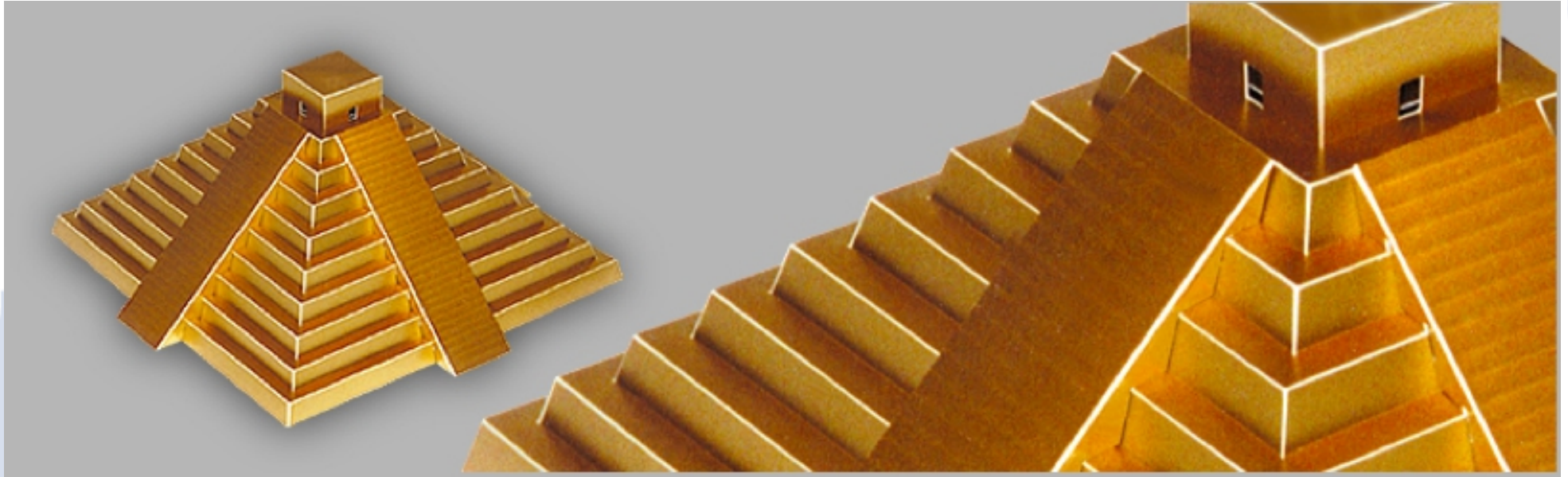


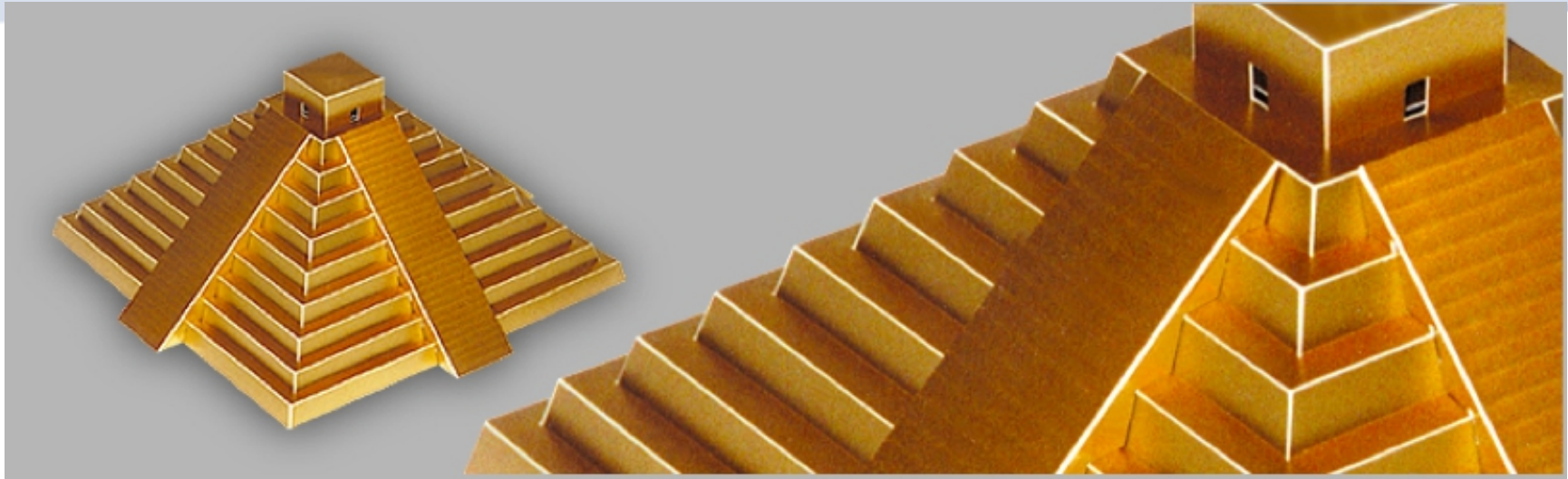
EL CASTILLO - ARCHITECTURAL 3-D MODEL BUILDING PROJECT



1: STUDENTS WERE PROVIDED WITH A FEW CLUES ABOUT THIS “MYSTERY” STRUCTURE THEY WOULD BE MAKING A 3-D MODEL OF.

2. CLASSES WERE DIVIDED INTO FOUR TEAMS PER PERIOD.

3: EACH TEAM RESEARCHED PARTS OF ITS HISTORY, LEGEND, ENGINEERING, MATHEMATICAL