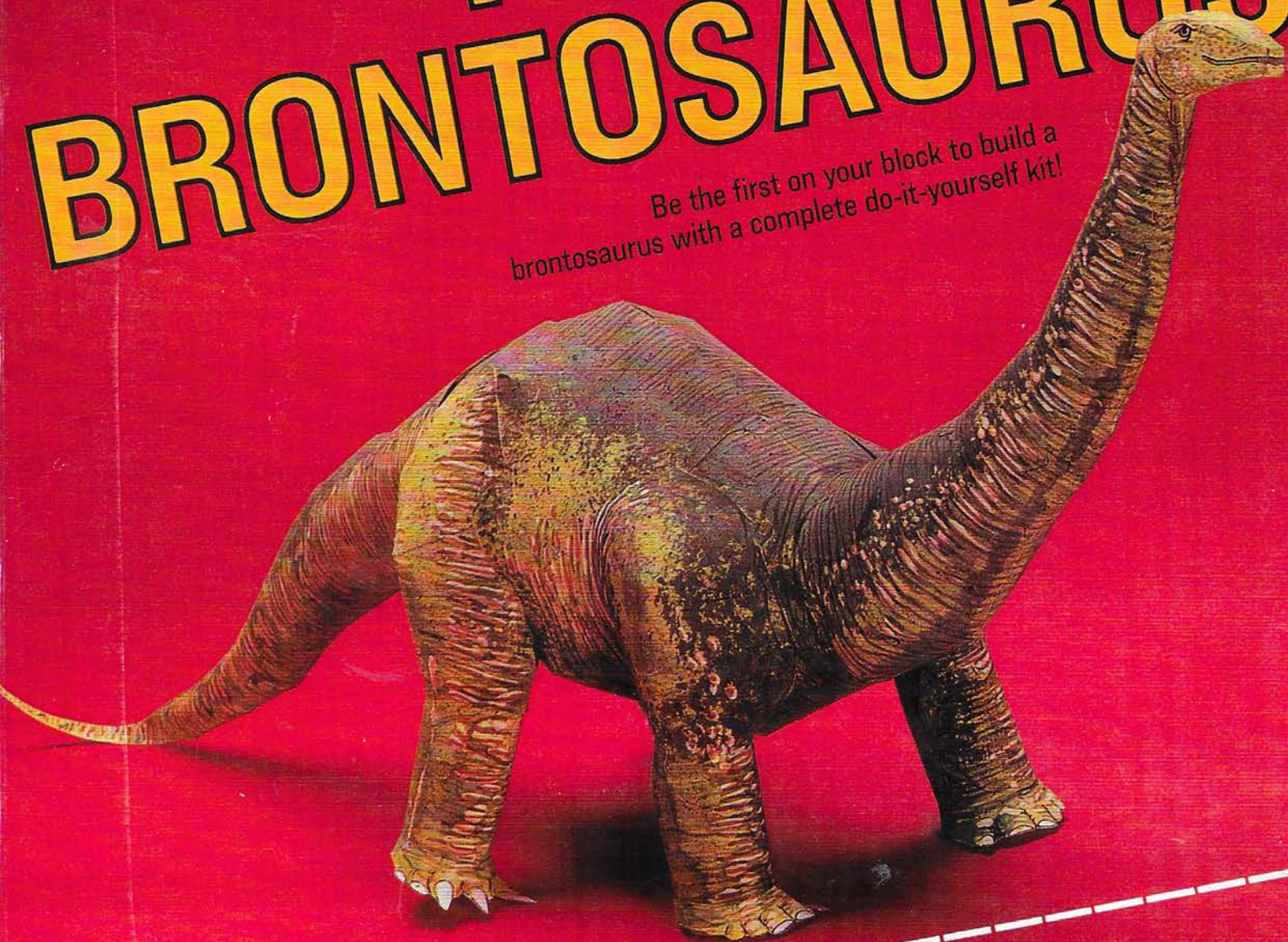


CUT AND CONSTRUCT YOUR OWN BRONTOSAURUS

Be the first on your block to build a
brontosaurus with a complete do-it-yourself kit!



ALAN ROBBINS



A UNIQUE, MISTAKE-PROOF MODEL THAT'S SO EASY TO ASSEMBLE, EVEN A KID CAN DO IT!

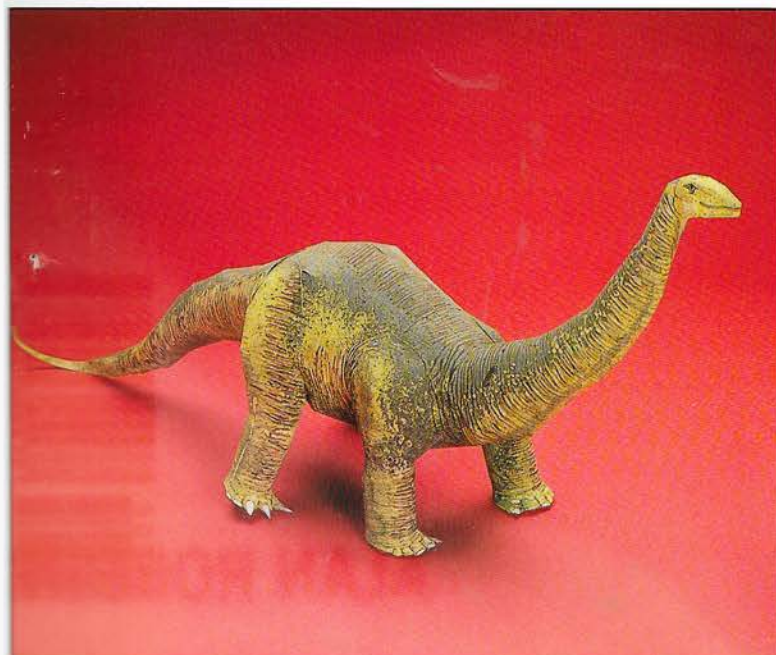
Once the brontosaurus was the king of the dinosaurs. Weighing in at 33 tons with a 70-foot span from head to tail, this great and gentle giant ruled the earth for a good 100 million years.



And now you can have one all your own, without even leaving your millennium! Award-winning graphic designer Alan Robbins has created an entertaining, educational, and durable model—over three-feet long—that you can cut and construct on your own. With only scissors, glue, and a ruler you can recreate the majestic creature that continues to fascinate humankind.

It's easier than you might think with:

- Fully illustrated easy-to-follow, step-by-step instructions
- Painting tips to give your brontosaurus an authentic or fantastic finish
- Fascinating history of the age of the dinosaurs
- PLUS, an even simpler baby brontosaurus model to keep the big guy company!



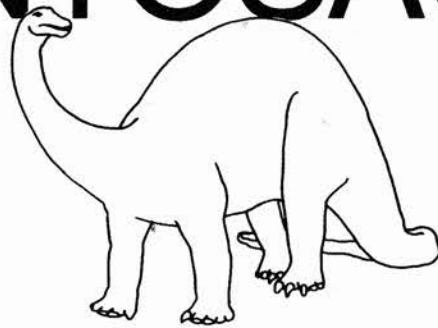
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The Simplest Cut-and-Construct Kit of its kind!



ISBN 0-345-35557-1

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ALAN ROBBINS

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ABOUT DINOSAURS

Long before mankind appeared, dinosaurs were the undisputed rulers of the earth. From 225 million to 65 million years ago, during what we call the Mesozoic era, countless varieties of these great creatures roamed the land. In 1841, Sir Richard Owen gave them the name dinosaurs from the Greek words *deinos* and *sauros*, meaning terrible reptiles.

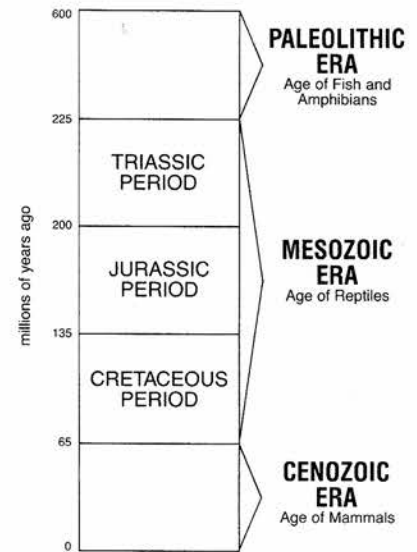
No individual creature better represents the grandeur of the dinosaurs than Brontosaurus. The name means thunder reptile, a fitting description for an animal that was 70 feet long and weighed 33 tons, three times heavier than the largest elephant of modern times.

What we know about Brontosaurus, and other dinosaurs, comes from the fossil record. These are the remains of bones, teeth, and footprints buried in the earth and turned into rock—as mineral salts in underground water permeated them over millions of years. In the late nineteenth century, when the fossils of Brontosaurus were first being studied, a mix-up of bones from different dinosaurs led to a confused picture of Brontosaurus. Although now, a century later, we have a much clearer idea of how they lived and what they looked like, our ideas continue to be revised as new discoveries are made.

Brontosaurus was a member of the sauropod family of dinosaurs that lived during the Jurassic and Cretaceous periods, the last part of the Mesozoic era. To clear up the earlier confusion, the creature is now technically known as Apatosaurus (deceptive reptile), although the more familiar name Brontosaurus is still used. Despite its incredible size, Brontosaurus was gentle and a plant eater. It spent much of its time in shallow water, which helped to support its great weight. And it traveled in herds for protection from other, meat-eating dinosaurs.

According to the fossil record, dinosaurs suddenly disappeared 65 million years ago. The cause of this remains a mystery but theories abound. Some scientists speculate that there was a great change in climate to which the dinosaurs could not adapt; others believe that a mass infection killed them; still others argue that the earth's collision with a huge asteroid or comet threw a cloud of dust into the sky that obscured the sun for months, destroying the plants on which they fed.

Whatever caused the sudden extinction of the dinosaurs, keep in mind that it came at the end of a 160 million year rule. Mankind, by comparison, has been seen on earth for less than 5 million years.



BEFORE YOU START

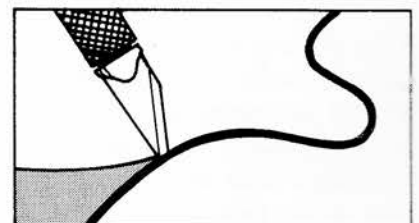
Materials

You will need a few tools to be able to construct the paper pieces in this book into a three-foot-long Brontosaurus: a good pair of scissors for cutting out the pieces—or a ruler and razor blade or X-Acto knife if you want to make precise cuts; scrap sheets of paper to glue and cut on; and glue.

Cutting Clues

You can cut out the entire model using only a pair of scissors but if you want a very precise model, use a razor blade or razor knife. All the pieces are outlined by a solid black line and that is the line to follow when cutting. If you take care to cut slightly on the *inside* of the solid black line—so that you are actually cutting the line off the final piece—then your finished model will be completely white, with no black lines on it. This will make the finished Brontosaurus easier to paint.

CUTTING OFF THE LINE



Gluing Hints

White glue, like Elmer's, is the best to use. With your finger, spread a very thin, even coat over the surface to be glued, then immediately wipe your finger clean on a scrap of paper. Place the glued part in position and hold it in two places with your fingertips until the count of ten. Wipe off any excess glue at this point; it won't come off later on. The parts will now stay together while you turn the joined edges upside down onto a clean piece of paper on the table surface. Now press down and rub on the glued area, from the back side, until the entire area is firmly secured (another ten seconds).

It is always best to glue two pieces together by pressing on the glued section from both sides, or against a surface. If you can't reach one side, try using the eraser tip of a pencil or some other tool to apply pressure from the inside. Similarly, if you have trouble getting glue on a piece you can't reach, use a tool like a pencil tip or a toothpick to spread the glue.

Paper Notes

Cambering is a term you will come across throughout the instructions. It means curling a piece of paper so it will form more easily into a curved shape. Always camber a piece away from the print side, that is, so the print is on the outside of the curve. Also, always camber in the same direction as the longest flap on the edge of the piece; this makes it easier to form pieces (like the shin) into a cylinder that can be glued closed along the flap.

The easiest way to camber a piece of paper is to press it across the edge of a table. You can also camber it by rolling it around a narrow can or jar.

If a piece doesn't fit exactly as it should, squeeze it. Paper is flexible stuff and can take a bit of twisting and denting. On a model of this kind, pieces sometimes don't fit exactly. You can tighten up pieces that fit too loosely by cutting your own dart (as explained in the next section). On the other hand, if a piece is too tight and needs to be opened up, you can slit it open slightly and patch the slit. A patch is a small piece of paper cut from the excess in this book that conforms to the area you need to fix. Patches also work well if you need to repair a torn piece, fix an area that got sloppy with glue, or secure a flap that won't hold.

Glue Parts

There are four different kinds of glue parts that you should know about before beginning the construction.

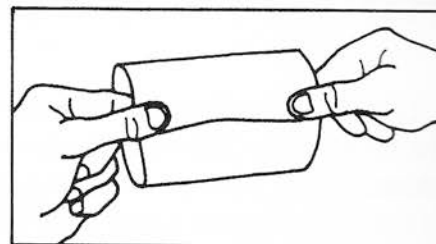
1. Darts

Darts are the V-shaped, shaded cutouts you see at the edges of some of the pieces. They are used to form the flat paper into a curved shape. They are only numbered when the order in which you glue them is important. To construct the darts, simply cut down the solid line on one side of the V, then spread a thin layer of glue over the shaded area, and glue one edge over the other so that the shaded portion is completely covered.

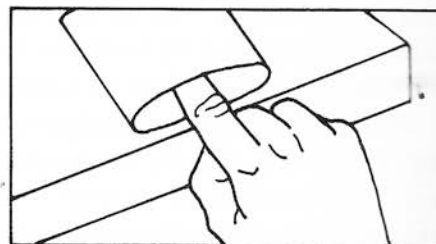
2. Flaps

Flaps are the parts that allow you to glue one edge of a piece to another. They are used either to join two pieces into one large piece, or to form the flat paper into a cylinder by gluing one edge to its opposite edge. Spread a thin layer of glue along the entire flap, and glue the edge to be joined to it right up to the dotted line. The dotted lines on this model are guides for gluing and are *not* meant to be folded. All flaps are numbered to show the order in which they should be glued.

