

Tutorial: How to Assemble Pepakura



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Preface

To start off, I would like to thank the 405th community for the wealth of knowledge it gives to the world. Without the 405th my dream of having Halo armor (or any armor) would have been stone walled. The many tutorials and inspiring builds on the 405th have increased my knowledge of prop making. It's a wonderful hobby to be a part of.

I want to give back to the community. This is my way of giving back; by compiling most if not all ways of assembling a Pepakura model. Most tutorials I have seen are mostly works of reference. In other words, it's their way of constructing Pepakura (this is not to down play their importance). The goal with this tutorial is give you, the reader the knowledge to choose for yourself how to assemble Pepakura. My hope is that this tutorial will benefit everyone regardless of how good their skills are in Pepakura.

Above all, have fun while working with Pepakura!

-Frozensnot

PS- Links for materials and other useful information will be provided at the end of the tutorial. I may also add some personal advice as the tutorial goes on. To help distinguish between the guidelines in this tutorial and my personal advice, I will describe my personal advice as a **“Snot Moment.”**

PSS- Google is your best friend and will have most of your answers☺.



Materials List

Note: This is not the type of list to buy everything you see here. They are all of the items you CAN use when assembling pepakura. Please note that not all of the materials listed here will reside in your current country. Check your local (hardware/office) stores or go online to find your items.



Cutting Utensils

1. X-Acto Knife with Blades
2. Surgical Knife with Blades
3. Other Assorted Knives
4. Scissors
5. Silhouette Cameo

Folding/Scoring Lines

6. X-Actco Knife/Surgical Knife
7. Fine Point Pens

The Different Types of Adhesives

8. Elmer's Glue (or any other non-dissolvable glues)
9. UHU All Purpose Adhesive
10. Super Glue
11. Hot Glue
12. Electrical Tape

Miscellaneous

13. Cutting Mat
14. Ruler
15. Tweezers

Miscellaneous Cont.

16. Paper
17. Popsicle Sticks
18. Cardboard

Description of Materials

This part of the tutorial will go over every item in the materials list. The items listed in categories such as “Cutting Utensils”, “Folding/Scoring Lines”, and “The Different Types of Adhesives” will have pros and cons attached to each of the respected items along with a description.

Cutting Utensils

1. X-Acto Knife with Blades



An X-Acto knife consists of two parts, the handle and the blade. Use an X-Acto knife to cut out your pepakura. The blades will begin to dull as you cut the paper. Switch blades as needed to achieve a nice clean cut. You should keep the dull blades they will come in handy later on when creating folds. Learning to use an X-Acto knife will not only help in cutting paper from pepakura but in foam as well.

Pros: The X-Acto knife is a main staple of the 405th. Many users use these knives not only for cutting paper but for cutting foam as well. They are versatile and can be very precise. Enclosed areas are easier to cut. Blades are easily interchangeable.

Cons: If you have never used an X-Acto knife before, it may take some getting used to. Blades can also be spendy without proper mats to cut on. Eventually the blades will get dull. An X-Acto blade is not as sharp as a surgical knife blade.

2. Surgical Knife with Blades



A surgical knife is an alternative to the X-Acto knife with similar properties. The differences lie in the handles and blades. The handle is flat made out of stainless steel. The blades are also different. The slot in the blade fits into the end of the knife. The surgical knife can be used for paper crafting and cutting foam. These specific blades are #11's.

Pros: Along with the X-Acto knife, the surgical knife is versatile and can be very precise in cutting paper or foam. Enclosed areas are easier to cut. The blades are very sharp compared to the X-Acto knife. The handle is very durable and the blades are cheap.

Cons: Inexperience in using sharp knives can lead to accidental cuts on paper. The blade stems are a little fragile. The blades are prone to snap if too much pressure is applied to the stem. Surgical blades are not easily interchangeable like the X-Acto knife.

3. Other Assorted Cutting Knives

The Utility Knife with snap off blades.



As the title suggests, instead of replacing blades you just snap off the end and you end up with a sharper blade. This is a worldwide available knife so most brands will do. Some examples of brands are: Stanley, B&Q, DeWALT, Kobalt, etc.

Pros: Pretty inexpensive. Blades are sharp and easily replaceable. The utility knife is pretty standard among worldwide users. The handle is quite durable.

Cons: May be cumbersome for some users. The knife can't really be held like a pencil in comparison to X-Acto and Surgical knives.

The Standard Utility Knife



This is your standard utility knife. Nothing special but it gets the job done. The blades can be replaced. The blade shape may be different according to the manufacturer but the standard is the blades in the second picture.

Pros: Blades are sharp and easily replaceable. The handles are quite durable depending on the model. You can find these knives pretty much anywhere.

Cons: May be cumbersome for some users. The knife can't really be held like a pencil in comparison to X-Acto and Surgical knives.

4. Scissors



This is a paper crafting pair of scissors. While you don't have to use these specific scissors, it would be wise to have scissors specially made for cutting paper. Most other scissors will do fine unless they are dull. Never use dull scissors. A 5"-8" pair of scissors will be long enough. If your scissors are any longer your cuts may not be as precise.

Pros: Easy to use. Scissors can cut accurately without a straight edge (ruler). Scissors will stay sharper for longer periods of time as long as it's used just for paper.

Cons: Not as versatile as an X-Acto knife or a Surgical knife. Enclosed areas can be a pain to cut out with scissors alone.

Snot Moment: For those who do not want to throw away dispensable blades or want sharper scissors; I present to you, Blade Sharpeners. The choice to buy disposable blades and/or buy sharpeners will be up to you. For any type of cutting utensil, make sure to test out how sharp/dull your utensil is. You don't want to mess up your Pepakura patterns.



5. Silhouette Cameo



A Silhouette Cameo is a machine that cuts out your Pepakura patterns or any other pattern. A very useful tool especially if you have trouble cutting out paper due to problems with your hands. There are many useful guides to get started with a cameo which I will provide in the “Links” section of this tutorial.

Pros: Cuts out Pepakura patterns so you don’t have to. Once you can figure out how it works (software, hardware, etc.), the payoff can be great.

Cons: Silhouette Cameos are very expensive. The starter kit on amazon is \$270. For the general user, it may be hard to understand how it works. Blades are expensive to replace.

Folding/Scoring Lines

6. X-Acto Knife/Surgical Knife



Either one of these tools can be used for folding/scoring the lines on your Pepakura patterns. A Utility Knife is another tool that can be used. How to score and fold the lines will be covered later in this tutorial.

Pros: Combined with a straight edge (ruler), all that is needed is one pass for folding. No need to go over a line several times. With more experience a lot of folds will not require a straight edge as long as you keep your hand steady and straight.

Cons: Inexperience can lead to cutting off flaps and making inaccurate folds. The flaps are not color coded compared to the “Pen Scoring Technique”.

7. Fine Point Pens



Ultra fine point or fine point pens will work. The “Pen Scoring Technique” will be demonstrated later in this tutorial.

Pros: All the flaps are color coded to indicate which way to fold. The pens are easier to use.

Cons: Several passes are needed for a clean fold. Most folds will need some type of straight edge (ruler).

The Different Types of Adhesives

Bear in mind that whatever type of glue you use on your Pepakura pieces; you are stuck with that type of glue to sand off in the smoothing stage. Each type of glue will be labeled whether or not they are sandable. If you want to stick with glues that are sandable, then stick with the glues that are sandable. Just as a note with hot glue, there is an extra step that needs to be taken when sanding it down. That extra step involves super glue. The next tutorial will cover that aspect. The key to finding a good adhesive for Pepakura is how the adhesive reacts to fiberglass resin. The following adhesives have proven to work and are widely used by fellow Pepakura users.

8. UHU All Purpose Adhesive (sandable friendly)



Anyone in the World can buy this type of glue. If you live outside of the US, this is your go to glue. It can be noted that there are many different types of UHU glue. Stick with the “All Purpose Adhesive” and you’ll be fine.

Pros: This kind of glue can be found anywhere. This glue gives the user plenty of time to adjust tabs for proper alignment. It’s is pretty easy to use and it’s also sandable friendly.

Cons: The nozzle can glob up and be quite messy. Too much can come out at once. The dry time takes longer compared to super glue. Tips on how to overcome these obstacles will be covered in the gluing section (Pg. 26).