PRINCIPLES & FUNCTION; ANSWERING A FULL PAGE OF SPECIFIC WEB HUNT QUESTIONS.



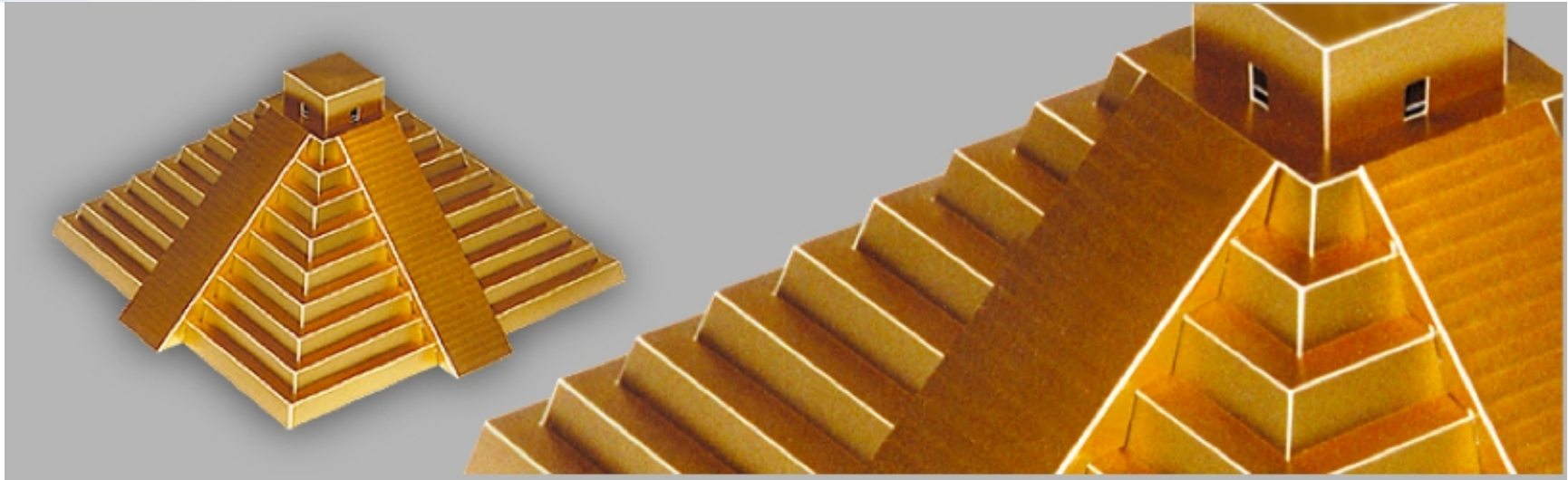
PART 4: TWO VIDEOS ARE SHOWN TO THE CLASS, INTRODUCING THE ANCIENT MAYAN CIVILIZATION & THE SIGNIFICANCE OF THIS TEMPLE.

PART 5: STUDENTS ARE GIVEN SCALE DRAWINGS OF THE TOP & SIDE VIEWS OF THE PYRAMID.

PART 6: THE TERMS “PLAN”, “ELEVATION” AND SCALE ARE INTRODUCED.

