


VULCAN
Paper Model Kit



VULCAN

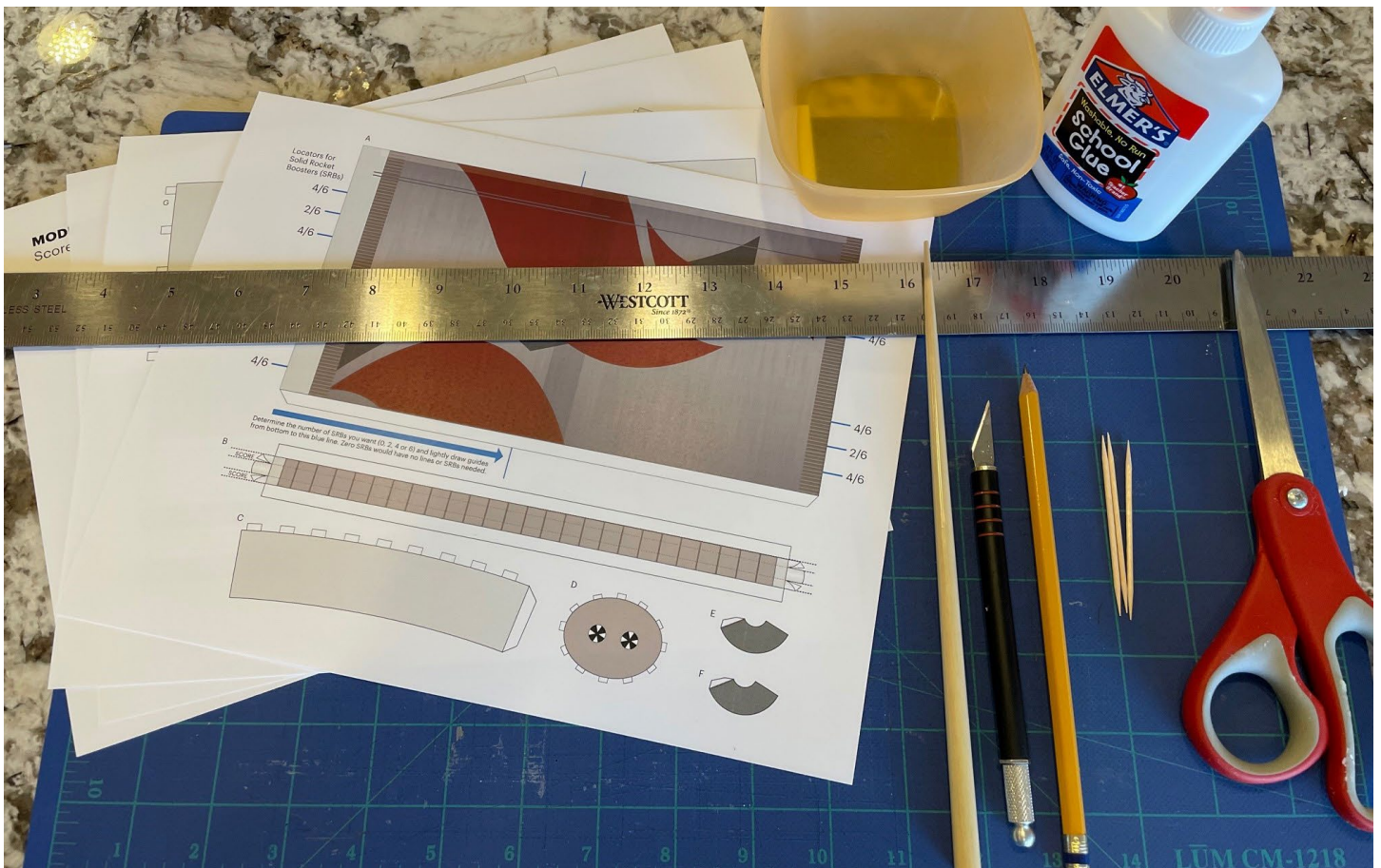
This paper rocket kit is designed to help you build a 1:150 scale model of the Vulcan rocket with your printer and basic tools. As with all paper model kits, your level of success will depend on your precision and the time you take. It is recommended to let the glue fully dry in each step before the next. Please take care not to cut yourself and do not leave children unattended with sharp tools.

Your Vulcan paper model kit will require:

- 8.5" x 11" cardstock prints of the 4 pages at the end of this document, (save paper and ink by only printing the pattern pages 14-17 and view the instructions online)
- A cutting mat
- Scissors and/or an x-acto knife (children should not use x-acto or be left unattended with cutting tools and anyone attempting this kit should take care to avoid injury from cuts)
- Glue (super glue or other adhesive is not necessary)
- A straight edge or ruler

Optional supplies:

- A few toothpicks for applying glue to small areas
- A small dish to hold a dollop of glue while building
- A long wooden dowel or chopstick to help you apply pressure to glued areas far into the rocket body
- A sharpened pencil



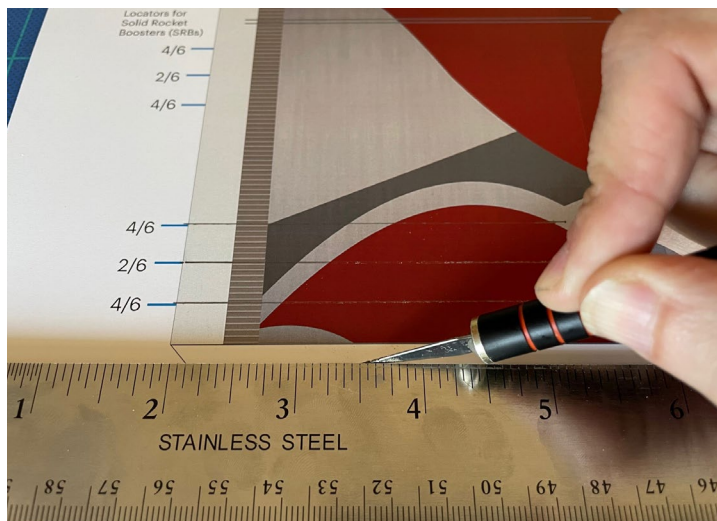
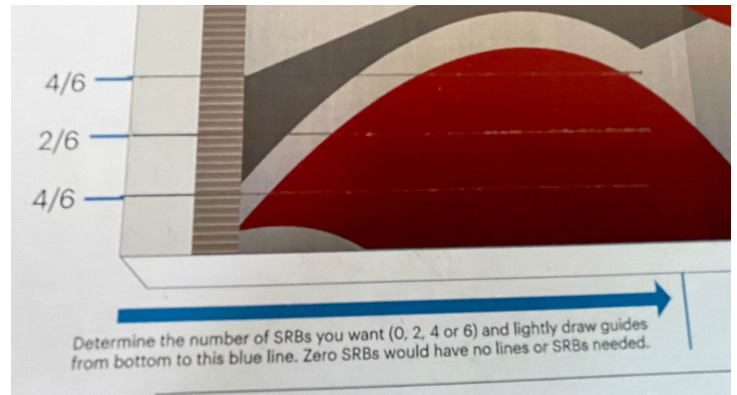
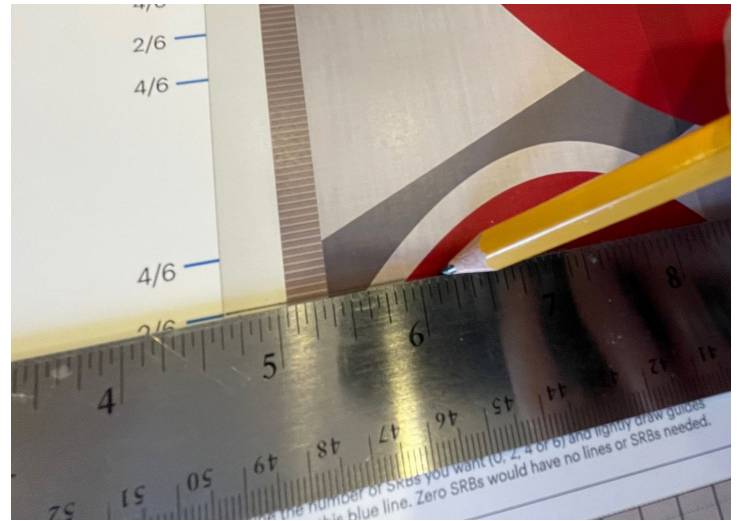
STEP 1