9. Elmer’s Glue (or any other non-dissolvable glues)(sandable friendly)



Elmer’s glue or anything similar is a good general type of adhesive. Tacky glue and wood glue are also good options. Remember to consider other brands. You don’t have to use just the Elmers brand of glue. **DO NOT USE DISSOLVABLE GLUES** (example: white elmers school glue)! Your Pepakura piece will fall apart before your eyes when applying fiberglass resin. You have been warned.

Pros: Very easy to use. The dry time is longer compared to other glues, giving a user plenty of time to align pieces properly. Clean up is easy as well. This type of glue is also sandable.

Cons: If you want the dry time to be fast, less glue would be preferable. The dry time takes longer compared to super glue and hot glue. Cardstock soaks up this type of glue. If this type of glue is used too much the cardstock will absorb the glue creating ridges. Those ridges will need to be sanded down later in the hardening/smoothing stage.

10. Super Glue (sandable friendly)



There are two different types of super glue; gel and liquid. The differences between the two are shown. Either type of super glue will get the job done. It's mostly a matter of preference what people like to use.

Pros: The dry time is almost instant. Once the super glue is bonded with paper, your pieces aren't going anywhere. Using super glue can be used quickly because of its quick dry time. Super Glue is also sandable.

Cons: Super glue is not easy to use. Super glue can instantly bond with paper and to your skin. Again, it reacts well to your skin. Since super glue bonds almost instantly, near to no amount of time is allowed to align a fold you are gluing. Precision and patience is the key to using super glue.

11. Hot Glue (not sandable friendly)



There are three types of hot glue and two types of guns. The three types of glues are low, multi, and high temperature. The two types of guns are low temp and high temp. The low temp glue and gun are characterized by their low amount of heat required to heat the glue. The multi temperature glue is in the mid to high range required for heating up. A high temp glue gun is used with multi temp glue. The high temperature glue needs a higher temperature to heat, requiring the use of a high temperature glue gun. Keep in mind that hot glue is not sandable friendly.

Pros for low temp: The dry time is faster compared to multi or high temp glue. You also will not burn your fingers. Aligning tabs and patterns for pepakura is easy with a good amount of time to work with.

Cons for low temp: The adhesion is not as strong as multi or high temp glue. The low temp glue may also not hold up to fiberglass resin. Not sandable friendly. The process of heating up the glue can take time. Using hot glue can be messy.

Pros for multi/high temp: Somewhat easy to use. Adhesion is greater compared to low temp glue. This type of glue can be used as general purpose glue making it versatile. Aligning tabs and patterns for pepakura is easy with a good amount of time to work with. The bonding time is somewhere between Elmer's glue and super glue. This type of glue will hold up to fiberglass resin.

Cons for multi/high temp: The hot glue is very hot and can cause blisters in excess amounts of melted glue (hence why it is called "hot" glue). Not sandable friendly. The process of heating up the glue can take time. Using hot glue can be messy.

12. Electrical Tape (not sandable friendly)



Electrical tape is a one of a kind tape that will stand up to fiberglass resin. Most if not all other types of tape will disintegrate.

Pros: It will not dissolve as bad as other types of tape when applying fiberglass resin.

Cons: Difficult to use. This tape will still dissolve with fiberglass resin and create an uneven surface. Not as good compared to any other type of glue.

Snot Moment: I cannot recommend any type of tape including electrical tape. Unless you have piles of electrical tape lying around and you don't want to buy any glue, then go on ahead. Just be aware of the consequences. DO NOT USE scotch tape, duct tape, or any dissolvable glue.

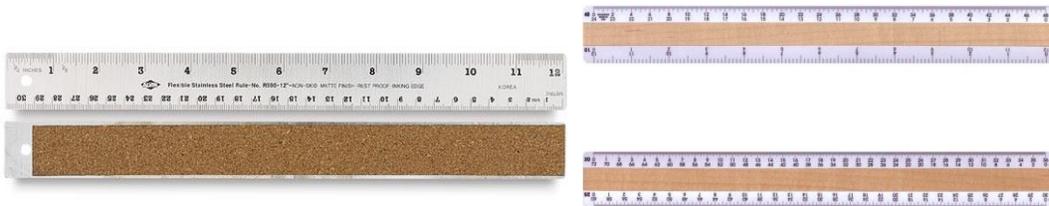
Miscellaneous

13. Cutting Mat



If you plan on using an X-Acto Knife or a Surgical Knife, then you will need a cutting mat. The first picture is a professional self-healing mat. The second picture is a plastic cutting board. The third picture is a cheap cutting mat. If you can afford a nice cutting mat, purchase a self-healing cutting mat. Wood will also be a good material for cutting mats. Maple wood is your best bet for wood cutting boards. Having a nice cutting board makes your blades less dull. Purchase a mat to fit your workspace. If not, use anything that has a smooth surface that you will not have regrets putting cuts into. It's better to save your furniture that way.

14. Ruler



A ruler is essential! The left ruler is a stainless steel ruler. The right ruler is a regular ruler. As long as you have some type of straight edge (like a ruler) you will be fine. If your ruler has nicks, chips or cracks in it, it's time to get another ruler. Your cuts and folds will not be as crisp as they could be with those defects.

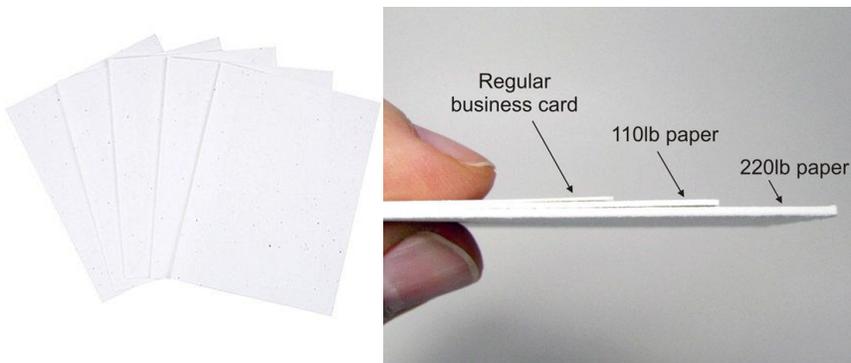
Snot Moment: Just get a stainless steel ruler if you can. They will last longer than any plastic or wood ruler. For all the abuse mine has suffered through the years, it still works like a champ.

15. Tweezers



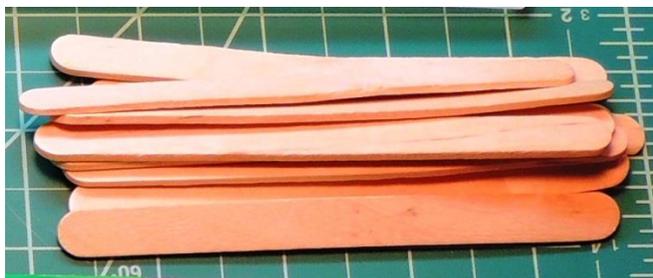
Any type of tweezers will work. Use your tweezers where your fingers cannot go. (FYI, the tweezers on the right are called goose neck tweezers.)

16. Cardstock (USA 110 lb. paper)(EU 165-180 GSM paper)



Use this kind of paper for your Pepakura model. The numbers that will follow are paper weights, which differ from America and Europe. The USA equivalent or The American Standard is 110 lb. paper. The EU equivalent or The Metric System is 165-180 GSM paper. Any range of paper from 165-180 GSM will work. They both have the same strength in relation to each other. Using extra cardstock to reinforce certain areas of your Pepakura model will be covered in this tutorial.

17. Popsicle Sticks or any flat sturdy material



One of the options you can use to create support for your Pepakura model. When applying fiberglass resin popsicle sticks can hold the general shape of your model to prevent warping. Any flat sturdy material will work as well. The supports will be covered in the section, "After Construction".

18. Cardboard



Cardboard is another option for supporting your Pepakura model during the hardening phase. Cardboard will be covered in the section, “After Construction”.

Snot Moment: So after all is said and done, what do you pick? I mean there is so much to choose from. Use this to help you get started.

First, pick at least one type of cutting utensil you want.

Second, pick at least one type of scoring tool(s) to use.

Third, pick at least one type of adhesive you want (or use multiple adhesives).

Fourth, get a ruler, a cutting mat, and popsicle stick/cardboard/any type of sturdy, flat surface object to keep your Pepakura model in tip top shape.

