU HAVE NO IDEA HOW TO FIX IT, OR YOU JUST WANT TO UNDO A SIMPLE MISTAKE, YOU HAVE A FEW OPTIONS:

1) PRESS 'CTRL+Z' TO UNDO YOUR LAST ACTION

2) PRESS 'CTRL+Z' MULTIPLE TIMES TO UNDO MANY ACTIONS

3) EXIT BLENDER WITHOUT SAVING AND THEN REOPEN YOUR PROJECT. YOU WILL START FROM YOUR LAST SAVED PROJECT.

HERE IS A LIST OF BLENDER HOTKEYS:

SHIFT+A: ADD AN OBJECT TO SCENE

TAB: TOGGLE OBJECT AND EDIT MODE

A: SELECT/DESELECT ALL OBJECTS IN A SCENE

S: SCALE

R: ROTATE

G: MOVE

X: DELETE

F: MAKE A FACE

C: SELECT SMALL AREAS

B: SELECT A LARGE AREA

CTRL+R: ADD LOOP CUT

CTRL+Z: UNDO

5: TOGGLE PERSPECTIVE/ORTHO MODE

1 (NUM PAD): FRONT VIEW (CTRL+1=OPPOSITE)

3 (NUM PAD): SIDE VIEW (CTRL+3=OPPOSITE)

7 (NUM PAD): TOP VIEW (CTRL+7=OPPOSITE)

HOLD MMB+DRAG: ROTATE VIEWPORT

SCROLL MMB: ZOOM IN/OUT

HOLD SHIFT+MMB: SHIFT VIEWPORT

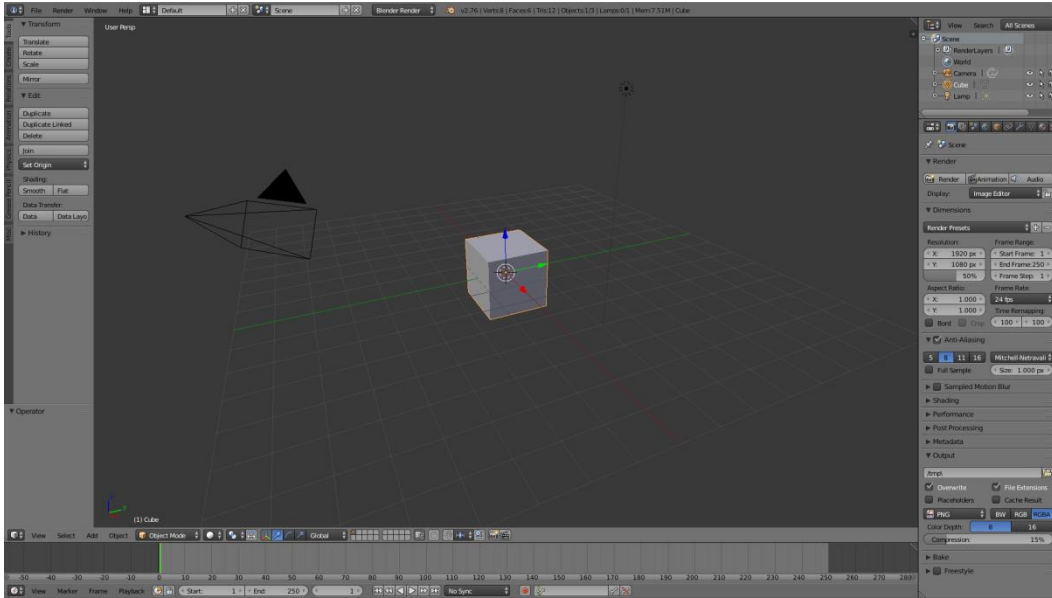
SHIFT+SPACEBAR: MAXIMIZE VIEWPORT

SHIFT+S: SET CURSOR

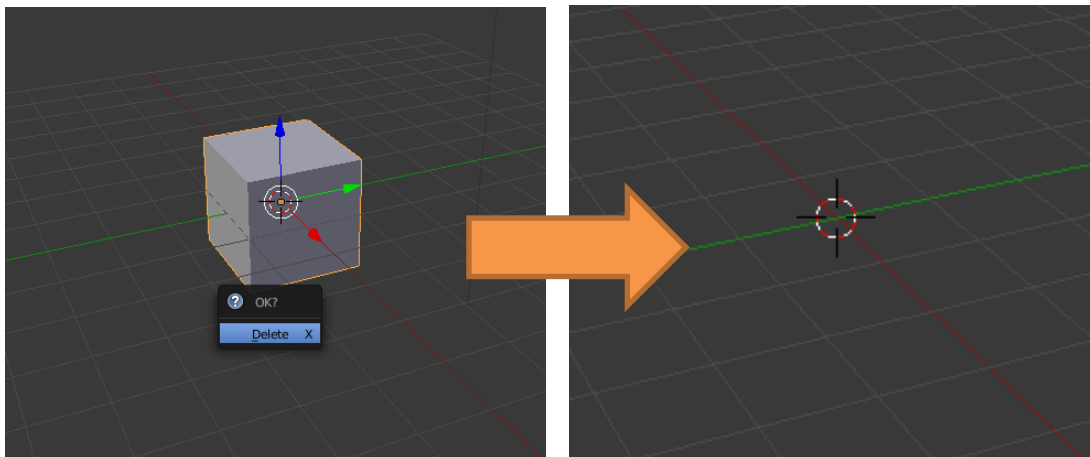
CTRL+J: JOIN MESHES

Z: TOGGLE WIREFRAME MODE

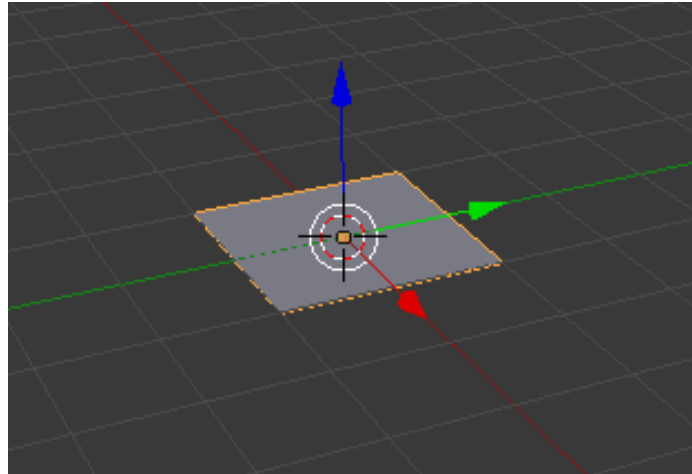
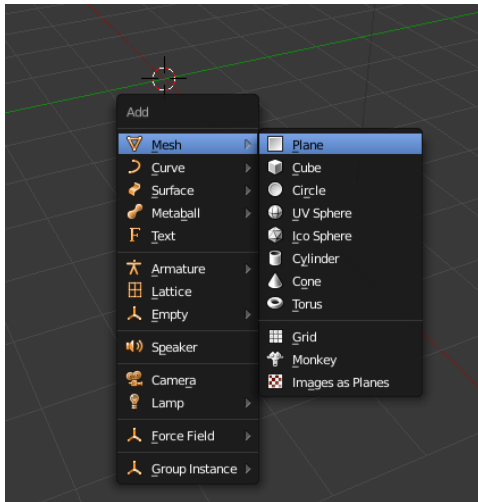
SHIFT+D: DUPLICATE



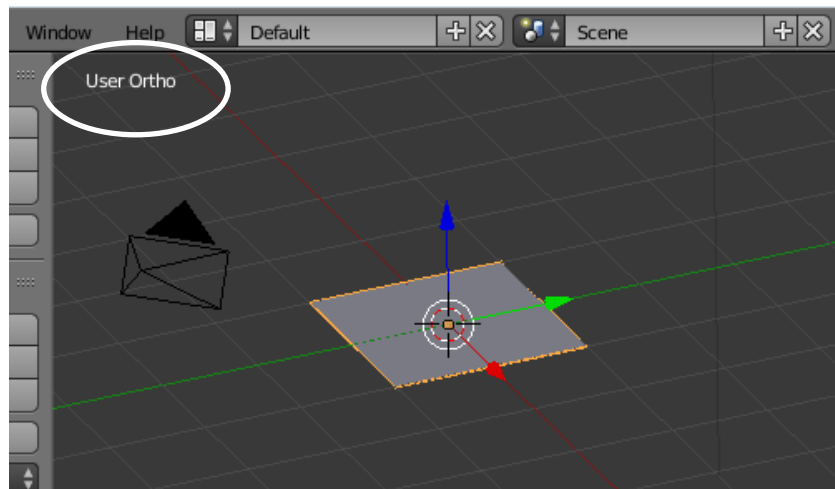
- 1) OPEN BLENDER. YOU WILL SEE THE DEFAULT SCENE. THE CUBE WILL BE SELECTED. IF IT IS NOT SELECTED OR YOU UNSELECT IT ACCIDENTALLY, RE-SELECT IT BY RIGHT-CLICKING.



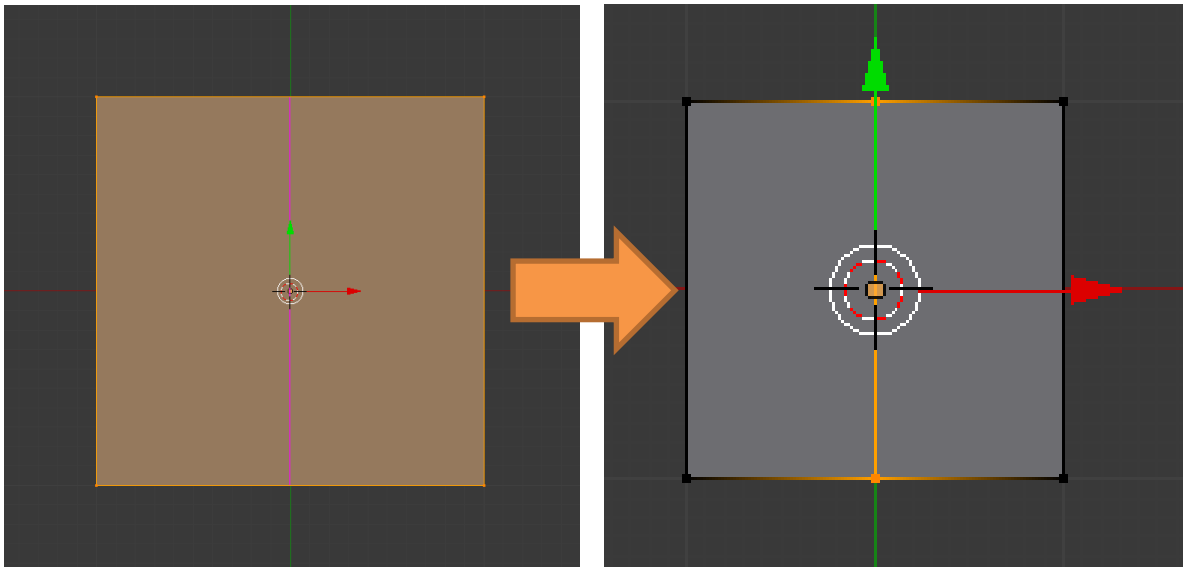
- 2) HOVER YOUR MOUSE OVER THE GRAY SPACE AREA. PRESS 'X' TO DELETE THE DEFAULT CUBE.



