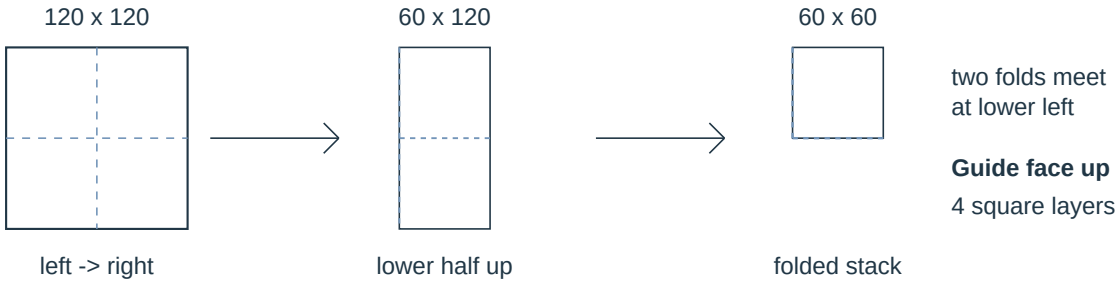
# Winter Fold-Cut Lab

Predict, fold, cut, unfold, compare, then correct one explanation.

Print all five pages on matching paper at 100% / actual size. Reprint this square for each trial, or measure three blank 120 mm squares. Check the bar. Helping hands may assist.

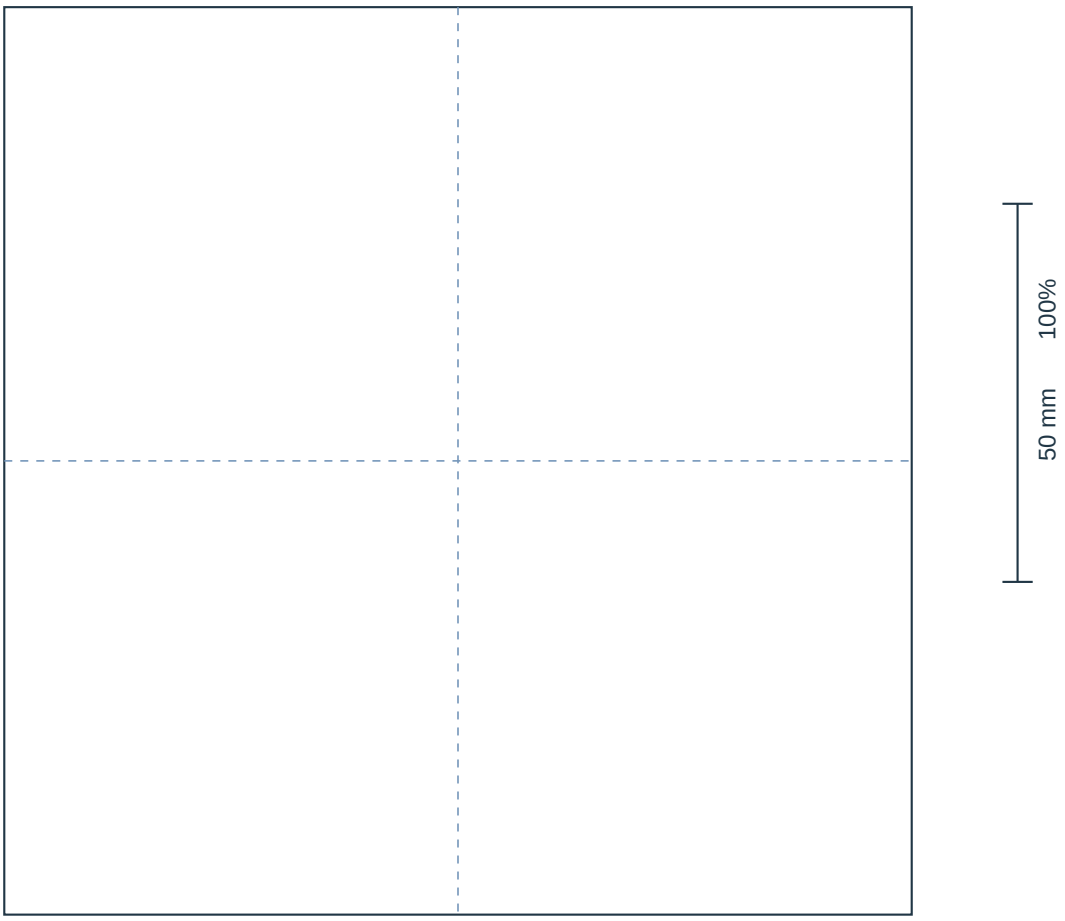
Fold left half right, then lower half up. Rotate if needed so the two folds meet at lower left. Place a separate page 2 guide face up, matching both FOLD edges; hold only in KEEP.




Diagrams reduced. Blue dashed = folds/folded edges; opposite stack edges are free.

Cut out each guide separately BEFORE placing it on the stack. Its outside border cuts guide paper only. Cut only the shaded discard through the stack; no adhesive crosses a cut. Remove guide, unfold and use pages 3/4. Keep page 3 face down until you predict.