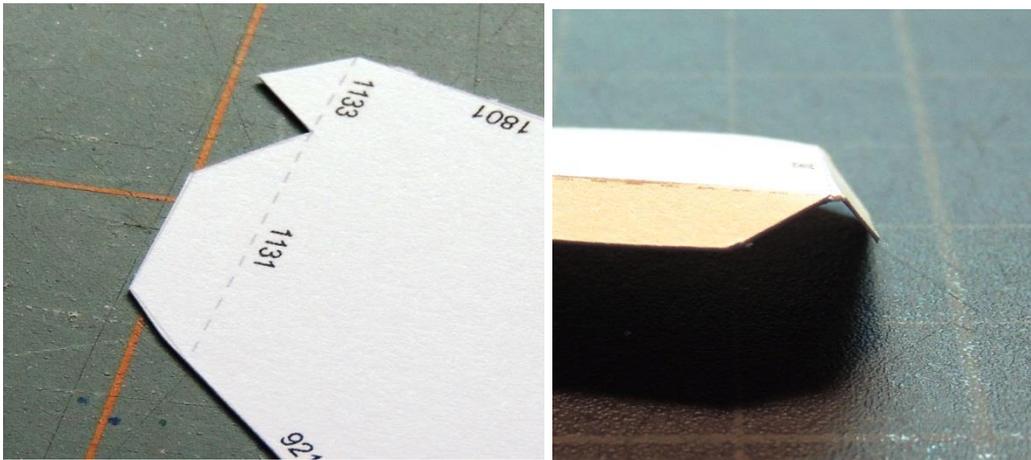
Section I

Before Construction

1. Understanding Pepakura

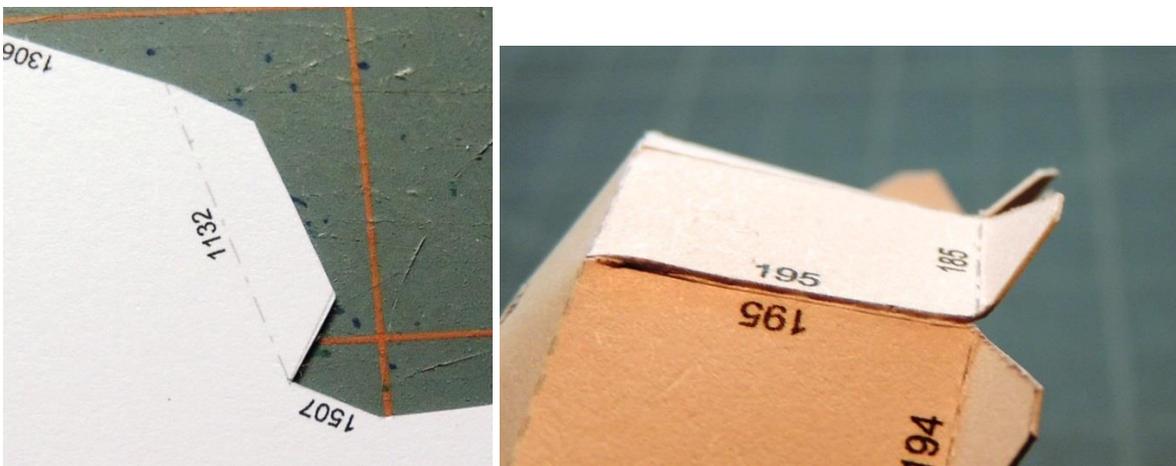
A. The Different Types of Lines

a. Mountain Lines



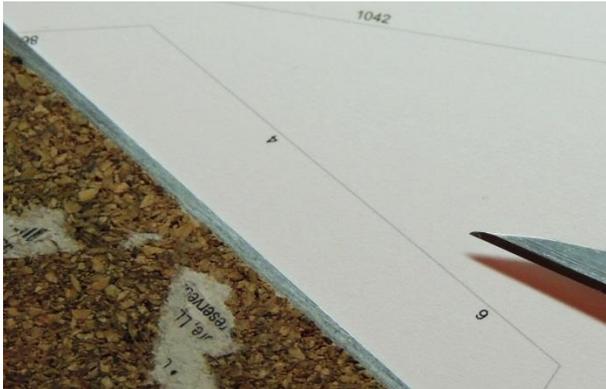
The first picture shows what a mountain line or otherwise known as a mountain fold looks like. Using the dashed line will guide you to where you need to fold as is the case with picture two. The concept with the mountain fold works like its real life counterpart, a mountain. The fold creates a mountain.

b. Valley Lines



The first picture shows what a valley line or otherwise known as a valley fold looks like. Notice a difference between a valley line and a mountain line? A valley line is usually characterized with a long dash with a mini dash afterwards and so on and so forth. Use the dashed line as a guide to create a valley fold as picture 2 demonstrates. A valley fold resembles its real life counterpart, a valley

c. Solid Lines



A solid line indicates where to cut.

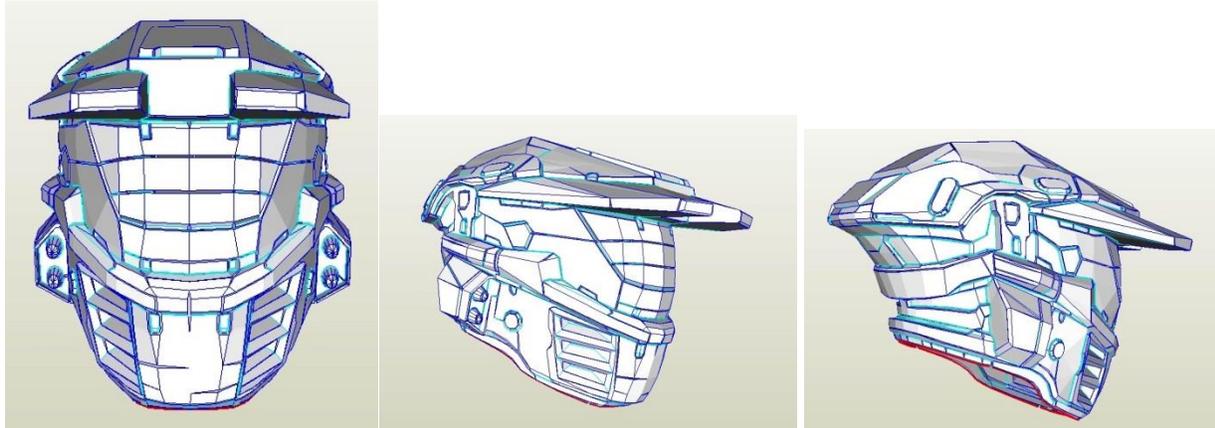
Snot Moment: If you are new to this, make sure to have these concepts in mind as you assemble your Pepakura model. Cutting off tabs on accident is never fun.

B. Corresponding Numbers



You may have noticed by now that Pepakura patterns have numbers, everywhere. Where there is a number, there is a matching number that corresponds. Let's use a previous photo to demonstrate. As you can see, there are two 195's. Using glue keeps these numbers close together (which will be covered later). You might be asking yourself, "Well, how can I find which piece goes where? There are pieces and numbers everywhere!" The next section will cover that question and many more.