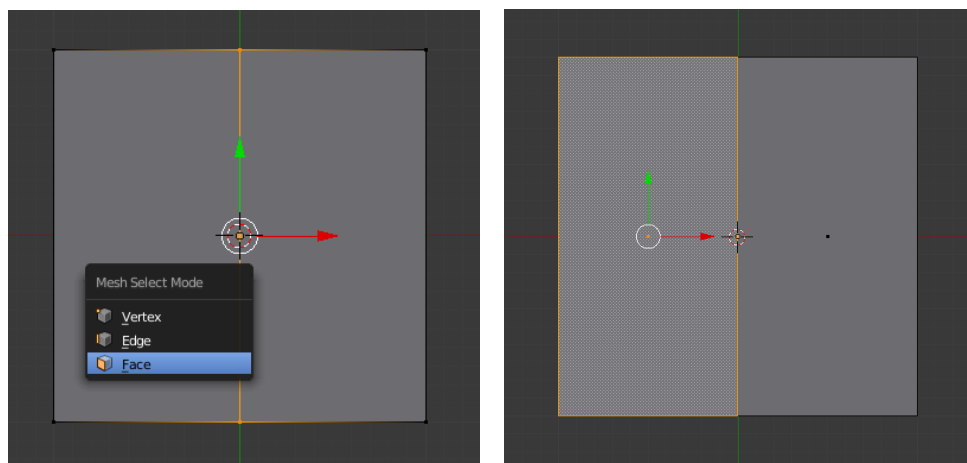
3) LET'S START OUR MODEL WITH A PLANE OBJECT. PRESS 'SHIFT+A' AND SELECT 'MESH' THEN 'PLANE'.



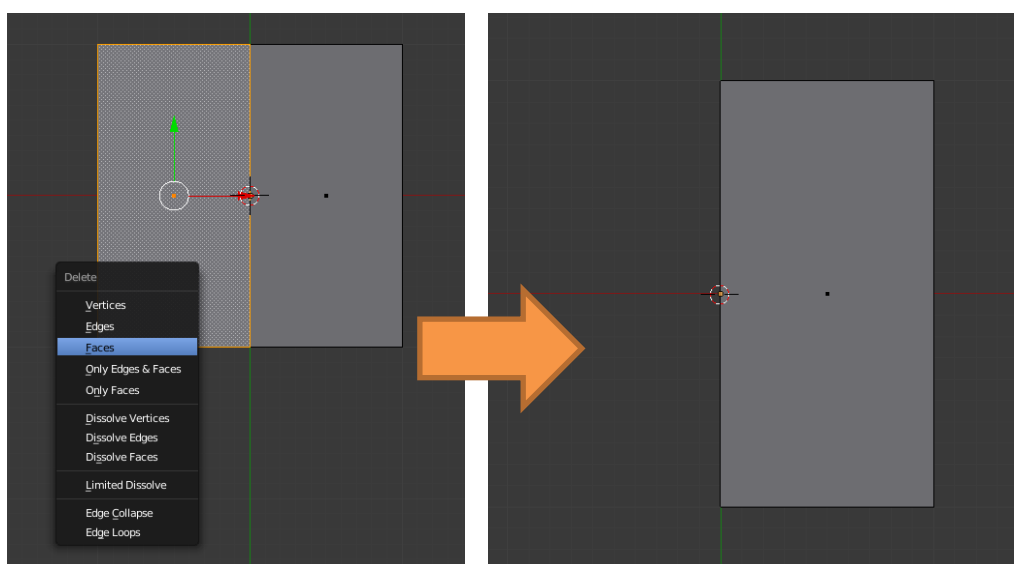
4) MAKE SURE YOU ARE IN ORTHO VIEW (PRESS '5' ON THE 10-KEY, NOT THE NUMBERS ABOVE THE KEYBOARD!!). IT WILL SAY 'USER ORTHO' IN THE TOP LEFT CORNER OF THE VIEWPORT.



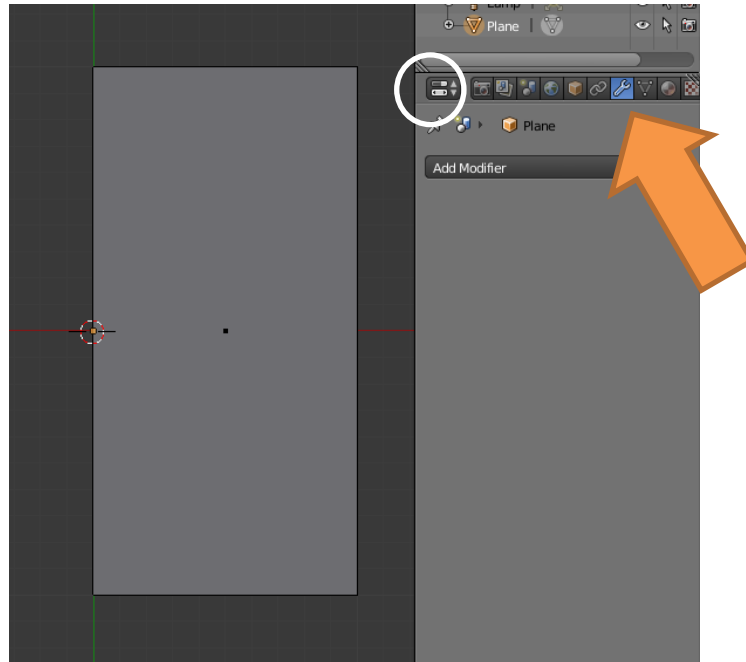
- 5) THE PLANE SHOULD STILL BE SELECTED (PRESS 'A' IF IT IS NOT). PRESS '7' TO GO INTO TOP VIEW (THIS MEANS YOU ARE LOOKING DOWN ON THE PLANE FROM ABOVE). GO INTO **EDIT MODE** BY PRESSING 'TAB'. PRESS 'CTRL+R'. HOVER OVER YOUR PLANE. A PURPLE, VERTICAL LINE SHOULD APPEAR. LEFT-CLICK TWICE OR PRESS 'ENTER' TWICE TO SET THE CUT.
- 6) NOTE: IF THIS STEP DOESN'T WORK FOR YOU, IT'S PROBABLY BECAUSE YOUR MOUSE WASN'T HOVERING OVER THE GRAY SPACE OR THE PLANE.



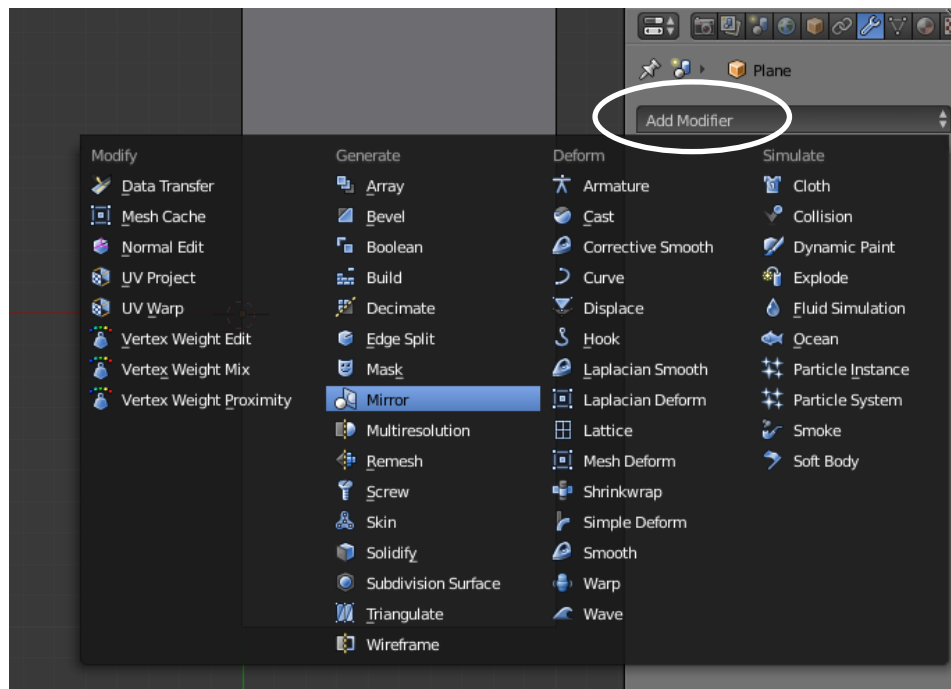
- 7) PRESS 'CTRL+TAB' AND SELECT 'FACE'. YOU WILL SEE TWO BLACK DOTS IN THE CENTER OF EACH HALF. RIGHT-CLICK THE LEFT DOT TO SELECT THE LEFT FACE. IT SHOULD NOW BE ORANGE.



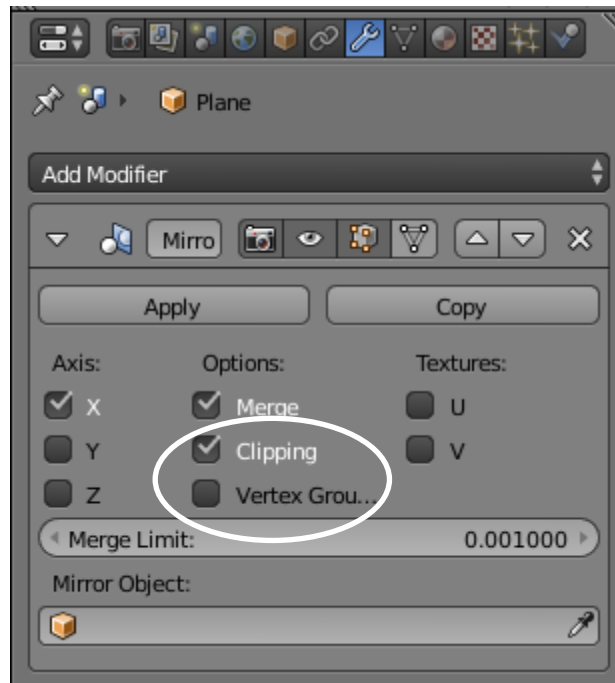
- 8) PRESS X. SELECT 'FACES' TO DELETE THE SELECTED FACE.



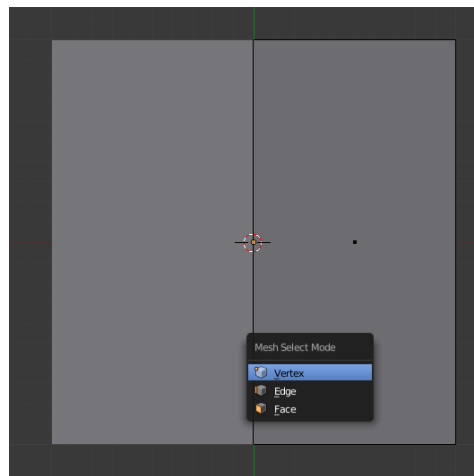
9) FIND THE WRENCH IN THE PROPERTIES PANEL. CLICK ON IT TO OPEN THE MODIFIERS TAB.