Mark the booster (A) for solid rocket boosters before cutting

Vulcan has the capability of using 0, 2, 4 or 6 solid rocket boosters (SRBs) for added performance. You will mark the locations for the SRBs first.

Determine how many SRBs your model will have. This example shows six. If you decide to have none, skip to the next step.

The numbers show the location lines for the quantity of SRBs you choose to use. Use a ruler across the blue marks at the top and bottom of the booster (A), to lightly draw the SRBs location lines, using the blue arrow as a guide. Do not go past the blue arrow with your marks or the pencil will show on the final model.



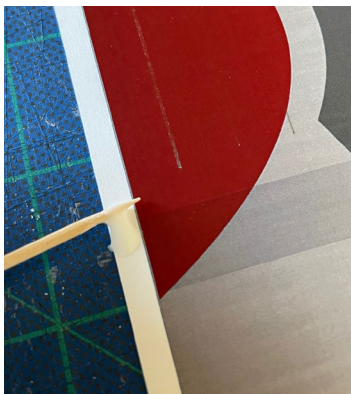
STEP 2

Trim out the booster (A)

Trim out piece A. Apply glue to the white strip on the side of the piece.

Gently curl the booster to make a tube and hold the glue until it dries in place.

You can use a wooden dowel or chopstick to put pressure on the inside of the tube where your fingers may not reach.



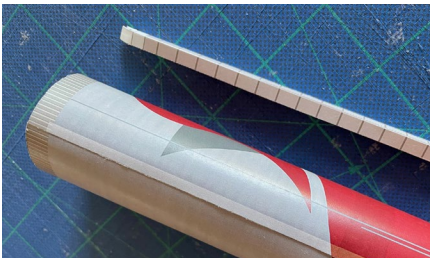
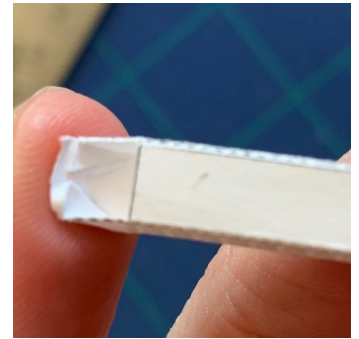
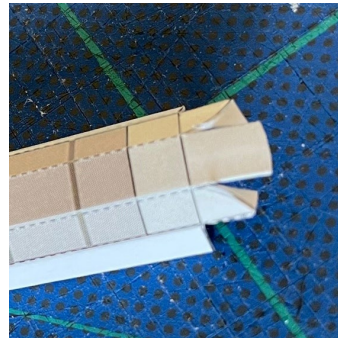
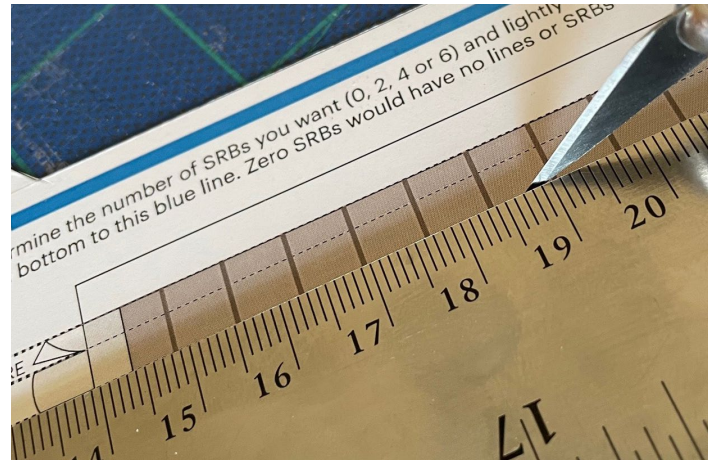
STEP 3

Make the booster raceway (B)

With the open blade of your scissors or an x-acto blade, you will lightly score the dotted lines on part B. For an x-acto, you will want to either use the back of the blade or extremely light pressure to avoid cutting the score lines. You may want to practice this first on a blank area of the cardstock. These will be fold lines.

Trim out part B and fold on the score lines to make a long box, and glue the piece together on the long side.

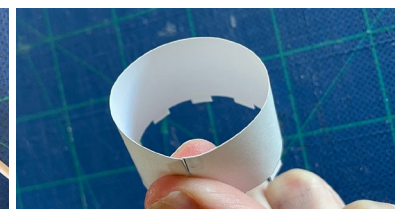
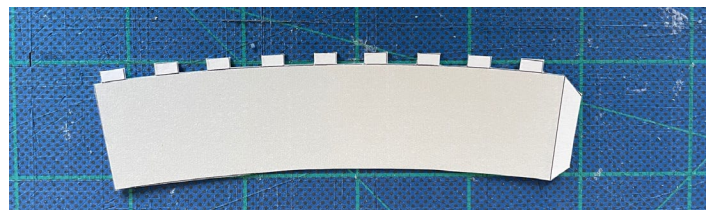
Once completed, bend the ends down and glue the triangular sections under the end pieces to form angles.



STEP 4

Attach the raceway to the booster

The booster has a lighter area along the seam on the back. Coat the back side of the raceway with glue and secure to the back of the booster in this guide as shown.