**120 x 120 mm PRACTICE SQUARE / cut outside border**

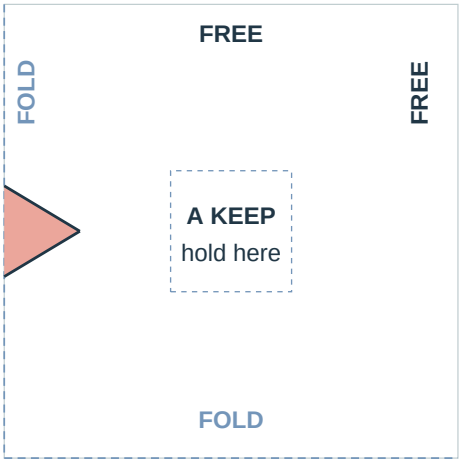


# Three Folded Cut Guides

Actual size: 60 x 60 mm. A separate guide goes on each four-layer stack.

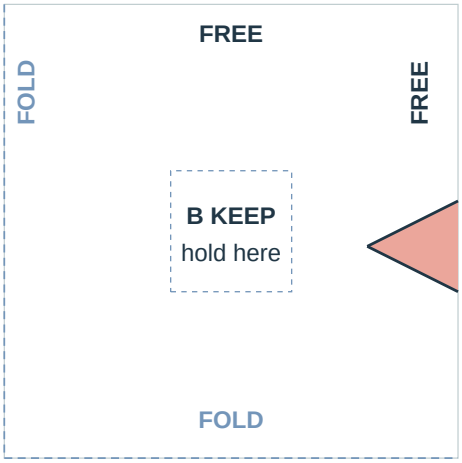
Cut guide borders first, away from the stack. Grey border = GUIDE PAPER ONLY. Blue dashed = folded edges. Dark interior stroke = cut through stack. Coral = discard; KEEP stays clear.

### A / Fold-edge notch



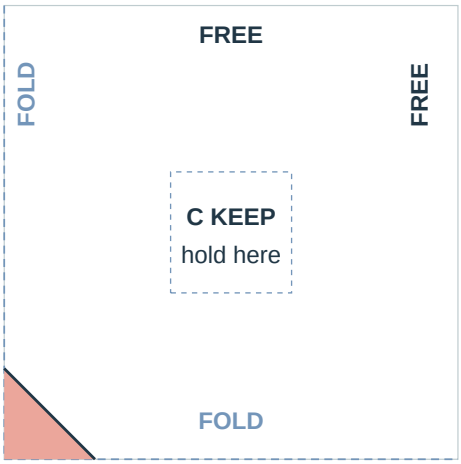

60 mm / separate guide

### B / Free-edge notch




60 mm / separate guide

### C / Fold-corner cut




60 mm / separate guide

Place guide face up. Match its left/bottom FOLD edges to the stack folds. Opposite top/right edges are FREE. Hold or lightly attach only at KEEP. Cut the shaded discard, remove the disposable guide, then unfold the original square.

Do not cut the answer diagrams through a folded stack. Record predictions on page 4 before unfolding.



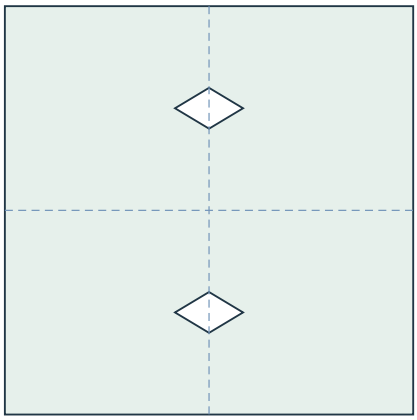
50 mm / print at 100%

# Verified Unfolded Results

ANSWER PAGE / keep face down until your prediction and trial are recorded.

Reduced answer diagrams: 45% scale. These are NOT cutting templates. Full squares are 120 x 120 mm. Dashed lines show the two reflection axes, not extra cuts.

### A / Fold-edge notch

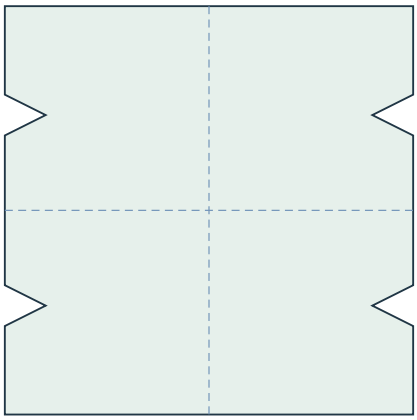


2 enclosed holes; 0 outer notches.

One connected retained sheet. Smallest web/corner clearance: 24 mm.

Retained area: 14160 mm2.