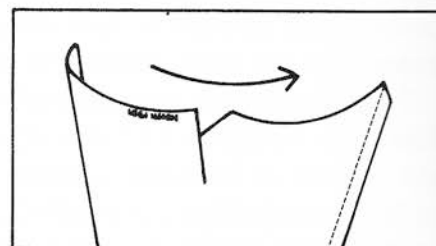
ADHERING THE GLUE



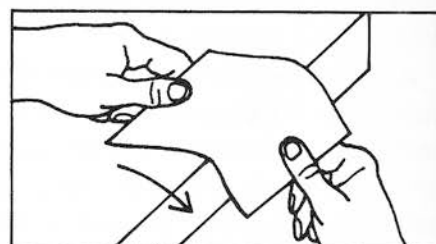
PRESSING



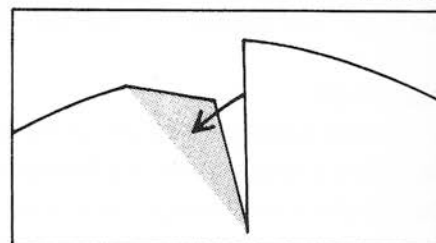
CAMBERING



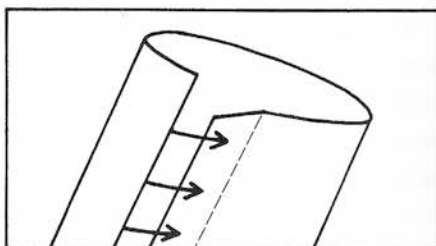
CAMBERING



DARTS



FLAPS

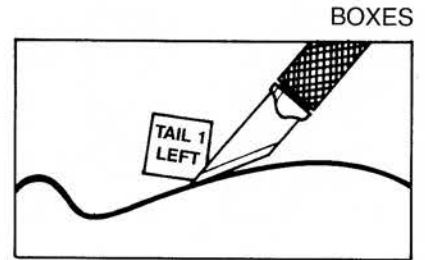
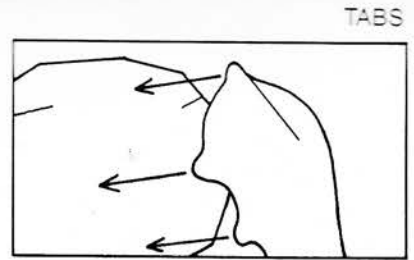


3. Tabs

Tabs are the rounded bumps along the edges of the pieces. These allow you to glue one constructed piece to the surface of another. To use them, simply hold one piece in the correct position against the other, then fold the tabs back one by one as you glue them. Use a very small dot of glue on these; too much will get messy. If you can't press on the glued tab from both sides, as suggested earlier, pressing on it from the outside for twenty seconds will make it adhere.

4. Boxes

All the pieces of the model are labeled somewhere on the surface so that when you cut them from the book you'll still know what they are. These labels will be hidden in the final model when they are covered by other pieces. On some of the pieces, however, the label is placed in a box sticking off the edge. That's because these pieces are not covered in the final model and there is nowhere to conceal the label. When you come across such a piece, simply cut the box off once you know where the piece goes, or remove it with a razor once the piece is glued in place.



Model Notes

Take your time when cutting, cambering, and—especially—gluing. Make sure parts are dry and firm before moving on to the next step. Remember the dinosaurs ruled the earth for millions of years; they deserve a few extra seconds of patience.

Start by carefully removing the pages from the book, making sure you don't accidentally tear into any of the pieces. Once all the pages are removed, cut out each of the pieces. It will avoid confusion later on if you keep all the body parts together. There are four main groups: body (four pieces); legs (sixteen pieces); tail (seven pieces); and neck and head (four pieces).

By the way, when left and right are mentioned, they refer to the dinosaur's left and right.

CONSTRUCTING THE MODEL

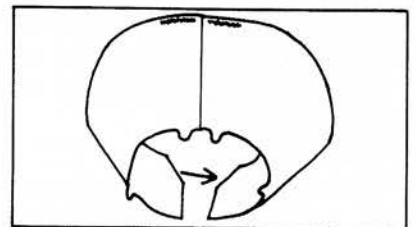
1. The Body

The body is composed of four pieces, two that form the chest and two that form the hips. Take the two pieces that form the left and right sides of the chest (Body 1 and Body 2) and camber them (curl them away from the print side). There is one dart on each of these pieces; glue them first. Now hold the two pieces so that the tabs are facing in the same direction, and glue them together to form a large cylinder by gluing flaps #1, #2, #3, and #4 in sequence.

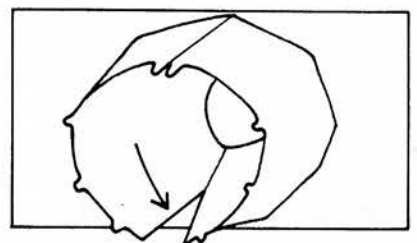
Next, take out the left and right hip pieces, marked Body 3 and Body 4. These are the biggest pieces in the book and, although they may look complicated, they are very easy to assemble. They don't have to be cambered because their size makes them flexible. Note that the darts *and* flaps on these two pieces have been numbered to make things easier. Go through the darts on Body 3 and assemble them in numerical order (#5, #6, #7, and #8). Then do the same with the darts on Body 4 (#9, #10, #11, and #12).

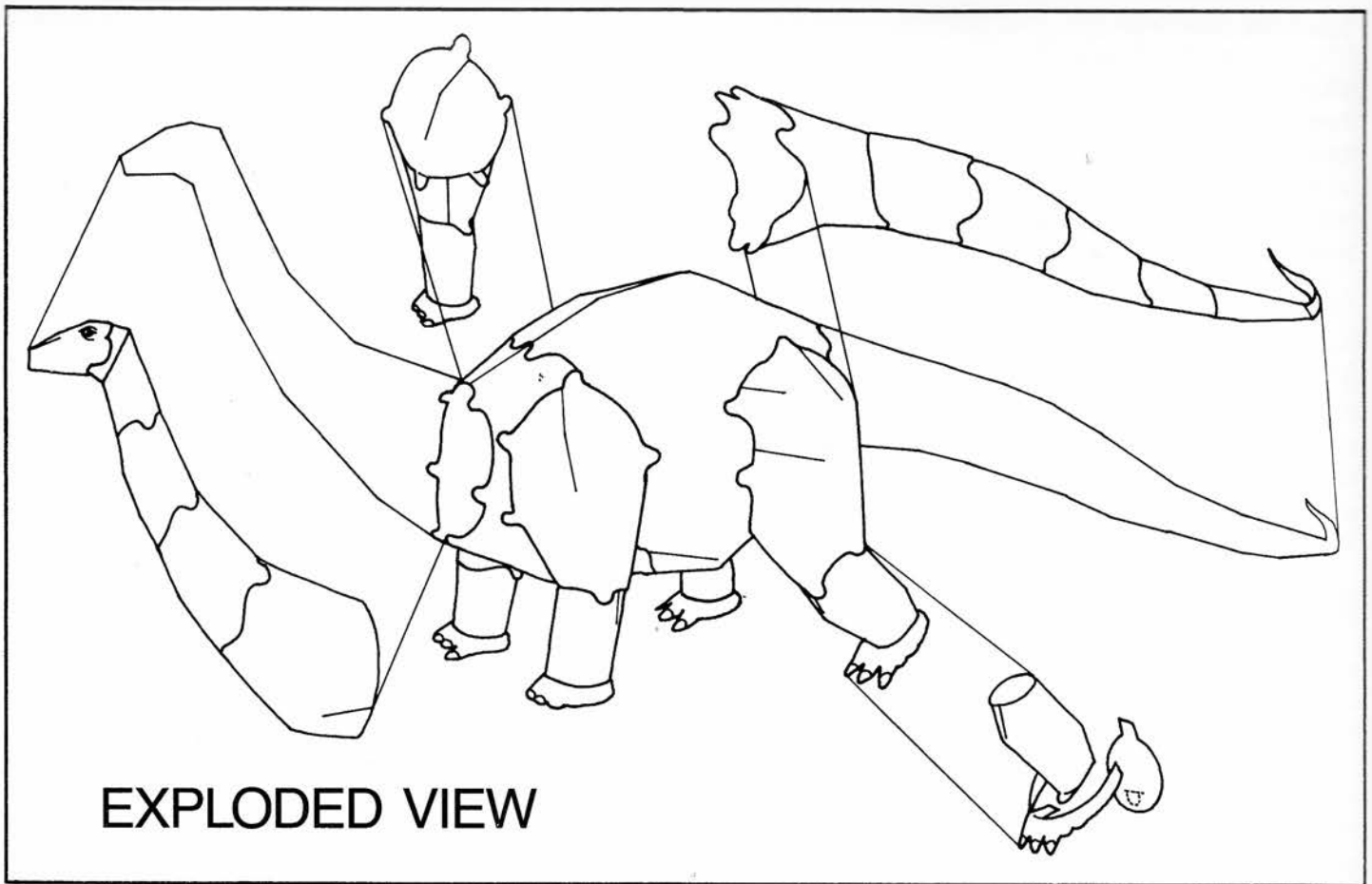
Now glue these two pieces together to form a large cylinder (tabs facing the same way again) by gluing the flaps in sequence (#13, #14, #15, and #16) along one edge. When you get to the second edge, glue only flaps #17 and #18. **DO NOT GLUE FLAP #19 AT THIS TIME.**

FORMING THE CHEST



FORMING THE HIP





To finish assembling the body, take the chest section and push it completely inside the hip section, label markings lined up and tabs facing the same way. Now, with one section inside the other, glue flap #19 closed. It may be a little tricky trying to glue this flap closed, but if you line up the seams of both sections, you can hold the flap from inside the inner section. Or you can use a pencil to hold the flap from the inside while it dries. If all else fails, tape the flap closed and then cover the tape with a strip of paper glued in position over it.

Once flap #19 is glued and dry, pull the chest section out of the hip section as far as it will go, so that the point on the underside of the chest section is clear of the two tabs on the underside of the hip section. Now secure the two sections together by gluing the tabs all the way around one by one.

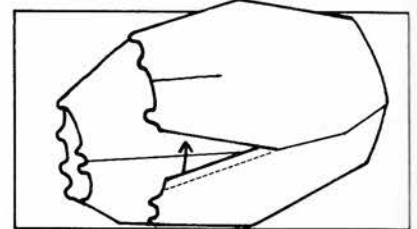
Lastly, give yourself a pat on the back; the body is now assembled.

2. The Legs

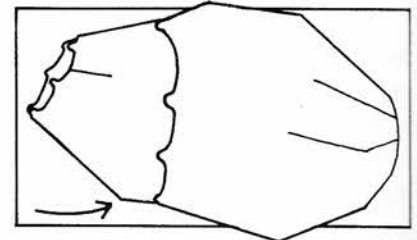
There are, of course, four legs. Each leg is made up of four pieces... a thigh, a shin, a foot, and a footpad. Start with the four largest pieces, the thighs. Each one is assembled in the same way. First construct the darts (some are numbered and some are not), then curl the bottom of the piece around and glue the small flap (#1, #3, or #4 depending on the piece) to the opposite side.

Once the thigh pieces are assembled you can attach them to the body one by one. Remember that Leg 1 is the right front, Leg 2 is the left front, Leg 3 is the right rear, and Leg 4 is the left rear. Get a general idea of their positions by looking at the diagrams but note also that there are a few small dots on the body to help you. The dots show where to glue the upper tabs of the rear thighs, and the front tabs of the front thighs. You can alter these positions if you want to. Once you are certain where each thigh goes, cut the label box off so it won't appear on your final model.

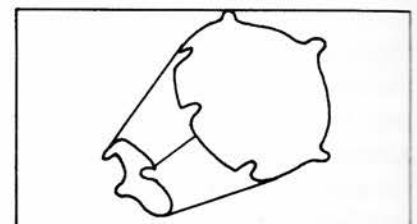
GLUING FLAP #19



FINISHING THE BODY



THE COMPLETED THIGH



Note that the upper tabs of the thighs lie flat against the body, but that the lower ones must be folded back in order to lay flat. Glue the thighs in place by bending back, gluing, and pressing the tabs one by one.

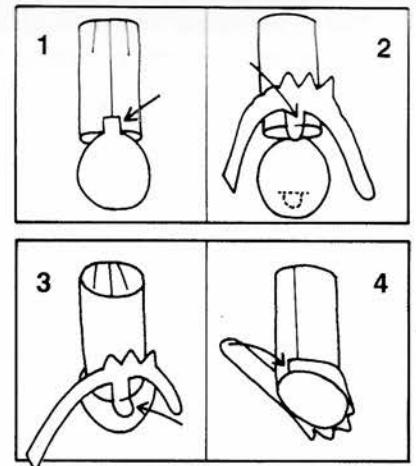
Now take the Leg 1 shin piece and camber it. Assemble the two narrow darts, then form it into a cylinder and glue flap #4. You will now attach the foot and footpad to this assembled shin (the diagrams will help with this). Note that the darts are at the top of the shin and the dotted box is at the bottom.

First, bend the tab on the footpad up (toward the print side) and glue that tab to the back of the leg directly over the seam. Then attach the foot to the shin by spreading glue on the print side of the foot tab and pressing it—upside down—against the dotted box on the shin. Next, glue the tab on the shin (the rounded one) down onto the surface of the footpad (there's a dotted outline to show you where it goes). Finally, wrap the bands of the foot around the cylinder of the shin and glue them in back, as tight against the footpad as possible. When the glue is dry, trim the footpad with scissors so it doesn't stick out beyond the foot. Repeat this procedure for each of the four feet.

