STRETCHLEARN · WORKBOOK

Origami — Workbook

This workbook turns the course into deliberate practice. Each section matches a course module and asks you to read symbols, fold test bases, check accuracy the way a careful folder does, and log your paper and results. Work through it alongside real folding and you will finish able to read an unfamiliar diagram, fold clean bases, complete a modular and a wet-folded model, collapse a simple tessellation, and choose paper that suits each job.

Reading Diagrams and Folding Accurately

Learn the symbol language, build the accurate-crease habit, and drill the named maneuvers diagrams assume you know.

Exercise: Symbol flashcard drill

Open any diagram from a book or the Origami Database and, before folding, point at each symbol in the first five steps and name it out loud: valley, mountain, existing crease, fold arrow, turn over, rotate, or sink. Cover the legend and test yourself.

• Can you tell valley (dashed, toward you) from mountain (dash-dot-dot, away from you) instantly, or do you still have to think?

• Did you look at the next step's picture before folding the current one to confirm the target shape?

• Which symbol did you hesitate on most? Note it and find three more examples to drill it.

Worksheet: Accurate-crease self-audit

Fold a simple model you know, then unfold it completely and inspect the creases. Record what your alignment habits actually are so you can fix the weak ones.

Model folded and paper size used (cm)

Did you pinch the two landmarks together before creasing? (always / sometimes / no)

Surface used (hard table / lap / other) and why it mattered

Tool used to sharpen creases (thumbnail / bone folder / card)

Where did alignment drift most (which step or fold)?

One alignment habit to change next time

Checklist: Named-maneuver readiness check

[ ] I can perform an inside reverse fold after precreasing in both directions
[ ] I can perform an outside reverse fold wrapping the flap around the outside
[ ] I can squash fold a flap open symmetrically
[ ] I can petal fold a flap to a point
[ ] I can collapse a rabbit-ear from three creases
[ ] I precrease every reverse and squash before committing the move
[ ] I look at the next diagram step before completing the current one

Exercise: Precrease-then-reverse practice

Take a narrow folded flap (the point of a kite base works). Practise an inside reverse fold by first folding the tip to one side and unfolding it, then opening the layers and pushing the tip in along the precrease. Then try an outside reverse on a fresh flap.

• Did the precreased reverse fold reverse cleanly, or did the layers buckle and fight you?

• What happened on a flap you reversed without precreasing first? Name the difference.

• Can you now tell, from the before-and-after pictures alone, which steps in a diagram are asking for a reverse fold?

The Classic Bases

Fold the kite, fish, preliminary, waterbomb, bird, and frog bases until your hands know them, then complete the crane.

Exercise: Base-from-memory ladder

Using 15 cm squares, fold the kite, then the fish, then the preliminary base, then the waterbomb base, then the bird base, each from memory if you can. Set every crease sharp and check each result against a reference.

• On the kite and fish, do the folded edges lie exactly along the centre line with no gap or overlap?

• Did the preliminary base collapse almost on its own, or did a crease folded the wrong way fight you?

• Can you feel how the kite nests inside the fish, and the preliminary inside the bird? Which nesting is clearest to you?

Worksheet: Base-to-model map

For each base you have learned, record which classic models grow from it. Building this map is how experienced folders recognise a design's skeleton at a glance.

Kite base: models it leads to

Fish base: models it leads to

Preliminary base: models it leads to

Waterbomb base: models it leads to (e.g. waterbomb balloon)

Bird base: models it leads to (e.g. crane, flapping bird)

Frog base: models it leads to (e.g. lily, iris)

Checklist: Crane quality check

[ ] Started from a clean bird base with four sharp narrow points
[ ] Neck formed by an inside reverse fold, head reversed again for the beak
[ ] Tail formed by an inside reverse fold opposite the neck
[ ] Wings folded down symmetrically and equal in size
[ ] Body symmetric when viewed head-on, no twist
[ ] Every crease sharpened for a crisp finish
[ ] Folded from a diagram or memory, not copied step-by-step from a video

Modular Origami and Wet-Folding

Fold identical units and lock them tight, wet-fold heavy paper into soft curves, and learn to match paper to the job.

Exercise: Identical-unit batch test

Fold six Sonobe units for a cube, then twelve more for a stellated octahedron, all from the same paper with the same care. Lay them side by side before assembling and compare them.

• Are all your units genuinely identical, or did some come out looser or uneven? Refold any that do not match.

• When you insert a flap into a pocket, does it push fully home so the joint is tight, or does it sit loose?

• On the finished cube and ball, did any joint loosen or pop near the end when tension was highest? Note where.