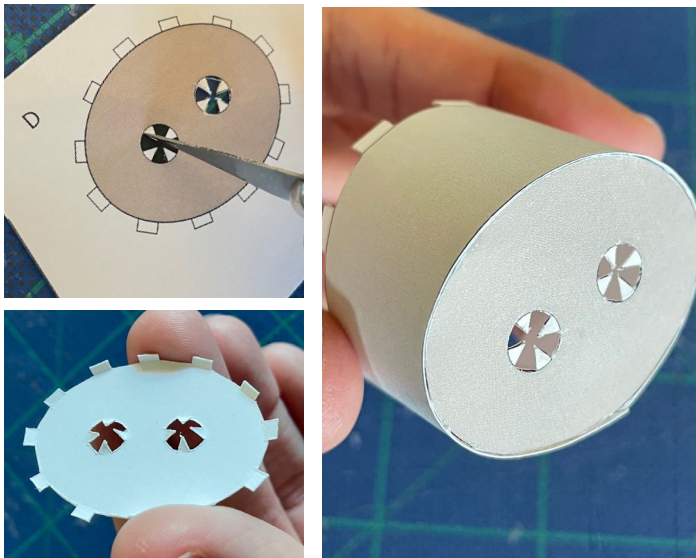


STEP 5

Make the heatshield (C)

Trim out part C, the heatshield, and apply glue to the white end.

Next, roll it around to form a ring.



STEP 6

Trim out the bottom of the heatshield (D)

Trim part D, which will be the base of the heatshield. Remove the black triangles in the center circles, leaving the white triangles in place. Bend the triangles and the rectangles back to shape the piece.

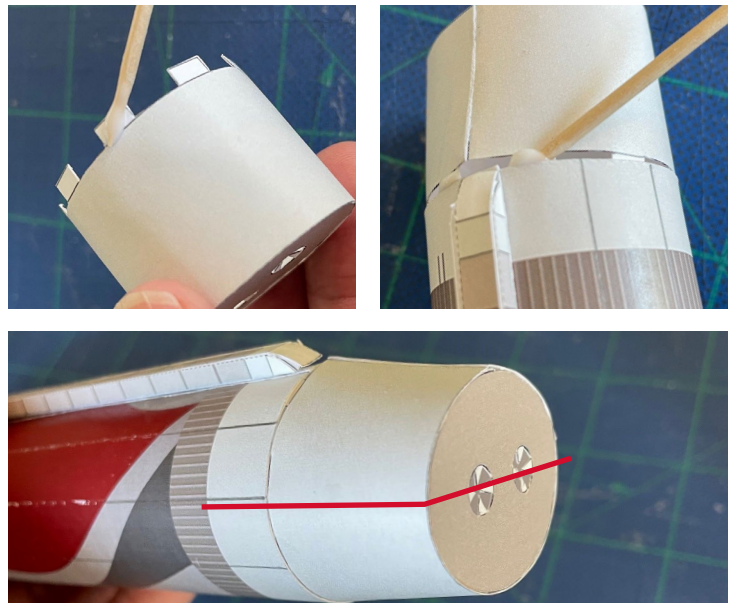
Add glue to the outer rectangles on part D, and glue the oval into the heatshield, from the last step, to form the heatshield.

STEP 7

Attach the heatshield to the booster

Apply glue to the rectangular tabs of the heatshield. Line up the holes of the heatshield with the side of the booster:

- If you drew lines for the SRBs, the holes should line up with the middle booster line as shown on the right.
- If you did not draw SRB lines, you can align the holes of the heatshield so the two engines would be perfectly visible from the front of the rocket.

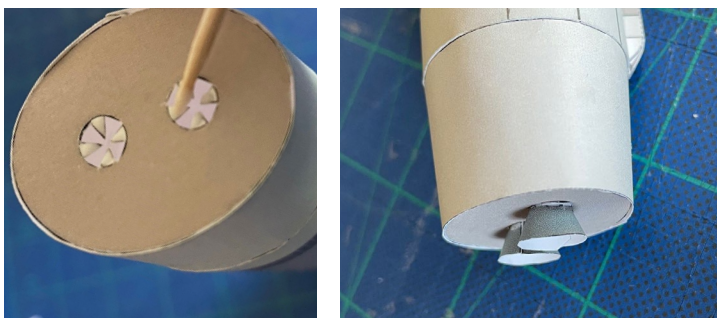


STEP 8

Make the BE-4 engine nozzle (E & F)

Trim out part E and F and curl them into a cone shape. Glue each end together to create two engine nozzles.

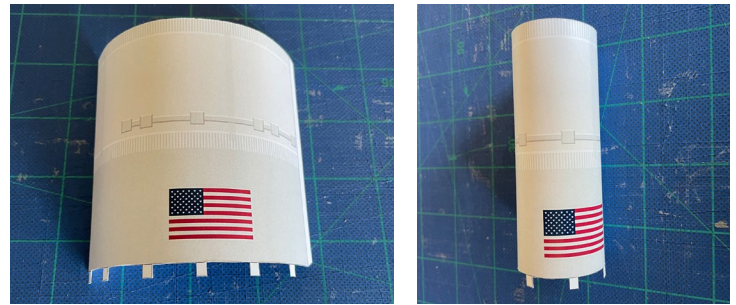
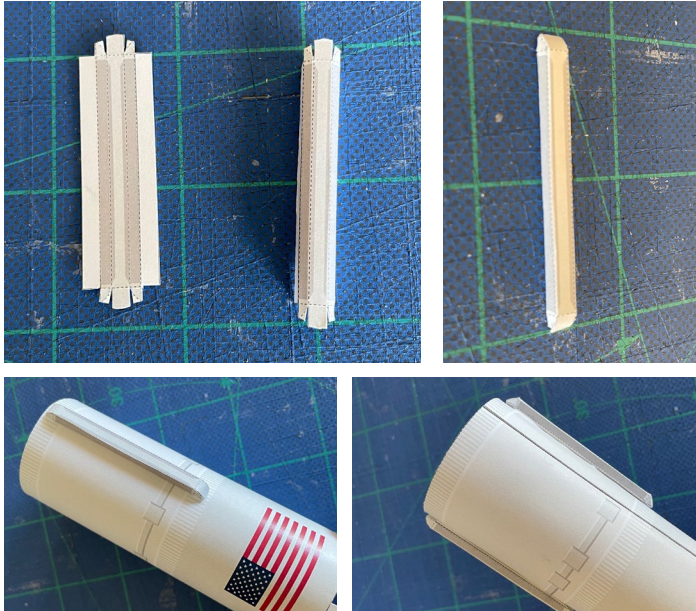
Once dry, apply glue to the triangular tabs on the heatshield and insert each engine into the hole in the heatshield as shown. The glue will dry and hold the engine in place. Center and level the two cone shapes before the glue dries.



STEP 9

Make the Centaur upper stage (G)

Trim out part G and wrap it gently into a tube, gluing the ends together to make the Centaur V upper stage.