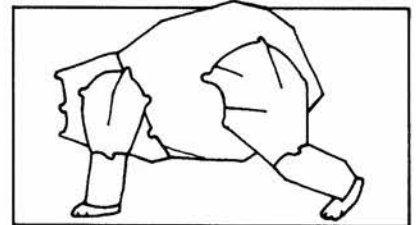
Once each foot is assembled, slip the shin into the opening of the corresponding thigh, position it, and glue the tabs. Again, follow the diagrams for the basic position, or alter them if you wish. Just remember that Leg 1 is the right front, Leg 2 the left front, Leg 3 the right rear, and Leg 4 the left rear.

To create a natural look, bend the claws to conform to the surface on which your model will stand.

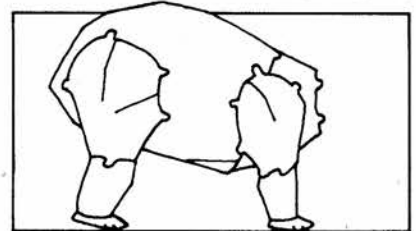
ASSEMBLING THE FOOT



LEG POSITIONS—LEFT SIDE



LEG POSITIONS—RIGHT SIDE



3. The Tail

Take out all seven pieces of the tail. You are going to assemble them individually, then put the entire tail together before finally attaching it to the body.

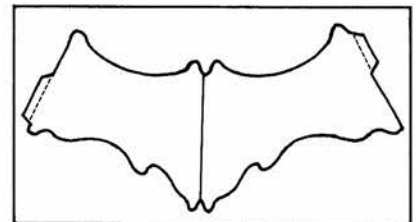
The first segment (Tail 1) is made of two pieces, left and right. Glue flap #1 on the right piece to the long edge on the left piece, creating a large butterfly shape. Curl the piece into a cylinder, and glue flaps #2 and #3. Note that gluing flap #3 creates an outward curve which the paper will resist. If you find the paper beginning to tear at this fold, glue a small patch to hold it better. This part should look like the diagram; if it's a bit lopsided, a little gentle bending and rolling will help.

To assemble the next sections (Tail 2, 3, 4, and 5), camber each of them, glue the dart or darts (if there are any), and glue the flaps in order, to form four tubes. Before you assemble the final segment (Tail 6), fold flap #11 over on the dotted line. This will make it easier to glue as you pinch the piece closed from the outside.

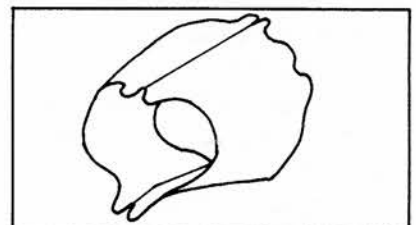
Once all the parts are formed, you're ready to assemble the entire tail. Slip the smallest segment (Tail 6) into the next one (Tail 5), pull it out as far as you can, and glue the tabs. Then slip this combined segment into the next larger one and glue in place, continuing with each larger segment until the entire tail is assembled. You can turn and twist these segments in any direction, but if you want to copy the model shown, make sure the seams are lined up and the printed labels face the same way. When the tail is finished, you can cut the labels off the largest segment and give the tip of the tail a graceful curve.

Now that you've assembled the entire tail, hold it in place against the rear end of the dinosaur. If you've changed the position of the rear legs, the open end of the tail may not fit precisely. This can easily be fixed by cutting or trimming the contour of the tail piece to fit neatly against the body. When you're happy with the position and the way it fits, glue the six tabs starting with the two at the top in the usual way—bend them up, add a dot of glue, press them down from both sides by reaching inside the body through the open neck if possible, and hold for twenty seconds.

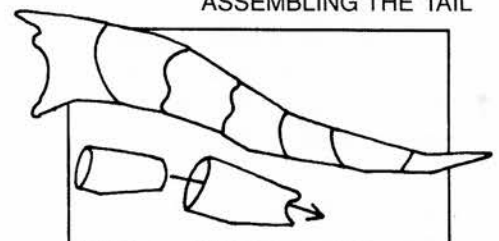
TAIL 1 PIECES JOINED



TAIL 1 ASSEMBLED



ASSEMBLING THE TAIL



4. The Head and Neck

The three pieces that make up the neck (Neck 1, 2, and 3) are all assembled in a similar manner. Camber them, then glue all the darts and the flaps (#1 through #6) on these three pieces. Note that two darts on each piece aren't numbered. Once these pieces are formed, assemble them together by fitting the smallest piece over the narrow end of the next larger piece, lining up the seams, then gluing the tabs. Again, you may turn these pieces in different ways if you want to create a neck posture different from the original.

The head is formed by the oddly shaped piece with the eyes on it. (It should be the only model piece left.) Glue the darts first; there are four small ones in a row at the front of the head, and two tiny ones on the opposite edge near the eyes. While these dry, camber the bottom segment and glue flap #1 to create a small cylinder. Now glue flap #2 on the head by folding the piece around into a small cone shape. Finish the head by folding the extra flap at the front down and under and gluing it on the underside of the head. Then glue flap #3 on the middle band.

The head can now be positioned by gluing its tab onto the middle band, and the tab on the middle band onto the bottom cylinder.

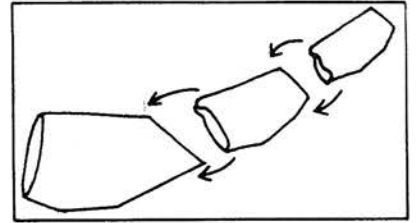
Now, put some glue on the three tabs at the bottom of this piece and slip it onto the assembled neck as far as it will go, facing whichever way you like. You don't have to hold this piece; it will dry by itself.

Finally, stick the wide end of the neck as far as you can into the opening on the body. You might have to squeeze it a little to fit. Then glue the six tabs starting with the top two.

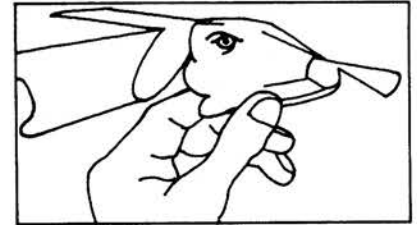
5. Last Step

Sit back and admire your model.

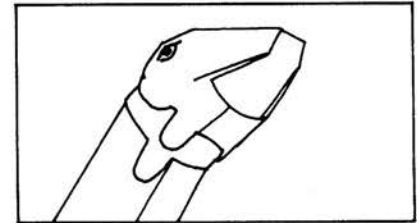
ASSEMBLING THE NECK



FOLDING THE HEAD



HEAD TAB POSITIONS



PAINTING THE MODEL

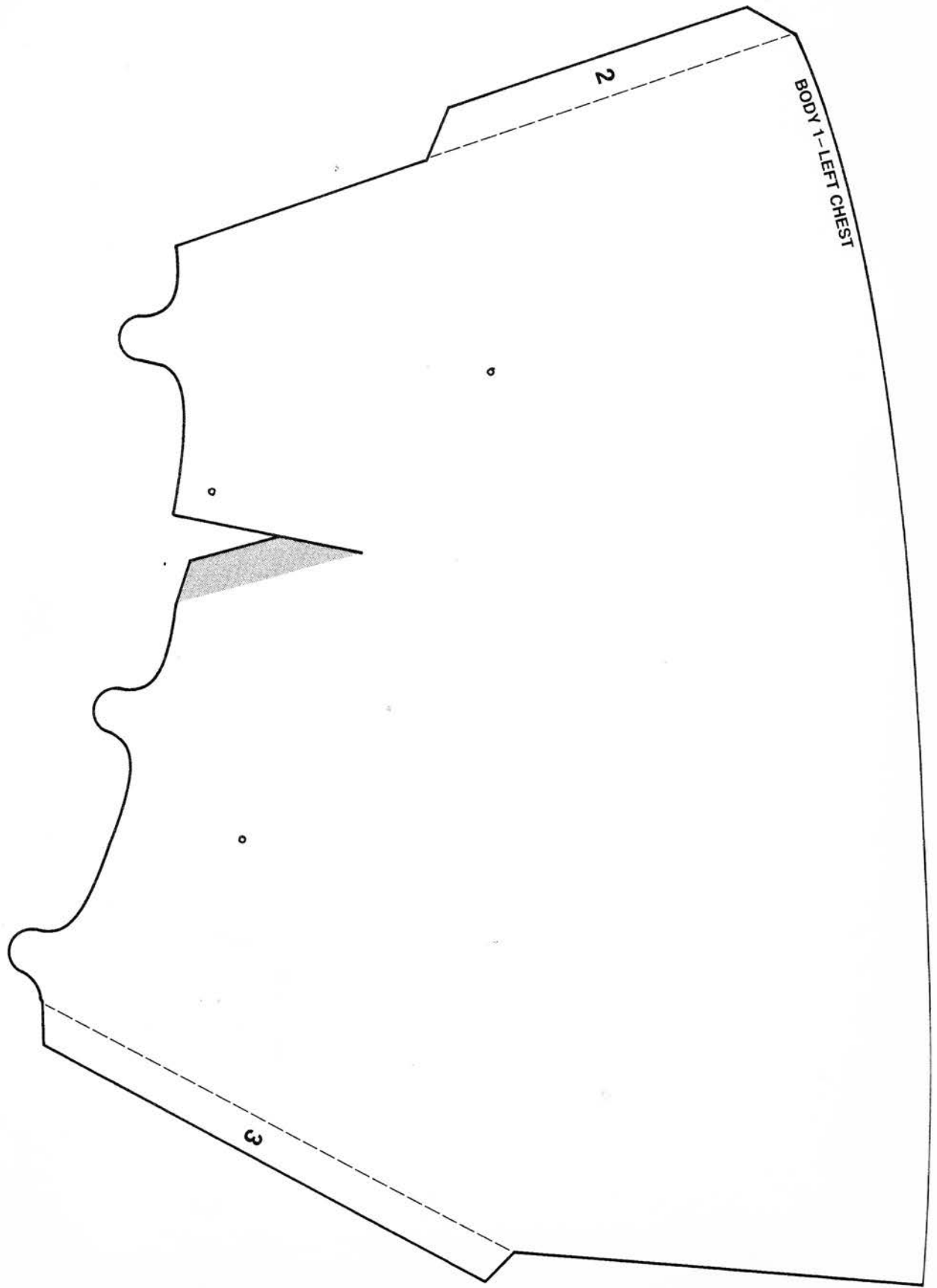
The best paint to use for your Brontosaurus is poster or acrylic paint. Water colors may be too pale, unless you apply them very thickly. Wide magic markers can be used, but it is much easier to cover the surface with a brush. Crayons are the least effective, unless you intend to have a Brontosaurus with tattoos.

No one really knows exactly what the skin of Brontosaurus looked like. We can only infer its texture and color from skin prints in the fossil record or from modern animals of similar bulk, like an elephant or rhinoceros. The color picture on the cover gives a good idea of our best guess regarding its skin. You can use it, or pictures from other books, as a reference.

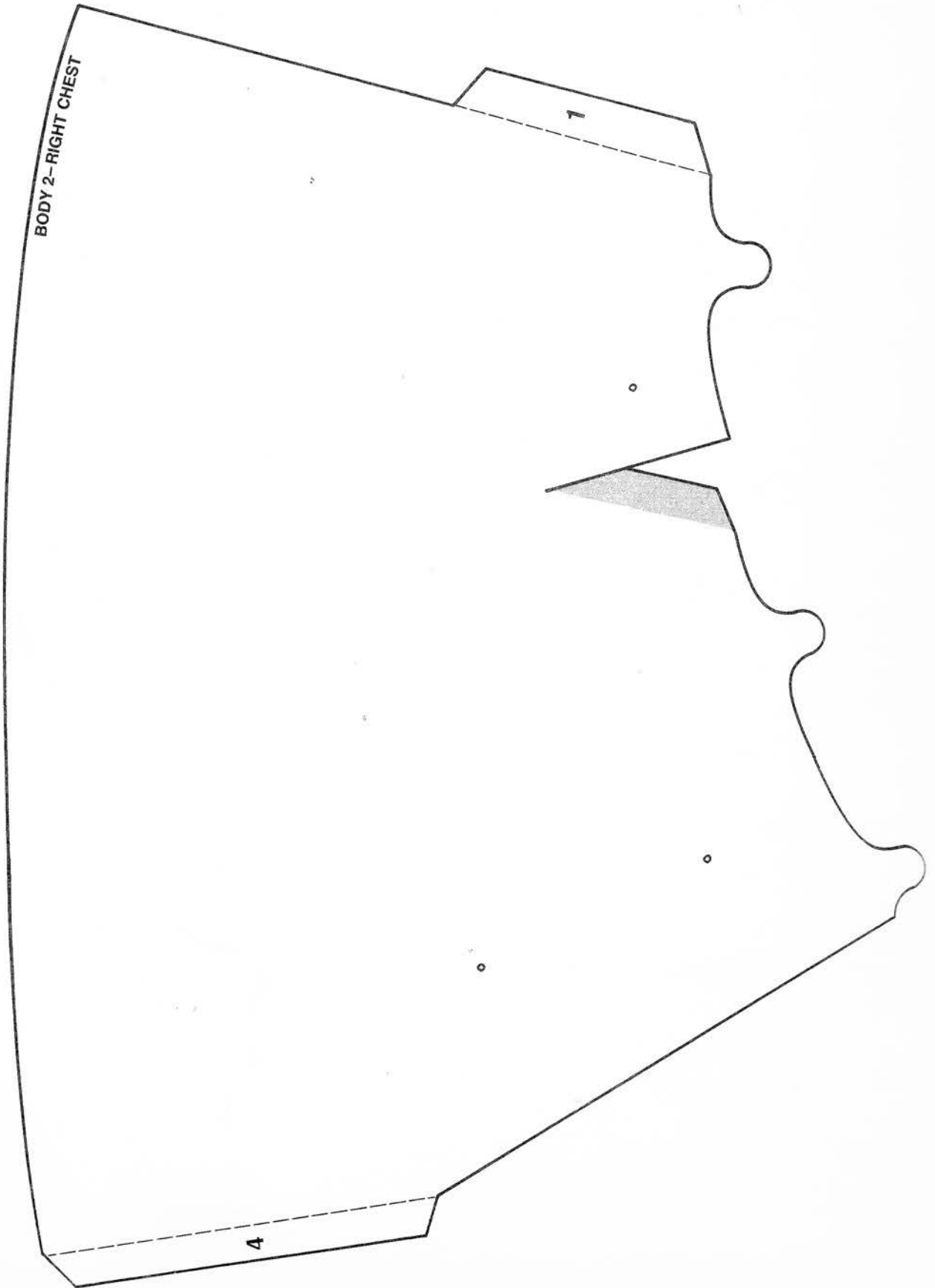
For a realistic look, use three colors: one for the overall skin tone; a darker shade for the upper surfaces and for skin creases; and a light tone for highlights.