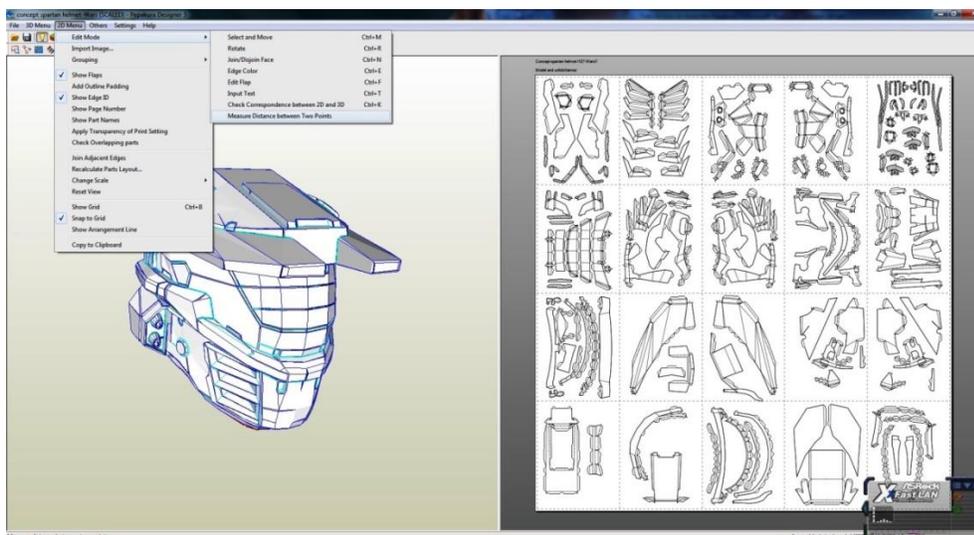
C. Referencing the Pepakura Model



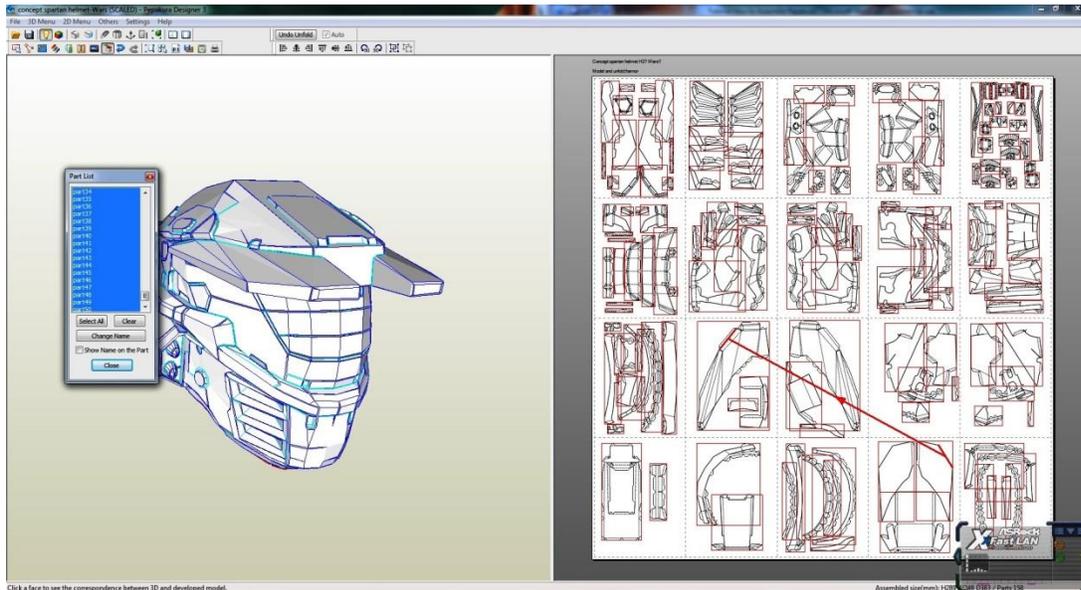
While you are constructing your Pepakura model it is very important to understand how everything will come together. Seeing/Referencing your model as you work gives you direction. Not all Mountain folds are going to have the same amount of degree to their fold. One fold may be a 90 degree angle while another may have just a slight angle of 10 degrees. The same applies to valley folds. This is why you need to look back at your virtual Pepakura model once in a while to understand how to construct it.

You will also need to understand where you will start on the model and where you will end. Typically with helmets, it is best to start at the helm/crown and snake your way down until you reach the rim of the helmet. This will typically be the case for most Pepakura models. Start off in a place where the area will be closed off or not easily accessible early on during construction. “Section II” will make sense of this concept.

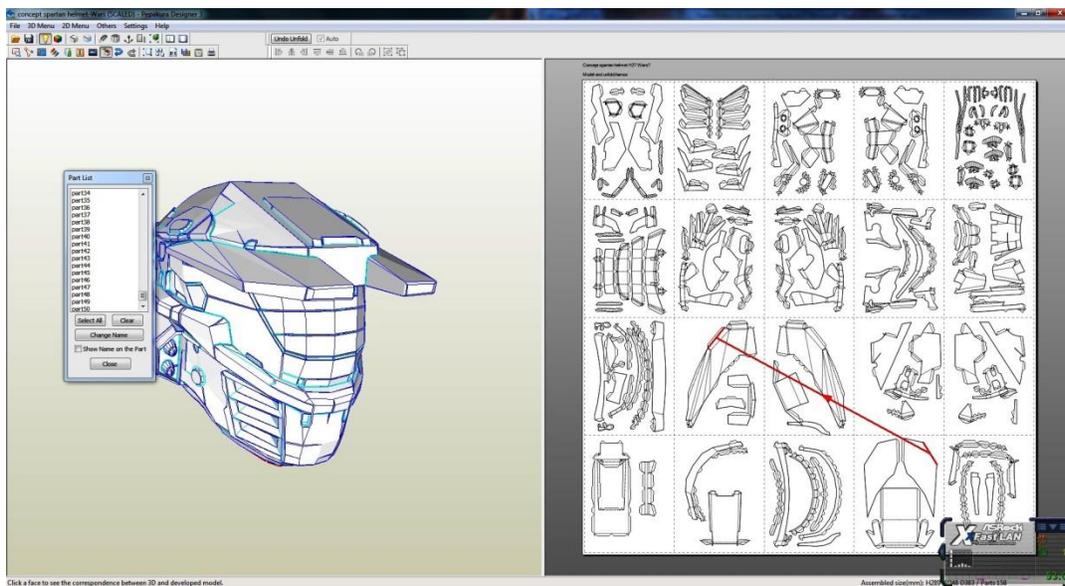
If you don't know where a certain piece goes, there is a special tool you can use to identify where its corresponding pieces are. This tool is called “Check Correspondence between 2D and 3D.” (Make sure you have the latest version of Pepakura.)



When you select this option, your screen should look similar to this.



This may look intimidating to look at all of the red outlines over every single piece. Go ahead and click anywhere in the 2D menu to deselect all of the pieces. Here you can pin point how each piece will connect to each other by hovering the mouse over a line.



Snot Moment: I cannot stress enough the importance of using your Pepakura model as a reference. Not only that, your assembly time will decrease as well. Also make sure you know where your pieces are going. You don't want to create 2 giant pieces of paper and then assemble them. It's quite difficult.

Section II

During Construction

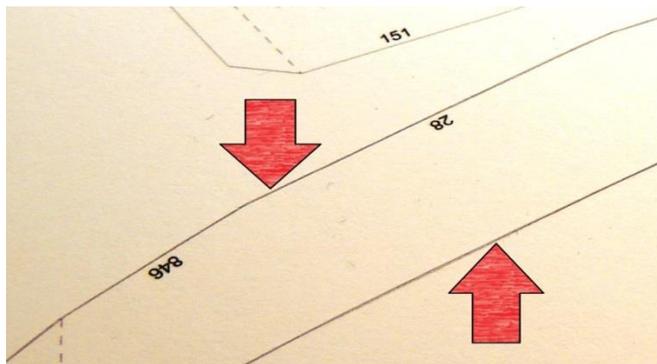
Alright, we finally made it! Let's get down to business. This section will cover the actual construction of your Pepakura model. I will demonstrate several ways of cutting, folding, and gluing.

There are two ways to go about assembling in general. First, cut out all of the pieces, create all the folds, and then glue everything together. Secondly, cut out some pieces (usually a piece of paper at a time), create the folds on the pieces cut out, and then glue some of the pieces together. No way is more correct than the other, it's more personal preference. If you hate redundancy, then cut->fold->glue pieces from one sheet then rinse and repeat. Less organization is needed as well considering the chances of losing your pieces is less compared to cutting them all out. If you have great organization and love redundancy, then cut everything->fold everything->glue everything. Find what best works for you by experimentation.

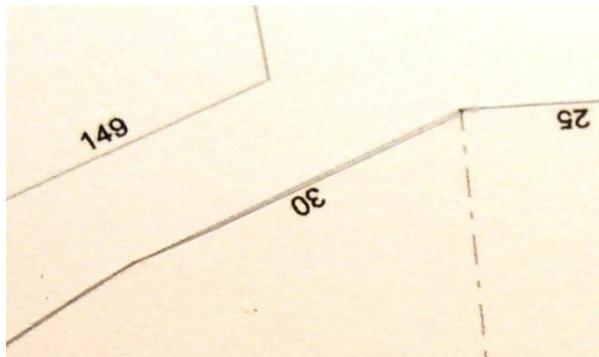
1. Cutting

Make sure to cut exactly on the solid line. Do not cut closer or farther from the solid line. Be as accurate as possible. Misaligned pieces can misshape your model. Cutting your patterns is actually the easiest part of the construction.