STEP 10

Make the Centaur raceways (H)

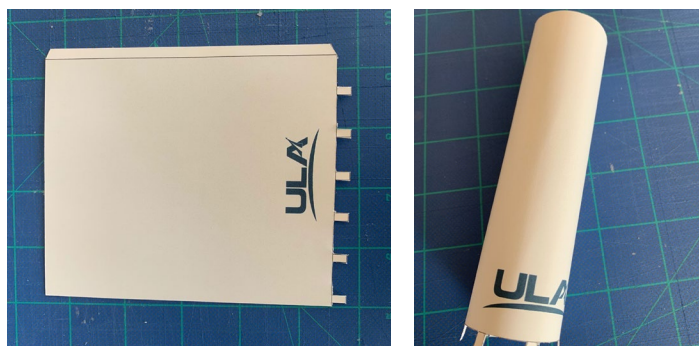
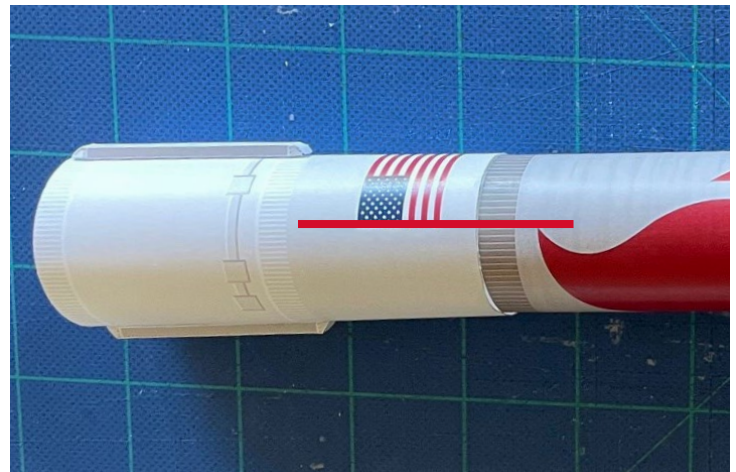
Score and trim both part H pieces in the same way you scored and trimmed the booster raceway. Glue the part into a long box and glue the ends in the same way.

Once dry, apply glue to the back of these pieces and locate the two darker, vertical stripes on the Centaur section, and glue these raceways to those locations, as seen on the left.

STEP 11

Attach the Centaur to the booster

Add glue to the rectangular tabs at the bottom of the Centaur section and glue it into the booster. Be sure to align the flag to the center of the front, between your SRB lines or with the left edge of the flag aligning to the top point of the flame at the top of the booster, as seen on the right.



STEP 12

Make the bottom of the payload fairing (I)

Trim out part I and wrap it gently into a tube, gluing the ends together to make the bottom of the payload fairing.

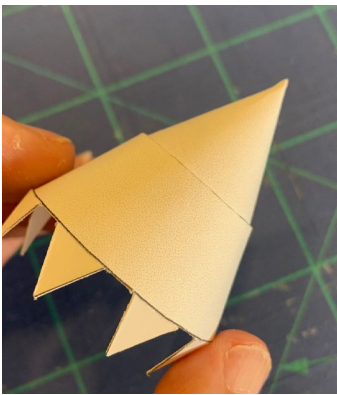
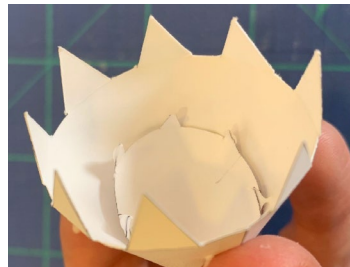
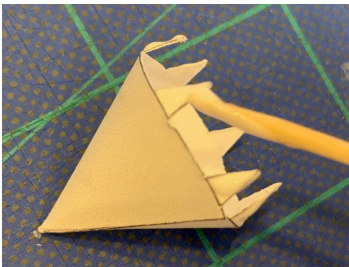
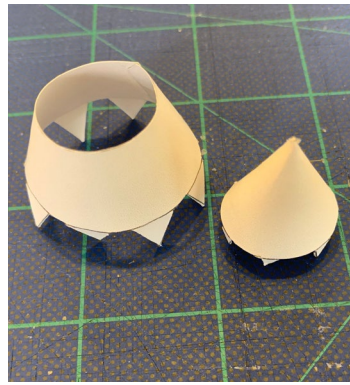
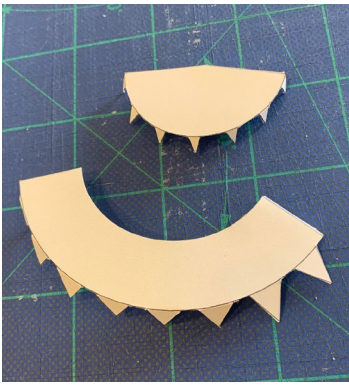
STEP 13

Finish the payload fairing (I, J & K)

Cut out parts J and K which will be the nosecone on the payload fairing. Slightly bend all the triangles back, then glue the ends and wrap them into their shape shown to the left.

Next, take the cone, part K, and add glue to the triangles. Line up the seams from both parts so they match up and drop the tip of the cone into the wider side of part J, to make a full nosecone. Center the top of the nosecone (K) and press the triangles down on the inside until they dry.

After the nosecone is dry, glue the triangles of the nosecone into the top of the payload fairing piece with the ULA logo (part I), as shown on the right. Let these parts dry completely to complete the full Vulcan payload fairing.

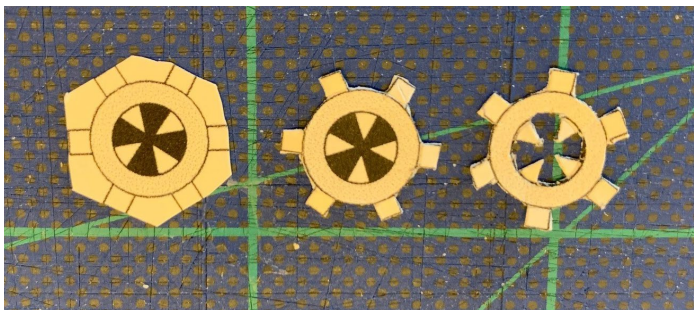
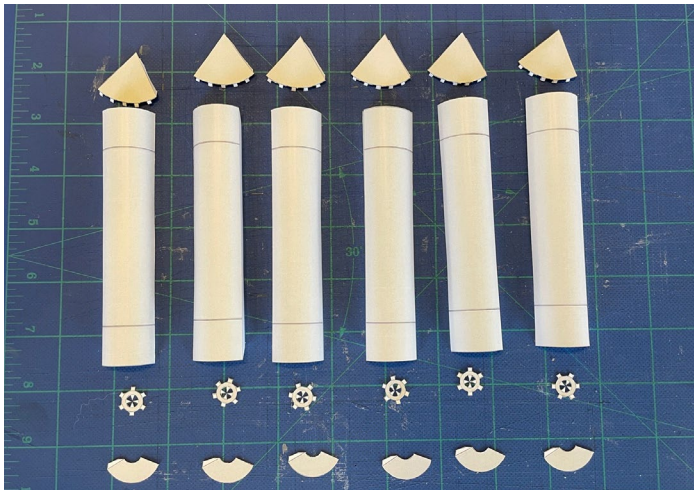
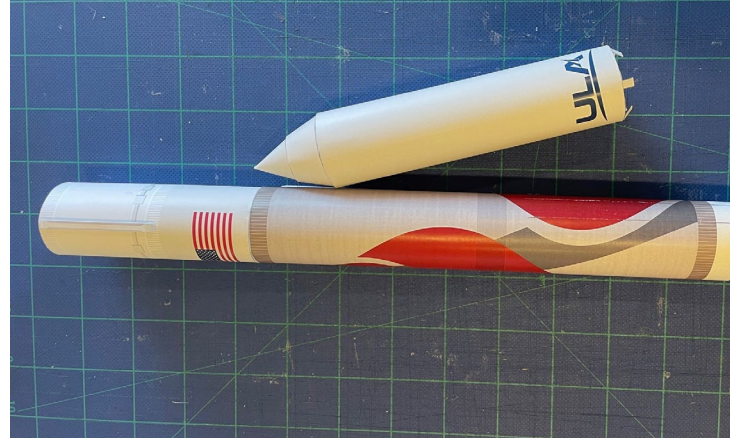