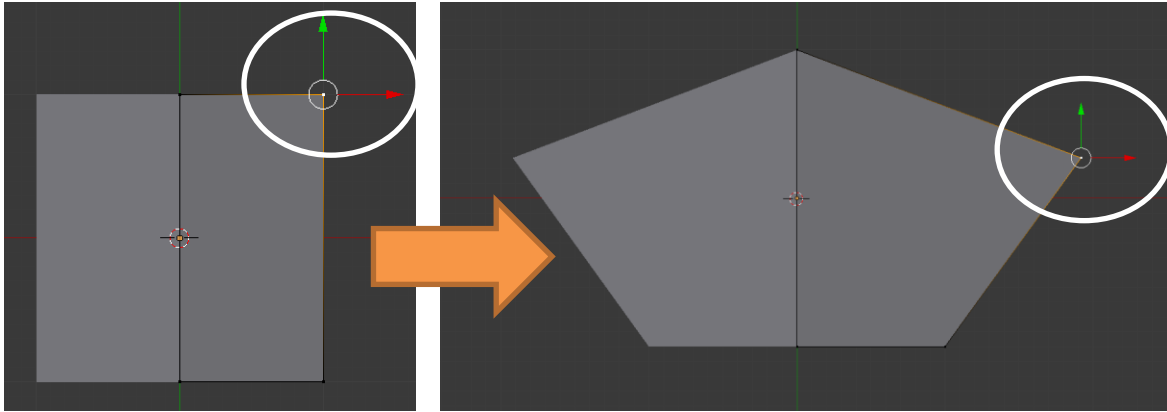
10) CLICK 'ADD MODIFIER' AND SELECT 'MIRROR'.



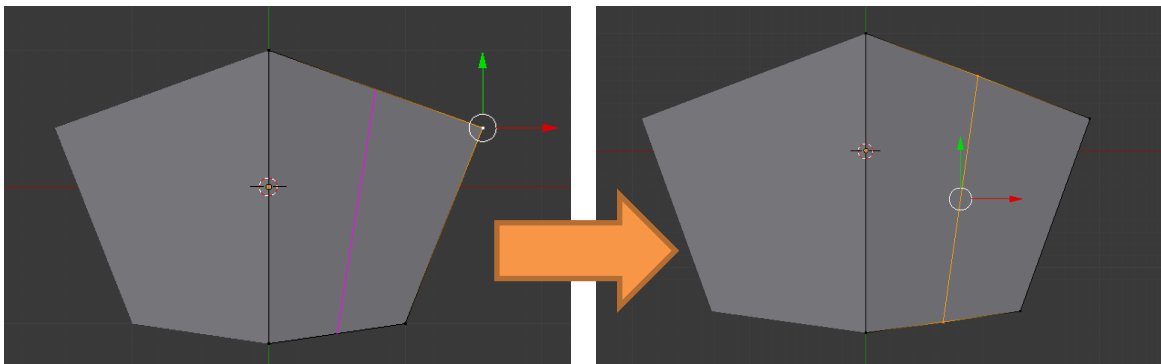
11) SELECT 'CLIPPING' AND DESELECT 'VERTEX GROUP'.



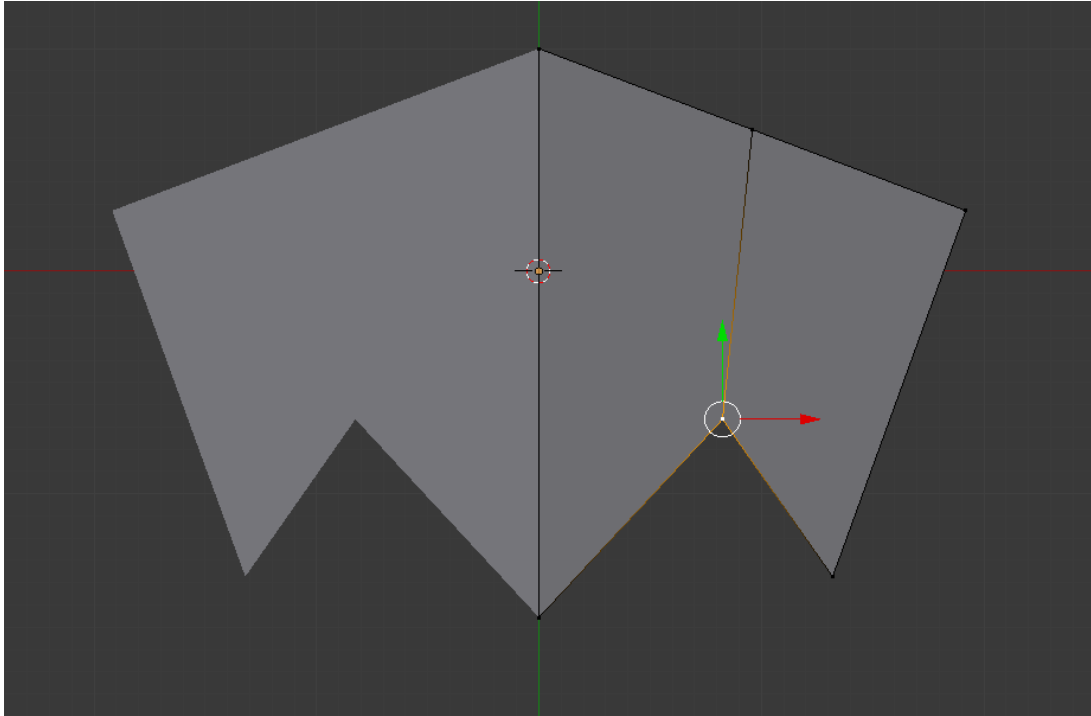
12) PRESS 'CTRL+TAB' AND SELECT 'VERTEX'.



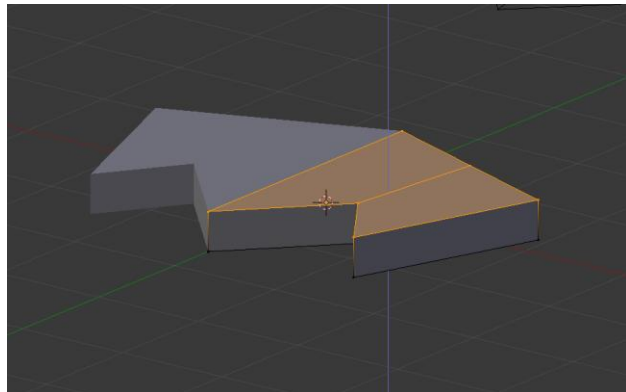
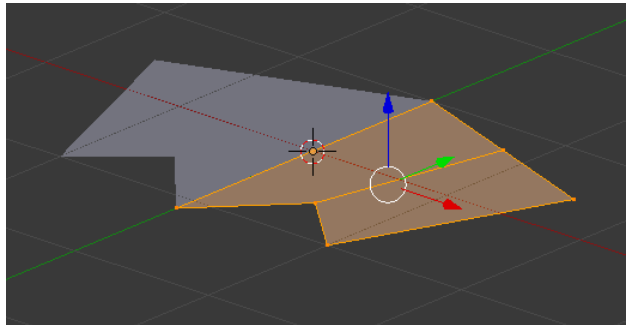
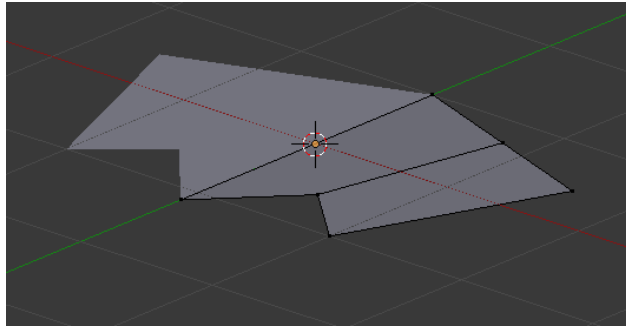
- 13) RIGHT-CLICK TO SELECT A VERTEX. IT SHOULD BE ORANGE. PRESS G TO MOVE IT. NOTICE THAT THE MOVEMENT IS REFLECTED ON THE LEFT SIDE.



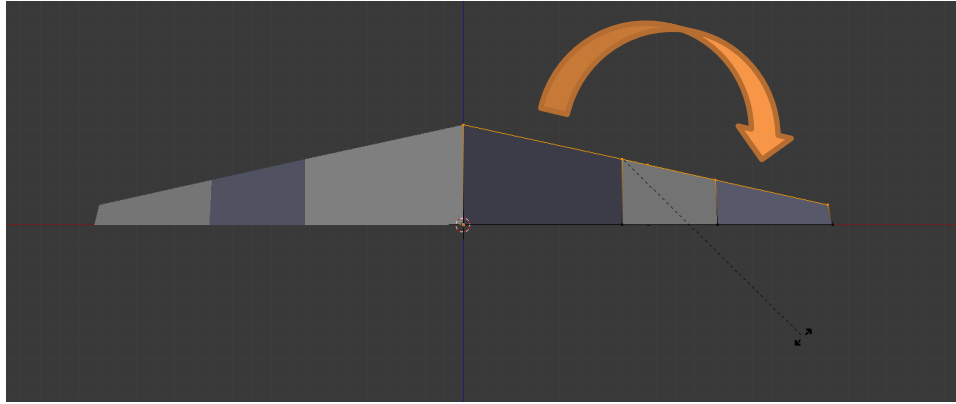
- 14) PRESS 'CTRL+R'. HOVER YOUR MOUSE OVER THE RIGHT SIDE OF YOUR PLANE. LEFT-CLICK OR PRESS 'ENTER' TWICE TO SET THE LOOP-CUT.



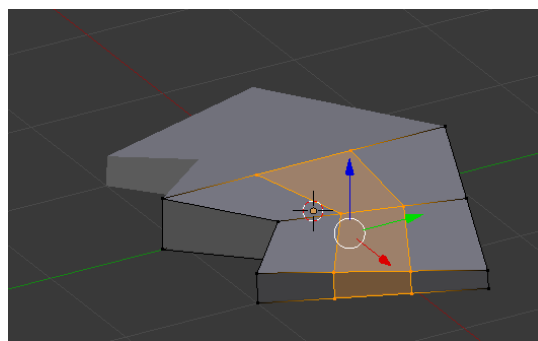
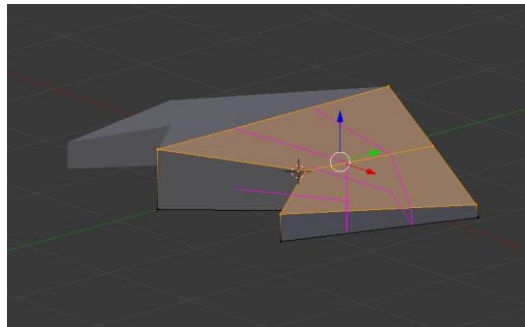
- 15) PRESS 'G' AND MOVE THE VERTEX UP. LEFT-CLICK TO SET IT.
- 16) IN STEP 15, FEEL FREE TO EXPERIMENT. MAKE THE SHAPE OF THE SHIP LOOK HOW YOU WOULD LIKE IT. SELECT VERTICES BY RIGHT-CLICKING AND THEN MOVE THEM WITH 'G'.



