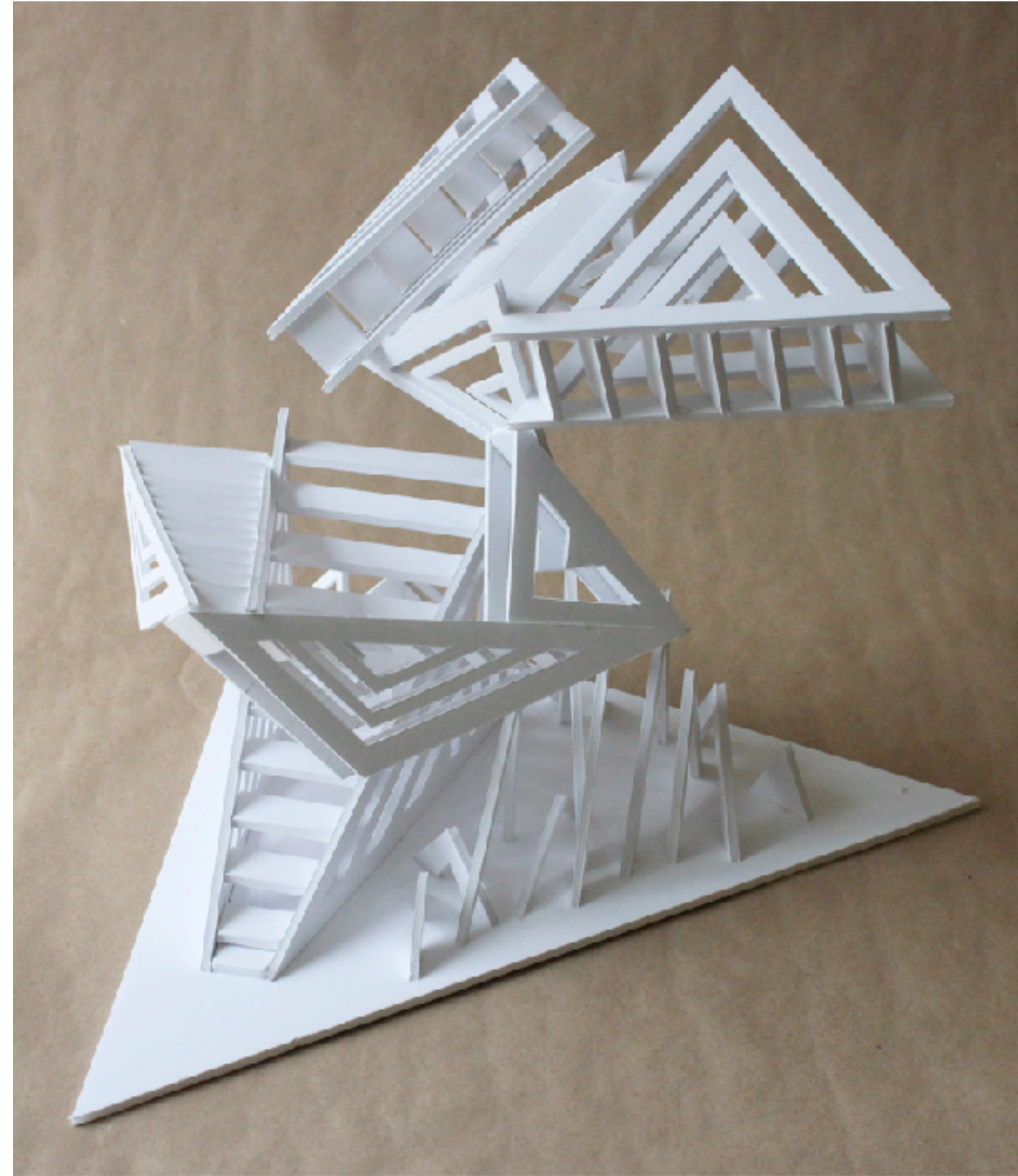


CS181DT Class 4: Analog form giving



Form exploration by
Gonzalo Portas



Student sculpture from Clara Lieu's
RISD course



Foam Core Squares by odstmarinell on DeviantArt

Class 4 agenda

- Zipcrit
- Why analog making?
- Foam core studio: techniques tutorial
- In class design activity: hyper personalized phone case

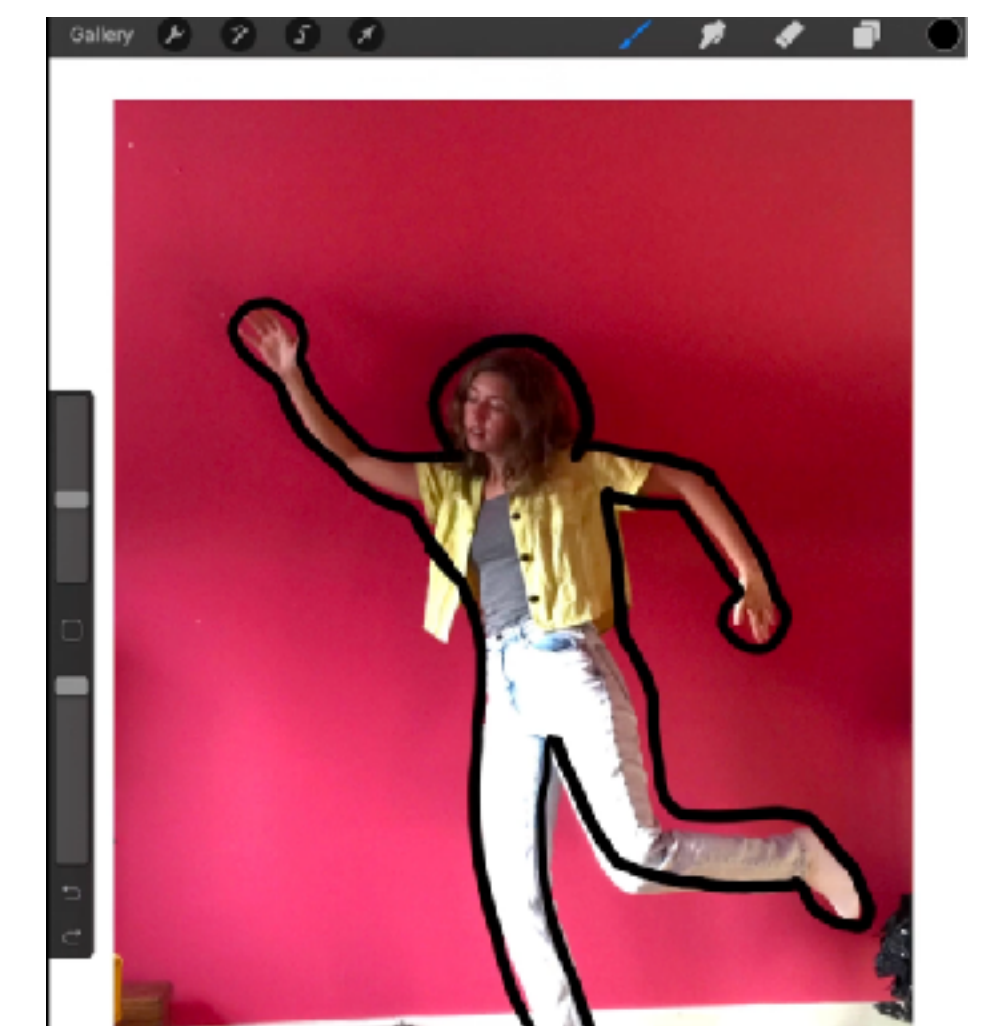
Analog making

Why analog making?

- Before computers, all making was analog



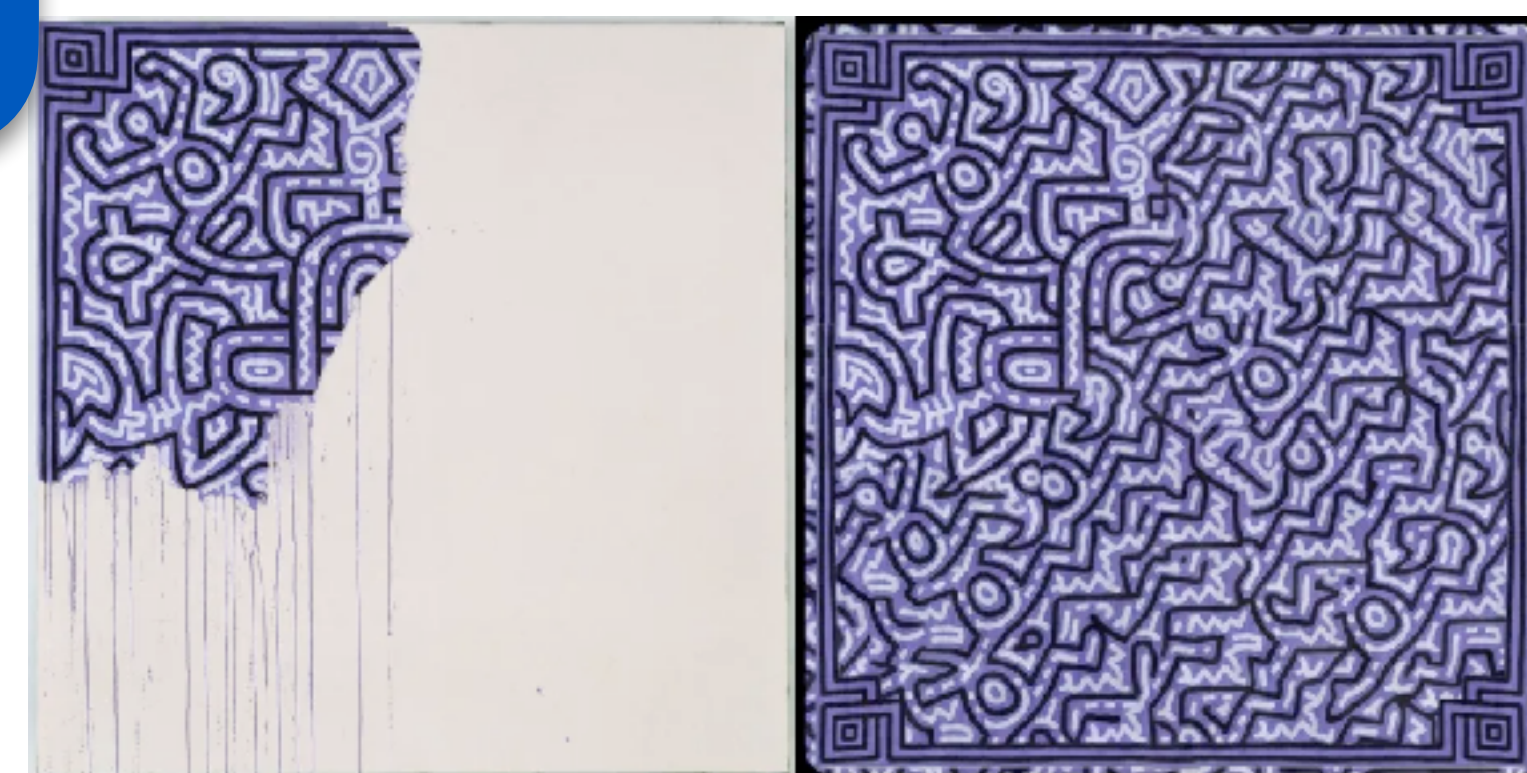
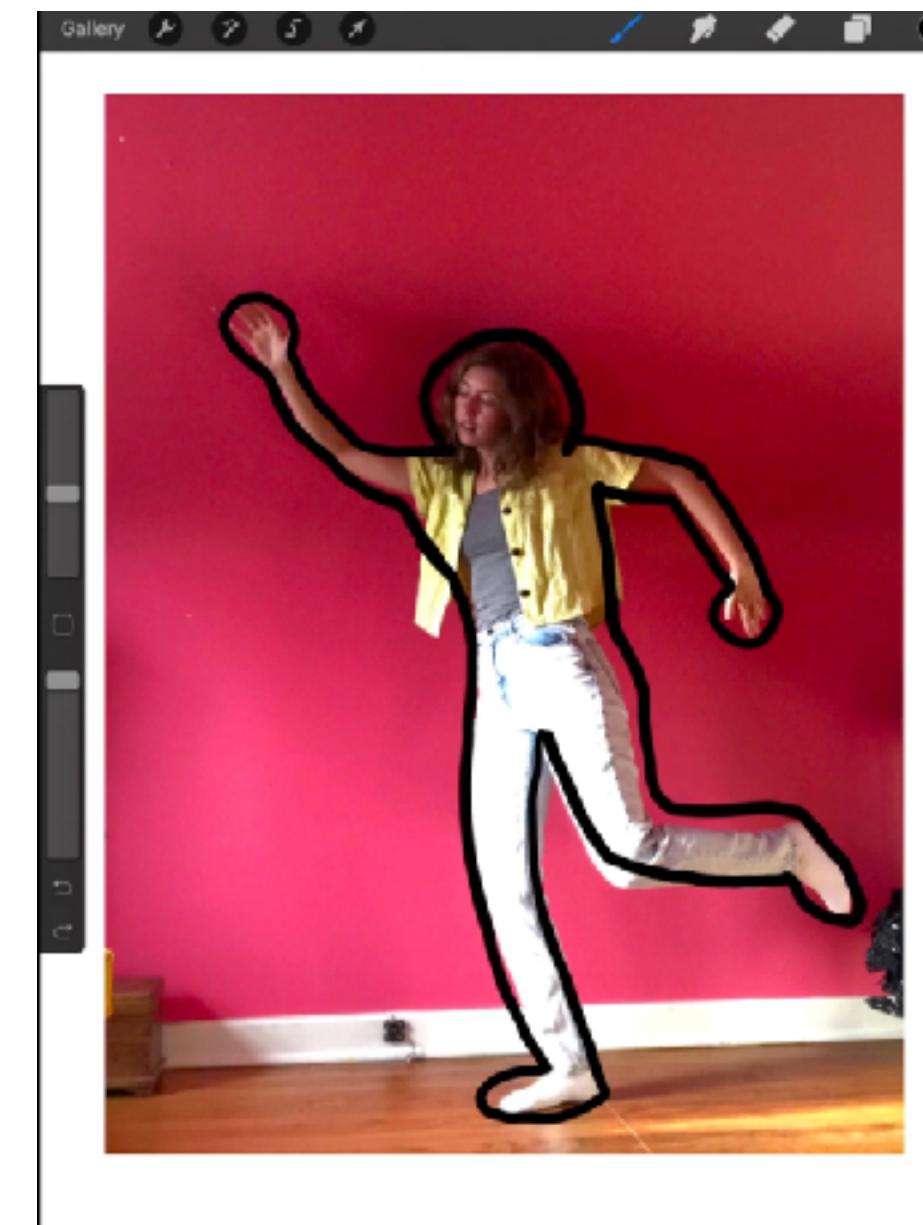
Technology (tools!) can help