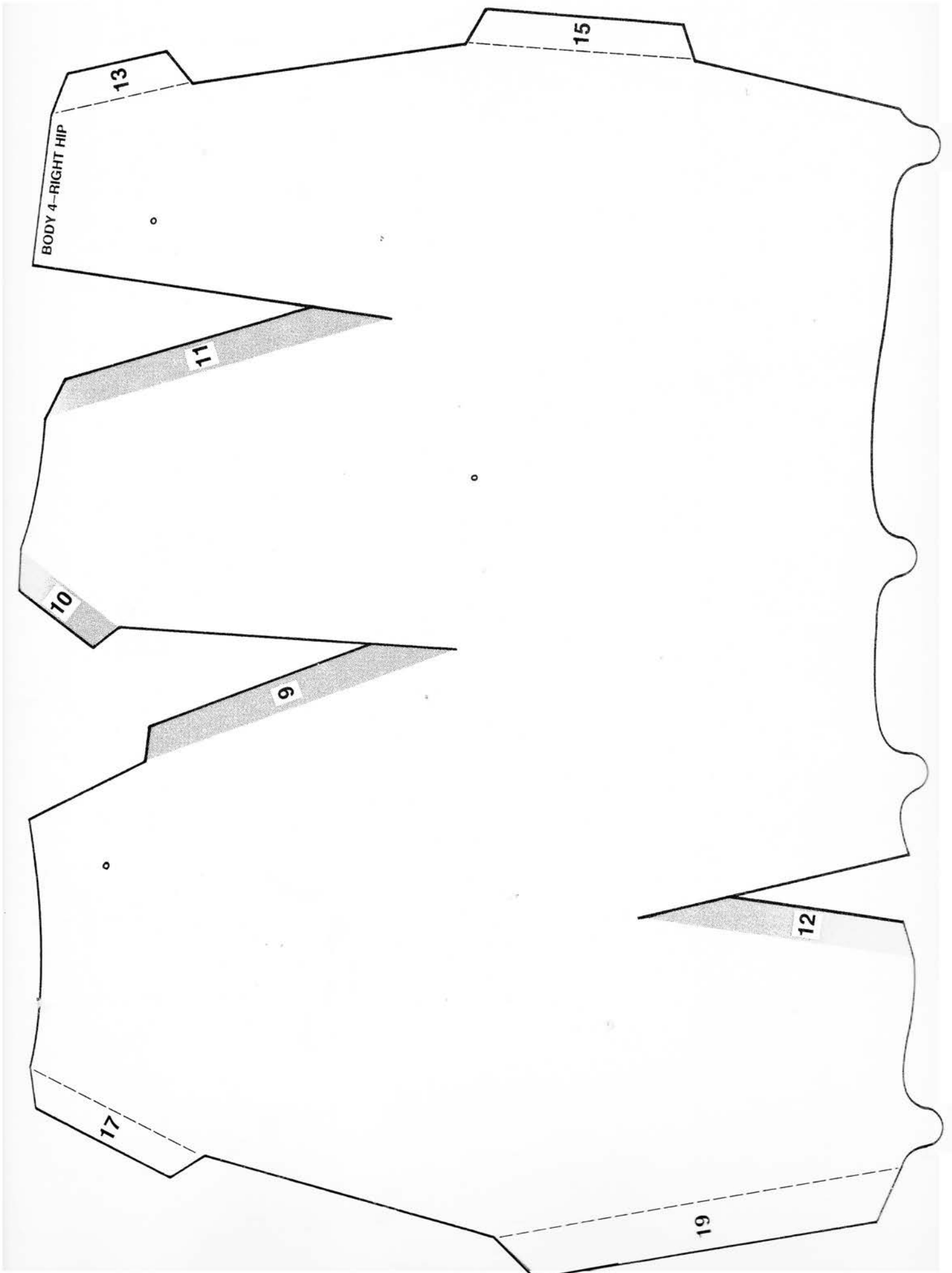
Of course, no one can say that Brontosaurus didn't come in more imaginative colors. And, after all, this is *your* model. So if you've always wanted a Brontosaurus that was pink with blue stars or red stripes and orange squiggles—or even tattoos—go ahead and paint it any way you like.

Even though human beings didn't exist at the time of the dinosaurs, one is included to give you a sense of the immense size of this majestic creature. There is also a baby Brontosaurus, which you can construct by cutting it out along the solid lines—including the space between the two shapes—gluing the two darts, then folding it in half, bending the tabs over and gluing them to the opposite side.