STEP 14

Glue the payload fairing to the rocket

Add glue to the rectangular tabs on the fairing section (with the ULA logo), then tip this into the booster of the rocket, lining up the seams of the fairing on the back and the ULA logo aligning with the flag.

If you chose not to add SRBs to the rocket, you are done here and can skip to the model base section of these instructions.



STEP 15

Trim out the SRBs from page 16

Each SRB will require one each of parts L, M, N and O. Cut out as many of each part as you have selected for your rocket. This example will show all six SRBs for our final rocket.

Part M requires the most patience and precision. Cut out each section slowly, and remove the black portion in the center to leave a hole and four triangular points, then fold them back. Be careful not to cut yourself, as these parts are tricky and tiny.

STEP 16

Assemble the SRBs

Nosecone (part N): Wrap this part around and glue it into a cone.

SRB tank (part O): roll this and glue the ends together to form a tube. Try using a pencil to roll the part around. Let dry.

SRB base (part M): will be glued into the bottom of the SRB tank to hold the engine.

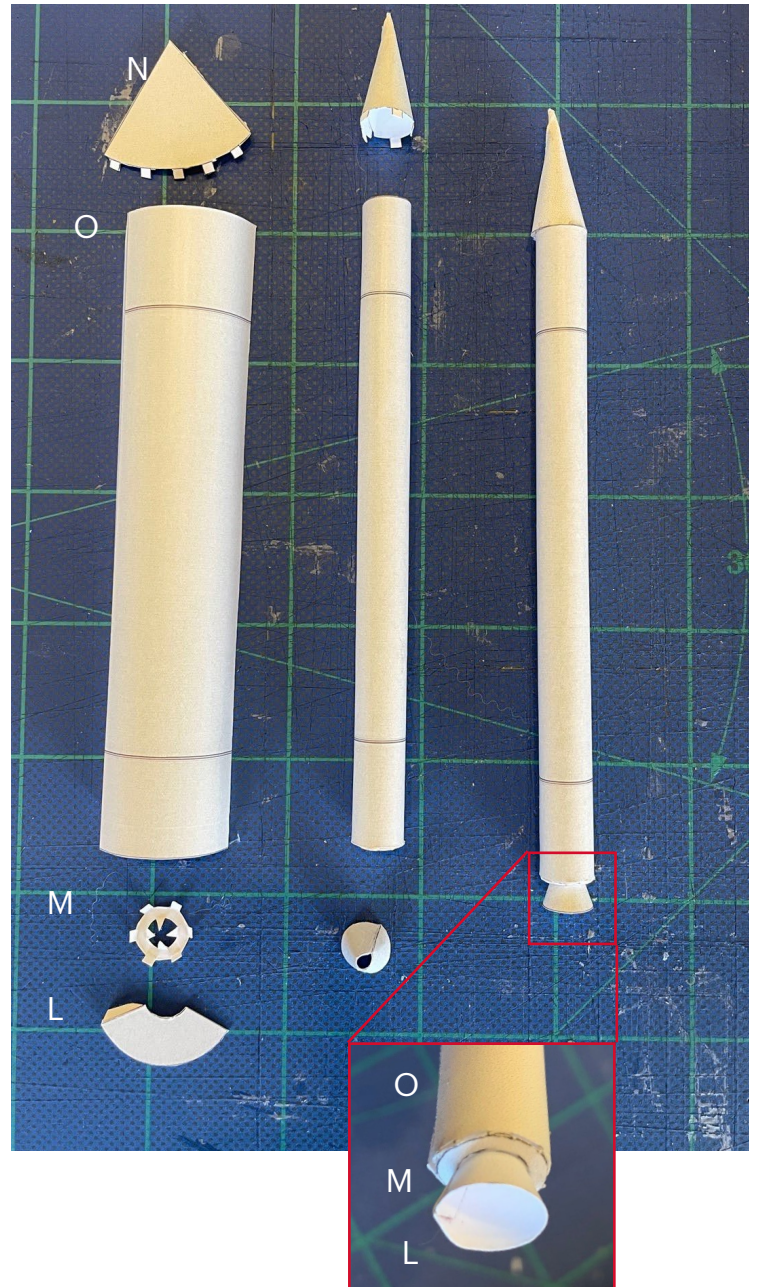
Engine nozzle (part L): wrap around and glue the end to make a cone.

Assemble the SRBs one at a time, making sure the glue dries on each part before proceeding.

Once each part is formed, glue the nosecone into the top of the SRB tank by adding glue to the rectangles and sliding it into the tank tube (either end is the same). Then glue the base (part M) into the opposite side of the tank.

Lastly, add glue to the triangles in the hole of part M, the base, and attach the engine nozzle (part L) by pushing it into the hole with the triangles sticking to the engine. Center the part before the glue dries.