Technology is good at automation



What do you think *should* be automated with tools?
What should be kept in the hand?



Keith Haring, Unfinished Painting, 1989. Private collection

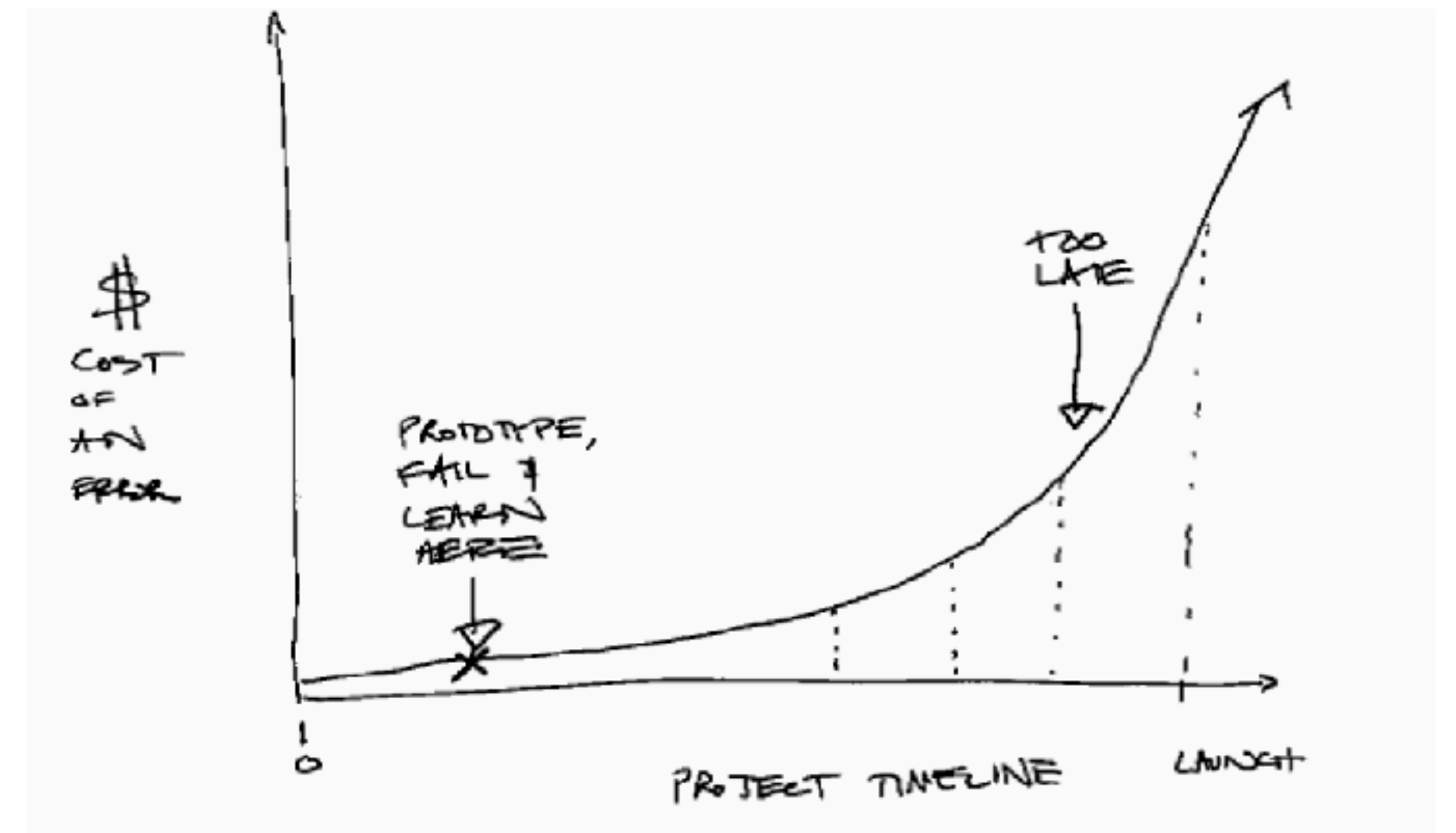
A Generated Attempt to Finish 'Unfinished Painting'

Why should you learn analog making?

- To inform the design of computational tools which respect, rather than replace, rich craft traditions
- To develop some of these skills yourself so you can respect them :)
- We live in a 3D world: let's make 3D things (not just software)
- Working with the hands releases serotonin and makes you feel good
 - *Flow state, movement is the foundation of thought...*

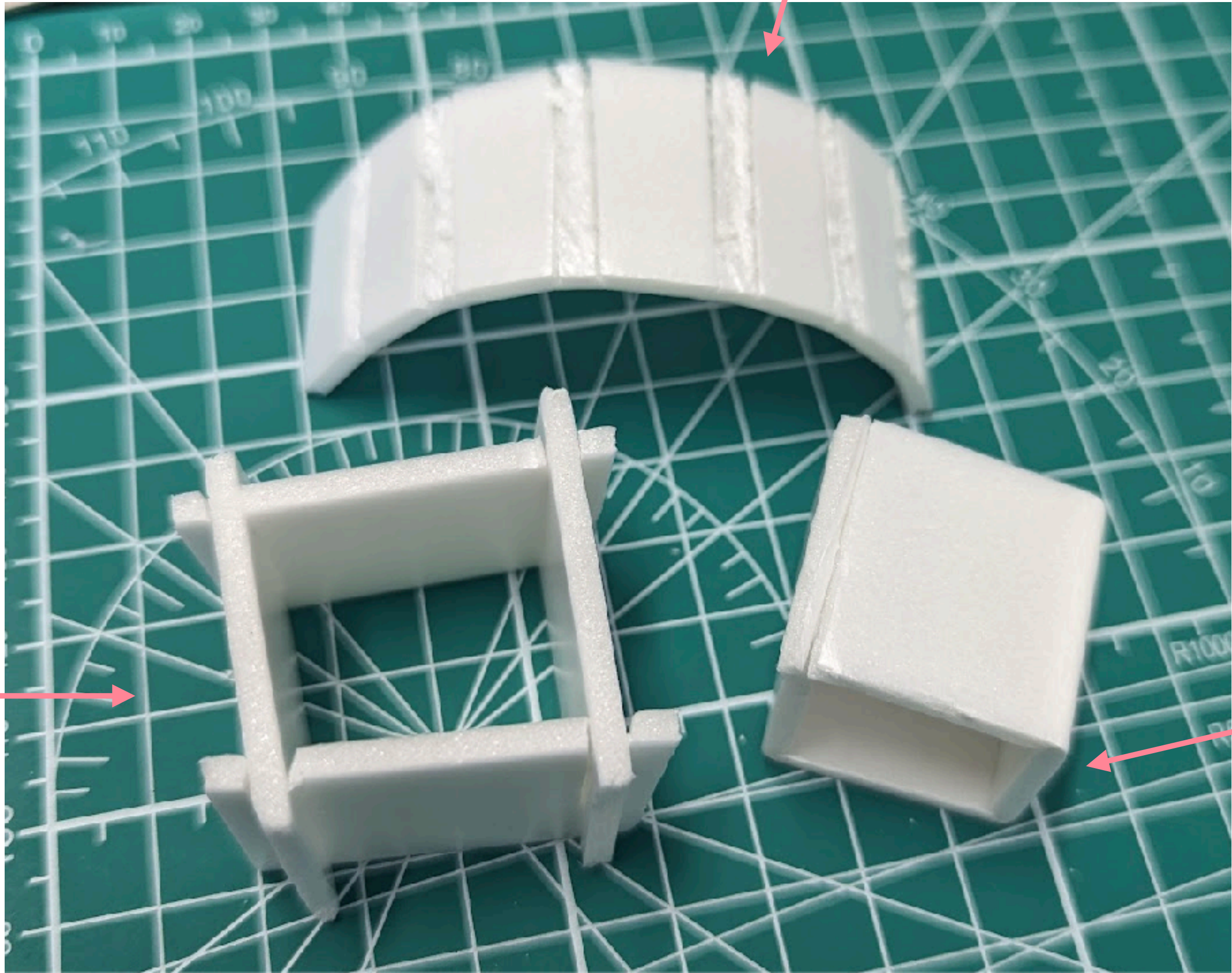
Why foamcore?