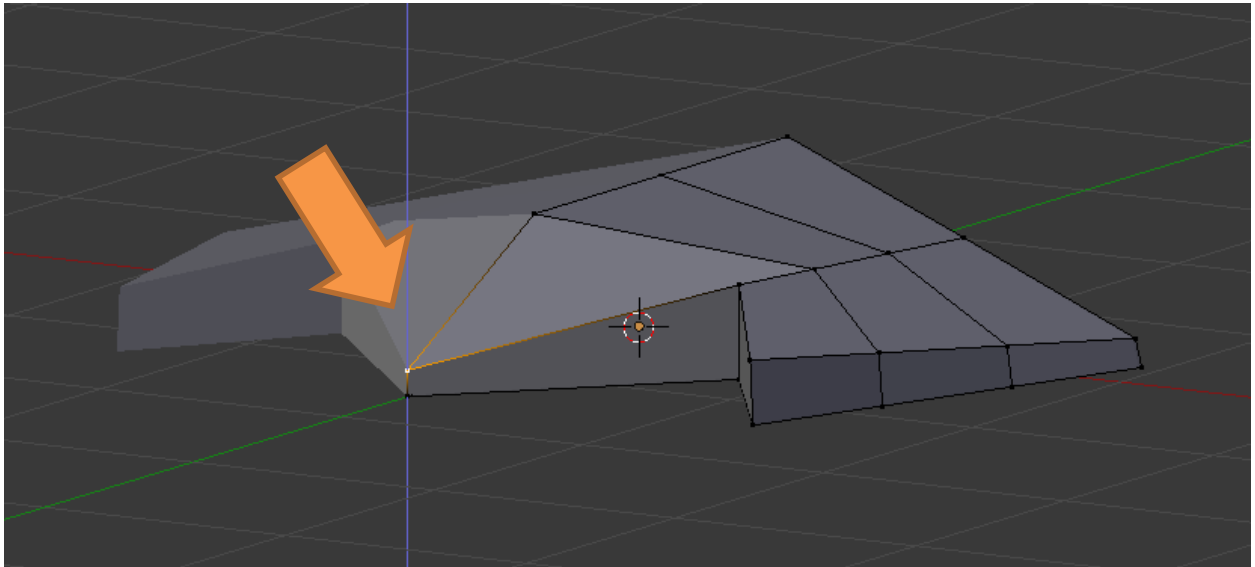
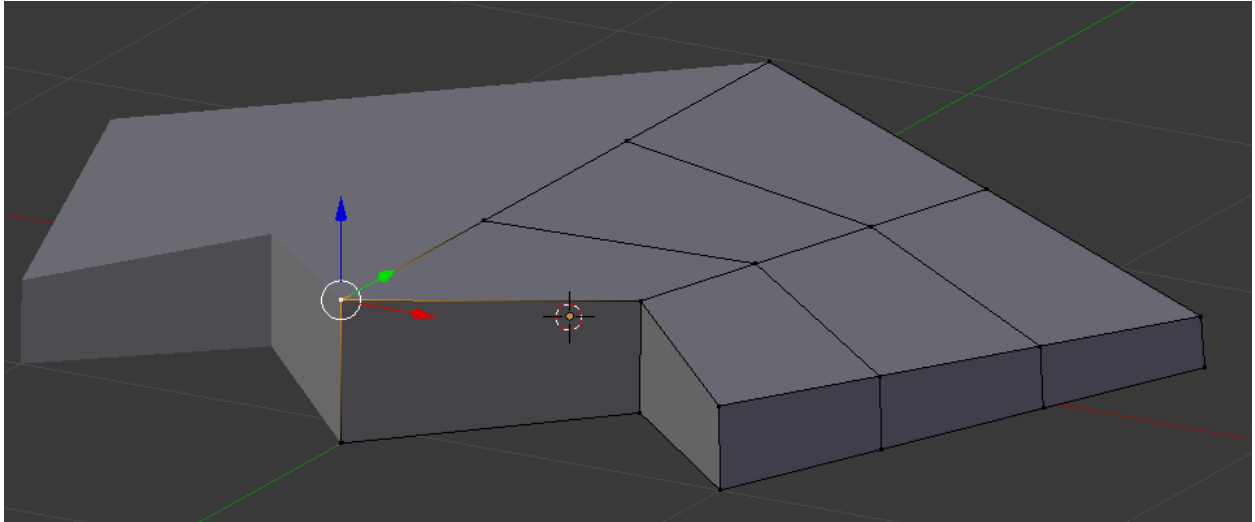
- 17) HOLD THE MIDDLE MOUSE BUTTON (MMB) AND DRAG THE MOUSE TO GET A DIFFERENT VIEWING ANGLE. PRESS 'A' TO SELECT ALL. PRESS 'E' AND THEN 'Z' TO EXTRUDE AND CONSTRAIN THE FACES TO THE Z AXIS. MOVE THE SELECTED FACES UP SLIGHTLY.



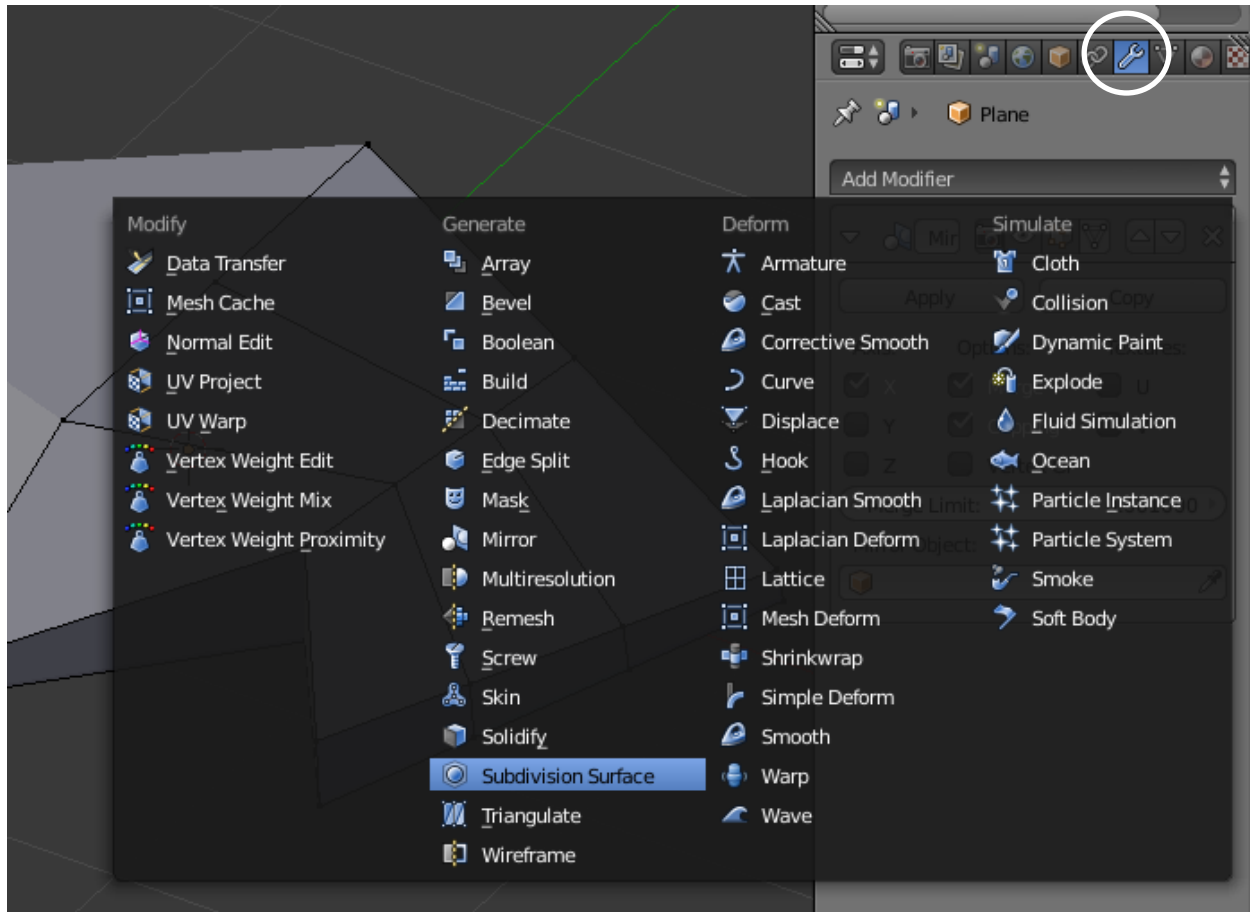
- 18) PRESS '1' (ON THE 10-KEY) TO GO INTO FRONT VIEW, AND THEN 'R' TO ROTATE THE VERTICES SLIGHTLY AS PICTURED. LEFT-CLICK TO SET.



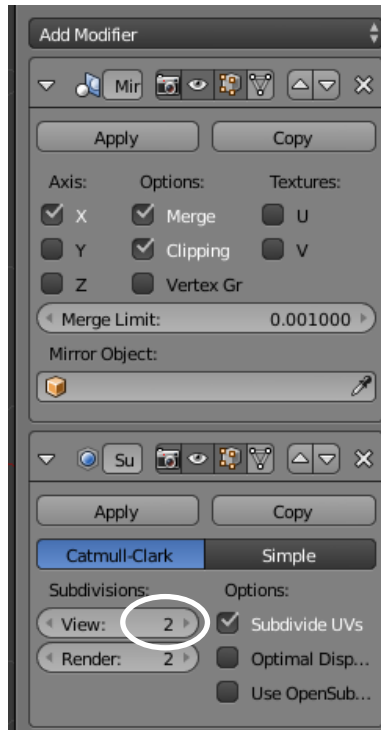
- 19) HOLD MMB AND ROTATE. PRESS 'CTRL+R' AND SCROLL ONCE TO ADD TWO CUTS. LEFT-CLICK TWICE OR PRESS 'ENTER' TWICE TO SET THE CUTS.



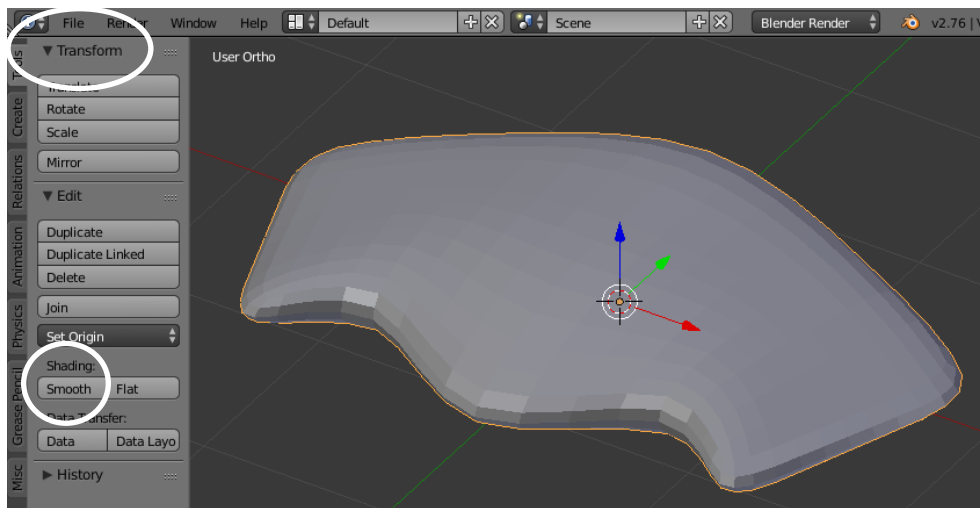
20) PRESS 'A' TO DESELECT ALL. RIGHT-CLICK TO SELECT THE FARTHEST-FORWARD VERTEX. PRESS 'G' AND THEN 'Z' TO MOVE IT DOWN. THIS WILL FORM THE FRONT OF YOUR HERO SHIP.