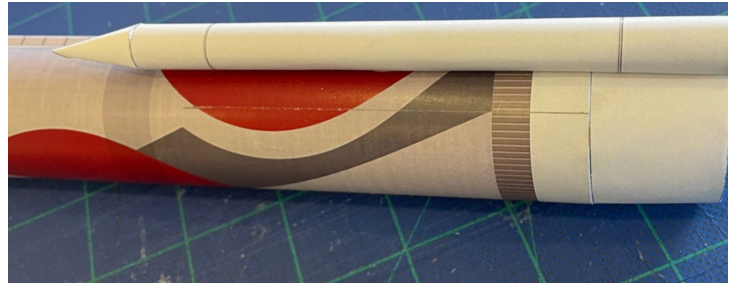
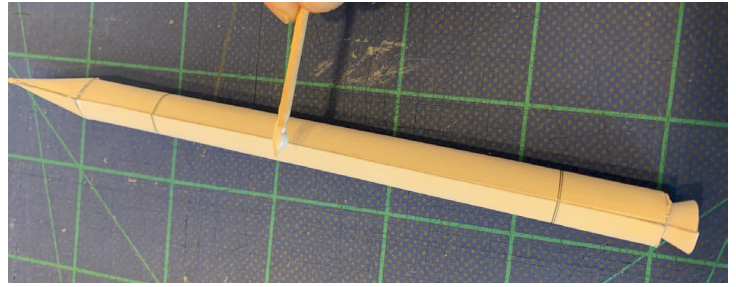
Make as many SRBs as you need for your model.



STEP 17

Glue the SRBs to the rocket

Remember those lines you drew on the rocket tank on step 1? You will now add glue to the seamed side of each SRB (this hides the seams) and stick them to the lines, one at a time, letting each one dry and assuring they are straight and lined up to each other.



COMPLETED VULCAN ROCKET

MODEL STAND

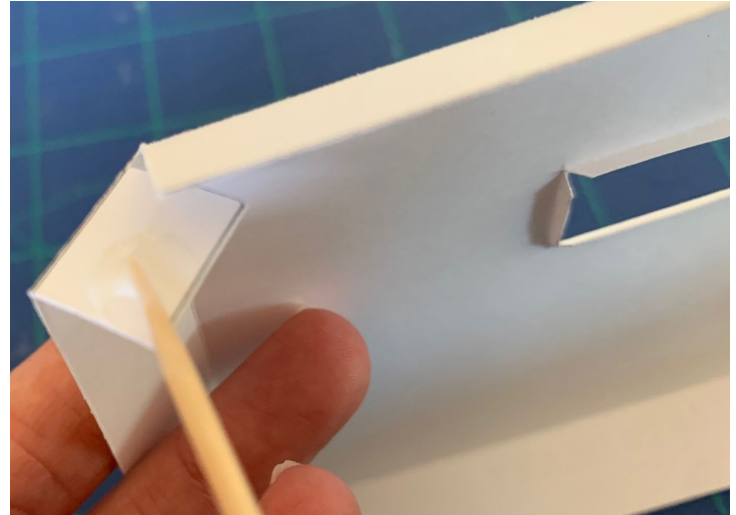
STEP 1

Make the base of the stand (P)

Trim out part P, as shown, and be sure to score all fold lines in this stand model. Score the lines by using the back side of the x-acto knife or cutting very lightly so the blade doesn't go through the line). The folds need to be crisp and 90 degrees to provide a sturdy stand for the rocket.

Remove the black section marked "cut out and remove." The white portion of this area can be scored and the corners cut to allow each tab to fold down. See photos on the right.

Add glue to corners of the box to make the base for the stand. Allow glue to fully dry.

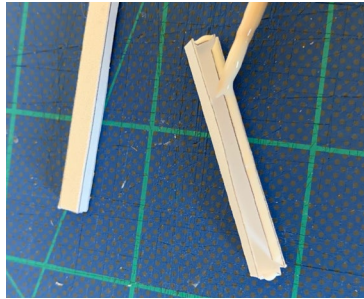
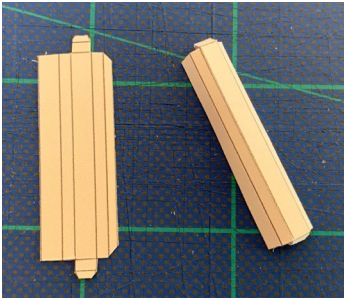
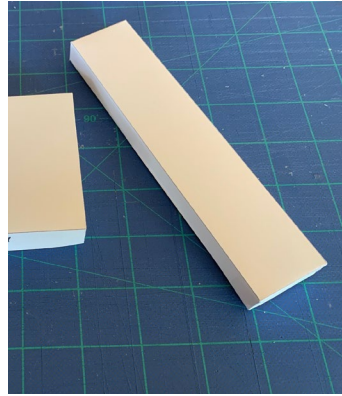


STEP 2

Make the support tower (S)

Trim out part S from the pattern, and again, score all the fold lines for a clean fold. Add glue to corners to make the shape in the photo, a tall, thin box.

Insert the support tower (S) into the base (P) and even the length with the side walls of the base. This will ensure that the support tower is touching the ground or table when it stands and will provide further support. You can also add glue to the folded tabs to secure the base to the tower, once you have the positioning correct.



STEP 3

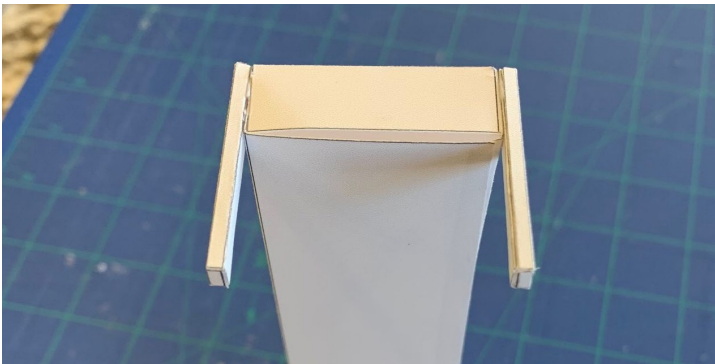
Make the support arms (Q & R)

Trim out parts Q and R, scoring the fold lines, then fold and glue together to make small boxes.

Next, glue the support arms to the sides of the support tower, at the very top, so that the widest surface is attached to the tower. See the photo for reference.

Let glue dry.

Add the rocket! The support arms should fit nicely around the booster, just above the SRBs.