- Foamcore is great for **rapid prototyping**
- Quickly experiment with alternatives
- Get feedback earlier and cheaper
- Prototypes **answer questions** and **raise new questions**
 - For 3D forms: size and scale, how to **interact**



Foamcore tutorial

Bendable shapes with scoring

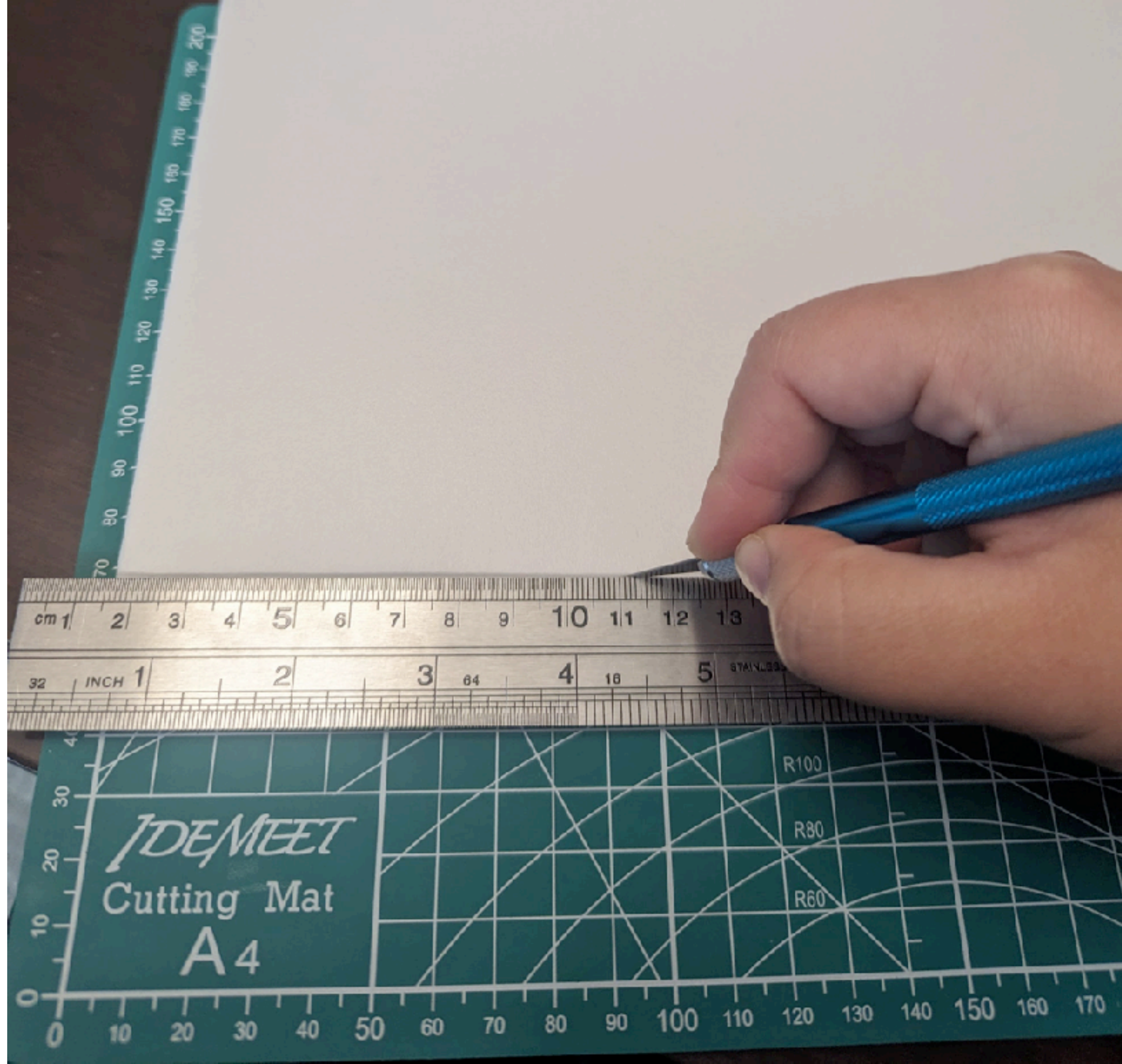


Overlapping joints

Folded joints

Materials

Foamcore (thinner than I would like - 2 cm, single ply)



Hot glue: off



Hot glue: on

Xacto knife (be careful, sharp blade)

Ruler (be careful, sharp edge)

Cutting surface



Cutting tips

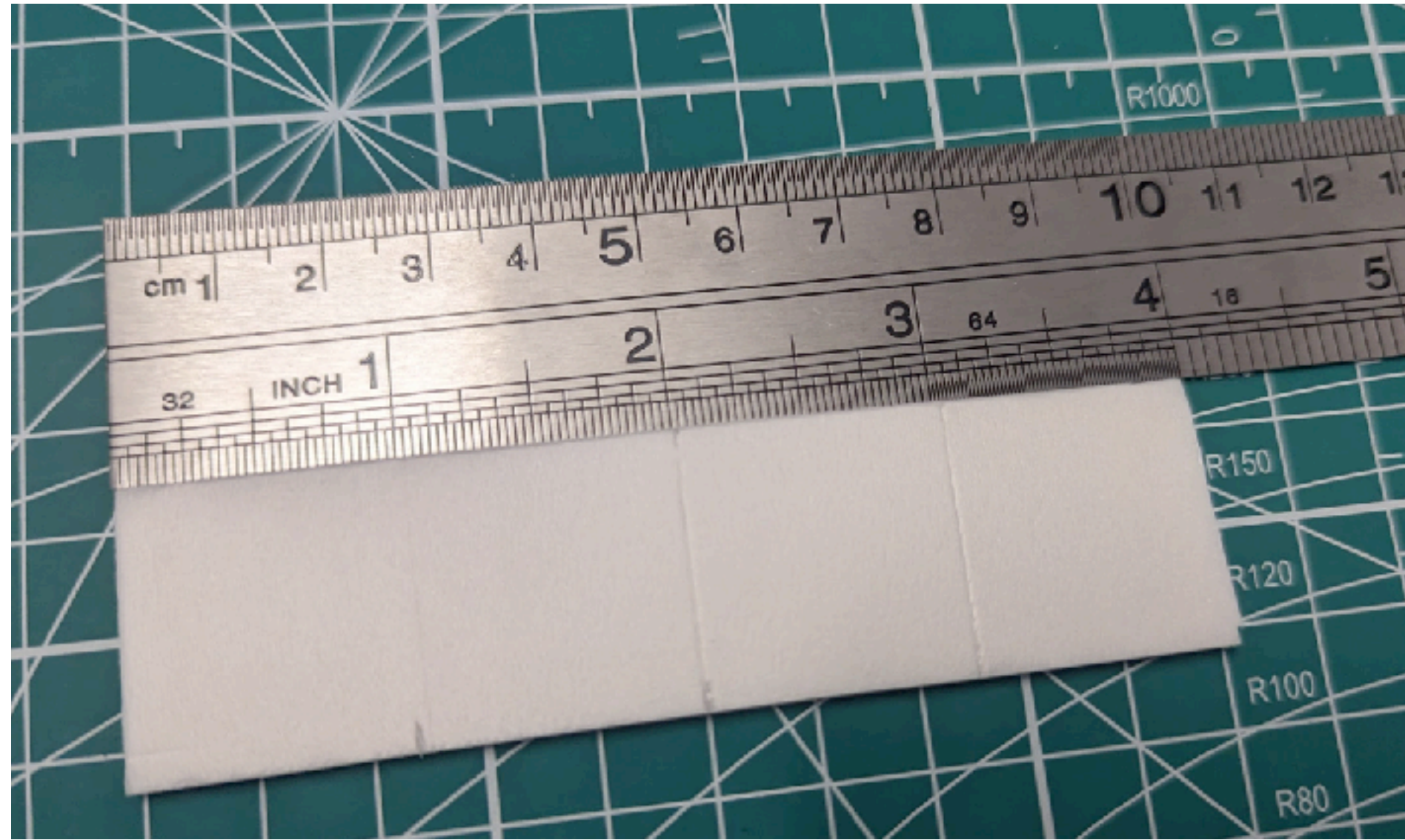
- Even and heavy pressure, one confident stroke, lean the knife against the ruler
- Hold down ruler with other hand the whole way

1. Cut out a 1 inch thick strip off the short side

Messing up is OK! Just cut another strip!