BODY 2-RIGHT CHEST





BODY 4-RIGHT HIP

13

15

11

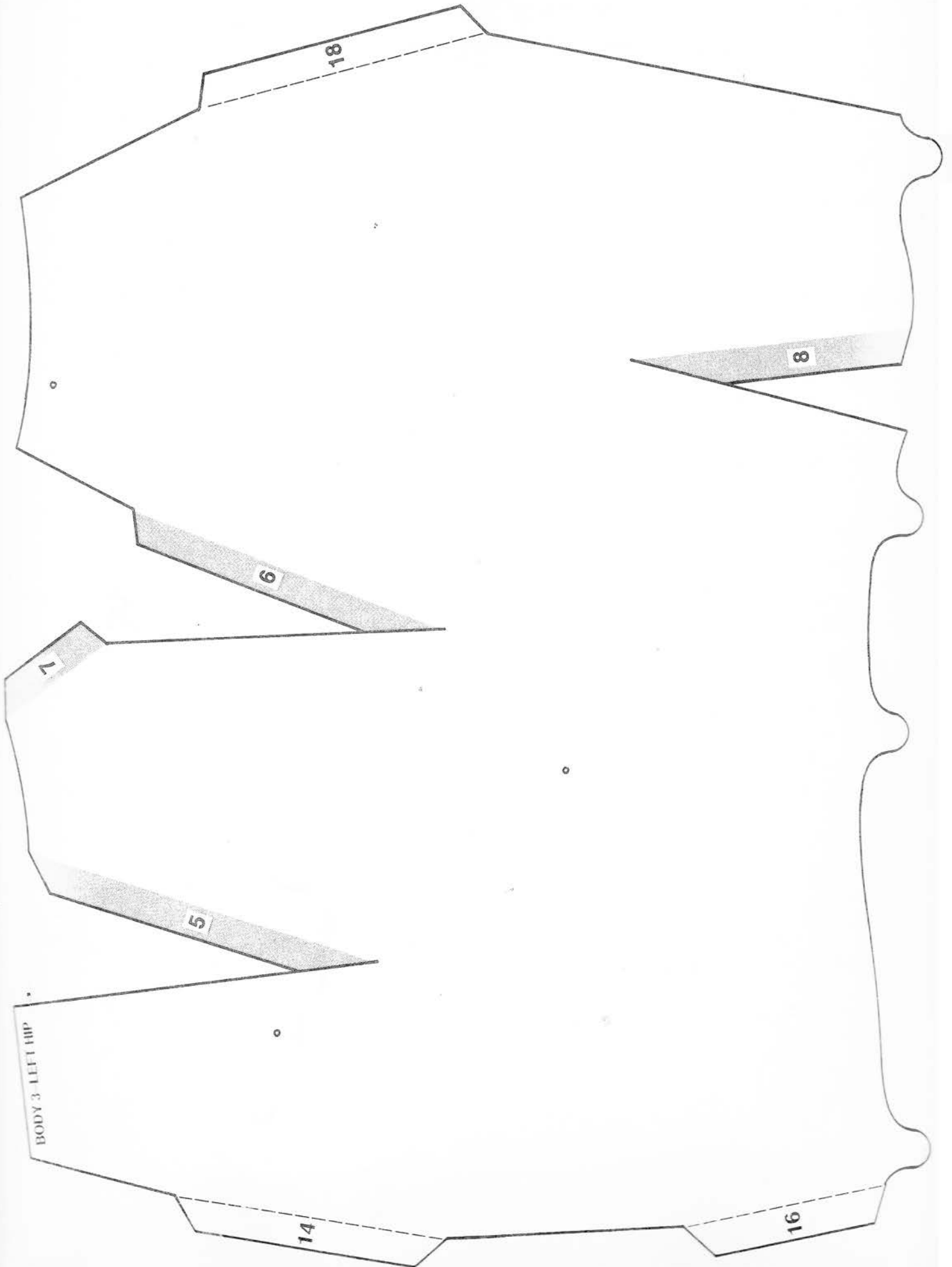
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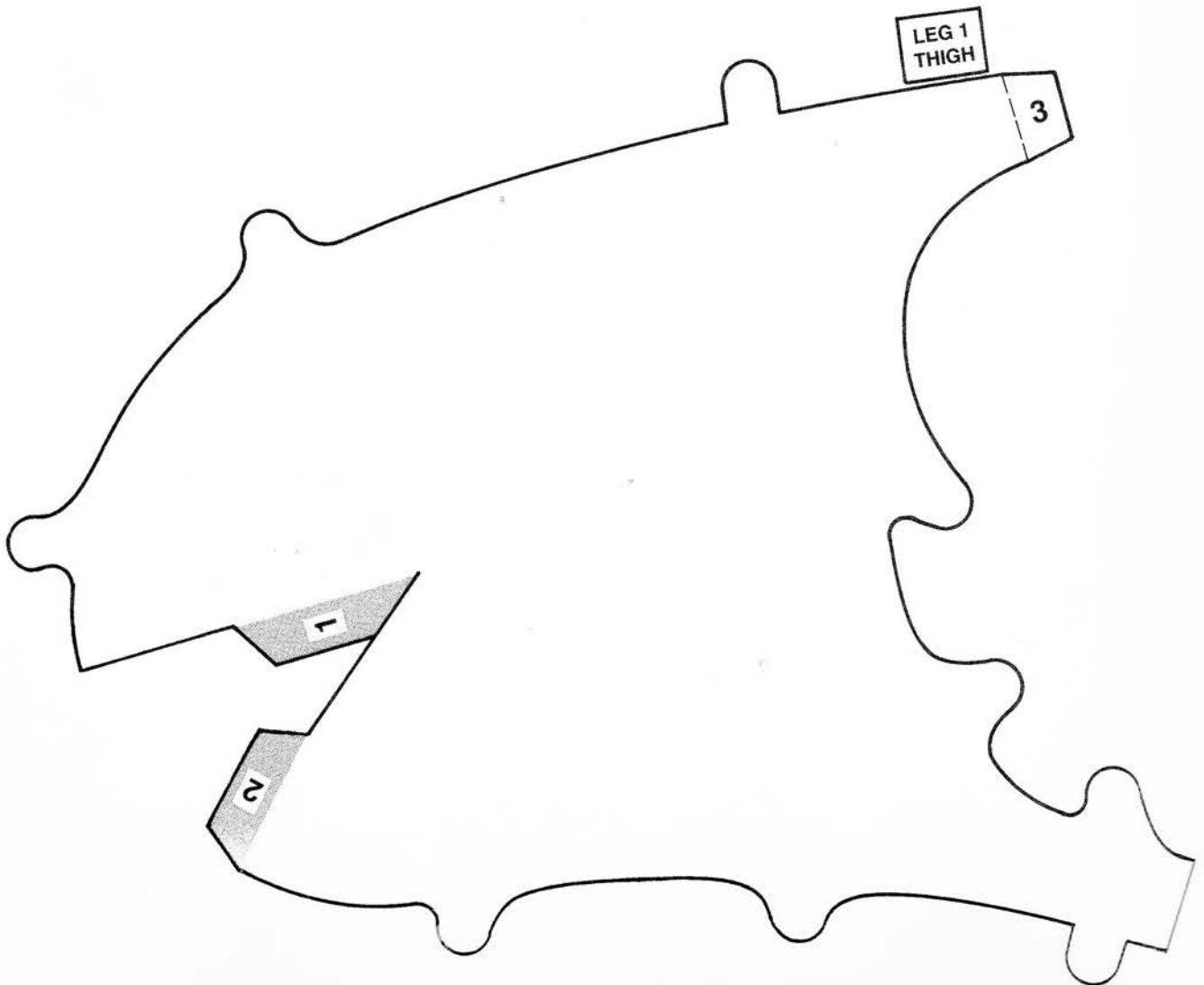
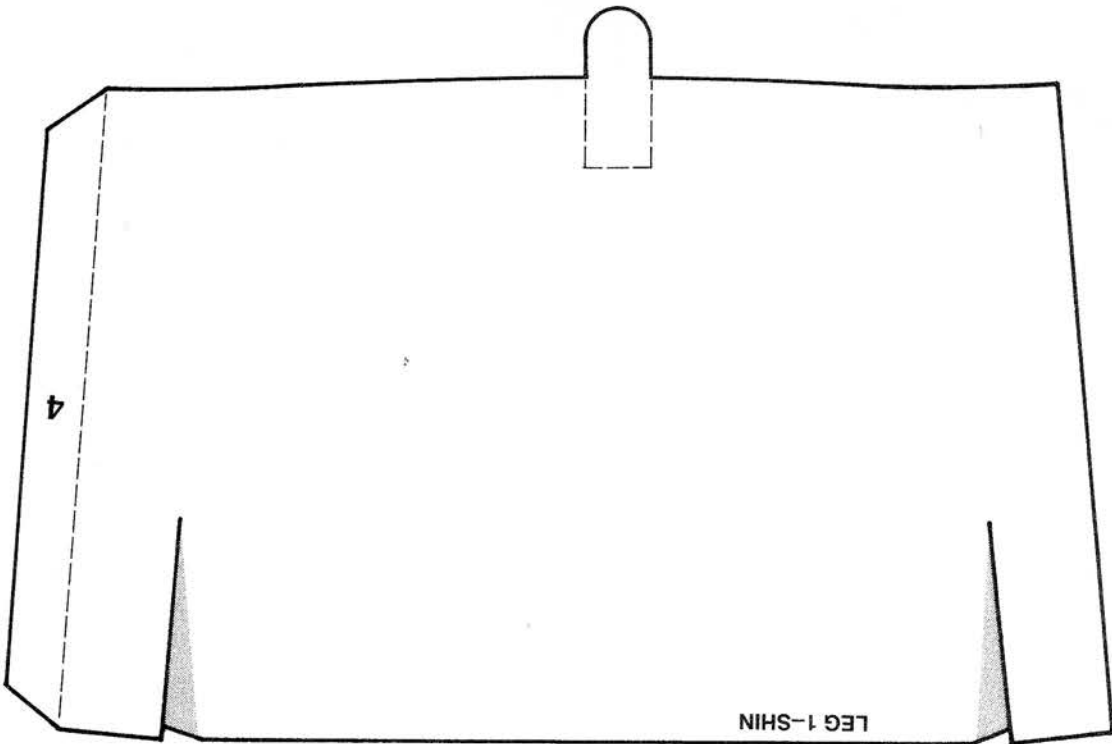
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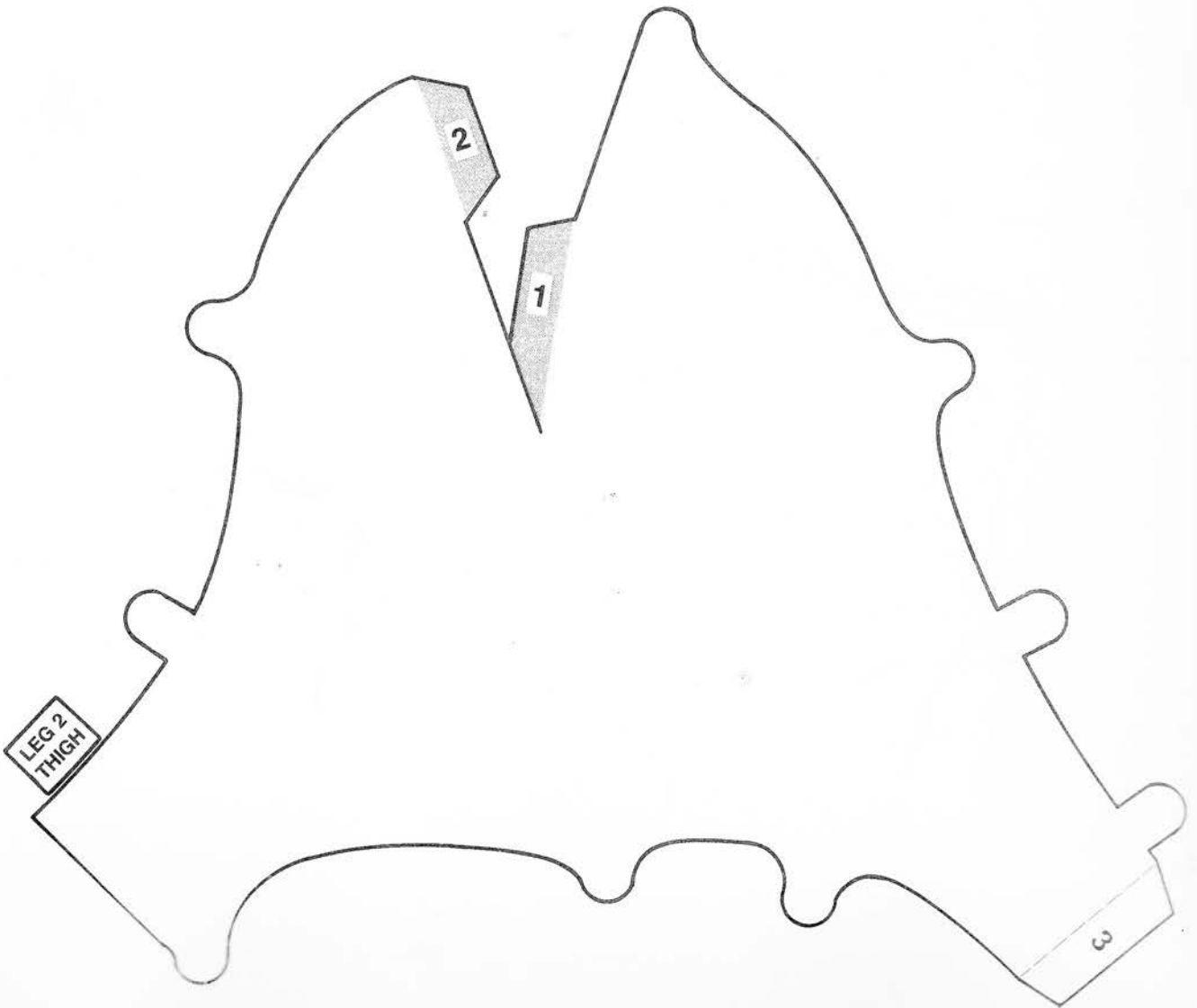
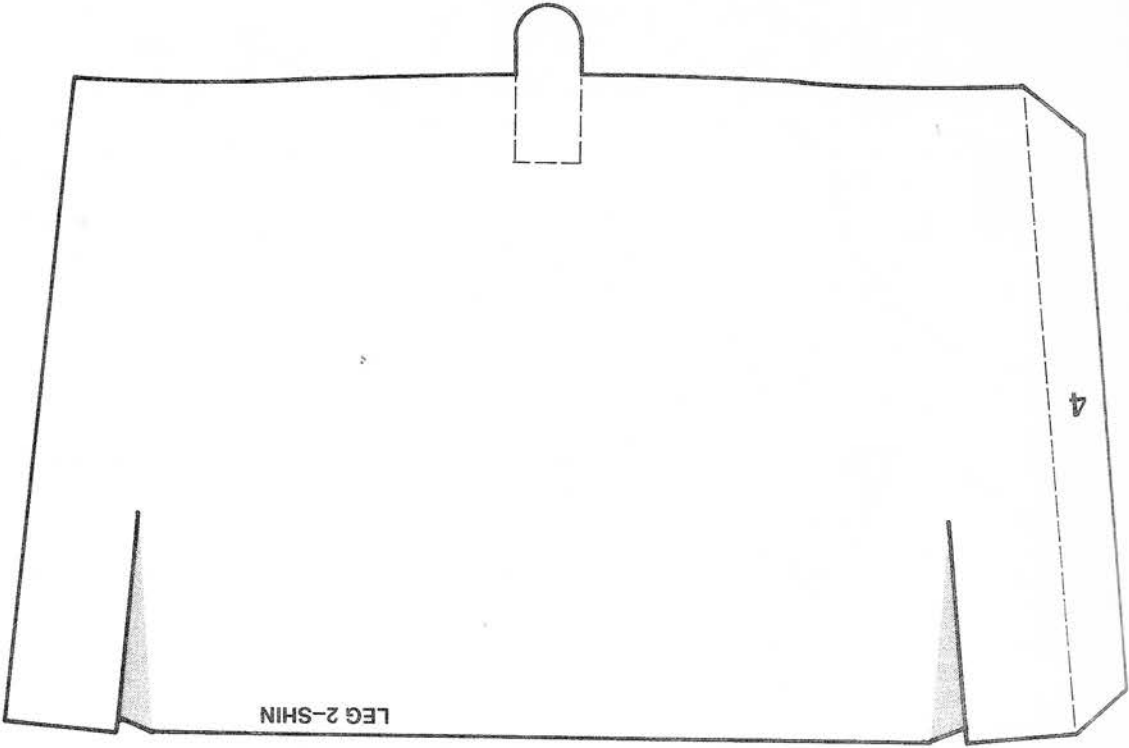
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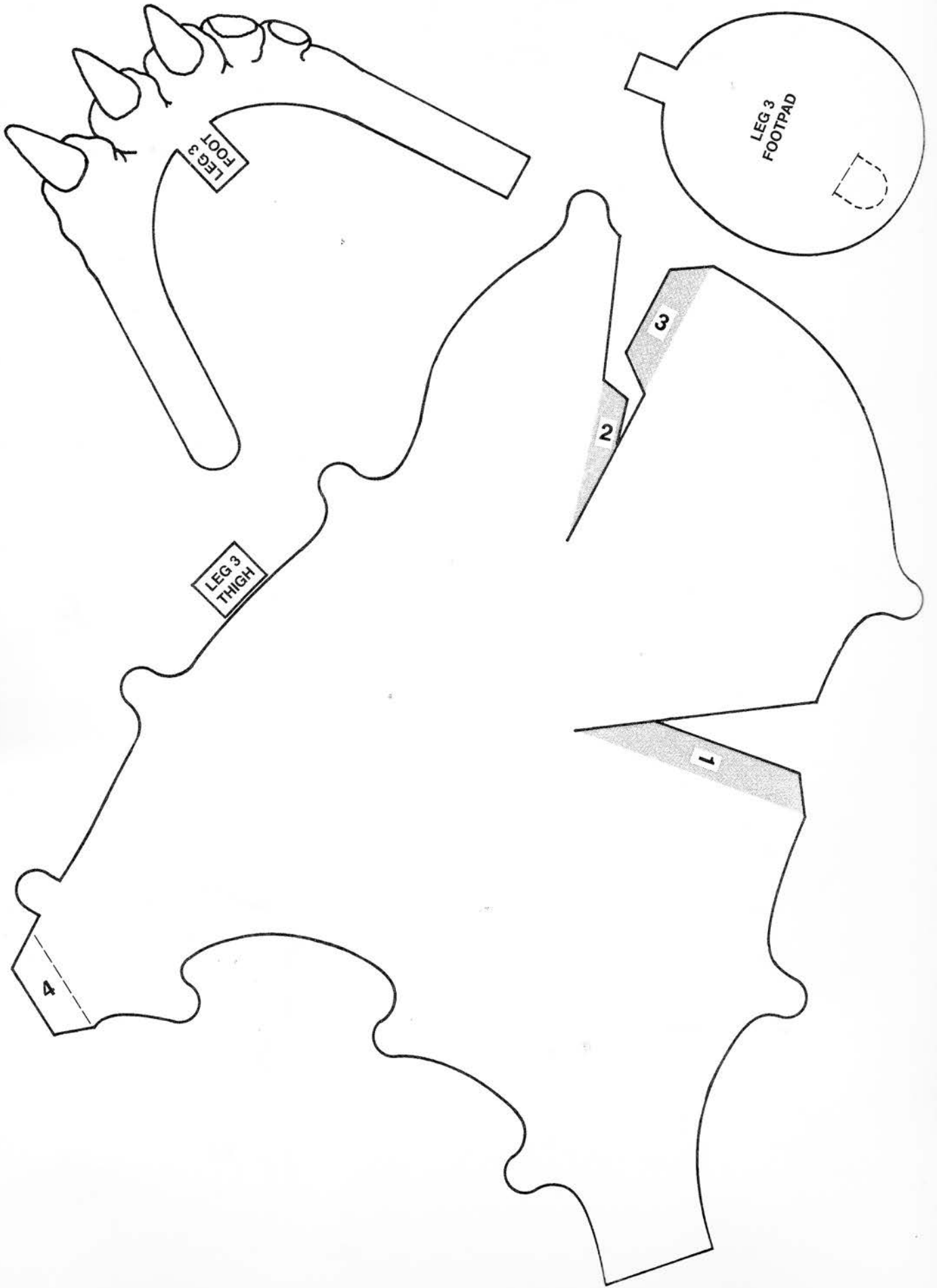
BODY 3 - LEFT HIP