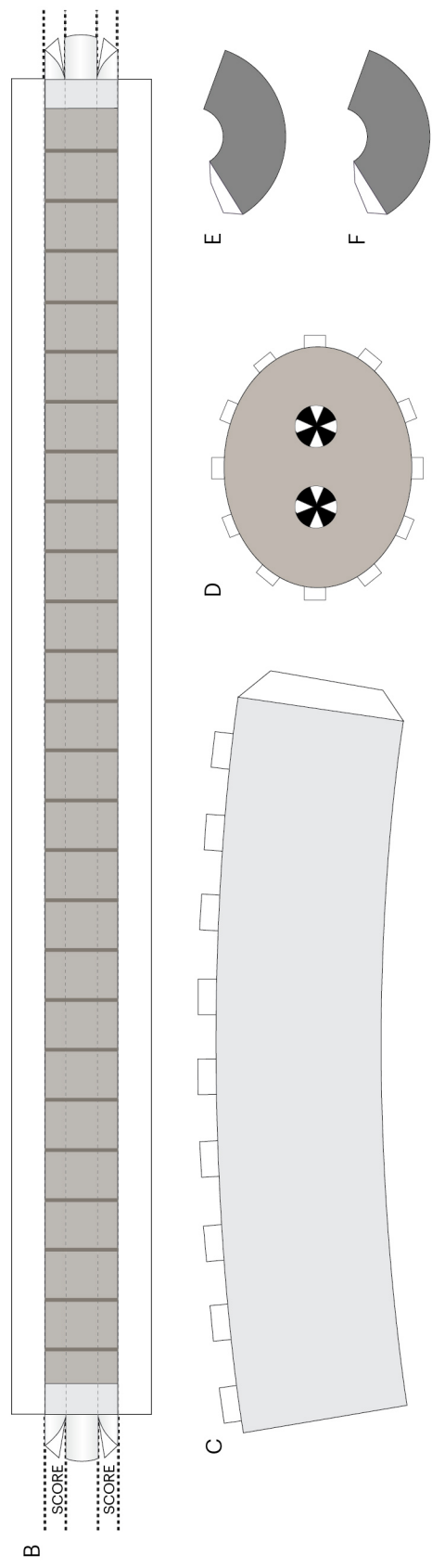


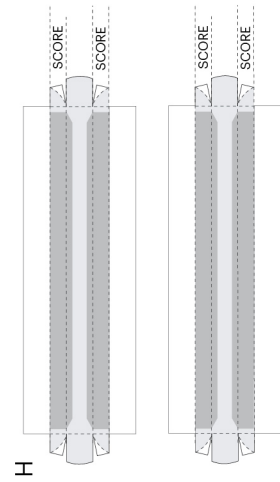
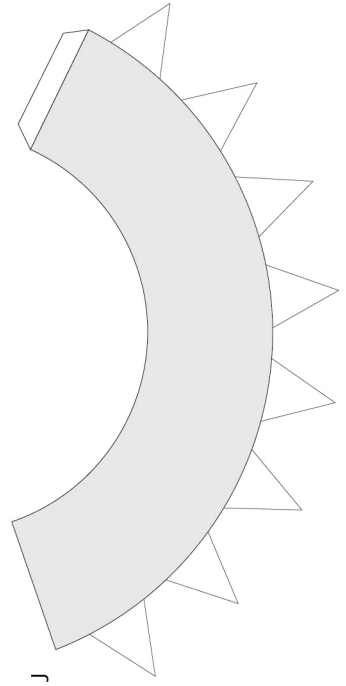
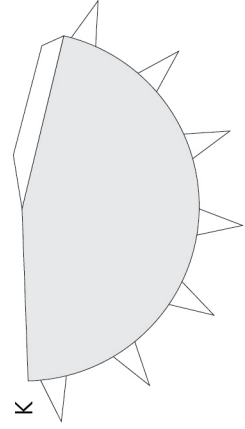
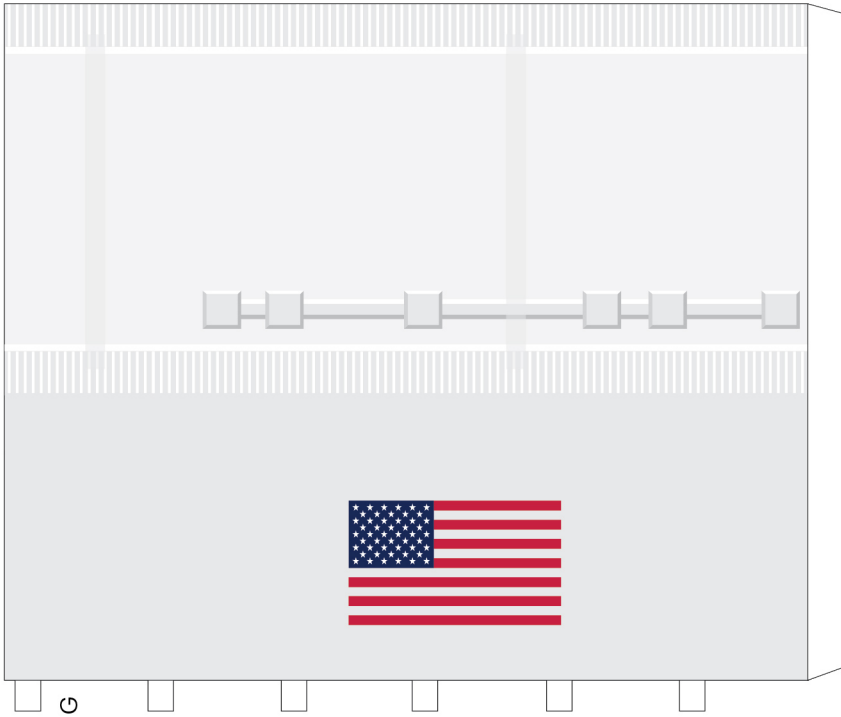
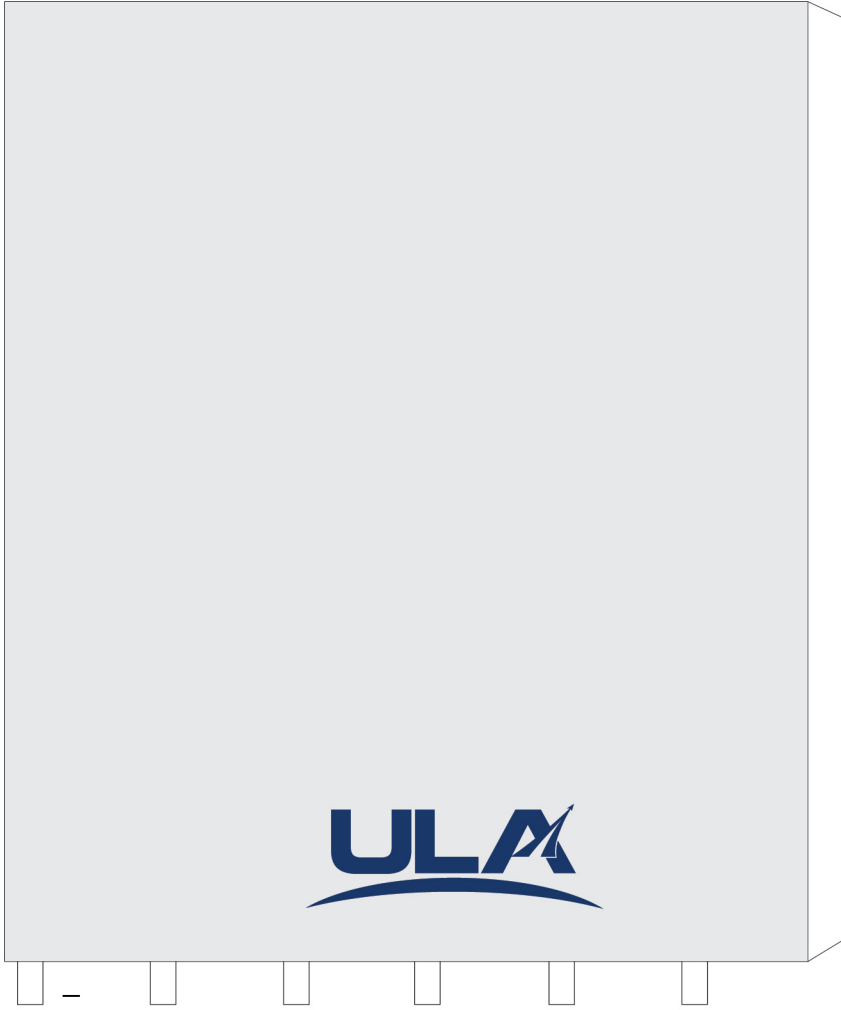
**VULCAN
ROCKET**
With Model Base