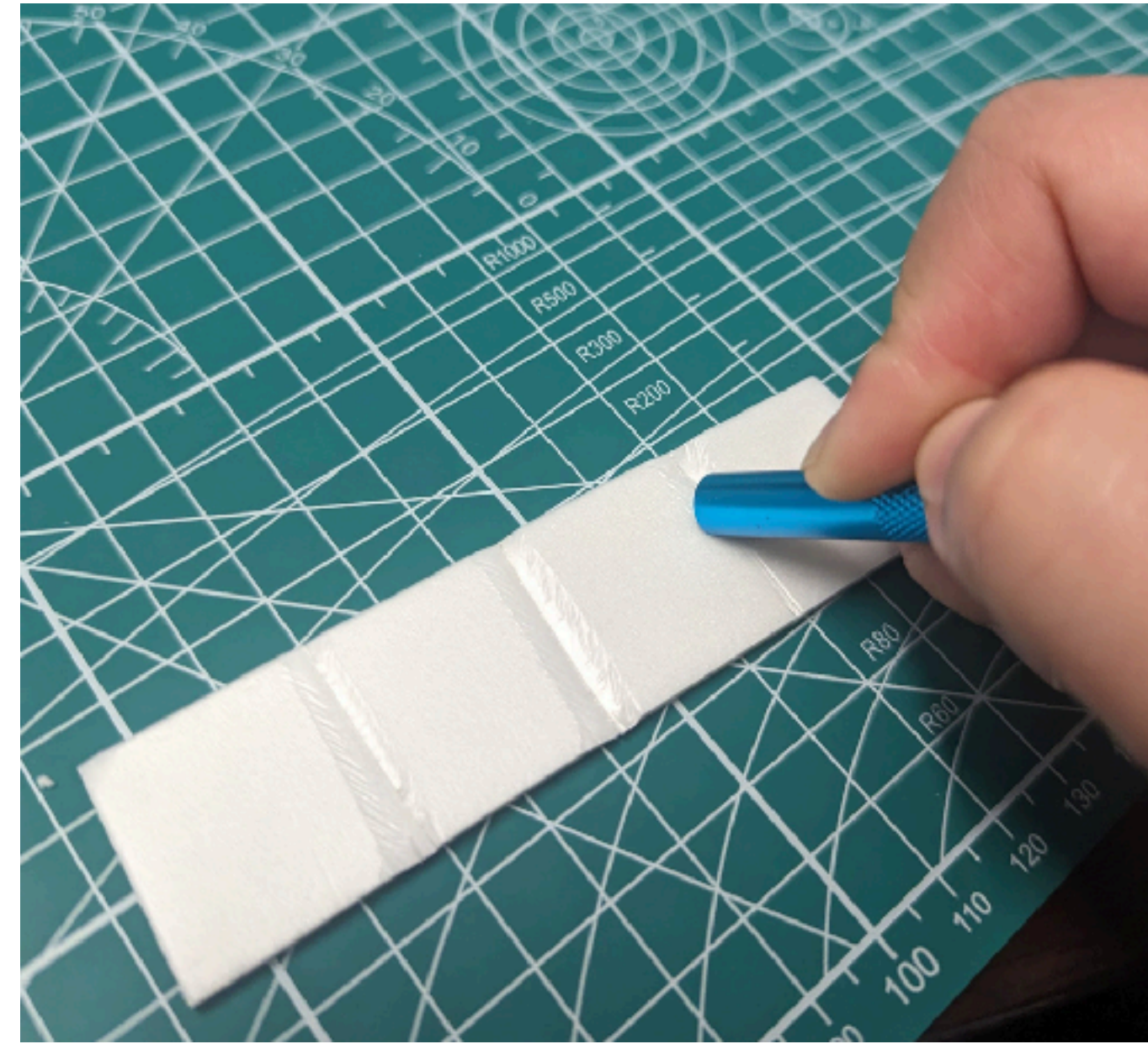


2. Cut 4 inches from your strip to be your folded box

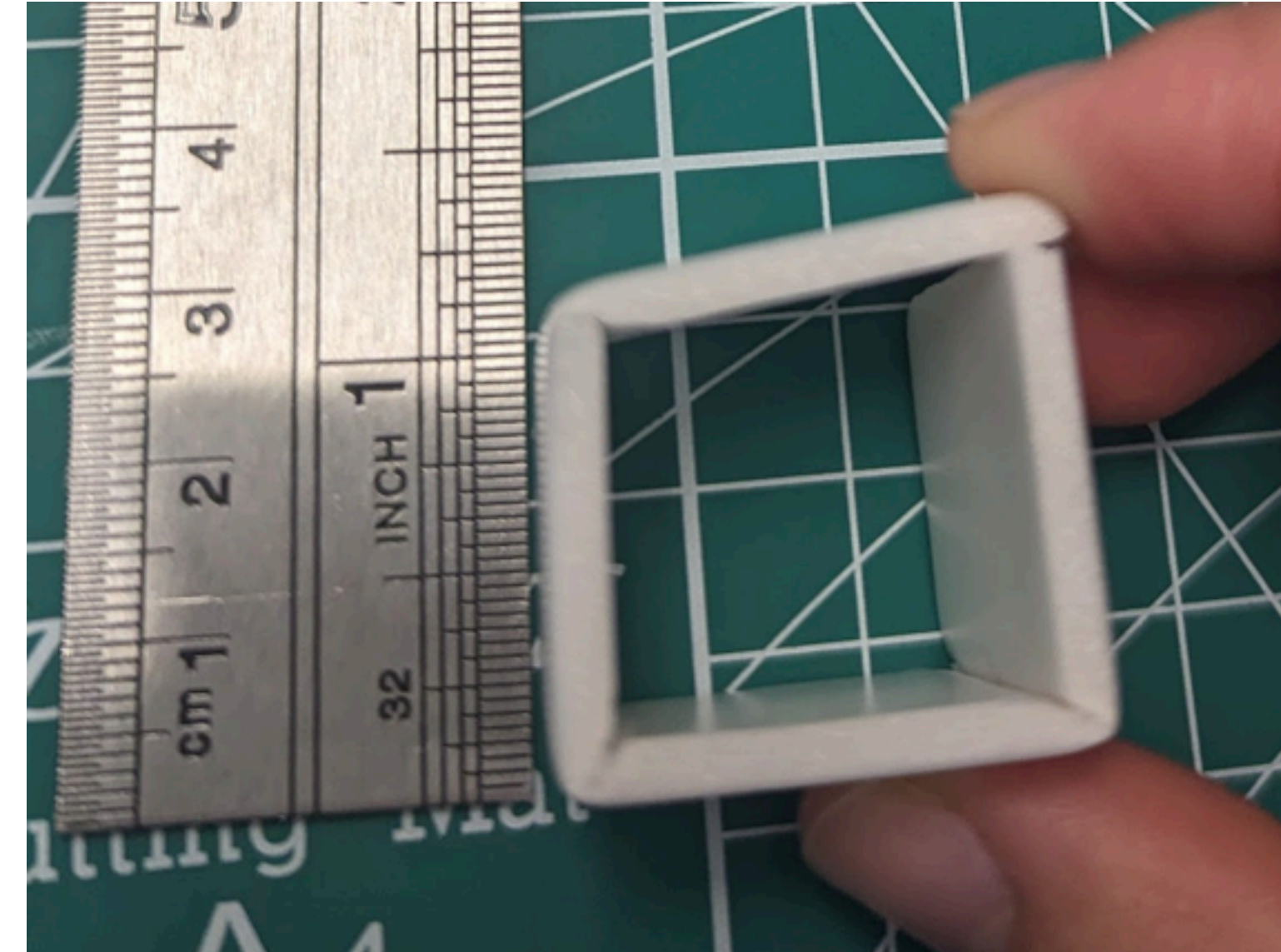


3. Very LIGHTLY cut at every inch.

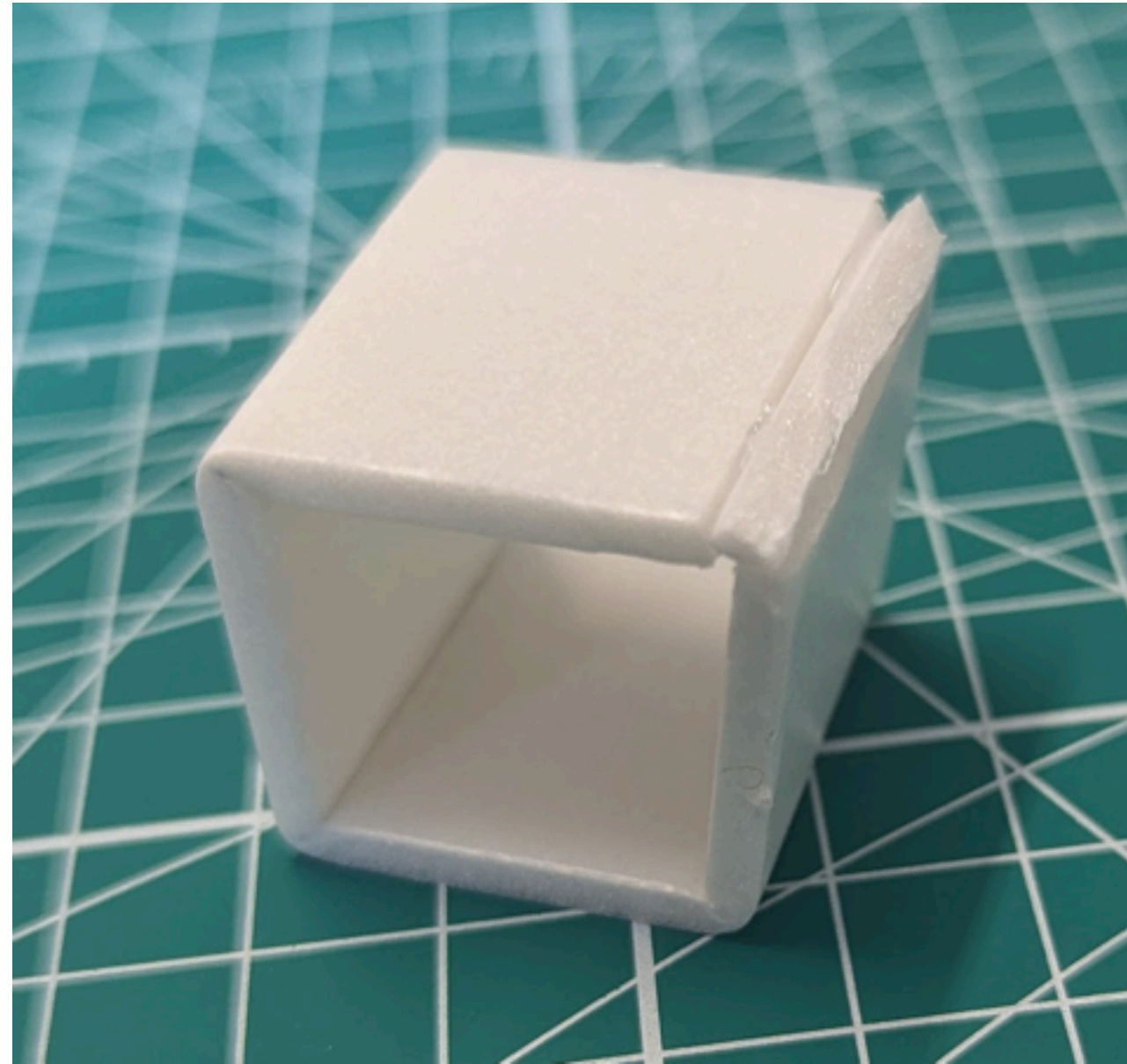
Do NOT go through the foamboard. It takes a few tries to get the pressure right!