14

16







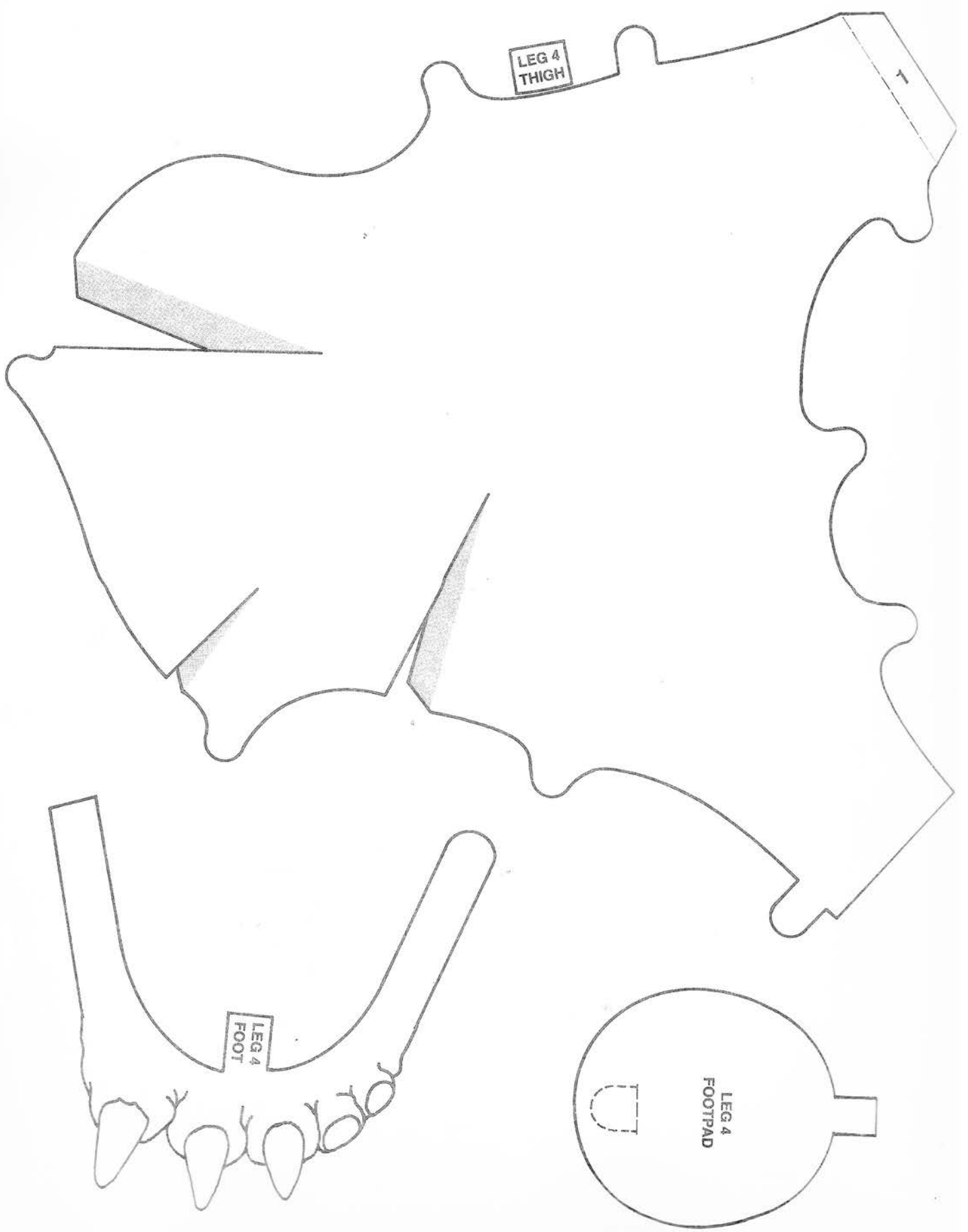
LEG 4
THIGH

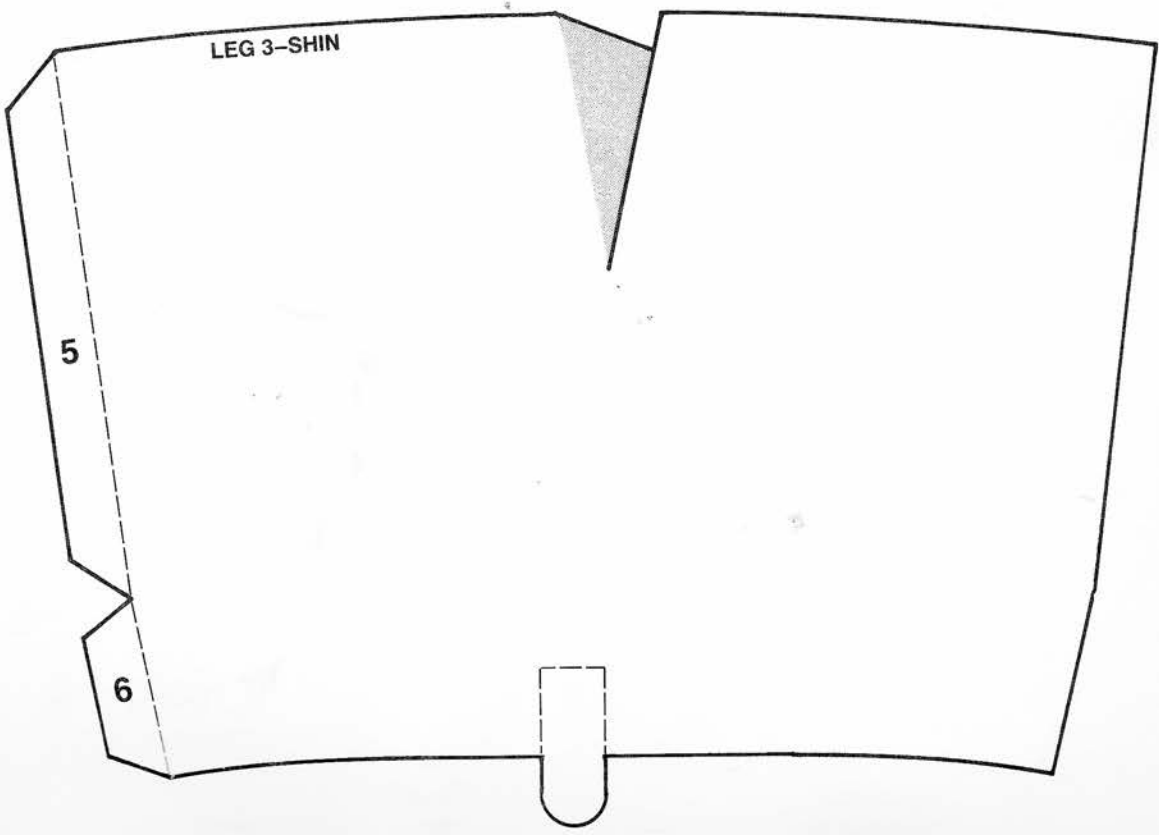
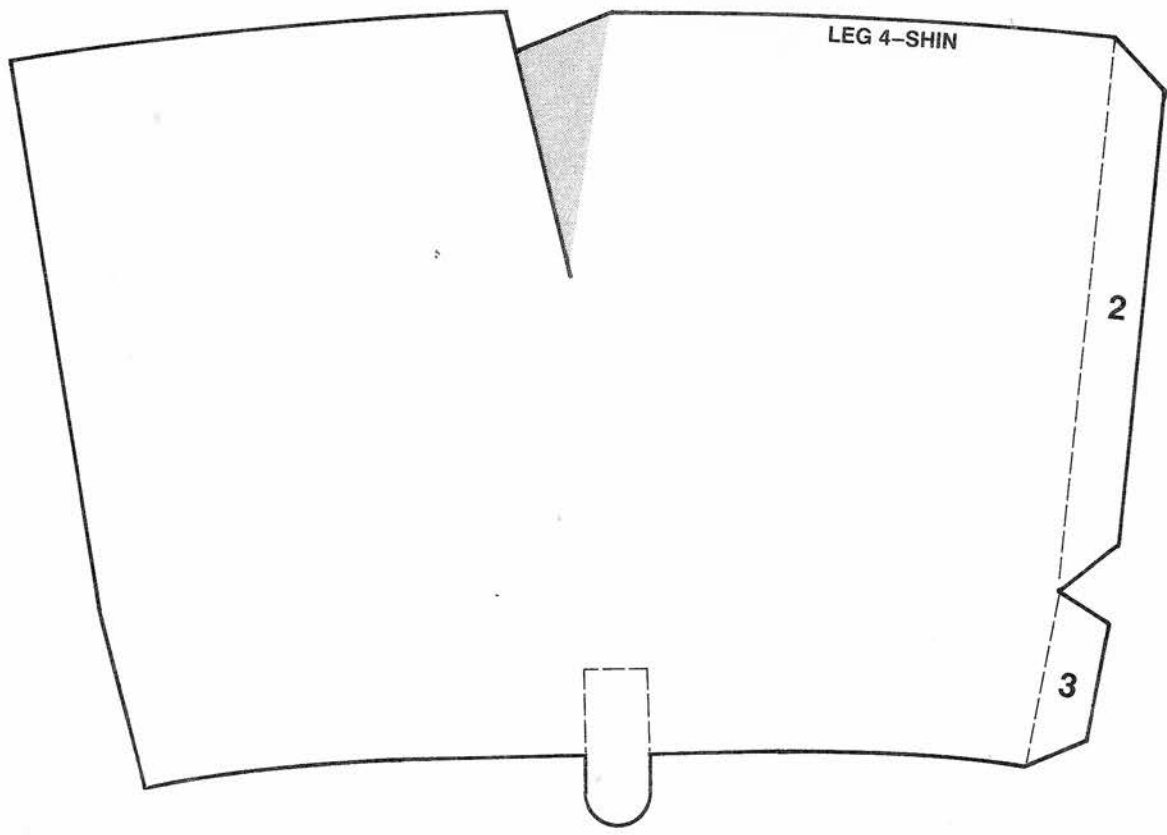
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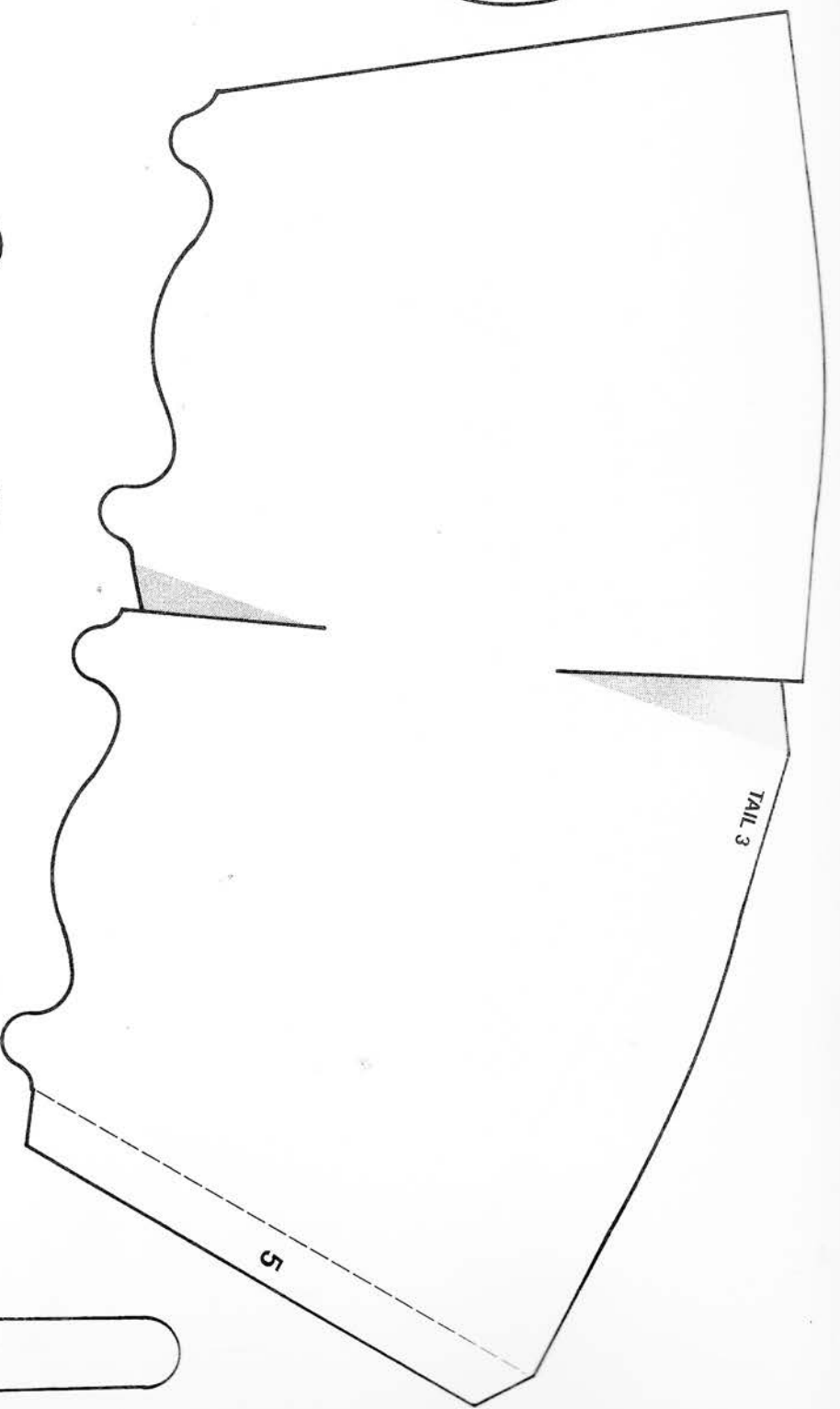
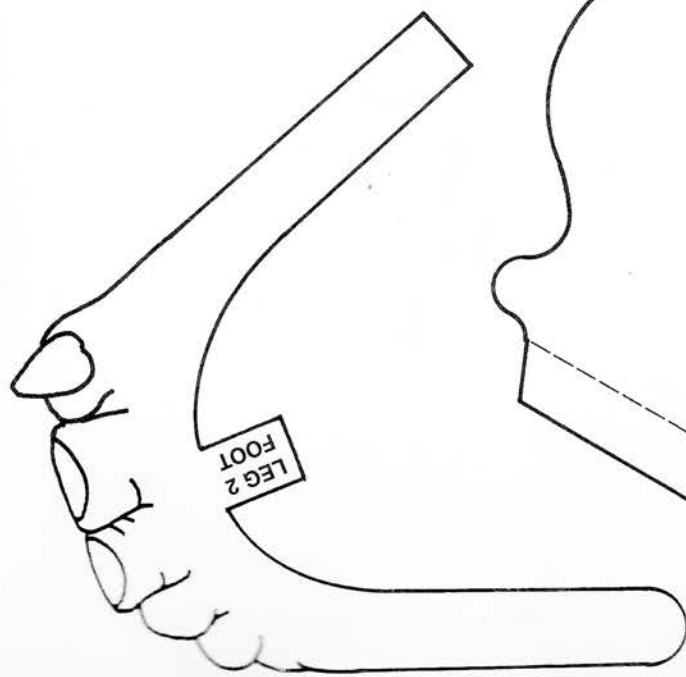
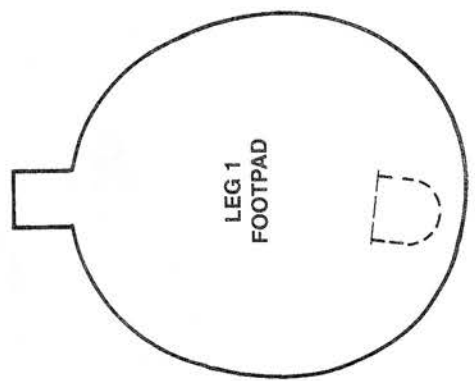
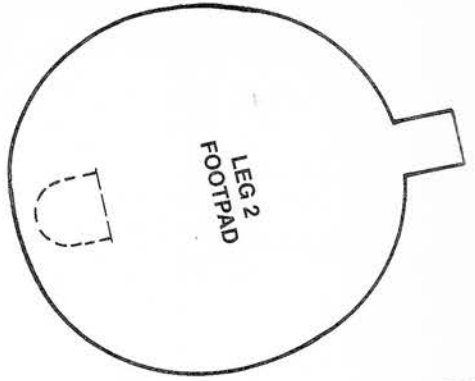
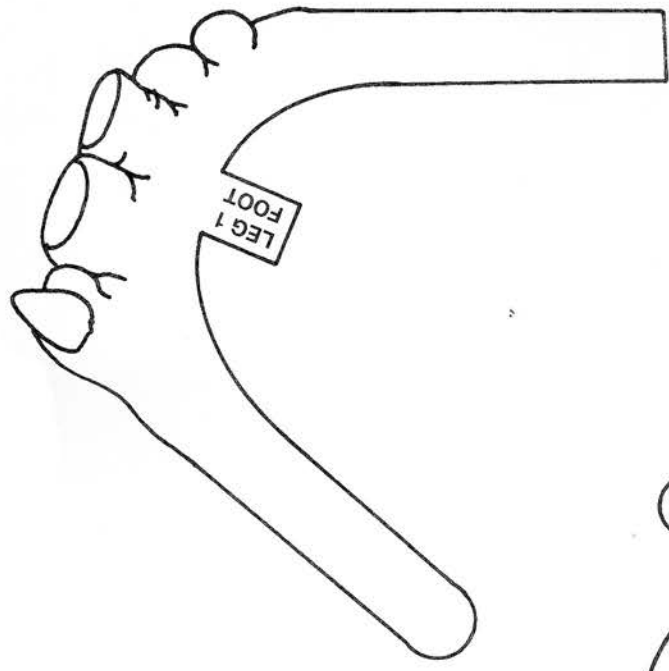
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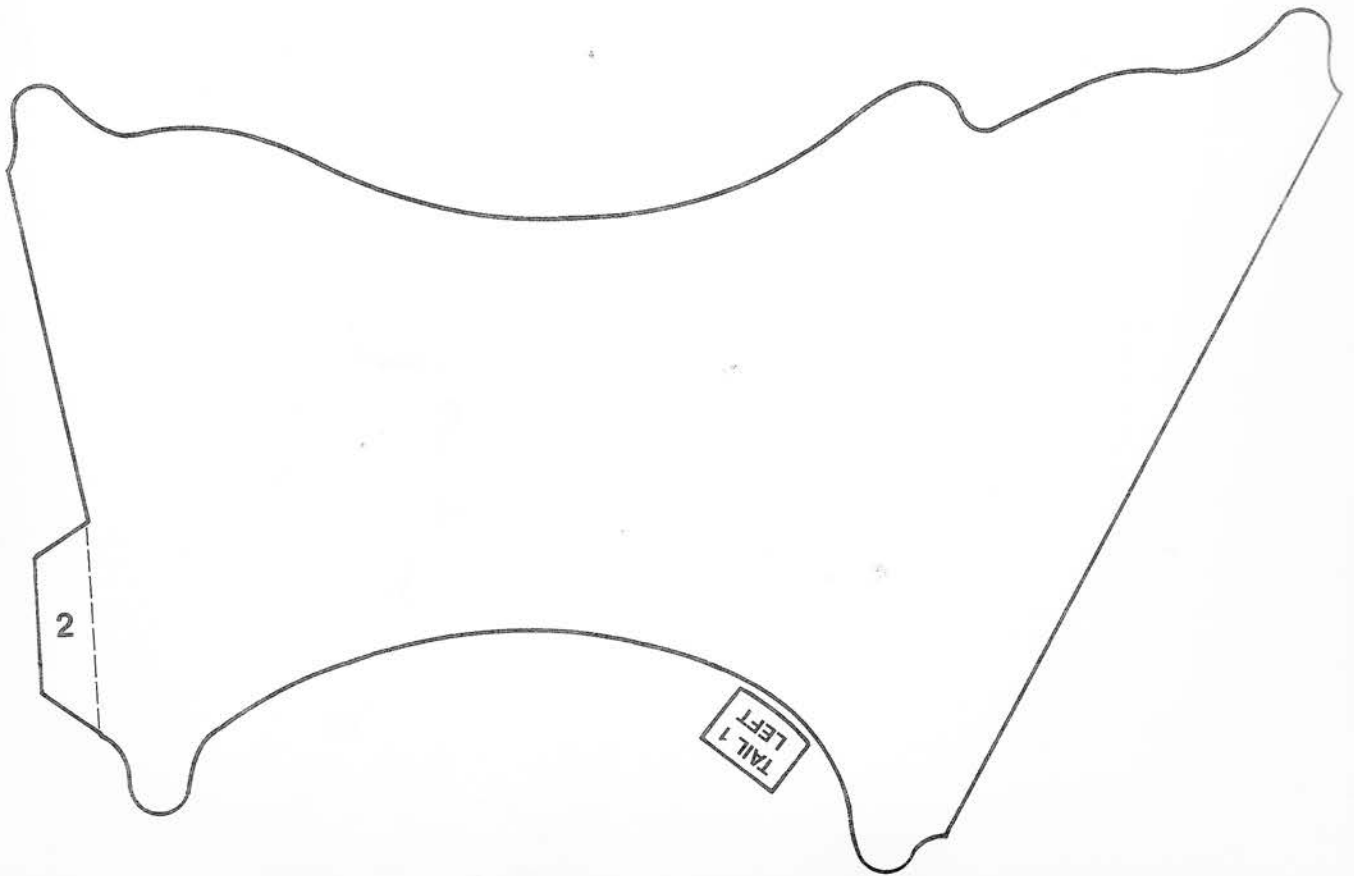
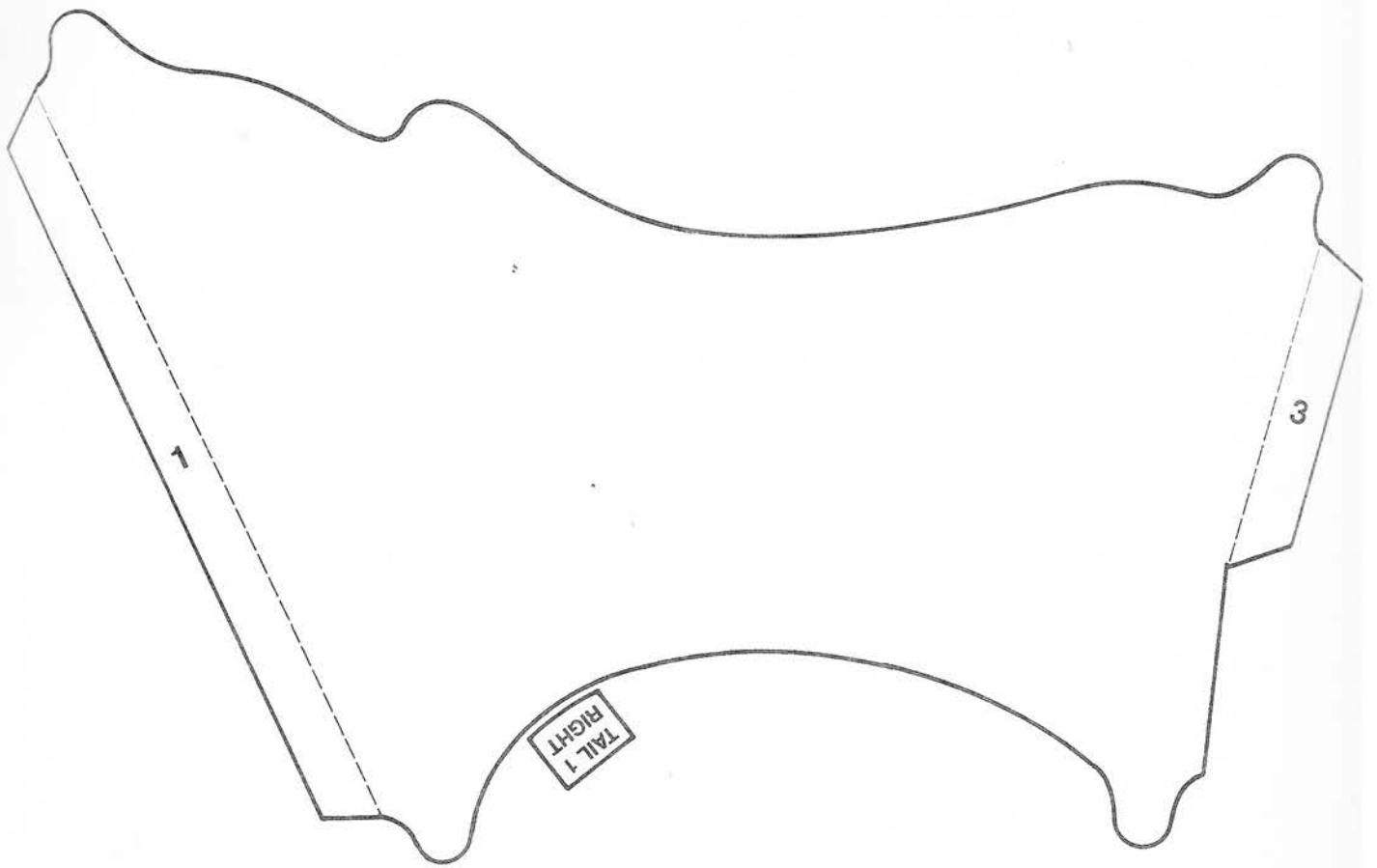
LEG 4
FOOTPAD