PART 7: DIMENSIONS ARE LISTED IN METRIC, SO STUDENTS WILL USE A UNIT CONVERSION PROGRAM ONLINE TO CONVERT TO FRACTIONAL FEET & INCHES.

PART 8: STUDENTS BREAK INTO THEIR TEAMS & ARE INTRODUCED TO THE IMPORTANT GEOMETRY OF THE TEMPLES; SPECIFICALLY THE CRITICAL ANGLES AND MEASUREMENTS OF THE OVERALL HEIGHT, WIDTH, AS WELL AS THE UPPER TEMPLE & ALL STEPS.



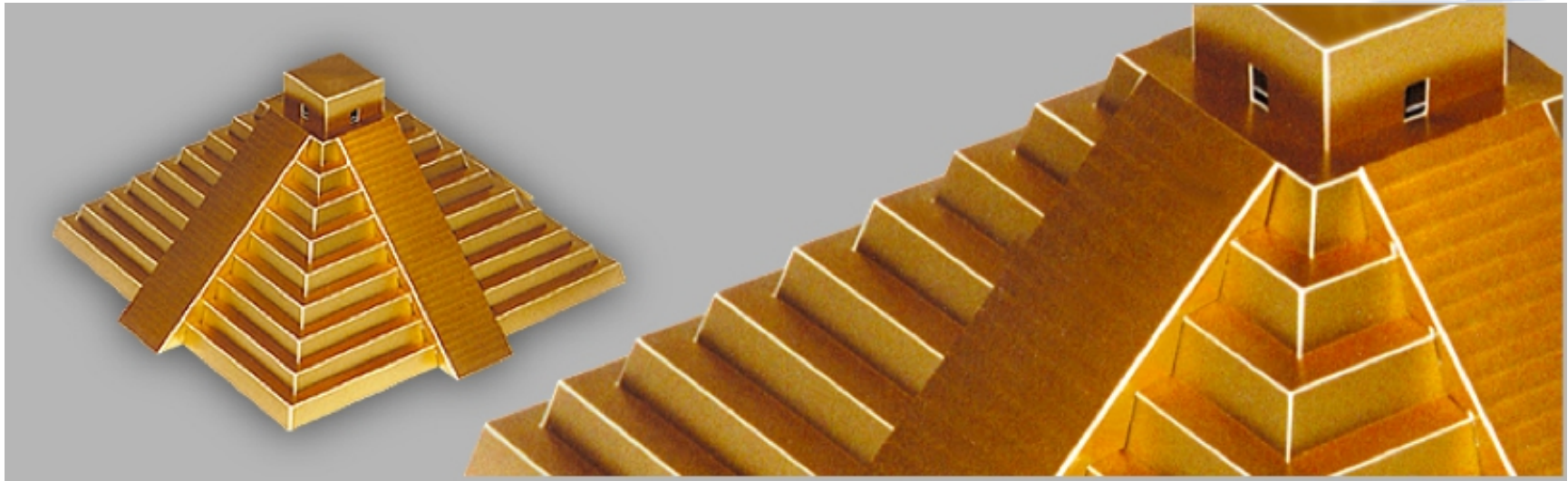
PART 9: LECTURE & DEMO ON USING A PROTRACTOR TO MEASURE ANGLES IS PROVIDED.

PART 10: KEY TERMS SUCH AS VERTEX, HORIZONTAL, VERTICAL, THE MAJOR POINTS OF THE POLAR COORDINATE SYSTEM, READING DEGREES, ARE COVERED. HANDOUTS WITH GRAPHIC EXAMPLES & REFERENCE GUIDES ARE PROVIDED.

PART 11: STUDENTS GO TO THE WEB SITE: TO PRACTICE MEASURING ANGLES WITH THE “WHAT'S MY ANGLE” GAME.

<http://www.amblesideprimary.com/ambleweb/mentalmaths/protractor.html>

PART 12: STUDENTS COMPLETE 2 “FIND THE ANGLE” WORK SHEETS AND FURTHER GUIDANCE ON ACCURATELY MEASURING ANGLES.



PART 13: LECTURE & DISCUSSION ON CONVERTING METRIC TO FRACTIONAL. STUDENTS ARE INTRODUCED TO & USE A SIMPLE ONLINE UNIT CONVERSION PROGRAM.

PART 14: STUDENTS GO TO THE WEB SITE: TO PRACTICE MEASURING FRACTIONS, INCHES & FRACTIONS, WITH THE “RULER” GAME.