4. Using the back of your knife, force a furrow. Unlike cutting, do this in several passes.



5. You can now gently bend at the cuts and furrows to make joints, such as this box shape



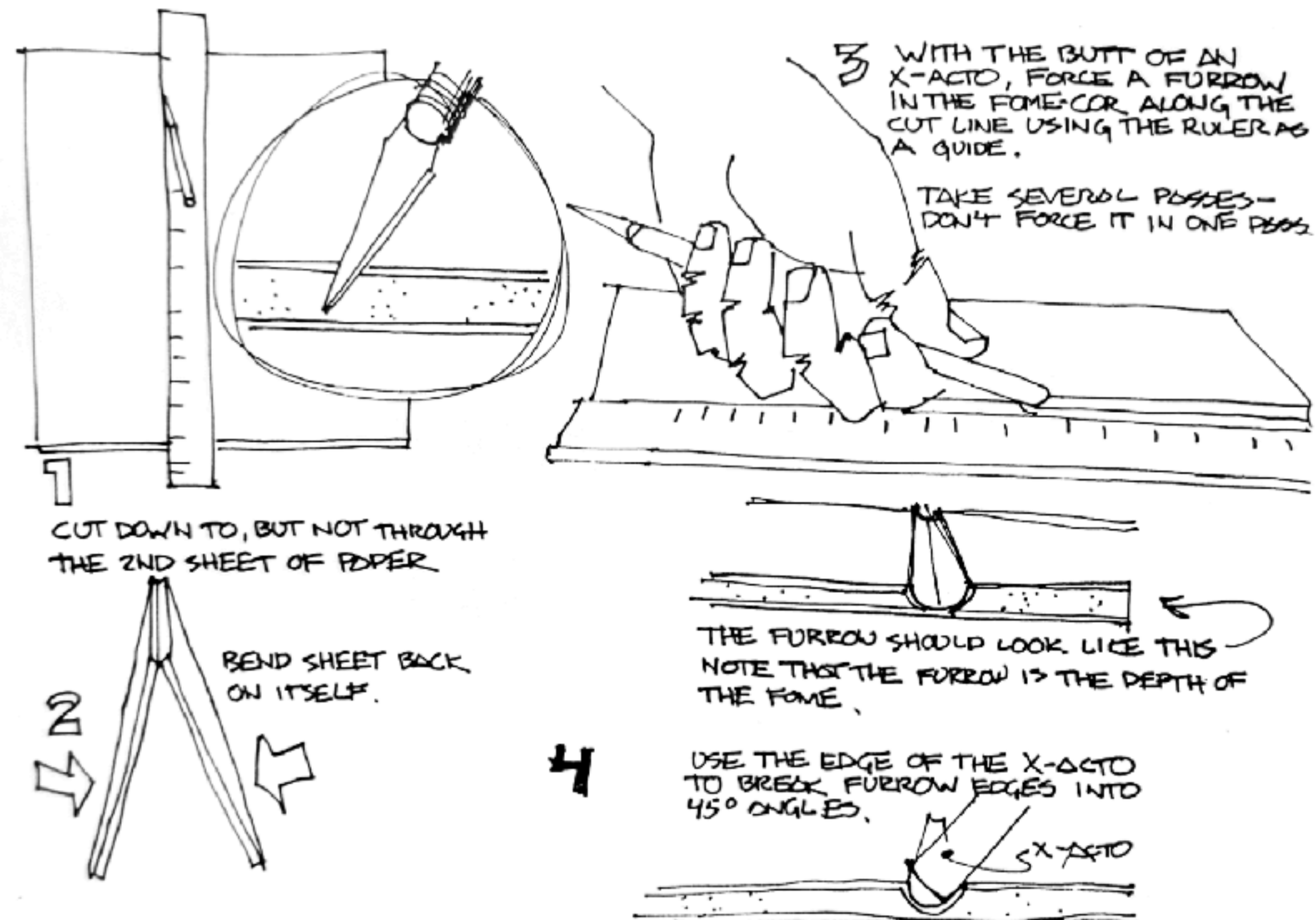
Hot glue tips

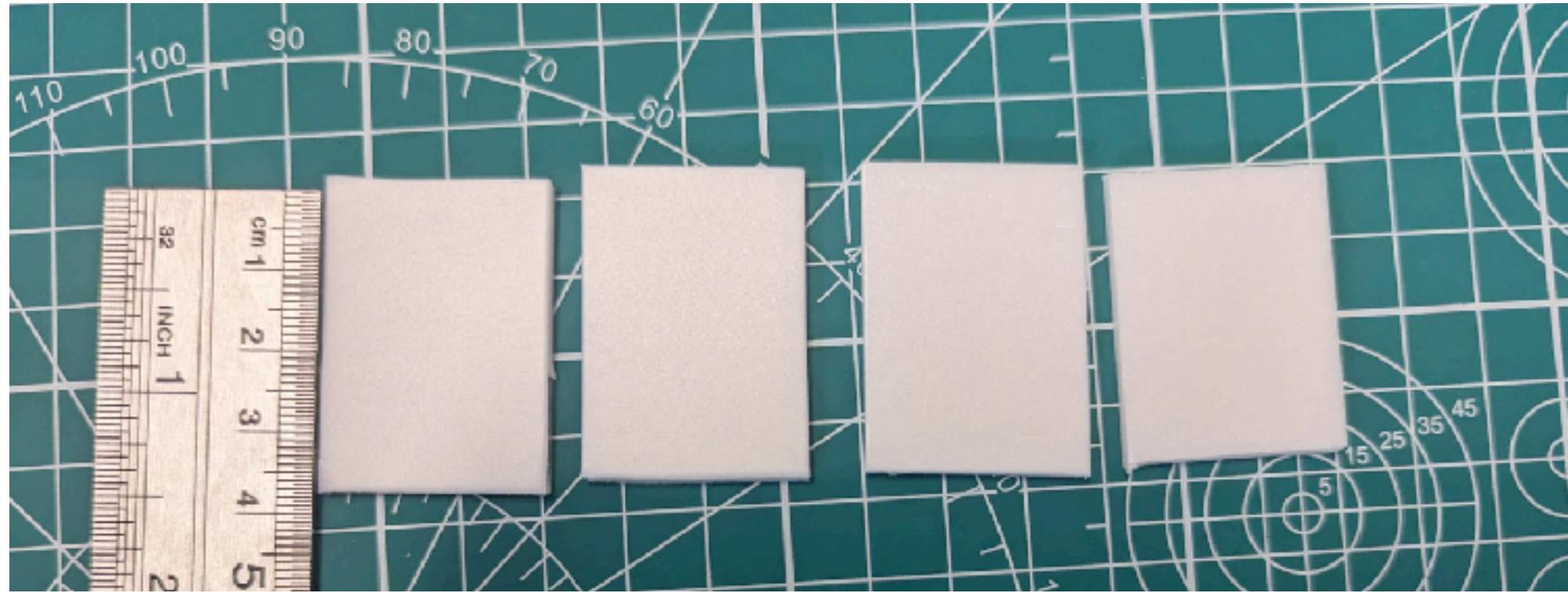
- Don't use a lot of glue. It's more about the holding it in place and applying pressure while counting to 10.

6. Cut off a little end piece (joints make the sides shorter since they take up space). Hot glue the open sides together with the end piece.

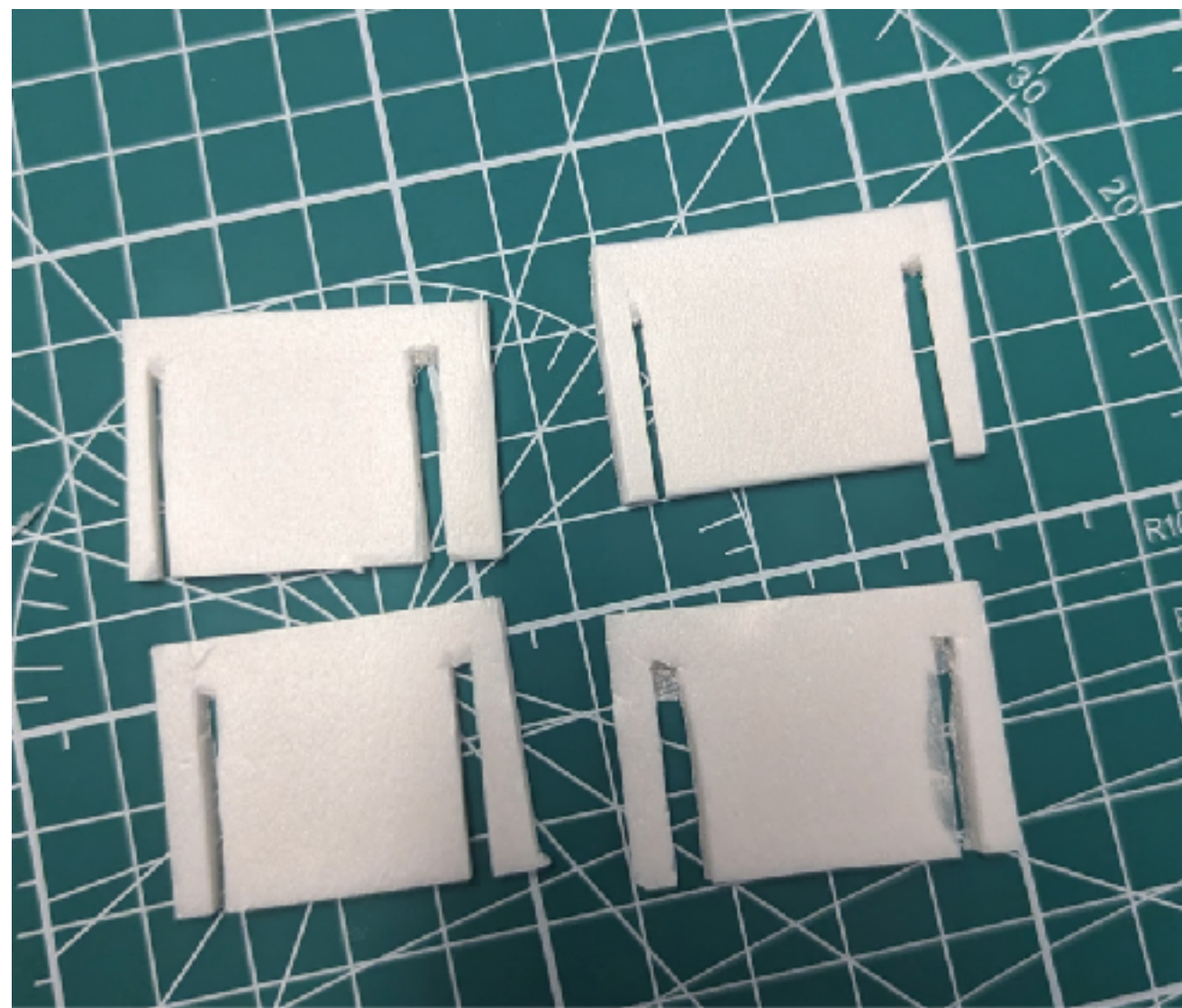
▶ JOINTS: SHARP

Foam Core Construction

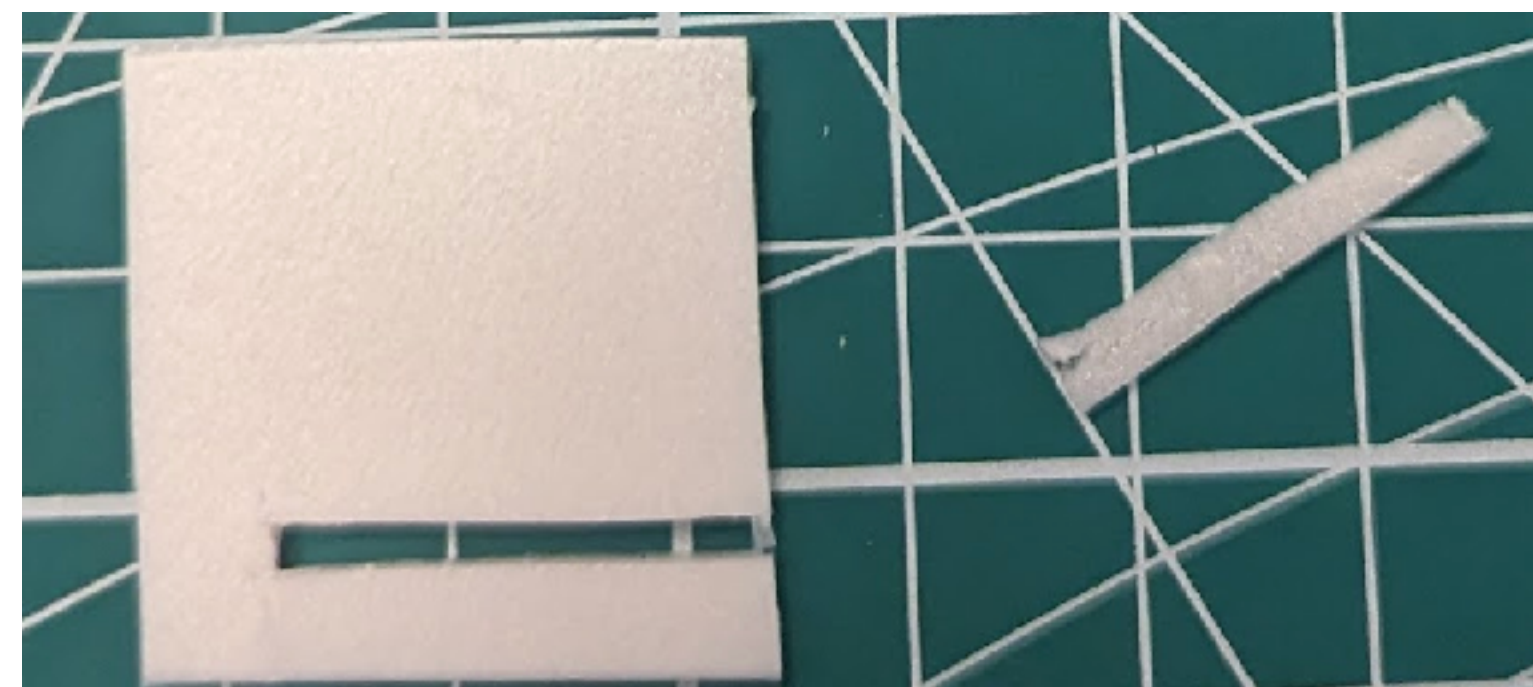




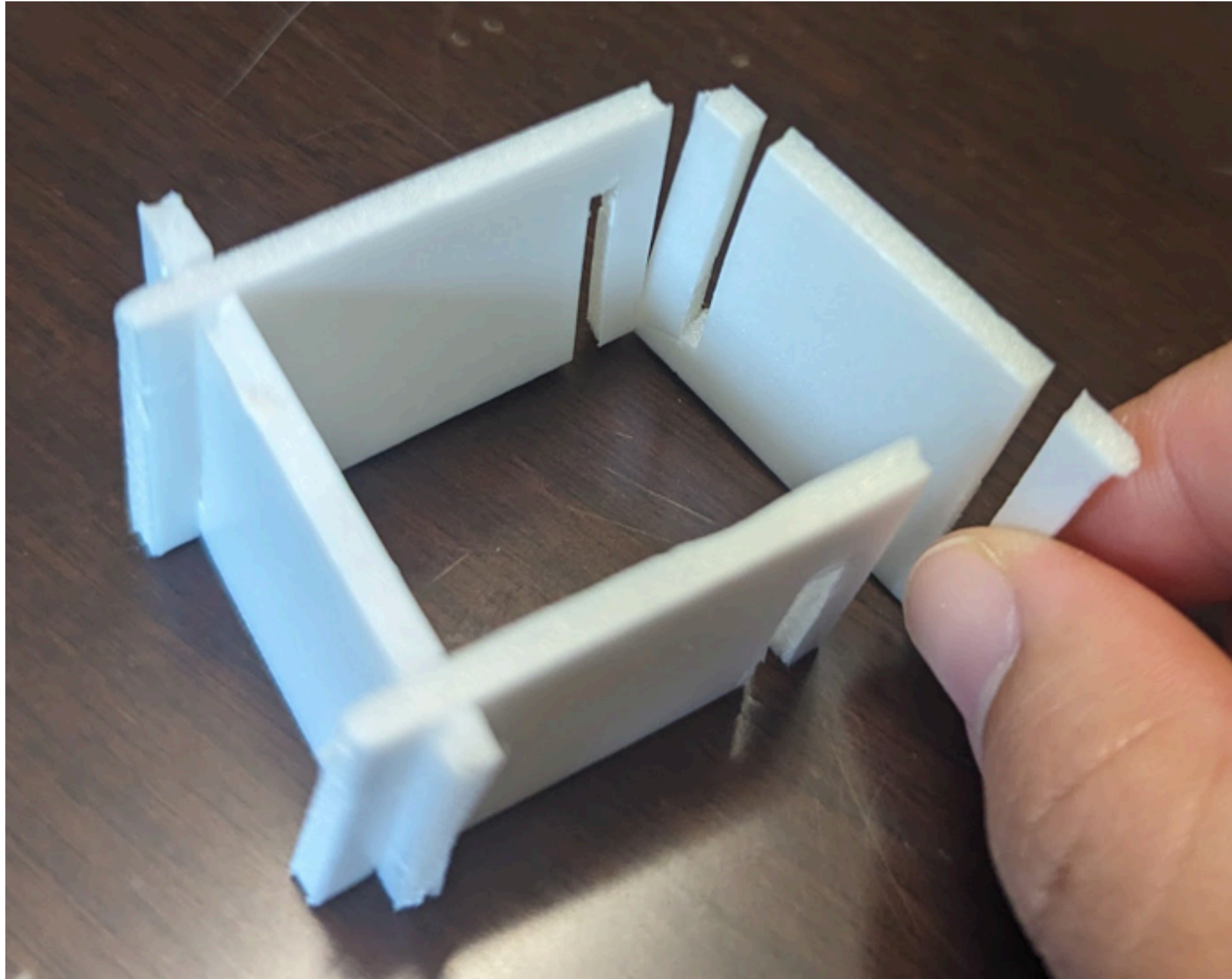
1. Cut 4 rectangles roughly 1.5 inches in length.