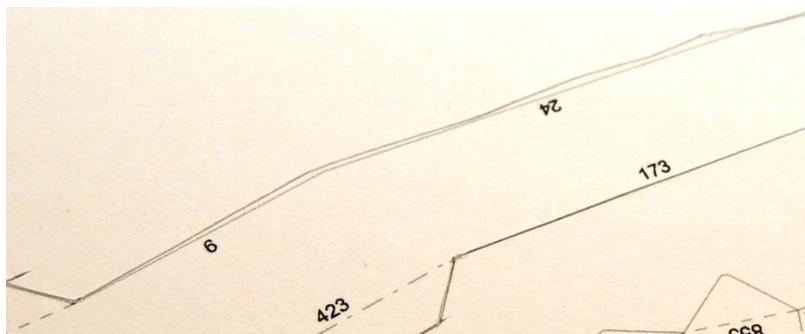
This is an example of a great cut. It's hard to tell but these lines are actually cut. That is what we want to achieve. If this is your first time, don't worry if your cuts aren't as crisp. Keep at it!



Here's an example of a good cut. The cut went inside the pattern a little bit but nothing to be concerned about. As long as the numbers and edges are aligned correctly, no misshape will take place.



Here's an example of a poor cut. The cuts are not straight and they do not match up with the solid line. Luckily, these cuts can be fixed. If this cut had been reversed and the cut was inside the pattern, I would strongly consider printing out the pattern and trying again. Accuracy and precision in the Pepakura stage is the key to better armor in the end.



2. Folding Tabs/Lines

There are two main methods to folding the mountain and valley lines. The first method is with pens and the second method is with an X-Acto knife. Each method will have pros and cons listed after an explanation is provided.

A. Pen Method

This method will use pens but not just your ordinary pens. Ultra fine and fine point pens will achieve the best fold utilizing this method. It's best to assign a specific color to a specific type of fold. For example, use the color red for valley folds and the color black for mountain folds.



Why not use regular ball point pens you may ask? The purpose of the pen method is to not apply pressure but for the ink to partially soak into the paper to create the fold. Using ball point pens or any other pen certainly isn't impossible to do. Pressure needs to be applied when using ball point pens. Applying pressure is not nearly as effective as this suggested method.

Snot Moment: Using pressure with ball point pens creates a crease with perhaps several passes. This crease is used to create the fold. Using the X-Acto Knife method essentially employs the same method except that no extra passes are needed. The fold with the knife also creates a sharper fold than a crease. I'm not dissuading anyone from trying this method just take this as a consideration.

I'll demonstrate how it all works. First grab a straight edge and line it up to a fold. In this case I used the color red to indicate valley folds. How much pressure do you use you may ask? Do you stroke the paper gently? My best advice is to apply the same type of pressure you would use as if you are writing. Adjust the pressure as needed.

With the ruler as close to your cutting surface as possible, run the pen along the fold 2-3 times. Make sure to use fresh(er) pens. The purpose is to partially soak the paper. If your folds aren't coming clean, then there is not enough ink in the paper.





Now that you have marked your fold, it's time to fold it! To insure that the fold is fairly consistent from one end to the other, use your fingers to create the fold. You should be left with a valley fold that looks like the third picture.



The same method applies to mountain folds as well, just with a different color and the direction of the fold.



Pros: All of the folds are color coded. Less risk is involved than using an X-Acto knife. Using this method prevents your X-Acto blade from becoming more dull. A great starting point for beginners.

Cons: A straight edge is required for most folds requiring more time. Not nearly as quick as an X-Acto knife. Several passes are needed to make a crisp fold. Since ink is the major factor when folding, some folds are so close to each other that it may be difficult to completely separate folds. In other words, the folds may intertwine. Switching between pens can be tedious.

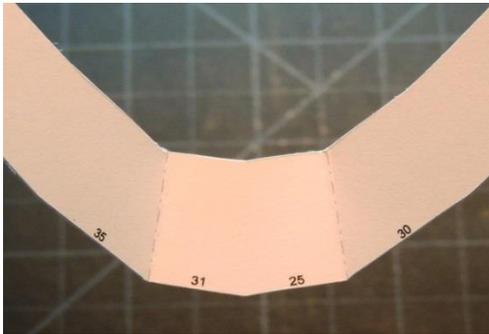
B. X-Acto Knife Method

This method uses (you guessed it) the X-Acto knife to score the lines. A surgical knife can also accomplish the same job. The goal when using a knife is to create a small cut in the paper to fold. Here's the process:

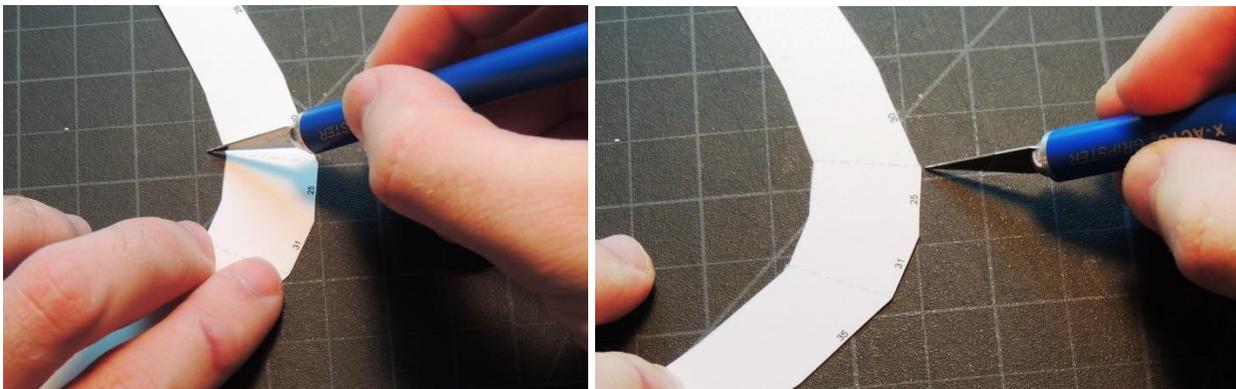
Line up the Mountain/Valley lines with your straight edge and score the line.



Fold it and you can have something like this. One fold was with a straight edge and the other wasn't. Can you tell the difference?



This is for those who have steady hands (and the brave). In a lot of cases, a straight edge is not needed for certain lines. Keep your hand steady and follow the lines.



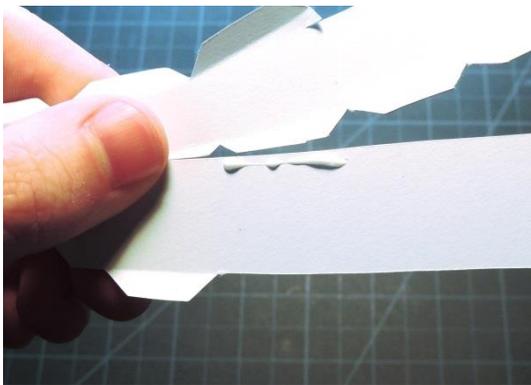
Pros: Using an X-Acto knife can cut down on time while still keeping precision. There is no need to switch from pen to pen with different types of folds. One tool is all you need for your cutting and folding tasks. For experts, a straight edge is not needed for most folds.

Cons: Using your X-Acto knife more often will reduce the blades lifespan of sharpness. If you are not careful when scoring your lines folds will not be straight and crisp.

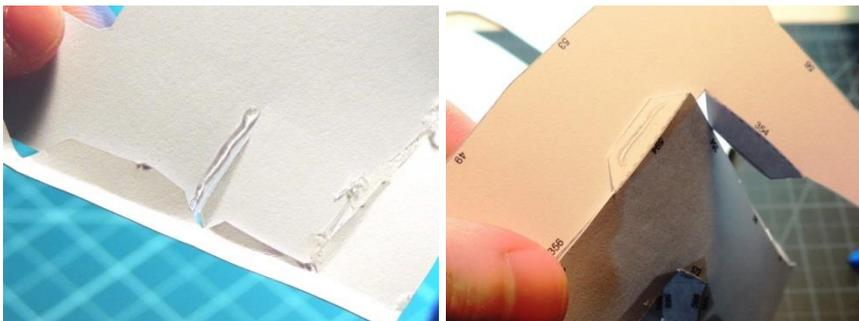
3. Gluing

Now that the basics of cutting and folding are out of the way, let's put it all together. First things first, reference your pepakura model. Where should you start? For helmets start at the crown/helm then work your way down adding one piece to the helm at a time. For any other Pepakura model start working on the enclosed areas. In other words, work on sections of the model where space will be limited for gluing purposes; then build the model around that enclosed area.