<http://www.rsinnovative.com/rulergame/index.html>

PART 15: STUDENTS COMPLETE 3 “FIND THE MEASUREMENTS” WORK SHEETS AND FURTHER PRACTICE ON ACCURATELY MEASURING FRACTIONS, INCHES & FEET, ON A RULER & A TAPE MEASURE.

Intro to Model Building & Tips

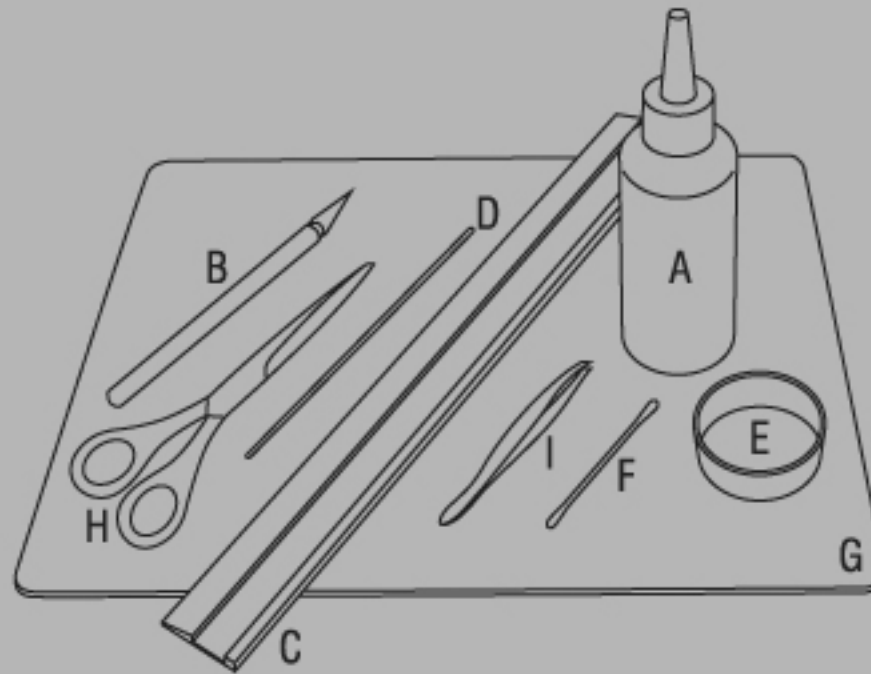
Assembling tips : preparation : gluing

In addition to the cardboard parts, which are supplied with the kits, you will need -

FOR PRINTED MODELS:

- white glue (A)
- a model knife (B)
- a ruler (C)
- a pointed stylus (D)
- small container for a glue (E)
- gluing tool (F)
- self-healing board for cutting (G)
- scissors (H)
- tweezers (I)
- hard surface to work on (J)

and patience



FOR PRE-CUT MODELS:

- white glue (A)
- a pointed stylus (D)
- small container for a glue (E)
- gluing tool (F)
- tweezers (I)
- hard surface to work on (J)