3. Do this on each end to all 4 pieces.

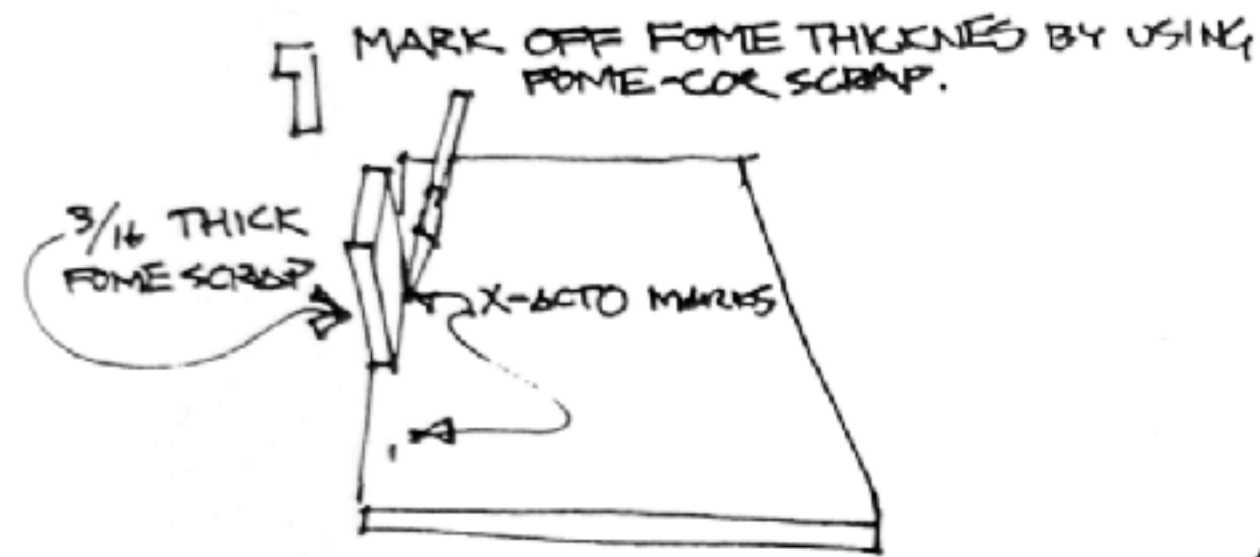


2. Make a cut near the edge but leave a few cm on the end. Use a difference piece of foamcore to measure the width. Make a second cut. You've made a hole where another foamcore can fit.

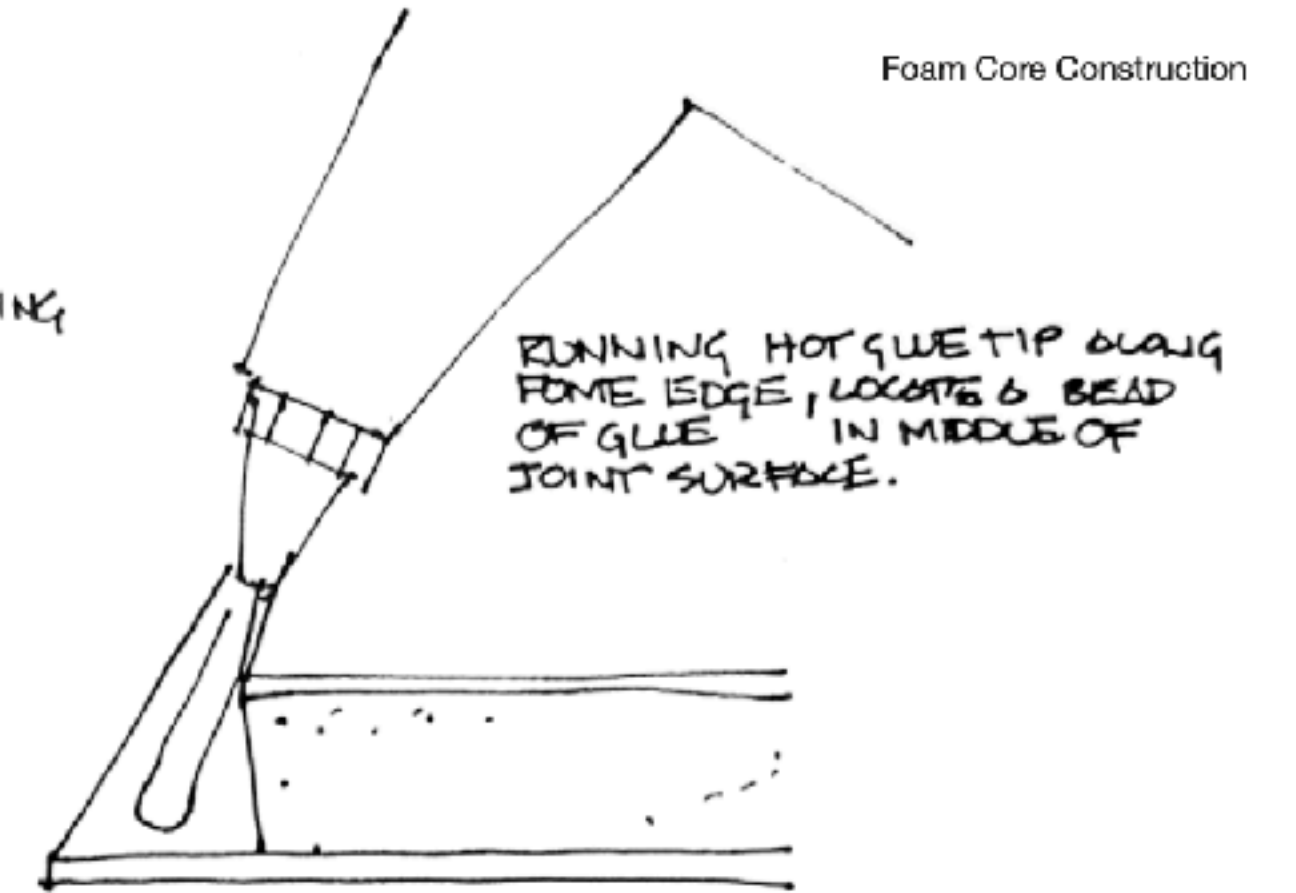
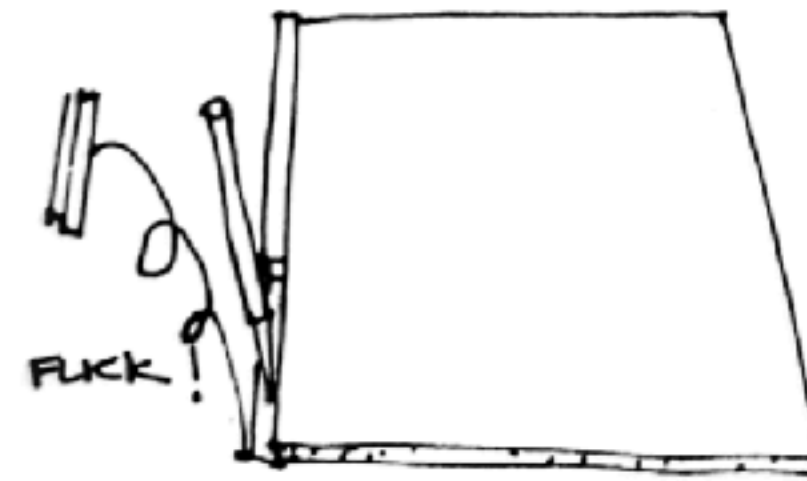


4. Assemble your box by pressing your pieces together: two sides with the cuts facing down, two sides with the cuts facing up.

