Text-only Instructions

# Terms and Definitions

1. General Terms

A. Orientation - the type of the crease - valley or mountain. Assuming the paper is laid on the table, we define:

I. Valley - the fold line is below the two flaps to its sides.

II. Mountain - the fold line is above the two flaps to its sides.

B. Reverse - make a valley into a mountain or vice versa. Unlike the

original crease that must be forced strongly, reversing does not need

that. You can use your fingertips only.

C. Starting point

1. Square - put the paper on the table so one edge is parallel to you.

II. Diamond - put the paper on the table so one corner is nearest to you.

D. (paper) Edges - every square has four edges, named as follows,

assuming the paper is held in parallel to the folder:

1. Left edge,

II. Right edge.

III. Near edge - the edge near you

IV. Far edge - the far edge.

V. The original edge of the paper is called a raw edge.

VI. An edge created after a fold is a folded edge.

2. Tessellation terms

A. Molecule - the single, smallest building block of a tessellation.

Usually, all four sides will be the same. In other cases, the left and

right edges must be the same and so are the top and bottom edges, but

the left edge does not have to be the same as the top edge.

B. Diagonal - a crease that connects two opposite corners of a unit, or

several adjacent units. For example, a diagonal of a two-unit rectangle.

C. Grid lines - the creases that form the grid (see later)

D. Grid

1. A division of the paper into smaller squares. Usually, a grid will

have a power of 2, which is the easiest to make. A grid of 8 means

dividing the paper into 8 by 8 squares. It is done by 7 creases, spread

evenly horizontally and vertically.

II. Every square is called a unit.

III. Units are marked just like a chessboard: columns are numbered from 1 (left-most) to 8. Rows are marked from A (top or far) to H.

IV. Grid lines are numbered from top to bottom and from left to right.

If you have a grid of 4, there are three grid lines horizontally and

three vertically.

V. All grid creases have to be bi-directional, and when the grid is

done, one must orient all the creases the same, so all of them are

valleys on the top side of the paper.

E. Frame

1. While calculating the grid size for a model, we always add extra rows

and columns. Those will become the frame of the model. The frame is not

folded.

II. A frame helps us manipulate the paper without holding it at the

molecules themselves.

F. Pre-creases

1. Tessellations ask for pre-creases that are all made after the grid,

and before the collapse.

II. Pre-creases are always between corners of units, or within a single

unit.

III. Pre-creases must be creased once (do not reverse them but in

special cases) in the right orientation

## Instructions

### Step-by-step 8 Grid

Use a square of thick paper, around 110 GSM.

The comfortable unit size should be between 1.5 to 2.5 cm. For an 8-grid use

a 15 cm square.

Mark the upside by folding the tip of the bottom-left corner up. This

will help you reset the paper after every pre-crease. You can also cut

it completely, but make sure the cut or the fold is considerably smaller

than the unit. This unit will be part of the “frame” around the

tessellation.

Step 1

Fold the bottom edge to the top edge. Unfold.

Step 2

Rotate the paper 90 degrees clockwise.

Step 3

Fold the bottom edge to the top edge. Do not unfold.

Result: You have made a grid of 2.

Step 4

Rotate the paper 180 degrees so the two edges are near you and the folded edge is far away.

Step 5

Fold the bottom edge of the upper layer only to the far folded edge.

Step 6

Turn the paper over, left to right.

Step 7

Fold the bottom edge of the top layer only to the far folded edge.

Step 8

Unfold everything. Return to the starting point by looking for the folded corner.

Step 9

Rotate the paper 90 degrees anti-clockwise or to the left. The folded corner is now on the bottom right.

\*\* I think that Step 9 is unnecessary. If I rotate the paper 90° I would refold the same folds of previous steps.

Step 10

Refold the bottom edge to the top edge.

Step 11

Rotate the paper 180 degrees so the two edges are near you and the folded edge is far away.

Step 12

Fold the bottom edge of the top layer only to the far folded edge.

Step 13

Turn the paper over, left to right.

Step 14

Fold the bottom edge of the top layer only to the far folded edge.

Step 15

Unfold everything. Return to the starting point by looking for the folded corner.

Result: You have made a grid of 4.

Step 16

Fold the far edge along the grid line number 1. The edge will align with the horizontal center line.

Step 17

Fold the raw edge of the paper up to meet the far folded edge.

This divides the top quarter of the paper into eights.

Step 18

Fold the top part (including 3 layers) down along the center crease line.

Step 19

Find the upper folded edge (grid line number 2 (but remember that it

was grid line number one before you divided the quarter into eights))

and fold it to meet the top folded edge.

Step 20

Unfold everything.

Step 21

Rotate the paper 180 degrees.

The faraway part is divided into two quarters, and the bottom part into

eights.

Step 22

Repeat the process (steps 16 to 19)

Step 23

Unfold completely.

Step 24

Rotate 90 degrees and repeat the process in this direction (steps 16 to 23).

Step 25

Unfold completely.

Result: You have made a grid of 8.

Step 26

Your grid is not consistent, since some of the folds are mountains and some are valleys. Reorient all creases so the upper part is all valleys.

Your grid of 8 is ready.