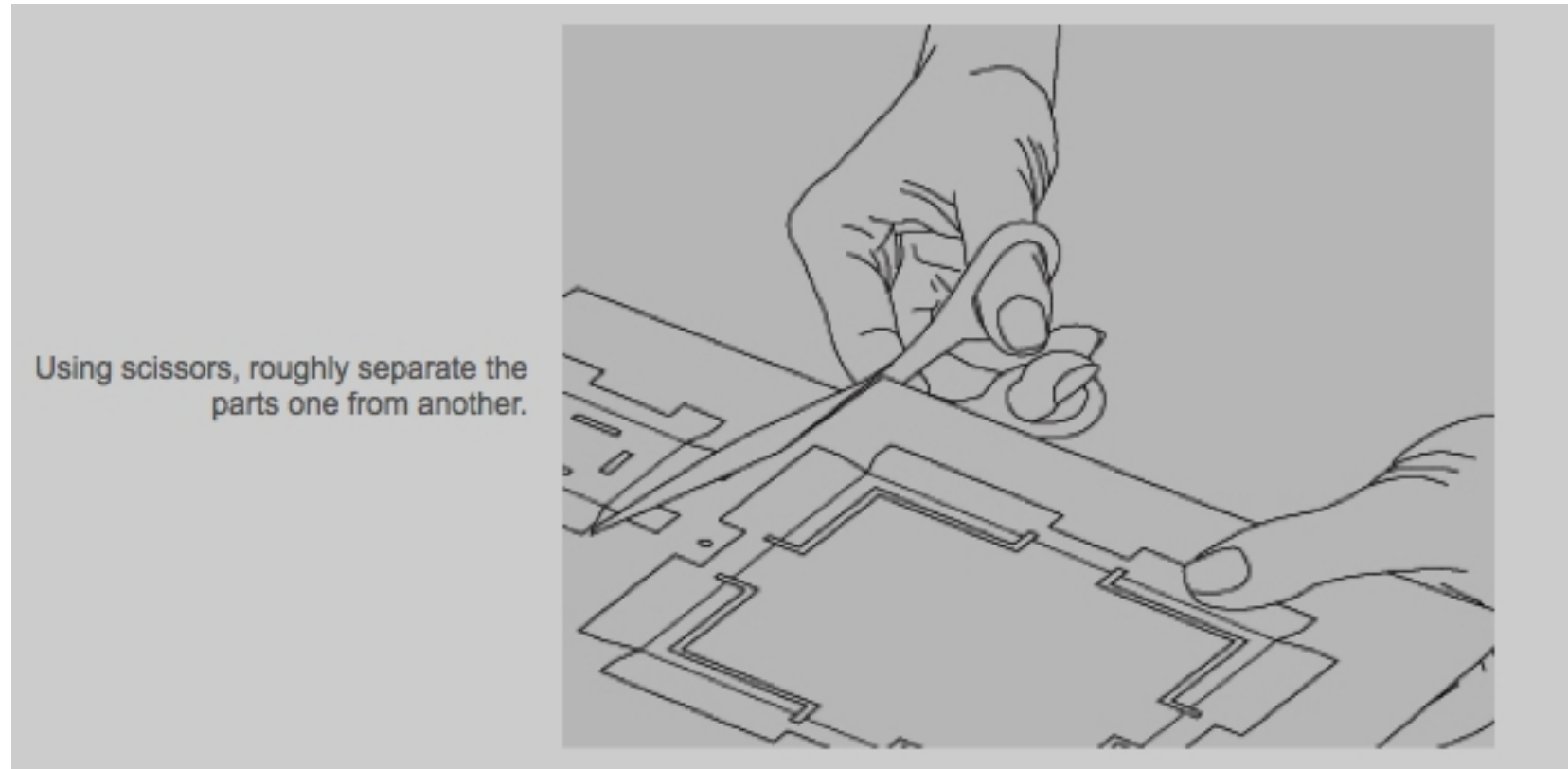
and patience

The parts should be prepared in the following order: pre-cutting > cutting > folding > gluing.