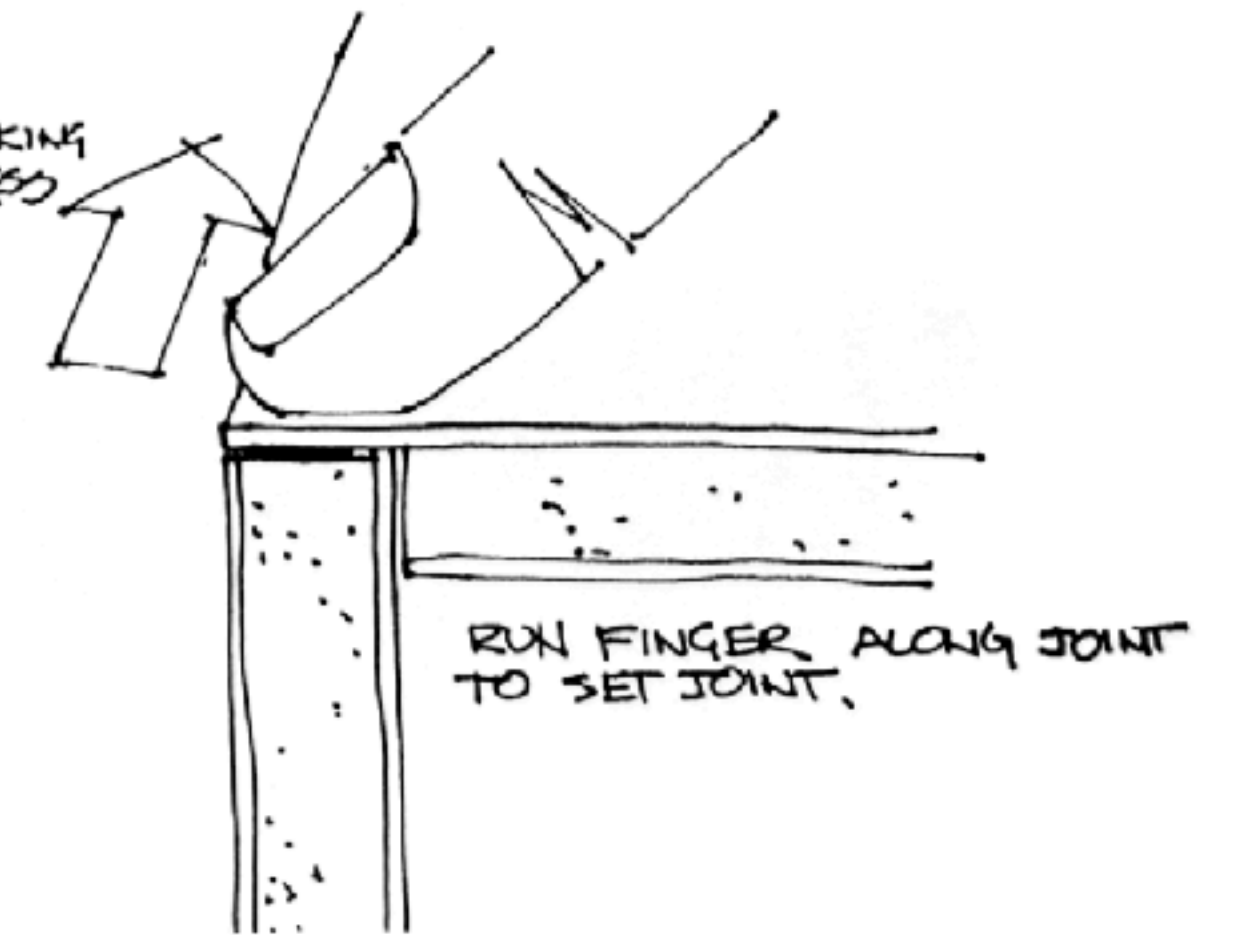
▶ JOINTS : LAP JOINT

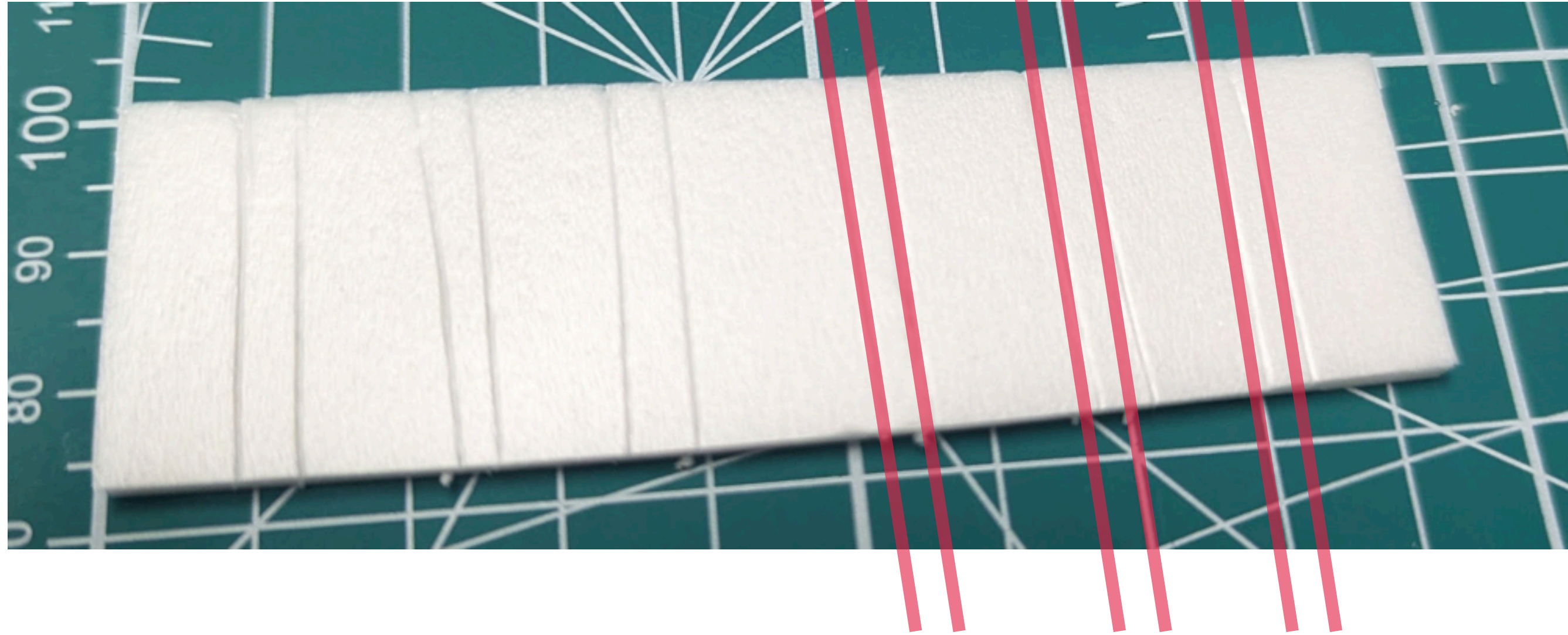


2 FLICK OFF 3/16" PIECE OF FOAM AND PAPER. A QUICK FLICKING ACTION SHOULD ONLY REMOVE EXCESS FOAM AND LEAVE PAPER IN TACK. IF FOAM REMAINS, CLEAN OFF.