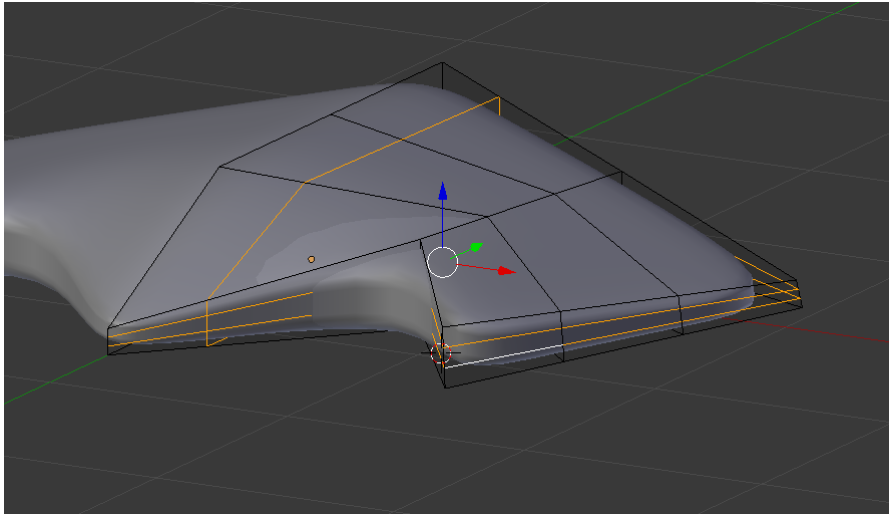
21) FIND THE WRENCH AGAIN IN THE PROPERTIES TAB. CLICK ON IT, THEN SELECT 'ADD MODIFIER' AND SELECT 'SUBDIVISION SURFACE'.



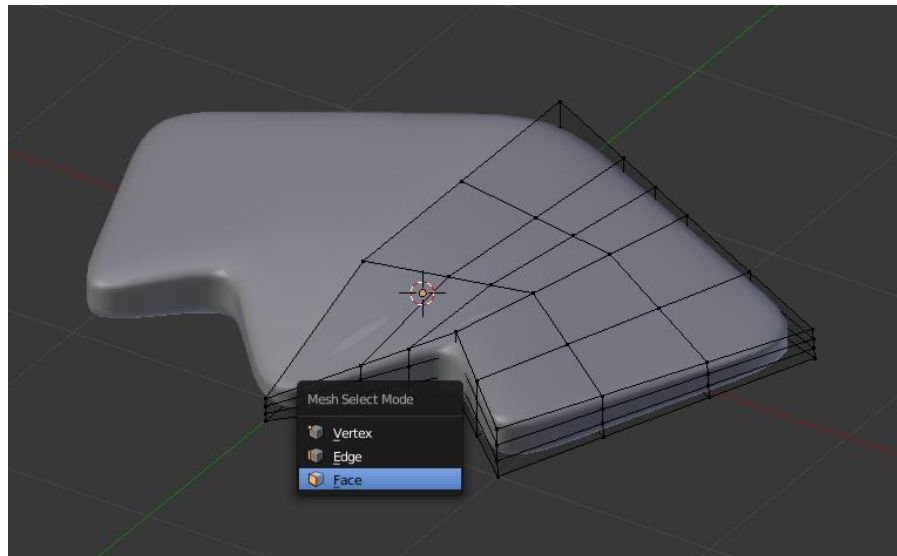
22) IN THE SUBDIVISION PANEL, CHANGE THE VIEW TO 2.



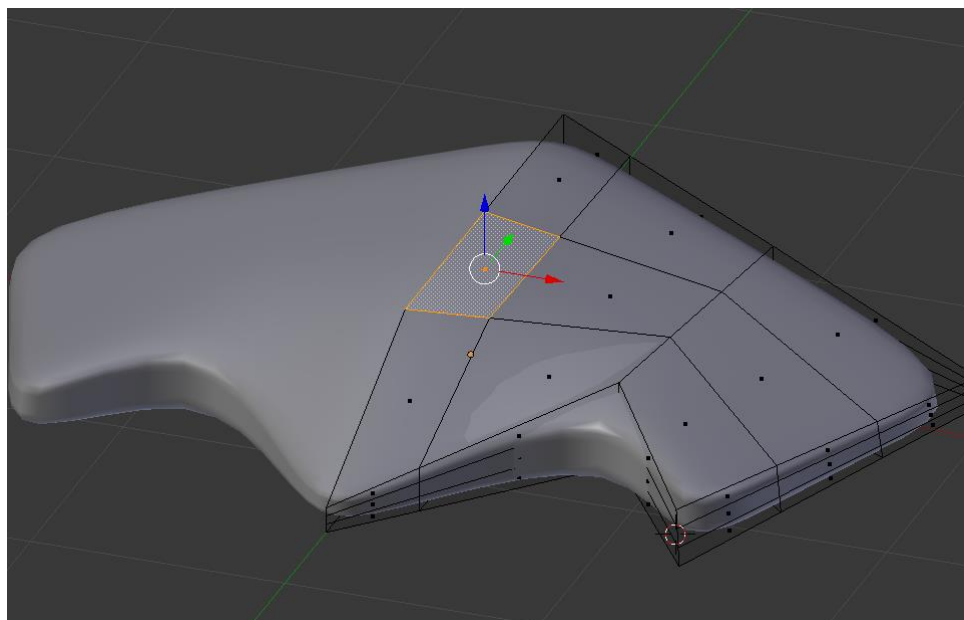
23) PRESS 'TAB' TO GO INTO OBJECT MODE. IN THE TRANSFORM PANEL, SELECT 'SMOOTH'. IF YOU CAN'T SEE THE TRANSFORM PANEL, PRESS 'T'.



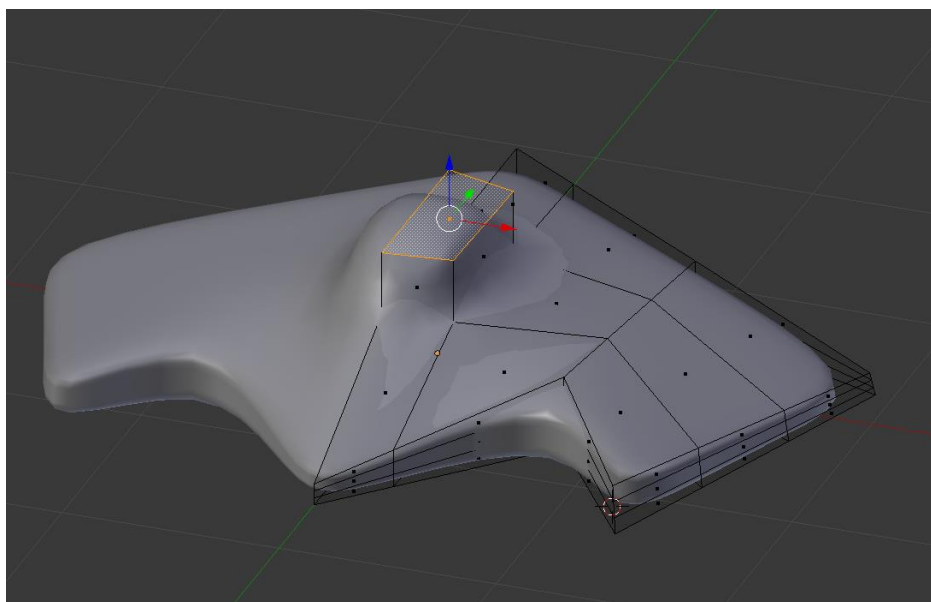
24) PRESS 'TAB' TO GO INTO EDIT MODE. PRESS 'CTRL+R' TO ADD MORE LOOP-CUTS. EXPERIMENT WITH WHAT LOOKS BEST FOR YOU. LEFT-CLICK TWICE TO SET THE CUTS.



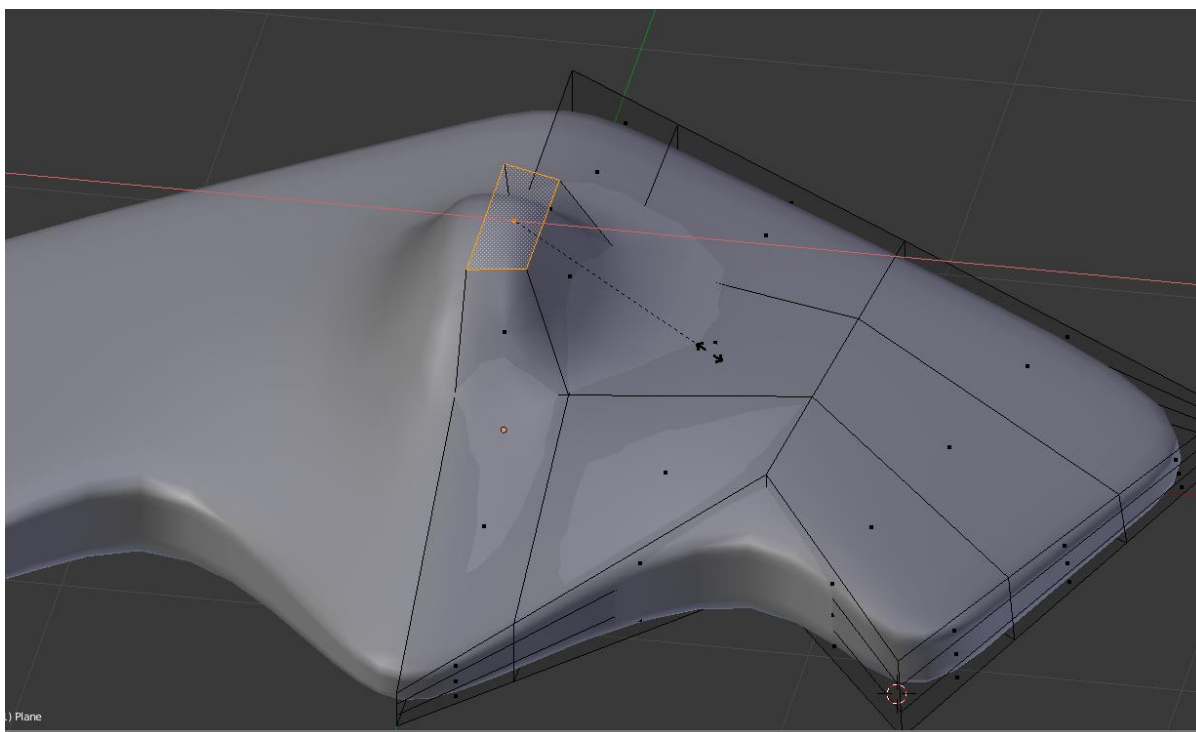
25) PRESS 'CTRL+TAB' AND SELECT 'FACE'.