1. ORGANIZE & LAY OUT ALL YOUR EQUIPMENT...

2. CLEAN & CHECK CONDITION OF TOOLS...

3. USE SCISSORS TO SEPARATE PARTS

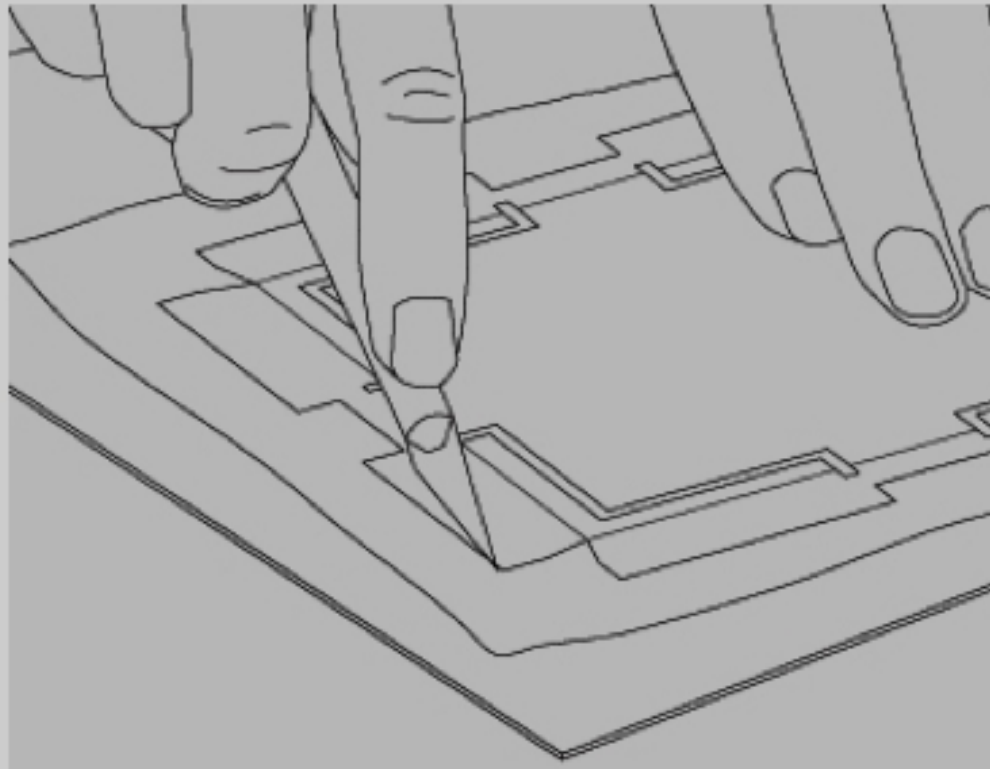


4. LABEL & ORGANIZE PARTS...

5. USE FOLDERS, CONTAINERS & CLIPS TO ORGANIZE/STORE PARTS...

6. CAREFULLY USE EXACTO KNIFES & METAL RULER EDGE TO CUT THE OUTSIDE CONTOURS

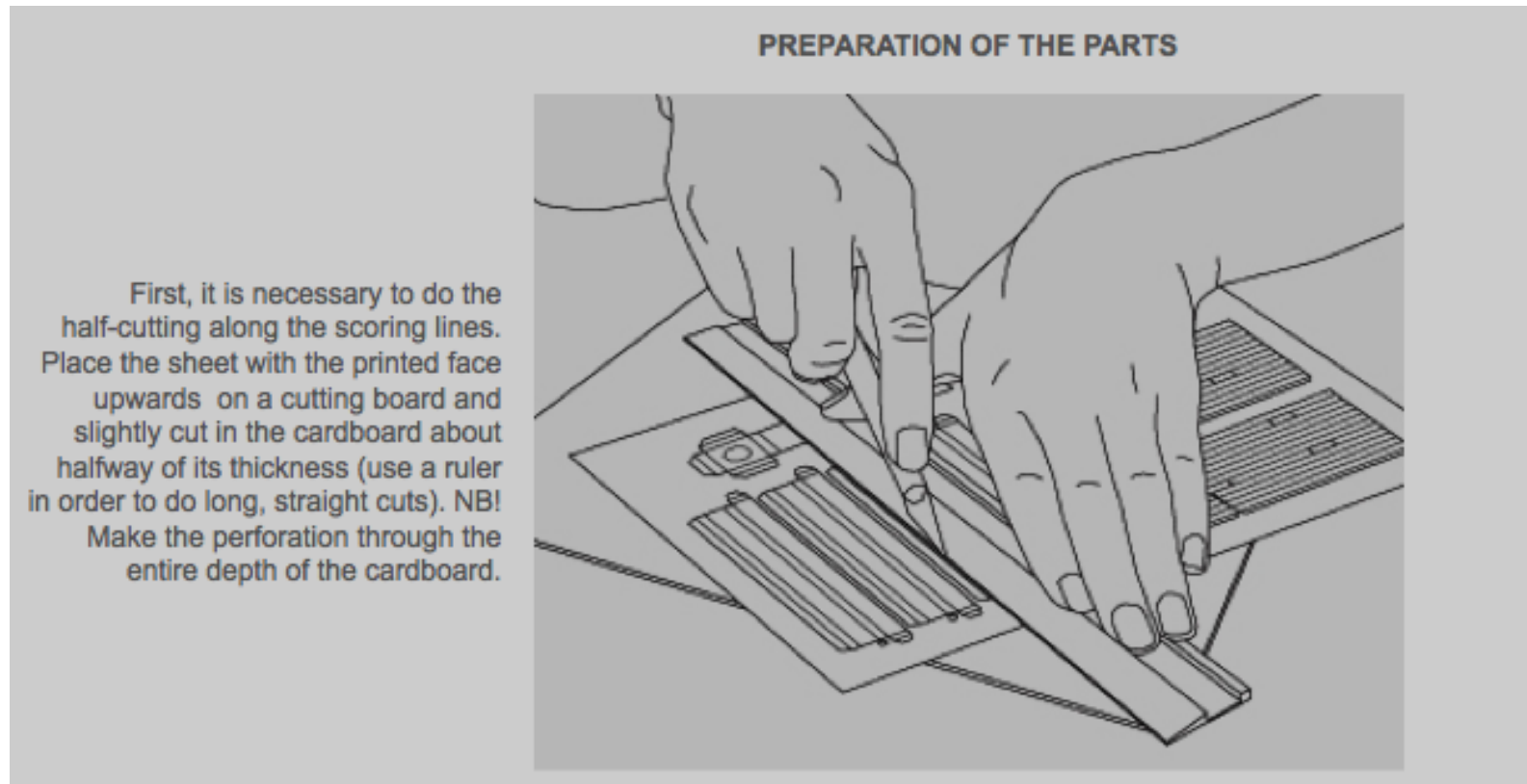
Cut out the parts along the contour.