Worksheet: Wet-folding session plan

Plan a wet-folded model before you dampen anything, since the technique needs the right paper, the right dampness, and a drying setup ready in advance.

Model and paper (type and gsm, must contain sizing)

How you will dampen (damp cloth / sponge) to leather-like, not soaked

Which edges stay crisp and which become rounded curves

Plan to re-dampen areas that dry before shaping is done

Drying setup (clips / foam / rolled cloth) to hold curves

Drying time before handling (often overnight)

Checklist: Paper-selection check before a project

[ ] Paper weight (gsm) suits the model: thin kami for simple, thicker for modular, sized heavy for wet-folding
[ ] Sheet checked as a true square by folding corner to corner both ways
[ ] Sheet trimmed square if the edges did not line up
[ ] Size large enough that the smallest final flaps stay foldable
[ ] Colour and finish suit the model (e.g. even-coloured Tant for modular units)
[ ] Wet-folding paper actually contains sizing (kami will not wet-fold)
[ ] Spare sheets on hand in case of a tear or a misfold

Exercise: Dry-versus-wet comparison

Fold the same simple animal twice, once dry from kami and once wet-folded from a heavier sized paper, shaping soft curves into the wet one and letting it dry fully. Set them side by side.

• Does the wet-folded version look more lifelike and rounded than the flat, faceted dry one? Describe the difference.

• Did you use too much water at any point (paper floppy or tearing)? Less water next time, or about right?

• Did the curves hold after drying, or relax? If they relaxed, prop them longer or use paper with more sizing.

Tessellations and a Folding Practice

Read a crease pattern, precrease an accurate grid and collapse a simple tessellation, and set up a lasting folding practice.

Exercise: Crease-pattern reading drill

Find a simple tessellation crease pattern (a square or hexagonal twist) and, without folding, read it: identify the line legend, find the repeating molecule, and trace where many creases meet at a vertex.

• Which line type is mountain and which is valley in this pattern's legend?

• Can you find the single repeating molecule that tiles across the sheet, and how many times does it repeat?

• Pick one interior vertex: do the mountain and valley counts differ by two, as Maekawa's theorem predicts?

Worksheet: Tessellation grid plan

Plan the grid before you fold, because in tessellations the precreasing accuracy decides whether the collapse succeeds at all.

Pattern chosen and source

Paper (thin even-coloured stock such as Tant or light kraft) and size

Grid divisions per edge (e.g. 16ths, 32nds) and square or triangular

Halving sequence to build the grid (half, quarter, eighth, sixteenth)

Extra mountain/valley creases the molecule needs

Where you will begin the collapse and work outward

Checklist: Tessellation collapse check

[ ] Each edge divided into equal parts by repeated sharp halving
[ ] Full grid built in both directions (plus diagonals if triangular)
[ ] All molecule creases precreased in the correct mountain/valley direction
[ ] Collapse begun at one molecule and worked outward across the sheet
[ ] Every repeat pleated the same way so the sheet contracted evenly
[ ] Finished tessellation flattened and set
[ ] Held to a light and the repeats look even and aligned

Exercise: Practice-plan setup

Set up your tools and a deliberate progression. Gather a hard surface, a bone folder, ruler, knife and mat, and your paper stock, then write a short ladder of next models that each teach a named technique.

• Which tools and papers are you missing, and what is the one most worth buying first?

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• List the next three models you will fold and the technique each one teaches (e.g. reverse folds, pocket locks, the collapse).

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• Which reputable book or source (Lang, Montroll, Tomoko Fuse, Eric Gjerde, OrigamiUSA's The Fold) will you work from next?

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Your Action Plan

1. Drill the Yoshizawa-Randlett symbols until valley, mountain, and the common arrows are instant on sight.
2. Adopt the line-up-then-set routine: pinch both landmarks together before creasing, sharpen only once you are sure.
3. Practise the named maneuvers (inside and outside reverse, squash, petal, rabbit-ear), always precreasing first.
4. Fold the kite, fish, preliminary, waterbomb, bird, and frog bases until you can make each from memory.
5. Fold the crane from a bird base using reverse folds, proving you can read a diagram and execute the moves.
6. Fold a six-unit Sonobe cube, then scale to a thirty-unit ball, locking every flap fully into its pocket.
7. Wet-fold one animal from heavy sized paper, shaping soft curves and letting it dry to set before handling.
8. Check every sheet is a true square and match paper (kami, Tant, mulberry, foil) to each model before folding.
9. Read a simple tessellation crease pattern, then precrease an accurate grid and collapse a square or hexagonal twist.
10. Set up tools, stock paper, choose a reputable book, and fold a little and often, logging what each model teaches.