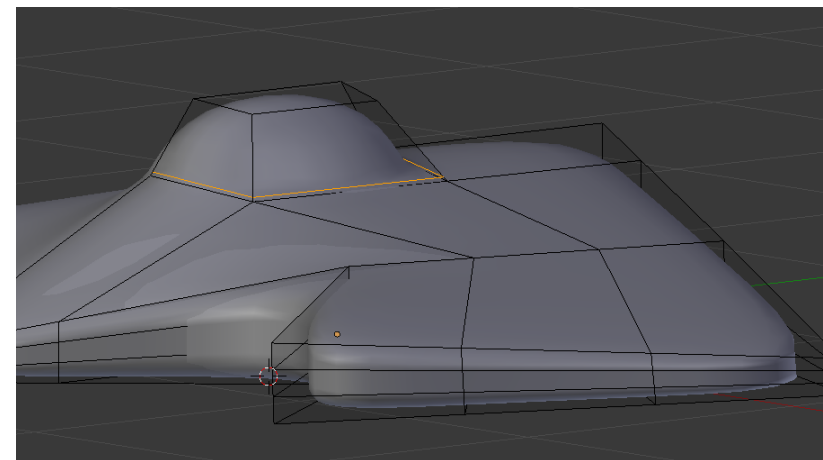
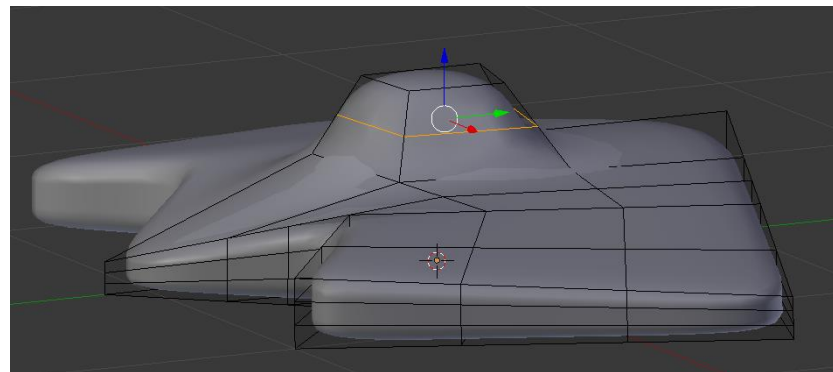
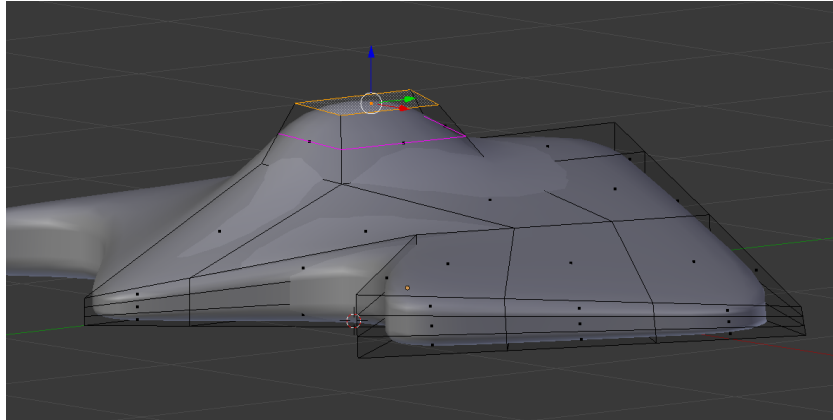
26) RIGHT-CLICK THE CENTER FACE.



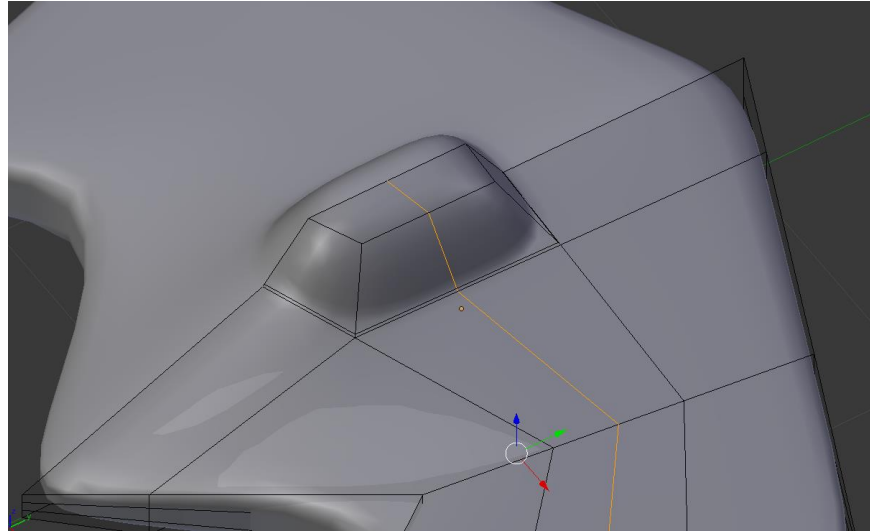
27) PRESS 'E' AND THEN 'Z' TO EXTRUDE AND CONSTRAIN THE FACE TO THE Z-AXIS. LEFT-CLICK TO SET.



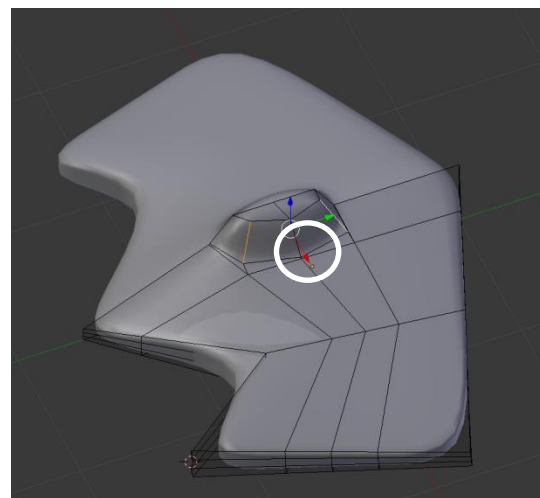
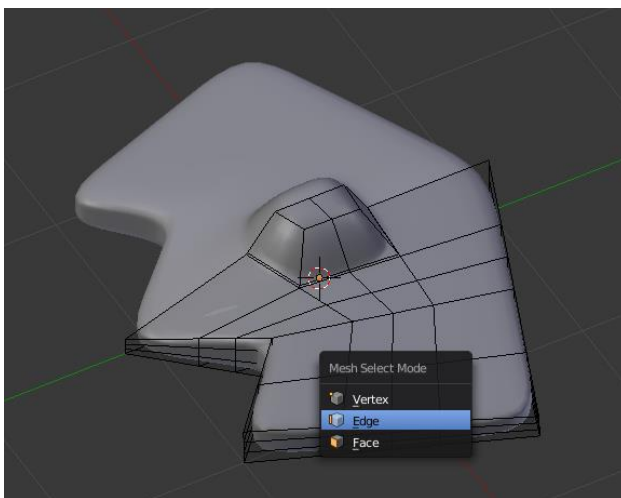
28) PRESS 'S' AND THEN MOVE THE MOUSE TO MAKE THE SELECTED FACE SMALLER. LEFT-CLICK TO SET.



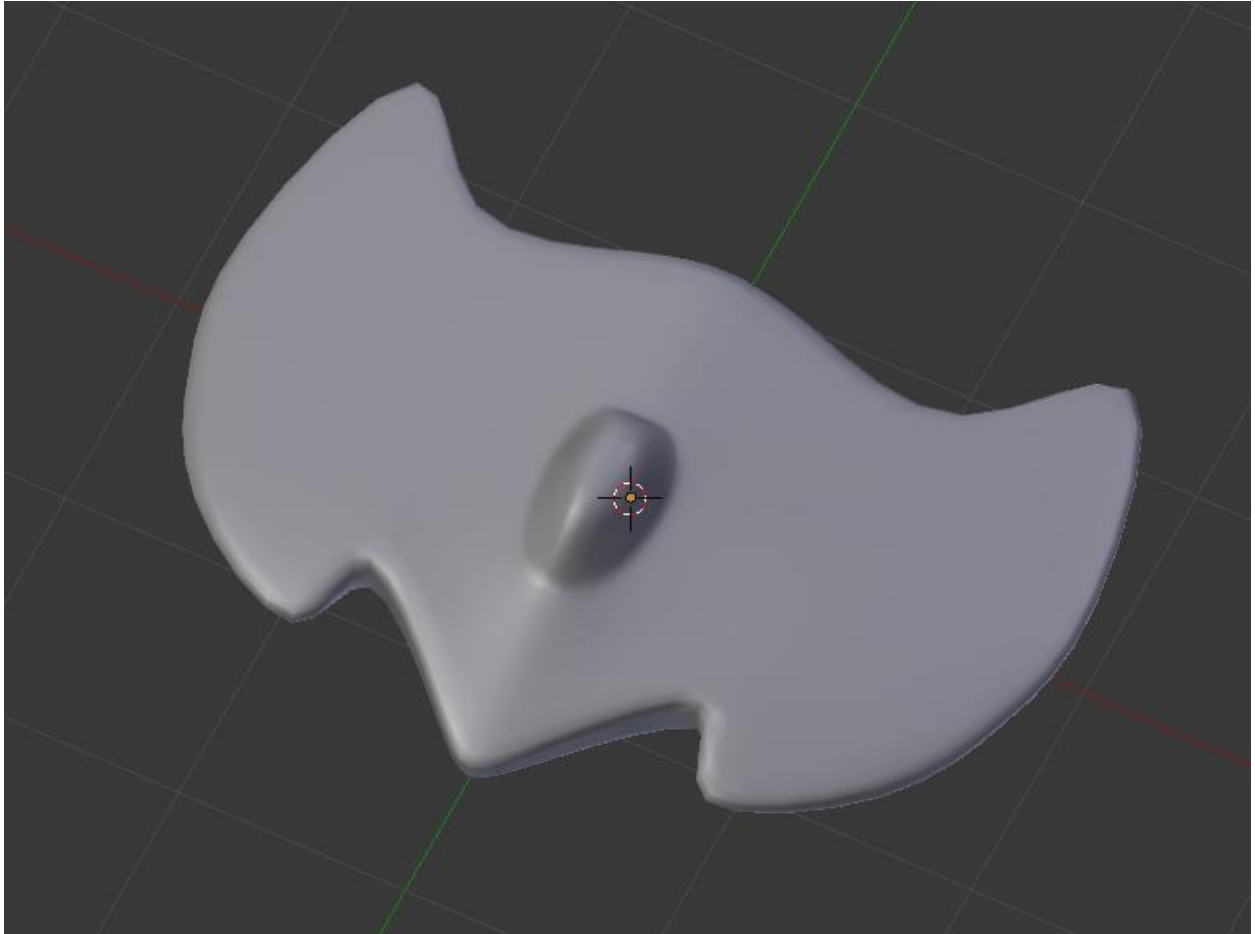
29) PRESS 'CTRL+R' TO CREATE A PURPLE CUT. LEFT-CLICK ONCE, THEN MOVE THE MOUSE TO MOVE THE CUT DOWN.