7. CUT MAKING “FULL STROKES” ALONG THE ENTIRE LENGTH OF EACH EDGE...

8. TRY TO CONSISTENTLY CUT ON THE VERY “OUTSIDE” LINE OR BLACK EDGE OF THE PIECES

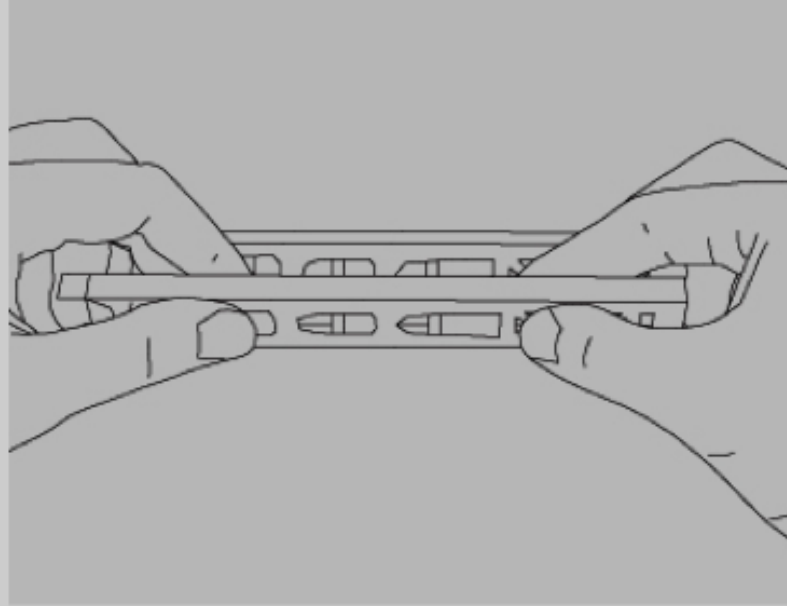
9. USER A RULER, MEASURE & CLEARLY DRAW THE “SCORE” (BEND) LINES ON THE PARTS...



10. CAREFULLY “SCORE” (HALF-CUT) ALL PARTS WITH A METAL EDGE (BE SURE TO PRACTICE HALF-CUTTING ON 2-3 SCRAPS 1ST!)

11. PLACE PARTS ON A SECURE FLAT SURFACE & CAREFULLY FOLD THE “HALF-CUTS” AT A RIGHT ANGLE

Place the parts on a hard surface and fold along the half-cut lines in a 90-degree angle. Similarly prepare for gluing all parts.



Place the parts on a hard surface and fold along the half-cut lines in a 90-degree angle. Similarly prepare for gluing all parts.