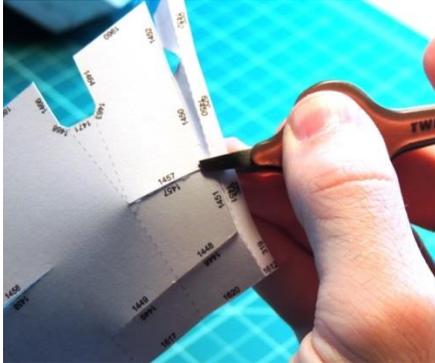
Let's go over gluing. How much glue should you use? This amount for non-dissolvable glue and hot glue should be enough. Even a little less glue would be desirable.



Super glue is a different story. The picture on the left shows a little too much super glue. The picture on the right shows a good amount of super glue used. Bear in mind that neither one is bad. Both of them will do the job.



If you have no desire to get your fingers stuck on paper, use tweezers. Use tweezers where your fingers cannot reach in tight places. Tweezers are a very useful tool to have anyways.



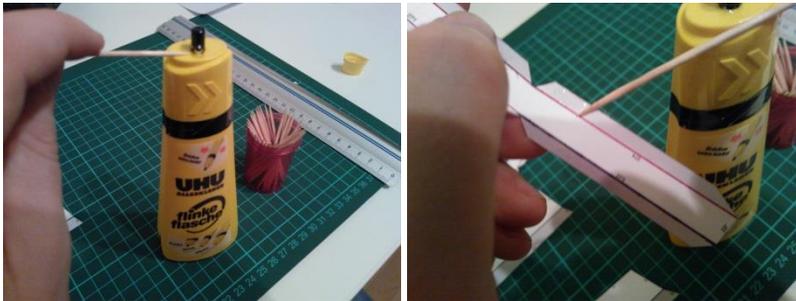
Here are some tips when working with UHU Glue and preventing a mess. One way is to keep your hands and nozzle clean. Here are a few methods that some 405th members have shared.

Method #1: Use a toothpick (Credit goes to ViZiONEER for their write up on this. Their original write up can be found in the links section for more reference.)

Step 1- Squeeze the container of glue enough so that glue comes out the opening.

Step 2- Use a toothpick and take the amount of glue needed.

Step 3- Smear the desired amount of glue where needed.



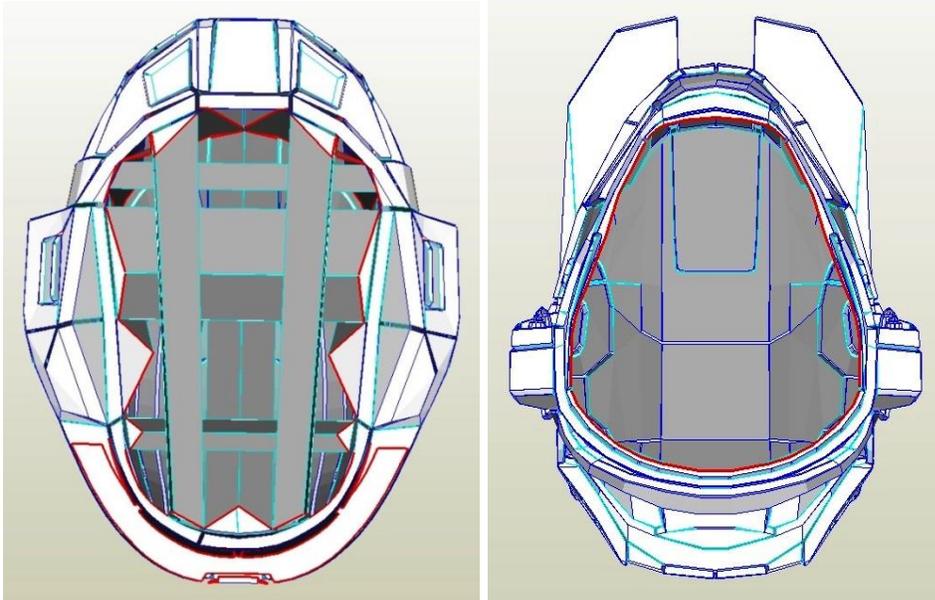
Method #2: Use a syringe (Credit goes to ventrue for this method.)

Ventrue says, "The main problem with (UHU) is the bottles and tubes it comes in. If you use those, there is no way to avoid using too much, so I got myself a syringe with a needle, put it in there and as it turns out, if you use little enough of it, it works even better than the superglue. It's less expensive as well, even if you factor the syringe in." You can find a syringe with needles pretty much anywhere.



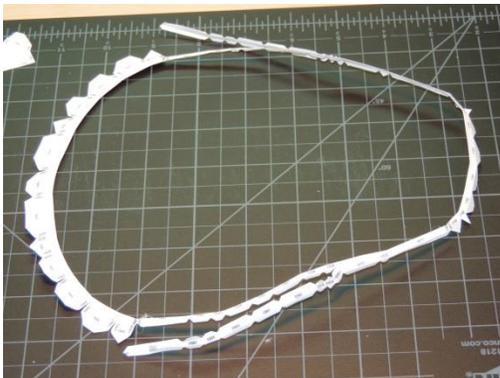
You may be thinking, “How will I know if my head fits through the opening of my helmet?” The answer is, it depends on the helmet. Take these two helmets for example. The Mark VI helmet on the left and the Mark IV helmet on the right. Which helmet has the bigger opening? The one to the right. The Mark IV helmet has the larger opening. Testing the opening would be optimal for this helmet.

What about the helmet on the left? The opening is constricted by the extra rim to encapsulate the wearers head. Realistically, You will not be able to fit your head in that opening without cutting part of the rim out. How much that needs to be cut will depend on the shape of the wearers head.



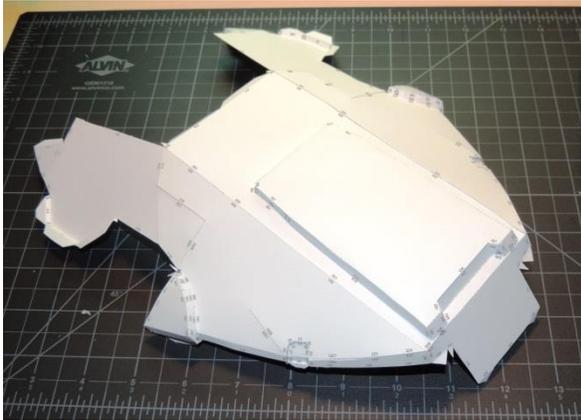
For the helmet on the right, I found the pieces to the rim and assembled it. I then fit it through my head. It was a perfect fit!

Snot Moment: I had a very good feeling it would fit. Not because I guessed but I used Science!... or more specifically a tool in pepakura called “Measure distance between two points.” I measured the length and width of the opening.

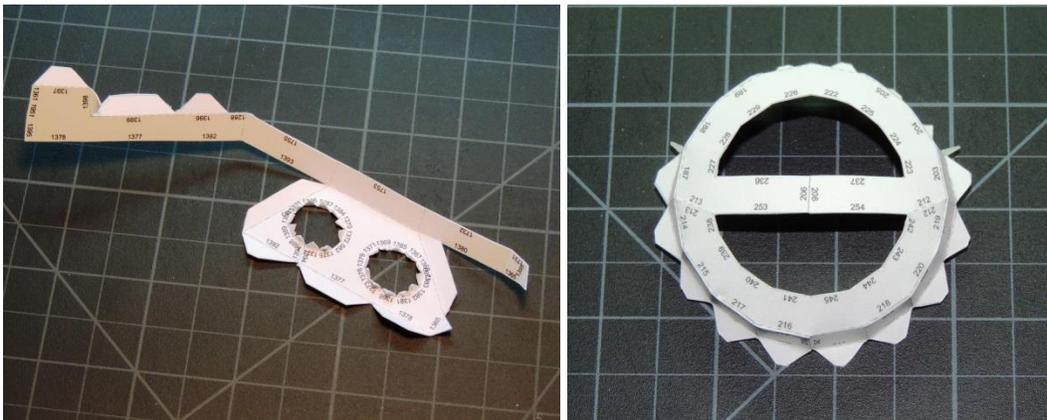


Another Snot Moment: I've mentioned this several times but make sure you know where your pieces are going. You don't want to have two giant pieces of assembled Pepakura and then glue them together. Talk about a nightmare!