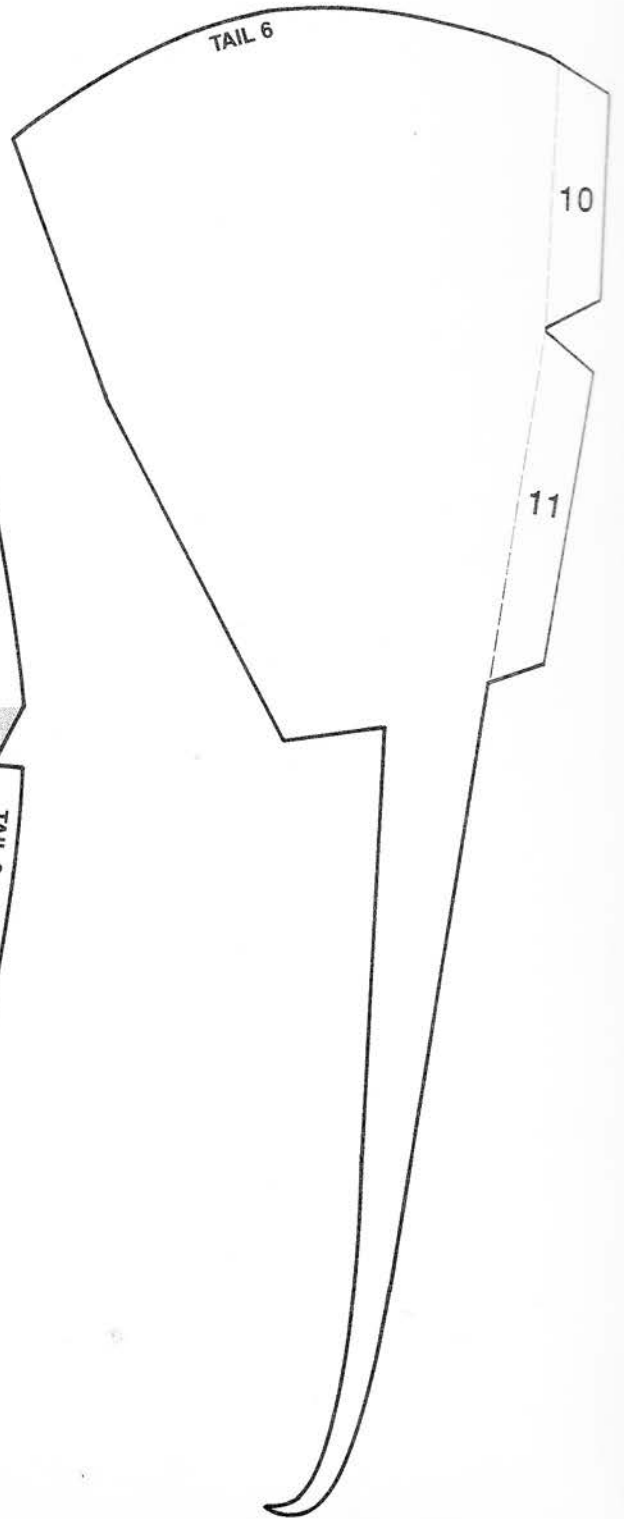
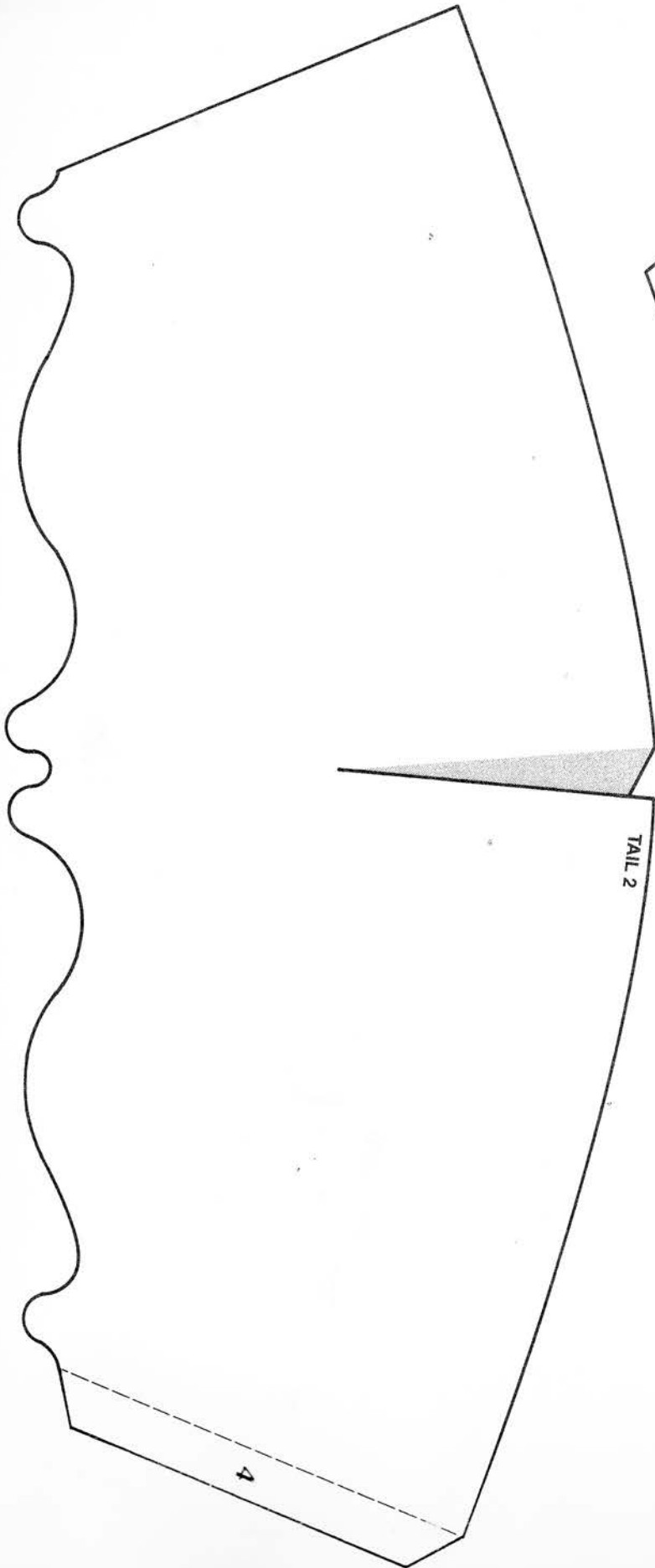
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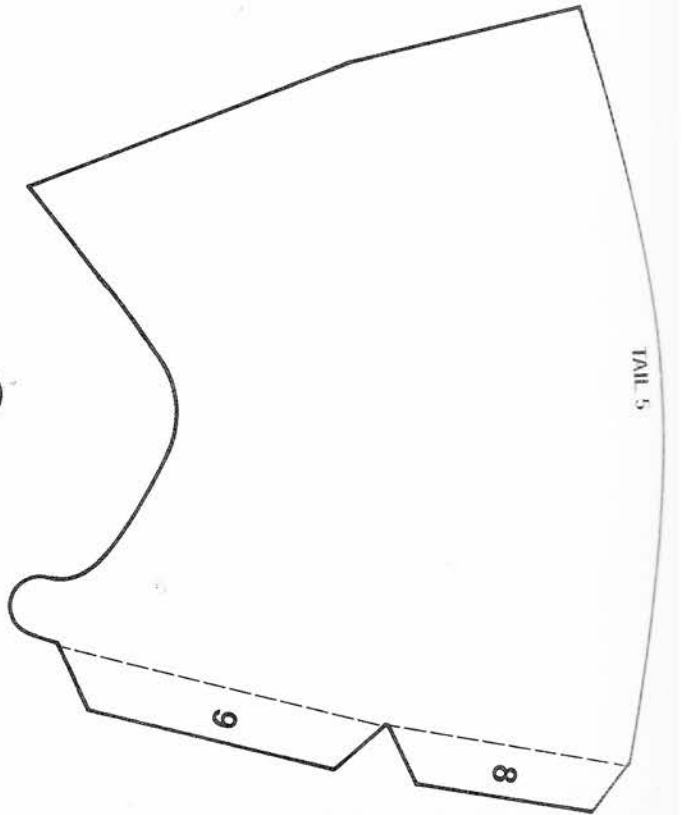
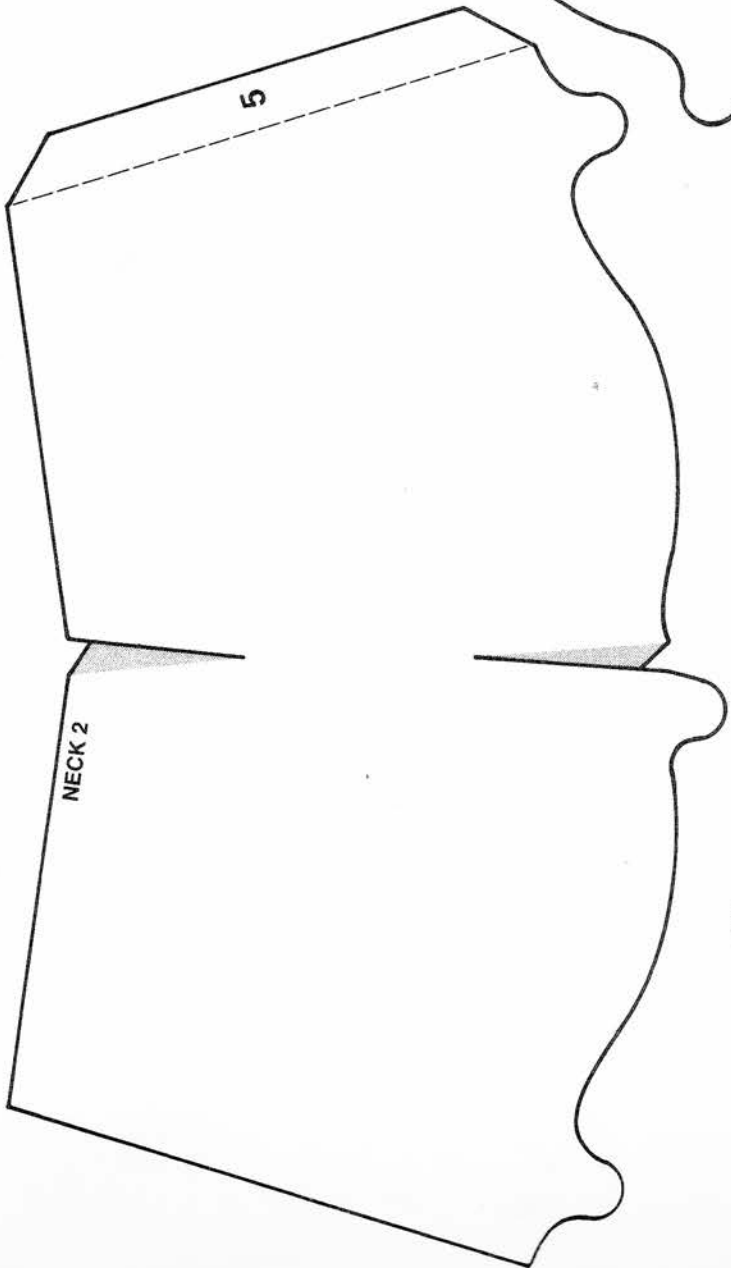
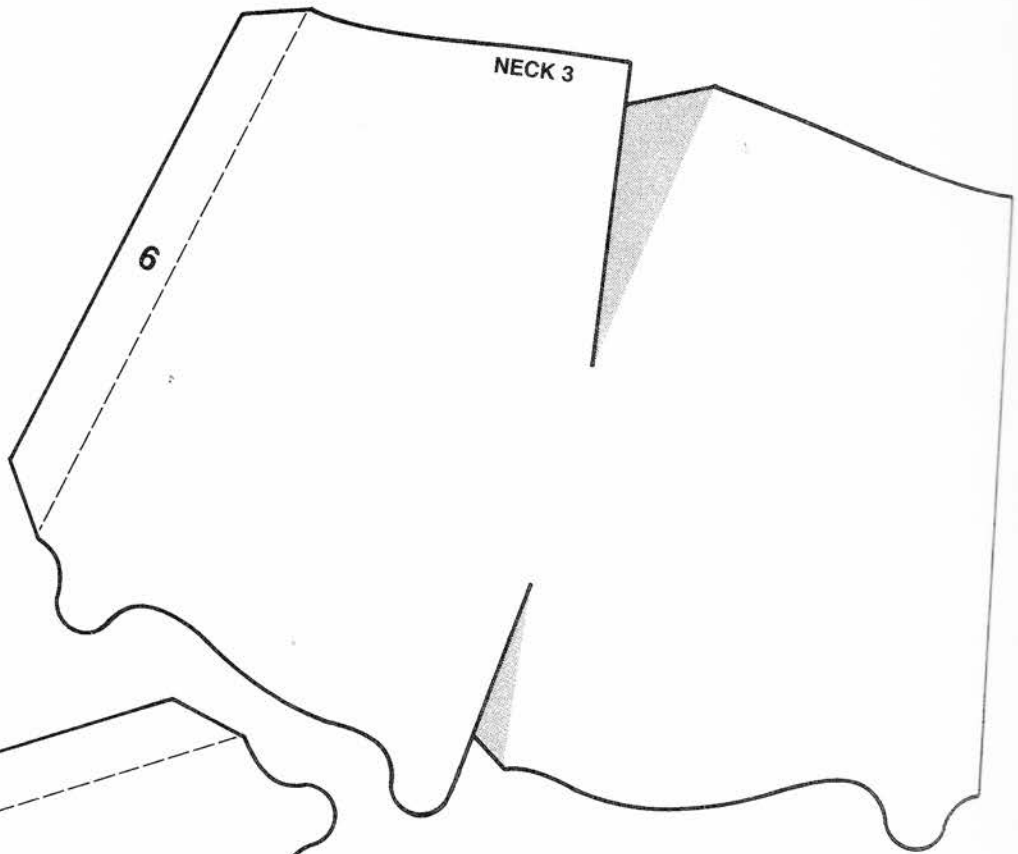