### B / Free-edge notch

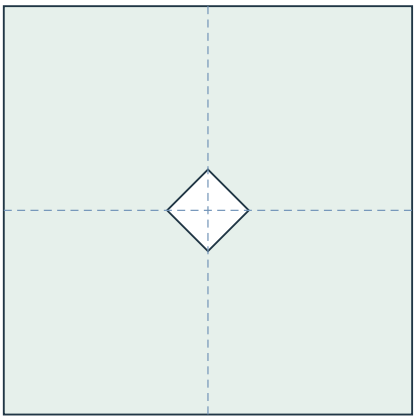


0 enclosed holes; 4 outer notches.

One connected retained sheet. Smallest web/corner clearance: 26 mm.

Retained area: 14112 mm2.

### C / Fold-corner cut



1 enclosed hole; 0 outer notches.

One connected retained sheet. Smallest web/corner clearance: 48 mm.

Retained area: 14112 mm2.

A cut on a folded edge opens an enclosed hole when unfolded. A cut on a free edge stays on the outside boundary. Cutting the meeting corner of both folds opens the central hole.

Each result repeats by reflection across both axes. A and B are not unchanged by a 90-degree turn; C is. Four quadrants do not always mean fourfold rotational symmetry.

# Predict, Compare and Explain

Use page 2 one trial at a time. Check page 3 only after predicting and unfolding.

### A / Fold-edge notch

| Prediction / sketch | Actual observation | Corrected explanation |
| --- | --- | --- |
| holes / notches / repeats | compare with page 3 | fold edge or free edge? |

### B / Free-edge notch

| Prediction / sketch | Actual observation | Corrected explanation |
| --- | --- | --- |
| holes / notches / repeats | compare with page 3 | fold edge or free edge? |

### C / Fold-corner cut

| Prediction / sketch | Actual observation | Corrected explanation |
| --- | --- | --- |
| holes / notches / repeats | compare with page 3 | fold edge or free edge? |

# Design One Folded Cut

An exploration: predict first. No fourth answer is promised for an unchecked design.

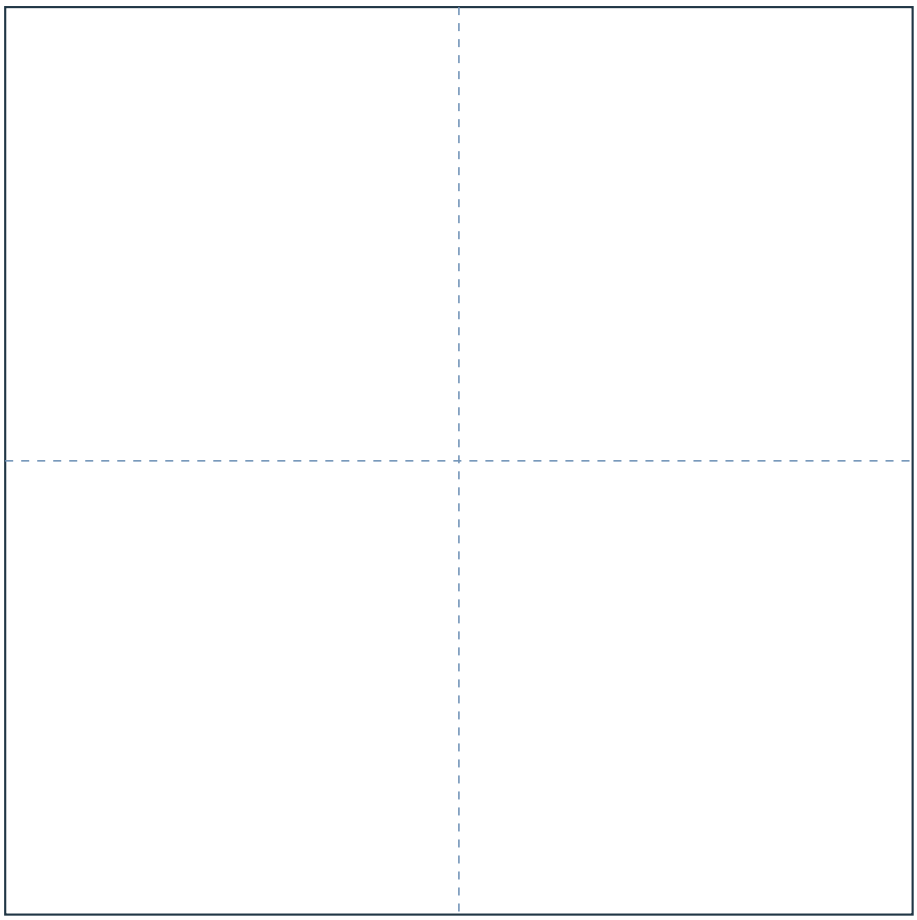
Draw one bounded cut touching a fold edge, free edge or fold corner on the blank guide. Keep at least 10 mm of connected retained paper; never cut across the whole stack. Keep the KEEP zone clear. Use the same separate-guide method from pages 1/2.

**Blank guide / 60 x 60 mm**




If retained paper breaks apart, record it and revise. An unchecked design may fail the 10 mm web or produce extra pieces.

**Blank square / 120 x 120 mm**



**Predicted result / sketch**

**Observed result / revision**