Again, for the helmet start your work on the helm/crown. Technically, you can start to cut out and partially glue some pieces that aren't part of the helm but don't combine separate pieces just yet. Focus on adding pieces to the helm first.



Let's look at the first photo. Notice there are two holes/gaps missing? Before you attach this piece anywhere, find the corresponding pieces that fit there and glue them in. The same can be said for picture two. Applying this method to all pieces will save you a headache in the end. Can you imagine gluing small inserts when your model is almost done?

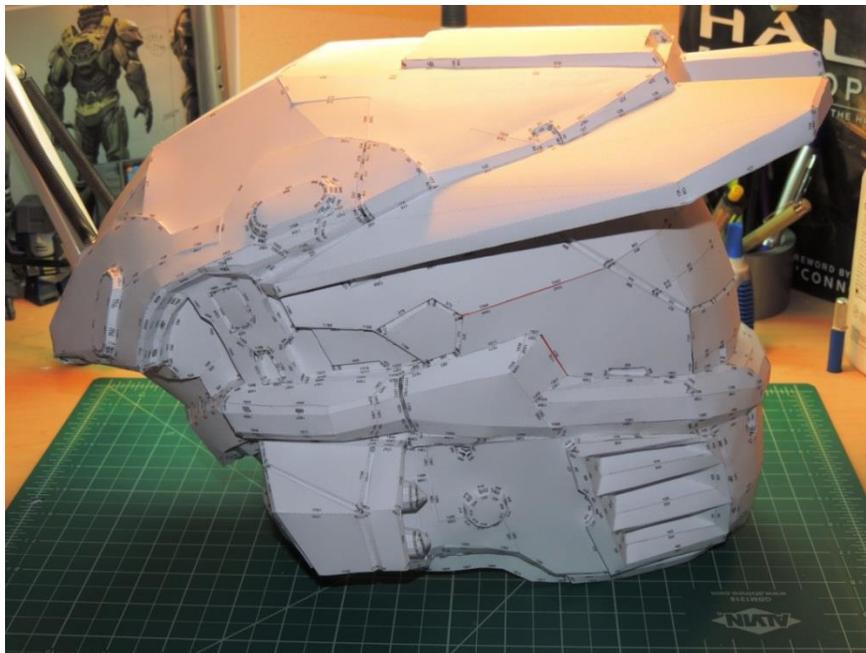


Work your way down like a snake attaching one piece at a time to the model. Obviously I didn't take a picture every time I attached a piece (there was 158) but you get the general idea.



Snot Moment: It may be worth noting that before you put in the rim of the helmet, (like in the second picture above) try it on first to see if it is too big or too small.

Keep attaching pieces until you finally finish your model. Don't relax though, we are not done yet.



Section III

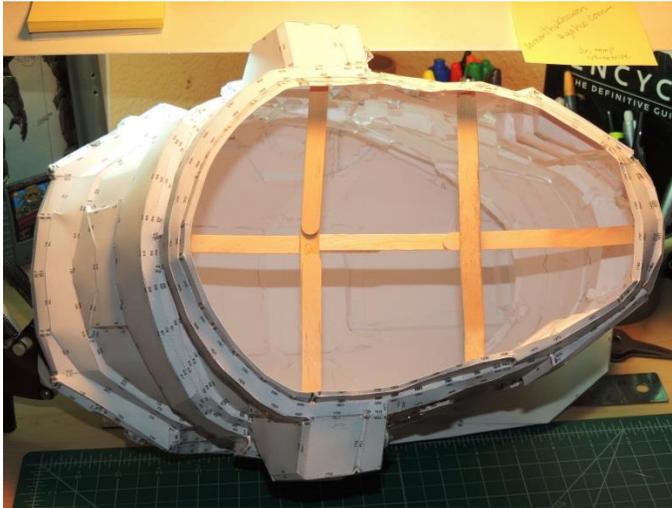
After Construction

This is one of the most important sections when it comes to assembling your Pepakura model. This stage is critical because you will be exposing your model to fiberglass resin (or other hardening materials). Resin will warp your model unless you properly reinforce it. This will make or break your end results.

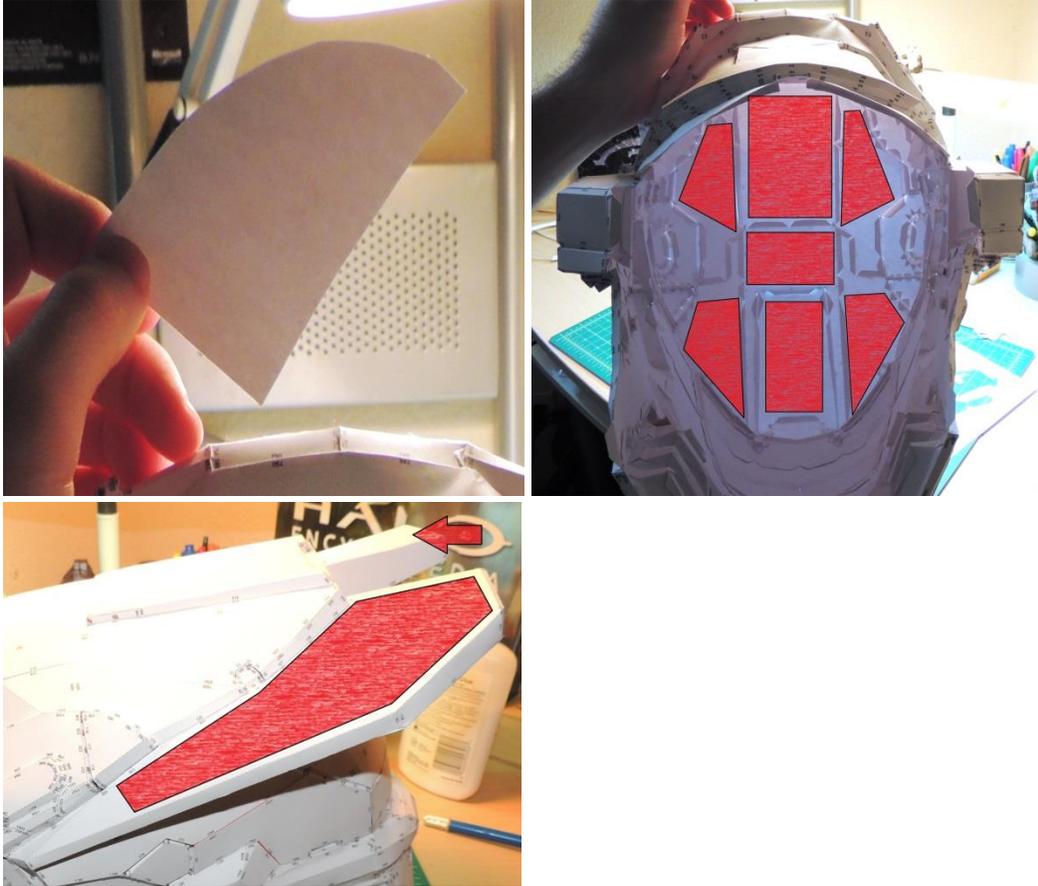
1. Installing supports

Where do you install supports? Supports should be placed in this type of fashion. This style will keep the general shape of the helmet intact. In this helmet I used popsicle sticks but anything that is sturdy and non-dissolvable will work. I used popsicle sticks because I have a steady supply of them. Cardboard is another viable option. You can even makeshift your own cardstock supports in the shape of a triangular prism. Again, anything that is sturdy enough will work. Make sure to have supports that span the length and width of the helmet. Use super glue or hot glue to secure the supports.