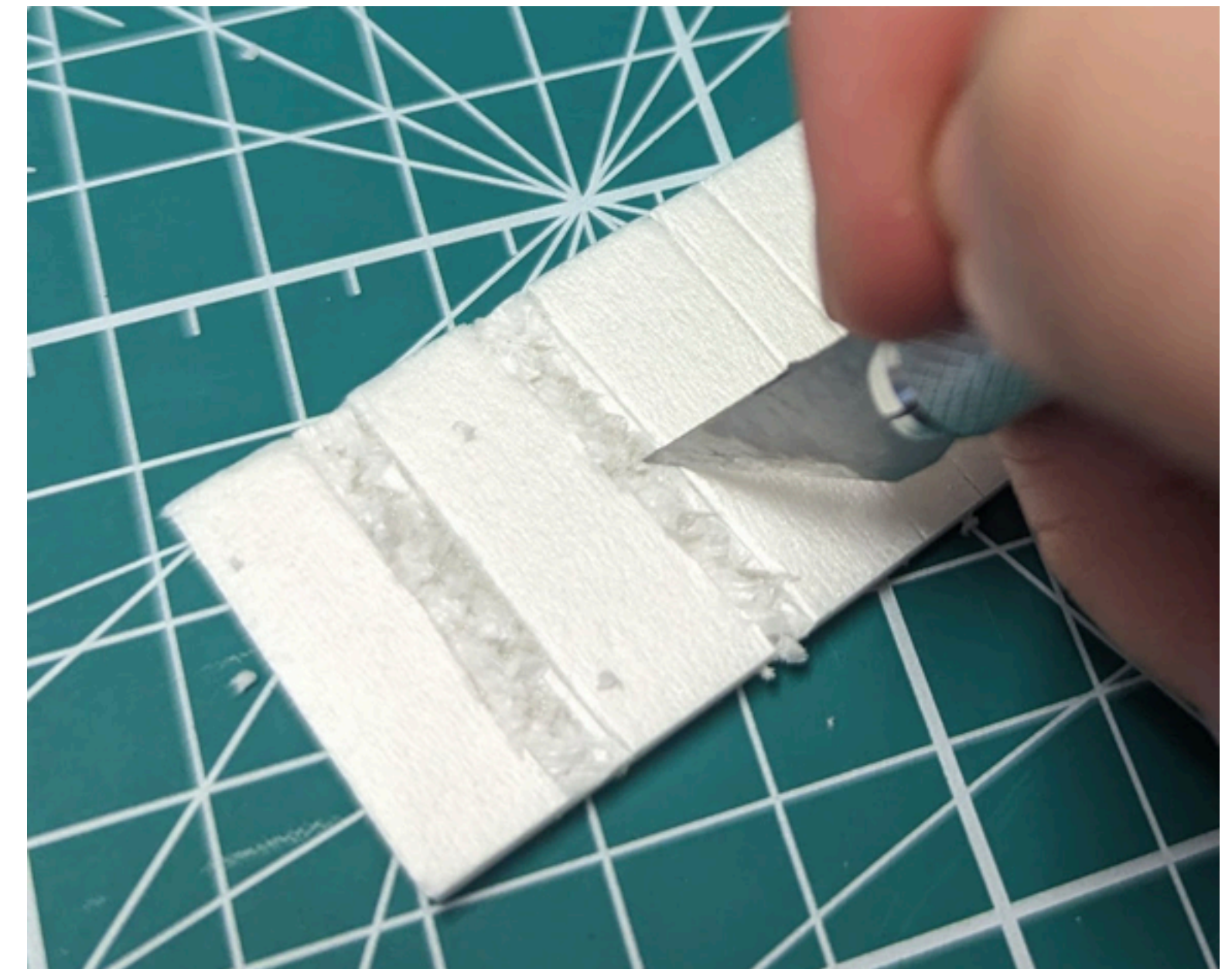


Foam Core Construction

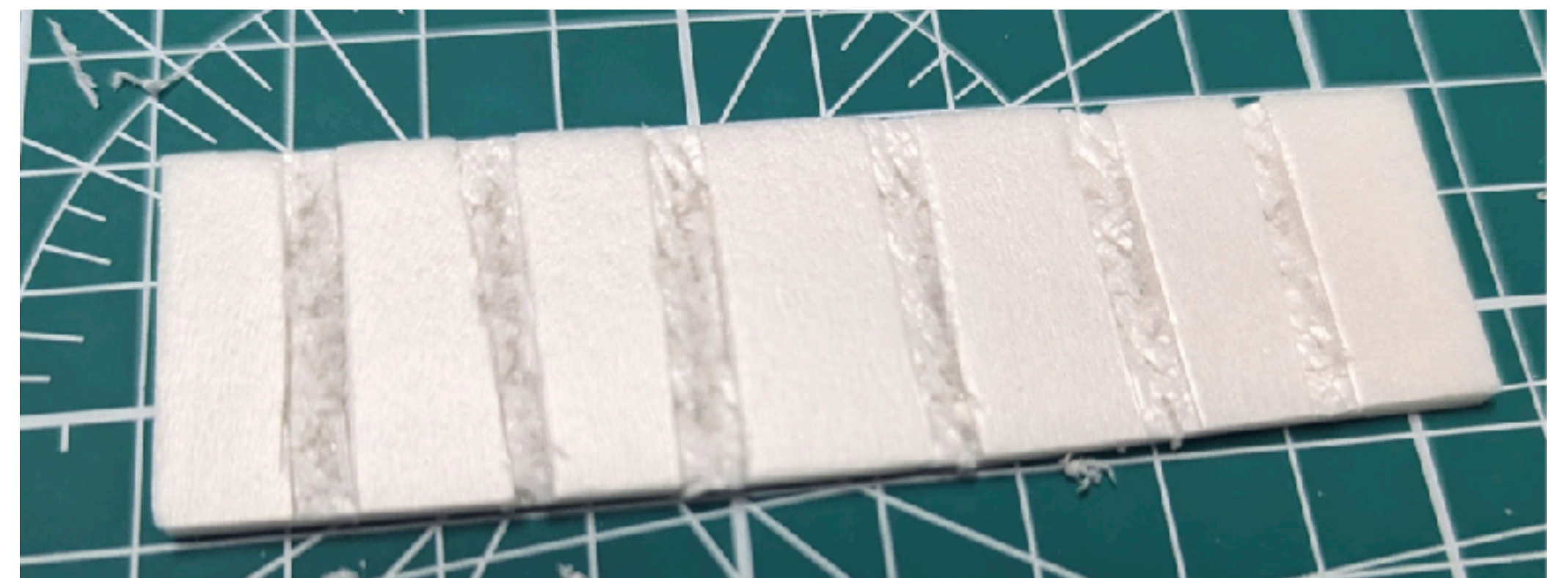


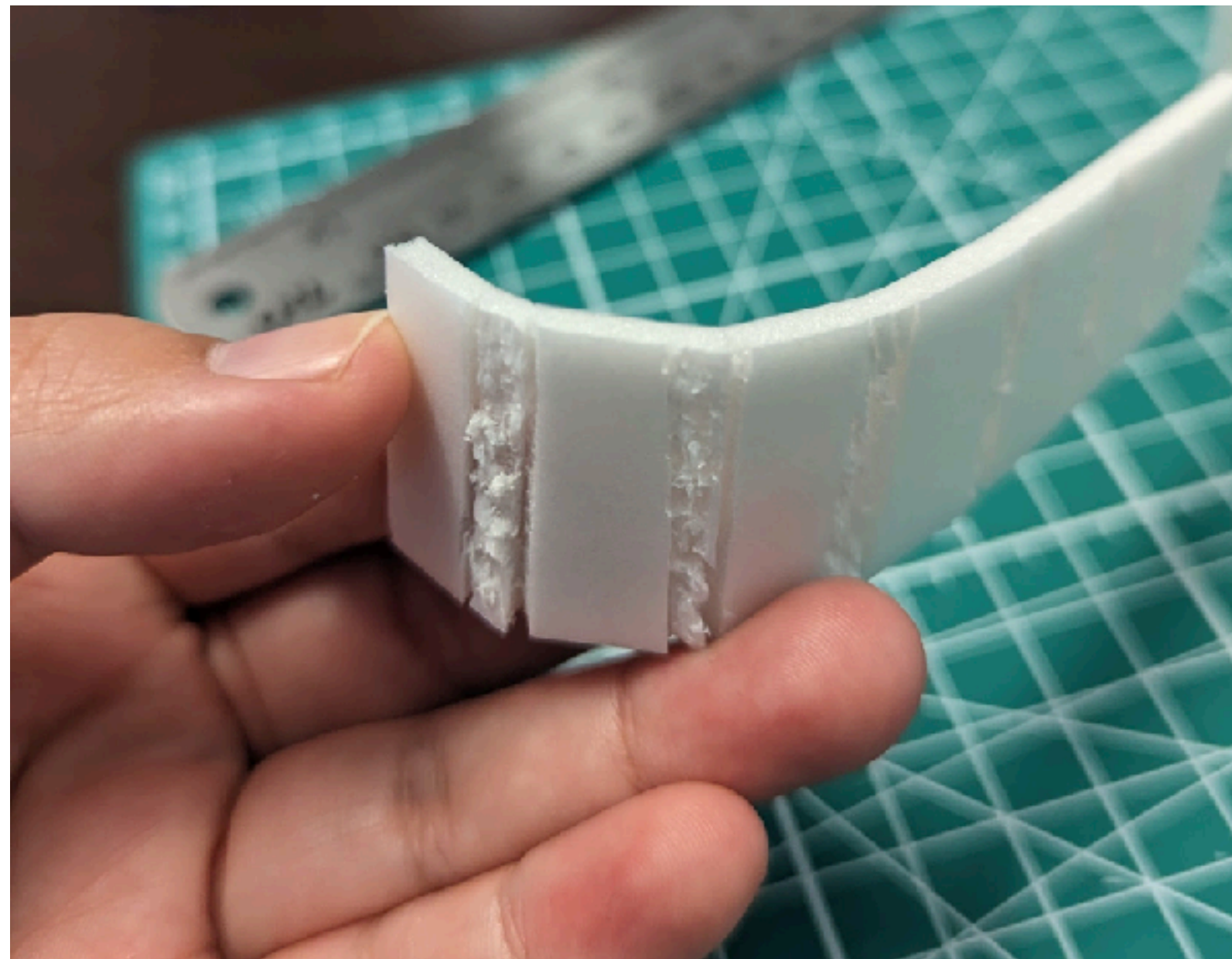


1. Take any remaining foamcore (or cut more) and GENTLY make indent marks ~2cm apart across the whole rectangle. Same pressure as box #1 when making hinges.

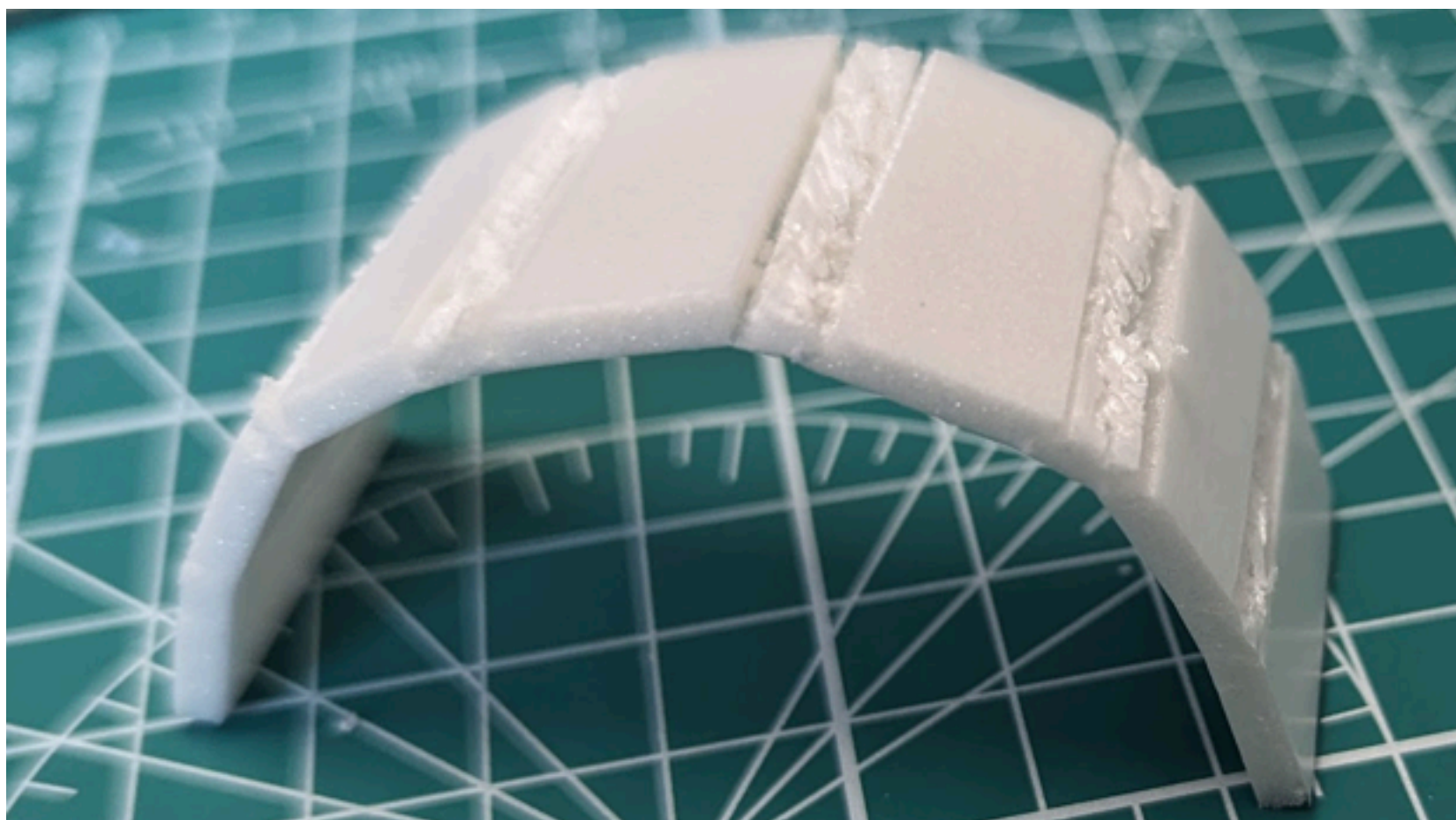


2. Use your knife to **score** the space between the indents and remove the top layer of material.



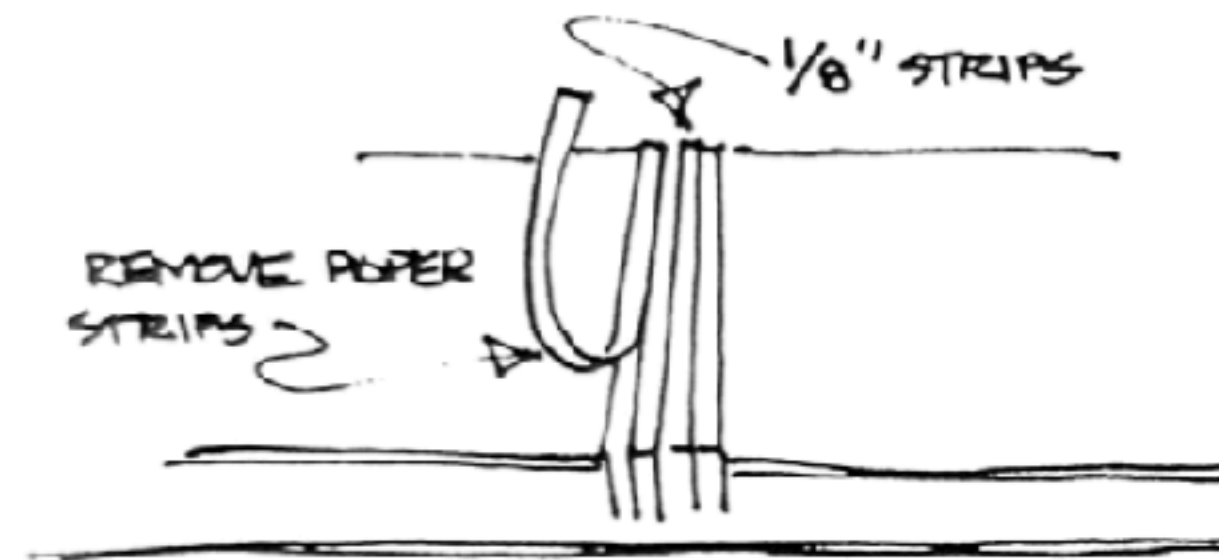


3. At the scores, gently bend the foamcore to create curvature.



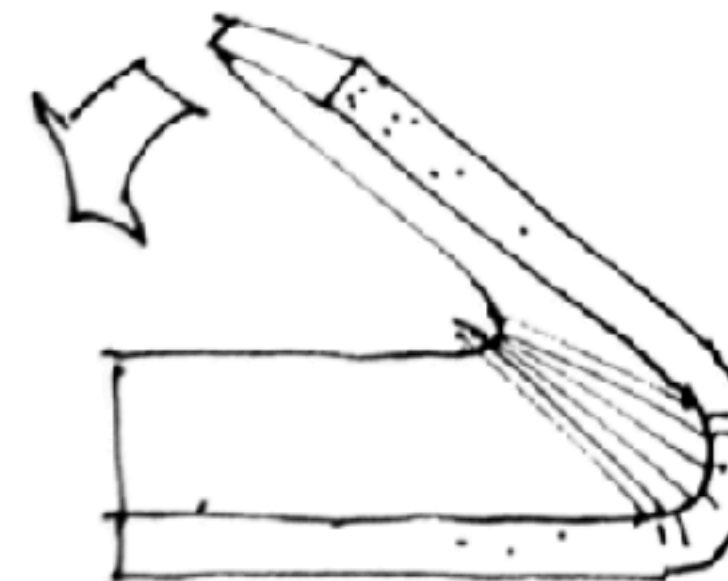
▶ JOINTS: LARGER RADIUS

1 CUT $\frac{1}{8}$ INCH STRIPS THROUGH FIRST LAYER OF PAPER AND ABOUT $\frac{1}{2}$ WAY THROUGH FOAM.



2 STRIP OFF THE $\frac{1}{8}$ " STRIPS OF PAPER, STRIP BY STRIP. THIS IS HARDER THAN IT SOUNDS BECAUSE THE PAPER TENDS TO PE-LAMINATE AS IT IS STRIPED OFF. DO THE BEST YOU CAN WITHOUT DAMAGING FOAM.

3 BEND THE SHEET GOING PAST THE INTENDED ANGLE OF THE FINAL JOINT. (THIS RELIEVES STRESS ON THE JOINT)



Design activity:

**Hyper personalized
phone stand**

Design for one

- Most times, we conduct user research and needfinding (e.g., interviews, observations) to figure out who our target user group is...
 - Not today. Pick a member of your team to design a hyper personalized phone stand for. (Rock paper scissors loser, volunteer, youngest...)
 - The phone stand should only include elements that make sense to them and their phone. Hobbies? Favorite color? Specific contexts of use?
 - Lastly, the stand has to be able to functionally hold up the weight of their phone!
- First, no cutting foamboard. Interview your teammate for ideas, gather materials, sketch and envision your object.
 - @ 3:55: rapid 60 second presentations from each team. Present your object as a story in narrative form.

Class 4 recap

- Exit ticket: <http://tiny.cc/cs181dt-week2>
- TODOs:
 - By **next Tuesday's** class:
 - PM2: Sensory cardboard (bring to class)
 - Also bring your laptop to class
 - By **next Thursday's** class:
 - P1 milestone: Storyboards
 - Do the HMC Makerspace general and 3D printing/laser cutter training (make.hmc.edu)