12. AT THIS POINT, YOU SHOULD HAVE 14 PIECES...

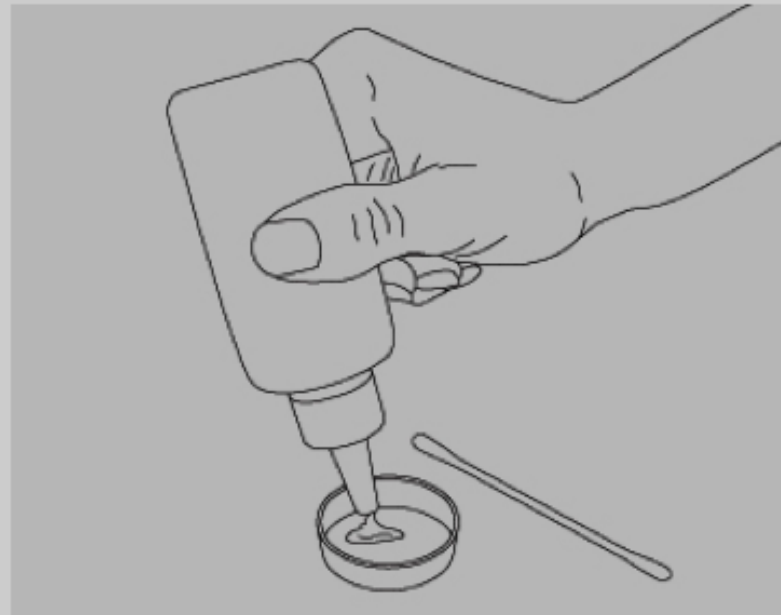
13. LAY FOLDED PARTS OUT IN ORDER TO PREPARE FOR GLUING

WHEN READY TO GLUE, POUR A
SMALL AMOUNT OUT, A BIT AT A TIME-
(SO YOU DO NOT WASTE IT)...

GLUING

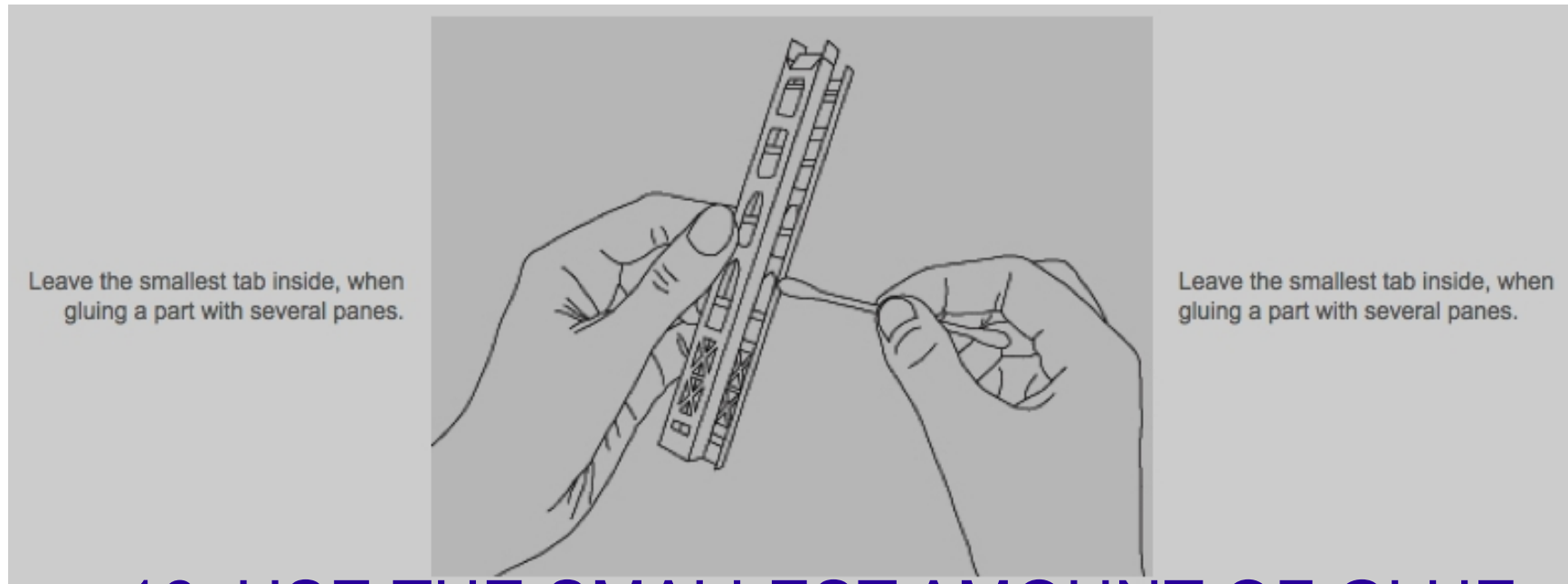
Before gluing, check that the parts fit together well.

Pour a small amount of glue into the
gluing container. Use a gluing tool to
apply the glue to the cardboard.



Pour a small amount of glue into the
gluing container. Use a gluing tool to
apply the glue to the cardboard.

15. WHEN SEVERAL FOLDED PARTS COME TOGETHER FOR GLUEING AT A CORNER, LEAVE THE SMALLEST TAB INSIDE.



16. USE THE SMALLEST AMOUNT OF GLUE NEEDED, & ALWAYS TRY TO “HIDE” THE GLUE BY APPLYING IT ON THE “INSIDE” PART OF THE MODEL THAT WILL NOT BE VISIBLE...