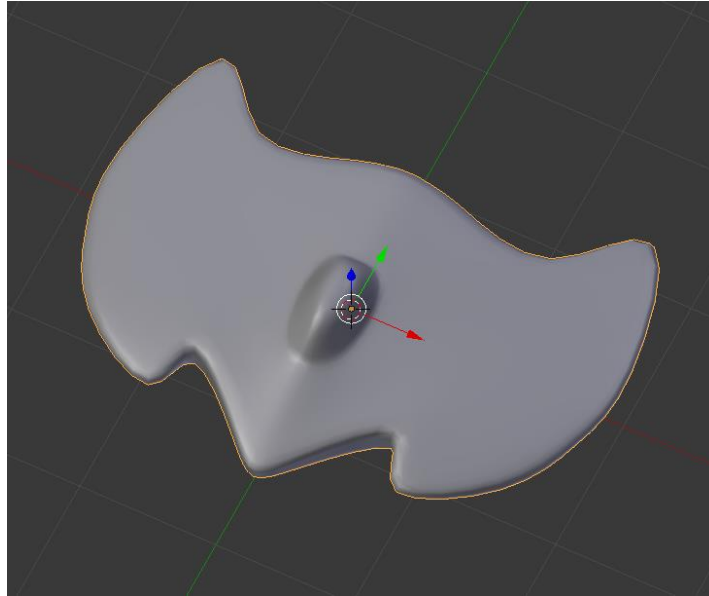
30) PRESS 'CTRL+R' TO MAKE A CUT ACROSS THE HATCH. L-CLICK TO SET.



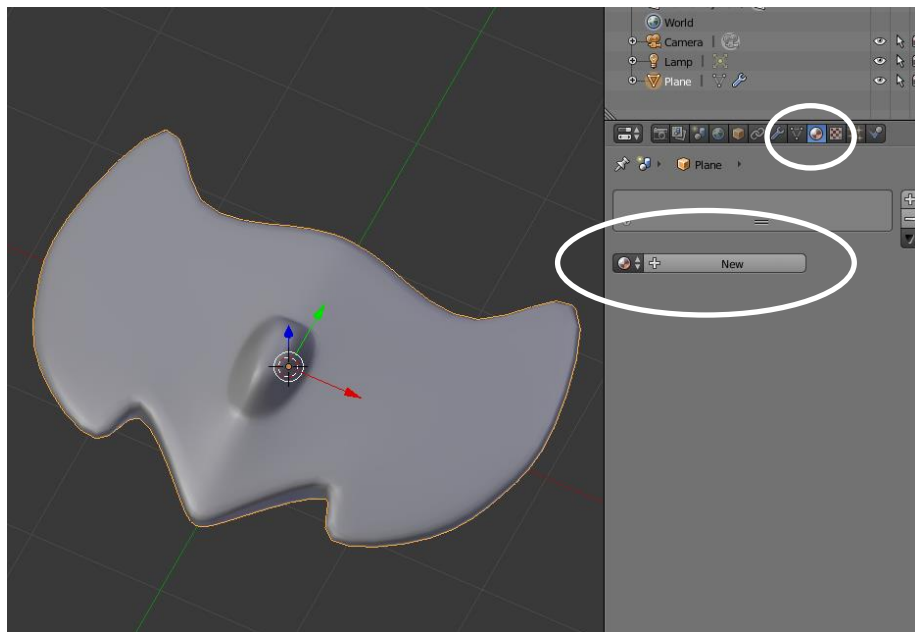
31) PRESS 'CTRL-TAB' AND SELECT 'EDGE'. RIGHT-CLICK TO SELECT THE PICTURED EDGES. USE THE RED ARROW TO MOVE THEM TOWARDS THE CENTER.



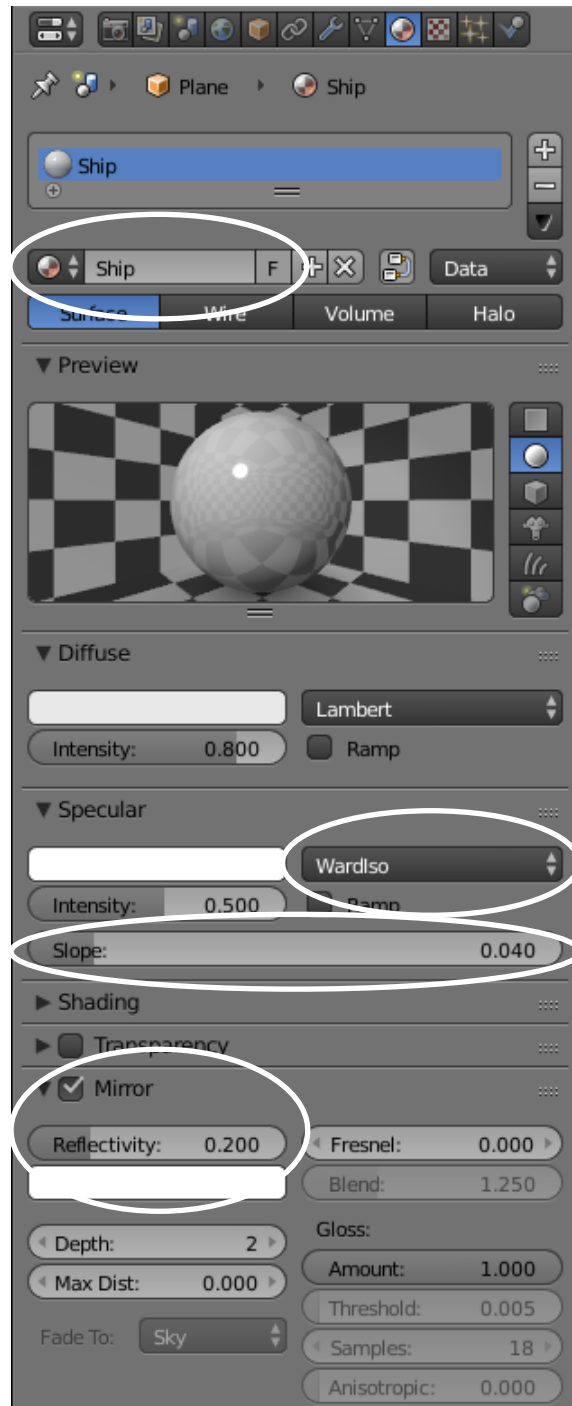
32) TWEAK YOUR SHIP TO LOOK DIFFERENTLY IF YOU'D LIKE. USE 'CTRL+TAB' OFTEN! RIGHT-CLICK OR USE 'C' WHILE IN EDIT MODE TO SELECT VERTICES, EDGES, OR FACES. USE 'G' TO MOVE THEM. USE 'CTRL+R' TO MAKE VARIOUS CUTS THAT ALTER YOUR DESIGN. THE PICTURE ABOVE SHOWS MY FINAL DESIGN.



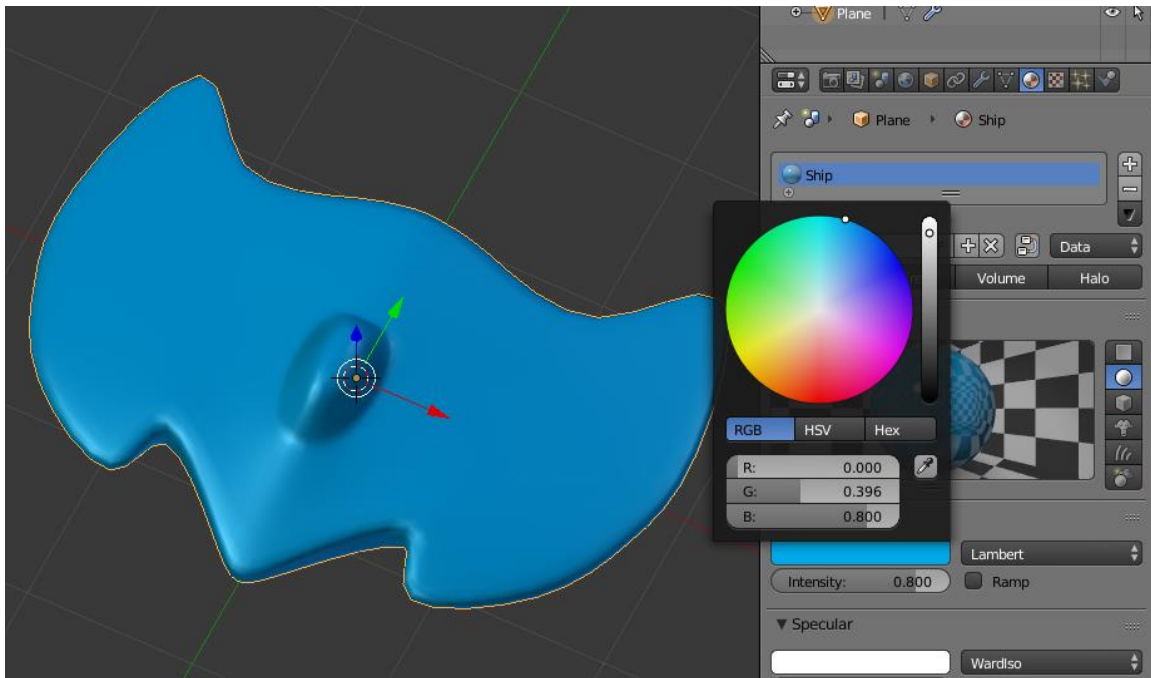
33) NOW WE JUST NEED TO ADD SOME COLOR. PRESS 'TAB' TO ENTER OBJECT MODE. RIGHT-CLICK TO SELECT THE SHIP.



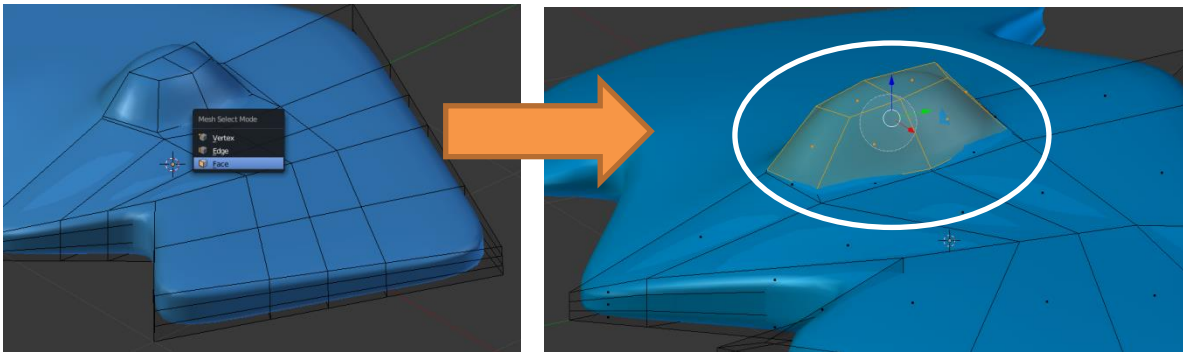
34) FIND THE MATERIALS TAB (IT IS A 2-COLOR CIRCLE) IN THE PROPERTIES PANEL. CLICK 'NEW'.