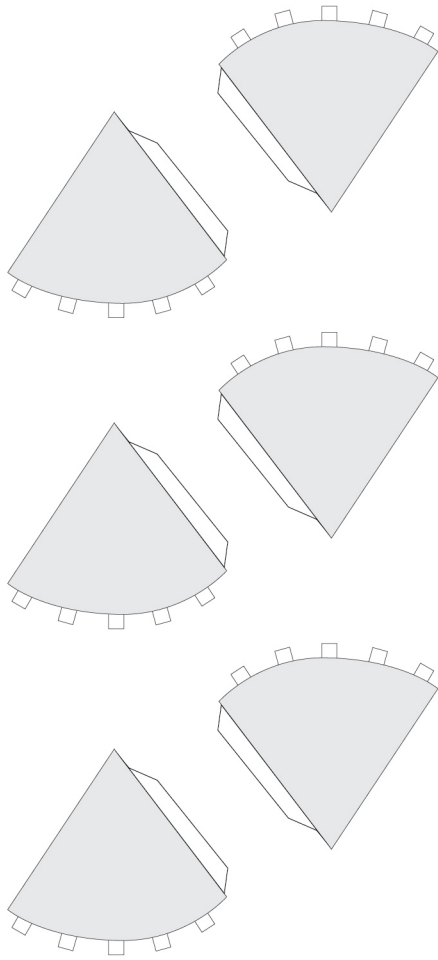


Determine the number of SRBs you want (0, 2, 4 or 6) and lightly draw guides from bottom to this blue line. Zero SRBs would have no lines or SRBs needed.

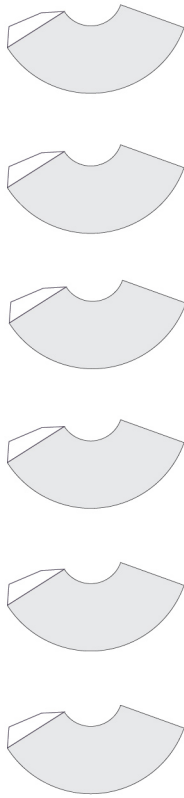




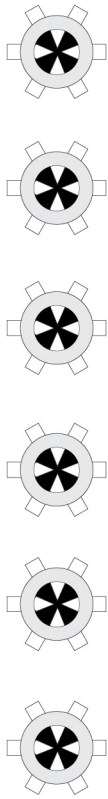
N (6 Parts)



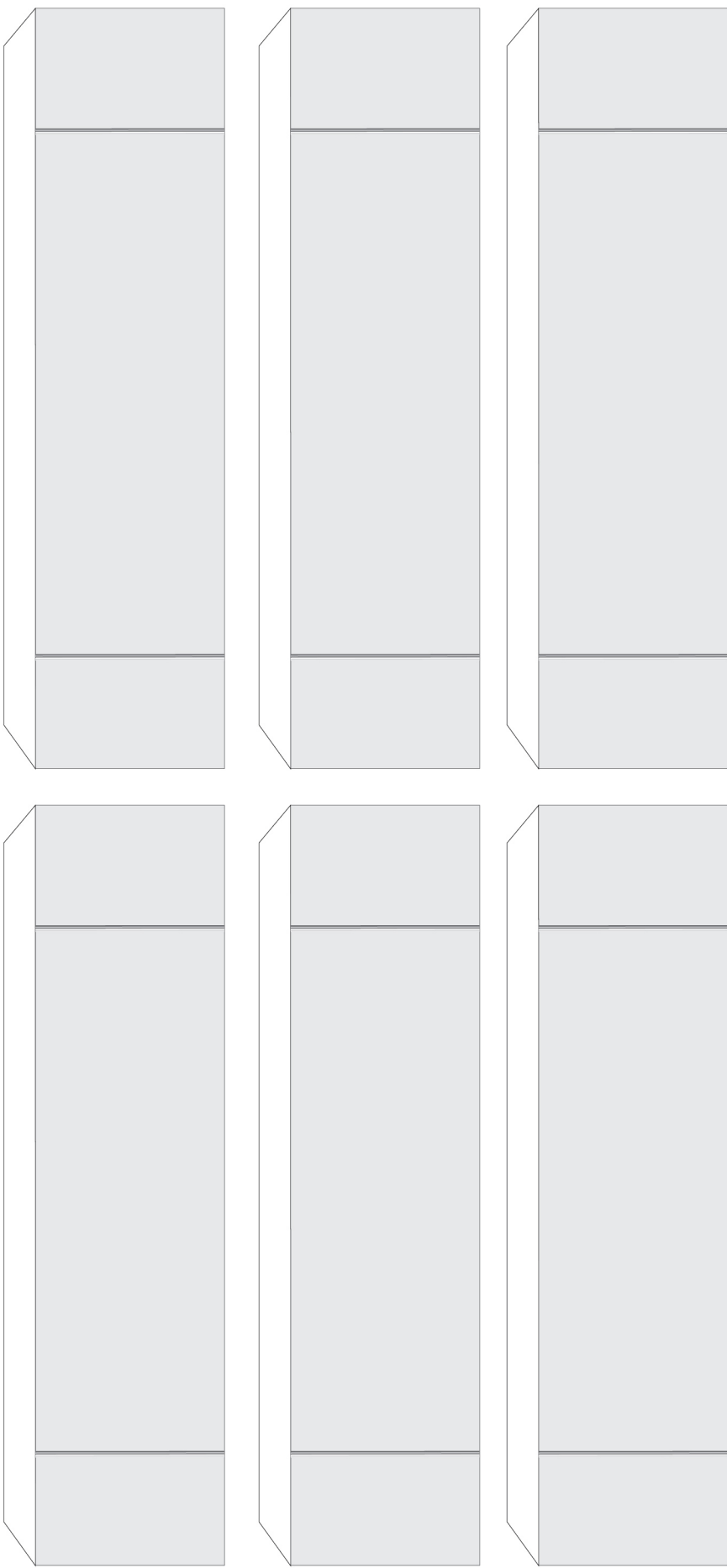
L (6 Parts)



M (6 Parts)



O (6 Parts)



MODEL BASE

Score all folding lines on this page