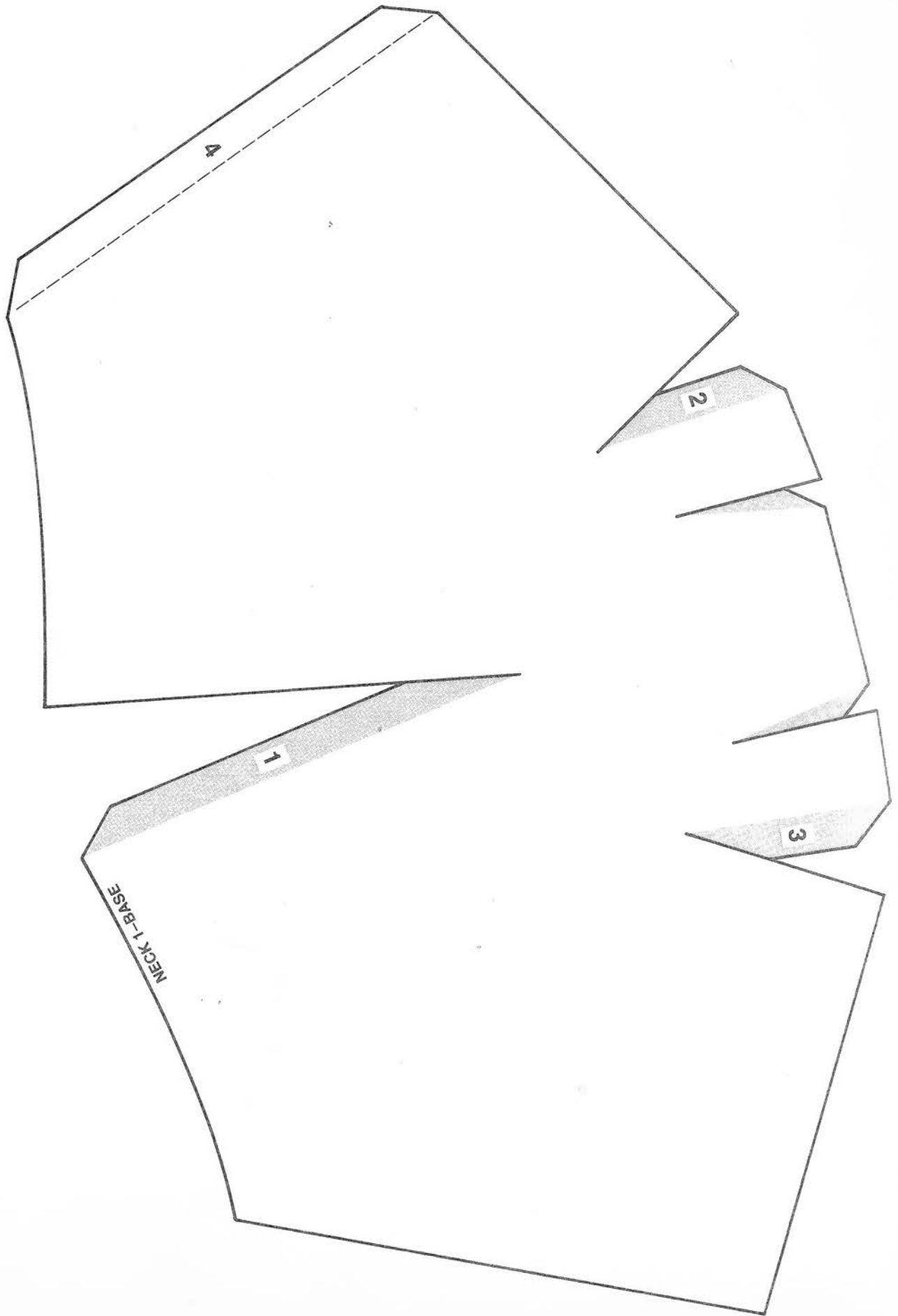












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3

NECK-1-BASE