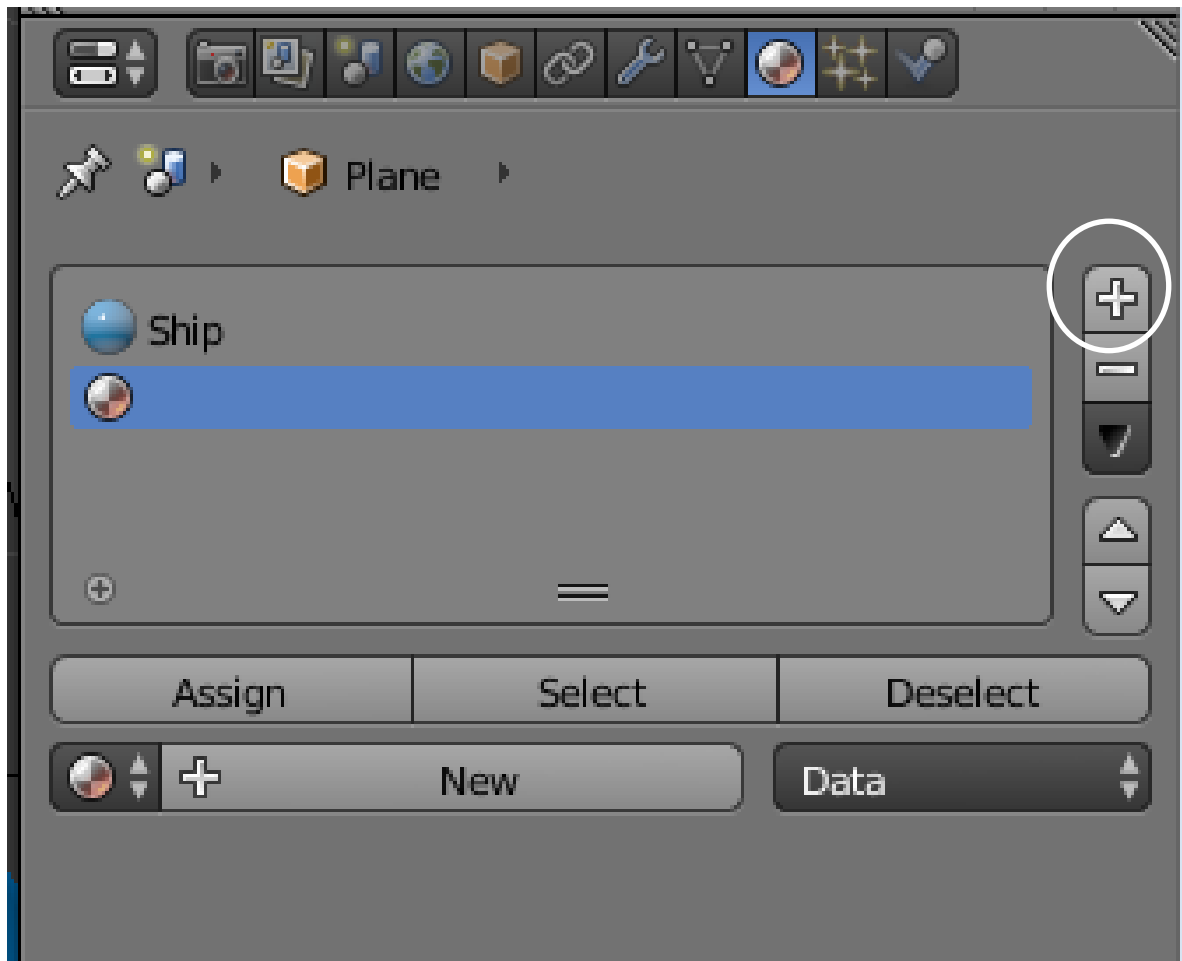
35) RENAME THE NEW MATERIAL 'SHIP'. SET THE SPECULAR TO 'WARDISO'. SET THE SLOPE TO '0.040'. SELECT 'MIRROR'. SET REFLECTIVITY TO '0.2'.



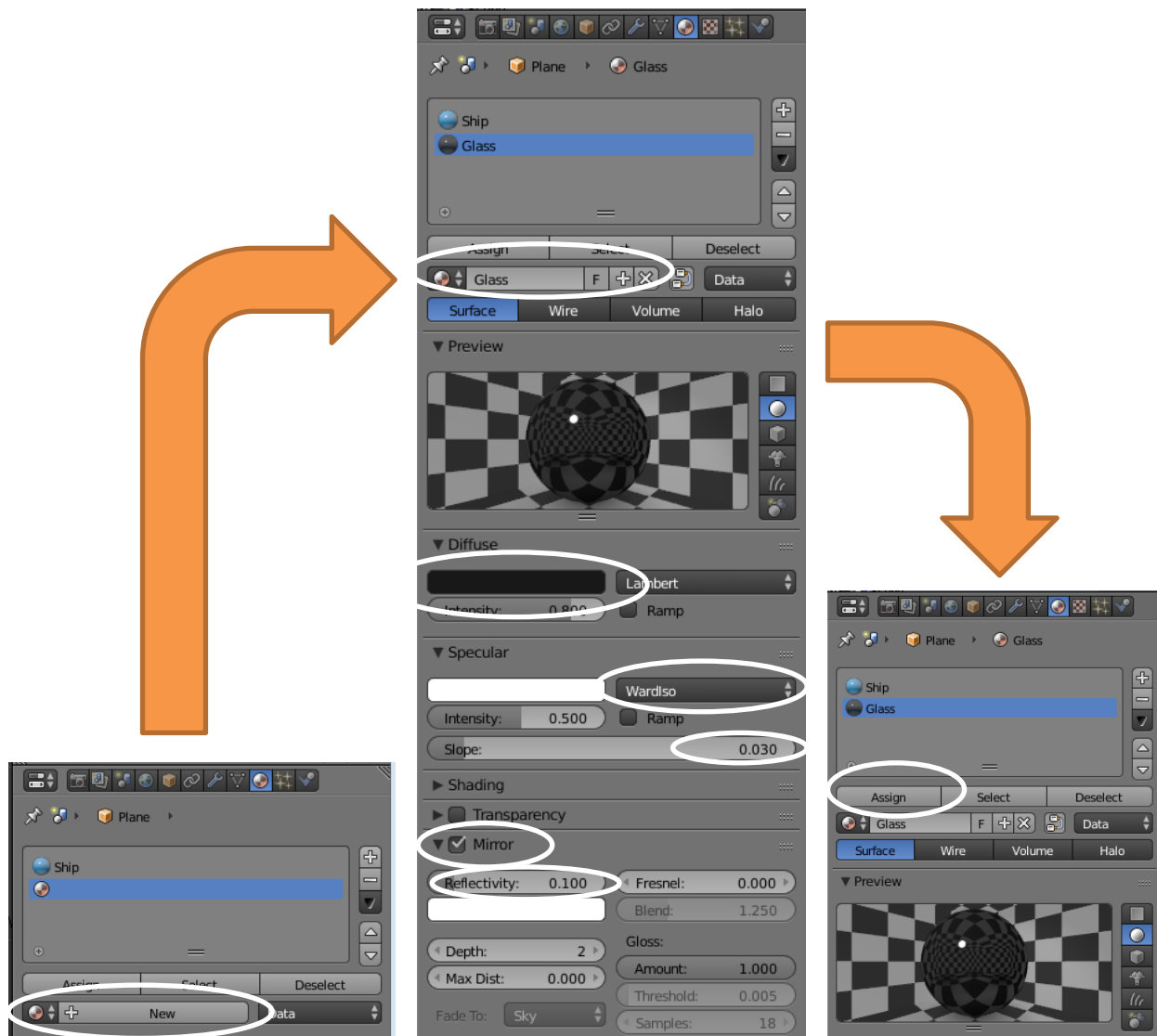
36) CLICK ON THE DIFFUSE COLOR BOX. SELECT A COLOR FROM THE COLOR WHEEL.



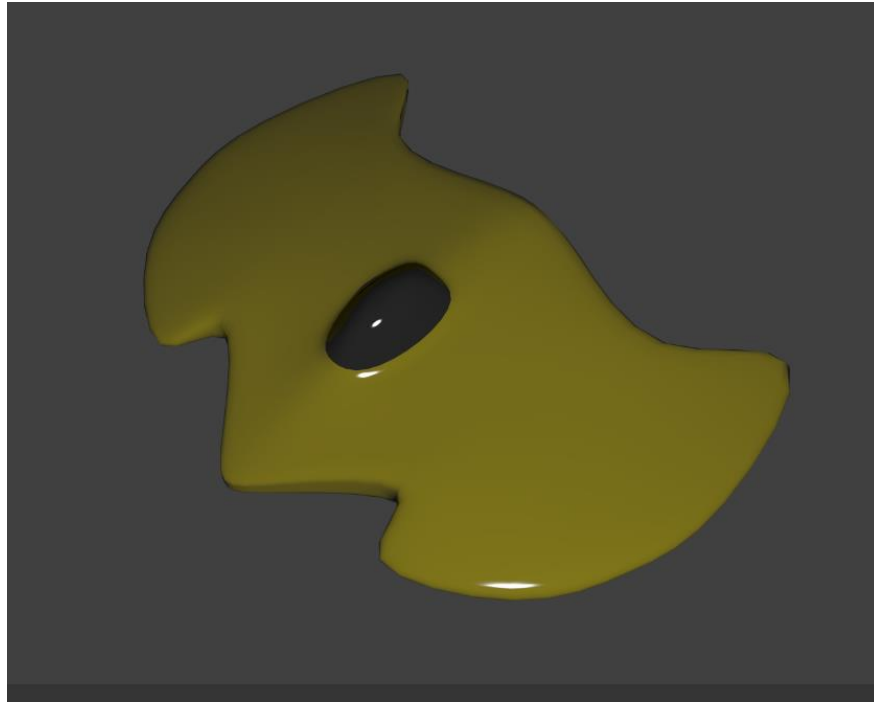
37) PRESS 'TAB' TO GO INTO EDIT MODE. PRESS 'CTRL+TAB' AND SELECT 'FACE'. PRESS C AND HOLD DOWN LMB TO SELECT THE FACES TO THE COCKPIT. R-CLICK TO CLEAR C.



38) WITH THE FACES SELECTED, CLICK ON THE 'PLUS' SIGN NEXT TO THE SHIP MATERIAL.



39) CLICK 'NEW'. NAME THE MATERIAL 'GLASS'. CHANGE THE DIFFUSE COLOR TO A DARK GRAY OR BLACK. CHANGE THE SPECULAR TO 'WARDISO', CHANGE THE SLOPE TO '0.030'. SELECT 'MIRROR', AND CHANGE THE REFLECTIVITY TO '0.1'. THEN CLICK 'ASSIGN'.



40) PRESS 'F12' TO RENDER THE IMAGE. THE LIGHTING IS POOR (BECAUSE WE HAVE NOT SET IT UP YET) BUT YOU CAN SEE THAT THE LIGHT REFLECTS OFF THE SURFACE.

CONGRATULATIONS!! YOU HAVE MADE A SPACESHIP!! KEEP PRACTICING BY MAKING DIFFERENT KINDS OF SHIPS. CHALLENGE YOURSELF: HOW WOULD YOU CREATE A FLYING SAUCER? OR THE MILLENNIUM FALCON? GIVE IT A TRY AND SEE WHAT YOU COME UP WITH.

[illegible]

[illegible]