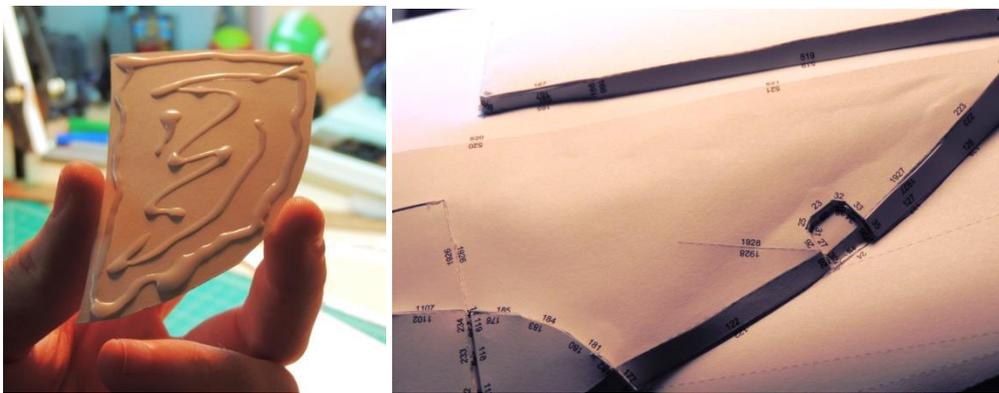
Snot Moment: I could have added another layer of supports inside the helmet but decided not to. If you are paranoid about your model warping, add another layer just to be safe. Be aware that you will have to remove the supports when you apply the fiberglass cloth/matte.



There is another way to support your paper from being warped. Let me introduce you to...more cardstock! Shape your cardstock to fit into areas that may get weighed down or warped by fiberglass resin. In picture two and three I labeled where I placed my extra cardstock. It will be up to you to find where to place the extra cardstock on your model.



Make sure to not overload on the non-disolvable (elmers) glue or the cardstock will absorb the glue as you can see in the first and second picture. If you use elmers glue, use a minimal amount. Super glue may be the winner in this situation. Super glue doesn't wrinkle the paper like elmers glue does.



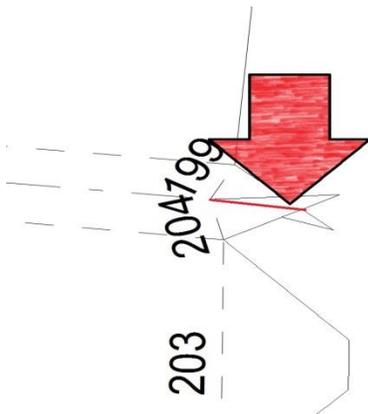
Section IV

Tips and Tricks

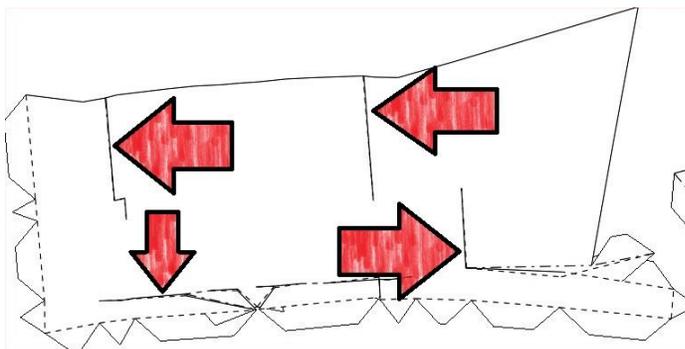
The following tips have no particular order to them. They are simply random bits of knowledge that will aid you as you assemble Pepakura. Enjoy!

Tip #1: Where do you cut?

Cut on the red line. For this type of problem, it's best to start the cut at the vertex between the lines and evenly distribute the tabs.



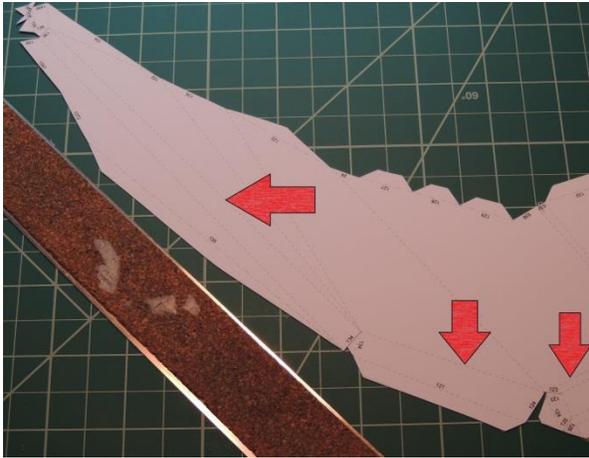
Do you cut these lines? Everything will depend on how the model is shaped but I usually treat lines like these as a fold that can either be a mountain or a valley fold.



Tip #2: Creating a Smoother Model

When you see a dashed line your thought pattern may be to fold it. What if I told you by not folding certain lines, your model will be more smooth? Let's look at an example of this method.

Notice in the completed helmet that the folds are not actually folded or given a crease. The lines have still been scored but not actually folded. With the pepakura pattern, the arrows indicate where there is an extreme angle. Doing this method will save you time during the smoothing process.

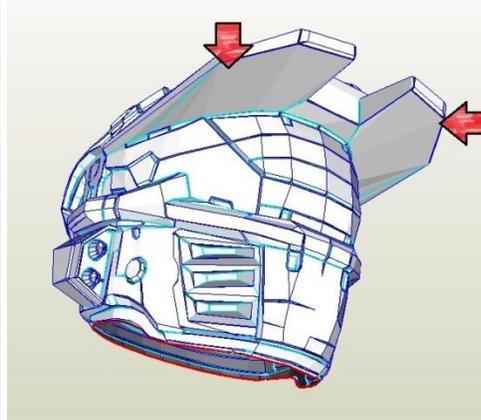
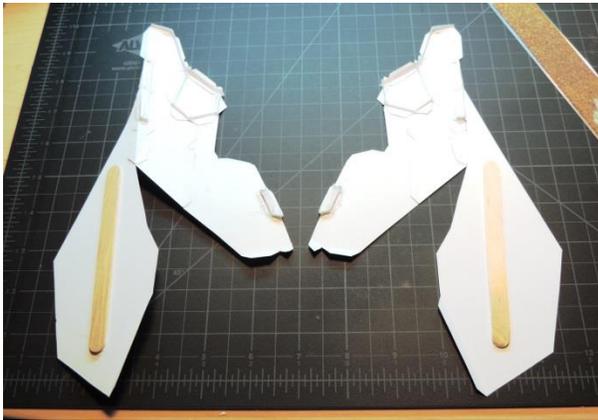


Snot Moment: When there are folds on a large pattern such as the one above, I score the lines but don't create the folds. I only create the folds when they are absolutely necessary. This creates a smooth uninterrupted surface.

Tip #3: Creating a straight bill

Many builders run into a serious problem. When they resin their Pepakura helmets the underside of their bills warp. The end result is a uneven and cricked bill that requires a lot of bondo work. This trick will help ease that problem. I present to you an old friend...popsicle sticks! Any straight object will also work like a straight piece of cardboard.

The solution is simple. Glue a straight object to the flat bill before you glue it to the main model. I only used one stick but really you could put on more if you want. It's all presonal preference.



Section V

Concluding Remarks

Wow, that's a lot to take in. If you have made it this far, take a small break. Every single shred of knowledge about assembling Pepakura from my brain (and other brains) has been freely given. Now that you have all of this knowledge, make sure to put it to good use!

I hope I have answered any questions you may have had in this tutorial. Remember that Google is your best friend. If you have any questions that were not answered in this tutorial, feel free to send me a message through the 405th forums.

When you finish your Pepakura model be sure to take pictures of your work. Post and share it to the world! Most of all have fun!



It has been a pleasure,

Frozensnot AKA Andrew

Credits/Links

Product Links

[Cutter Bee Precision Scissors](#)

[Knife and Scissors Sharpener](#)

[Blade Sharpener Kit](#)

[Silhouette Cameo Starter Kit](#)

Guides/Useful Links

[Guide to using a Silhouette Cameo](#)

[ViZiONEER's WIP](#)

[Robot Chicken's Silhouette Cameo Video Tutorial](#)

I would like to thank the following users for their amazing talents and for sharing their knowledge. I would have never been in my current circumstances without them. Truly, this tutorial would have never happened without them.

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WandererTJ

Crimmson

Thorssoli

HaloGoddess

Katsu

RobTC

Chernobyl

Robot Chicken

venture

ViZiONEER