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Terminology

Symbols

Diagram illustrating various book components and techniques:

- accordion**: A stack of pages with multiple folds.
- sections**: Individual pages or sections within a book.
- accordion hinge**: A hinge mechanism connecting the **front cover** to the **back cover**, with a **board sheet** in between.
- one-piece cover**: A cover made from a single piece of material, showing the **spine** and **cover**.
- pages**: Individual pages, including the **head**, **tail**, **verso**, and **recto**.
- fore-edge**: The edge of the pages.
- inside reverse folding**: A technique for folding pages inward.
- piano hinge**: A hinge mechanism using a strip of material.
- flap** and **pocket**: Components of a flap or pocket structure.
- wrong side** and **right side**: Indicators for the orientation of a material.
- folios**: A stack of pages.
- turn-ins**: A technique for finishing the edges of a book.
- slit** and **slot**: Techniques for cutting into the paper or cover.

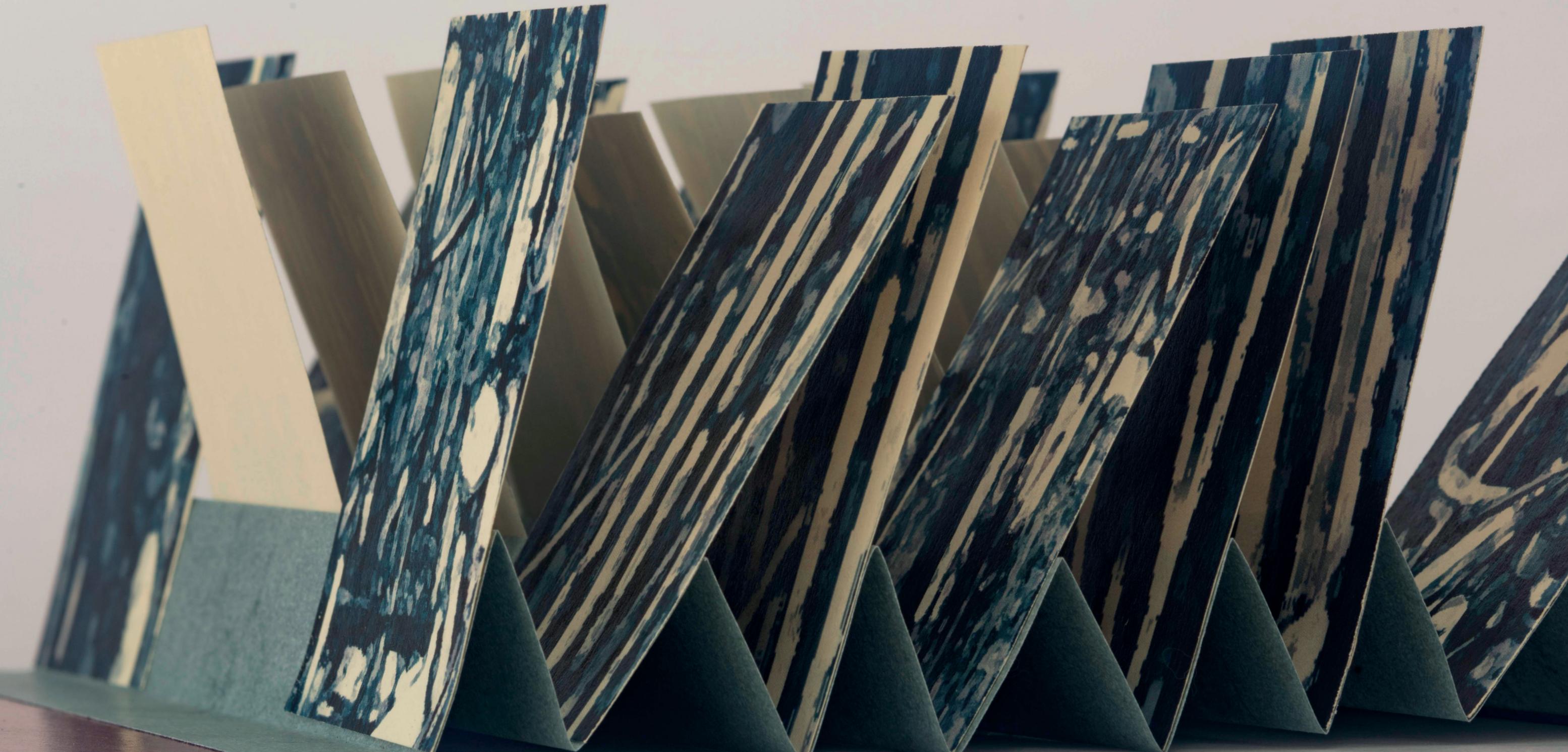
Diagram illustrating various symbols and templates used in bookbinding:

- panel**: A rectangular panel with a fold line.
- pattern template**: A template for creating a book cover, showing **hinges**.
- flap** and **pocket**: Diagrams of a flap and a pocket.
- sewing template**: A template for creating a sewing structure.
- measuring template**: A template for measuring a book block, showing dimensions **w**, **h**, **Th**, and **2w + h**.
- book block**: A 3D representation of a book block with dimensions **w**, **h**, and **Th**.

- outline
- future fold line – valley
- future fold line – mountain
- score line
- dashed line shows material underneath
- pencil line
- awl mark
- turn, bring over
- flip
- tuck
- detail enlarge
- double sided tape, adhesive
- grain direction arrow

1

The Accordion



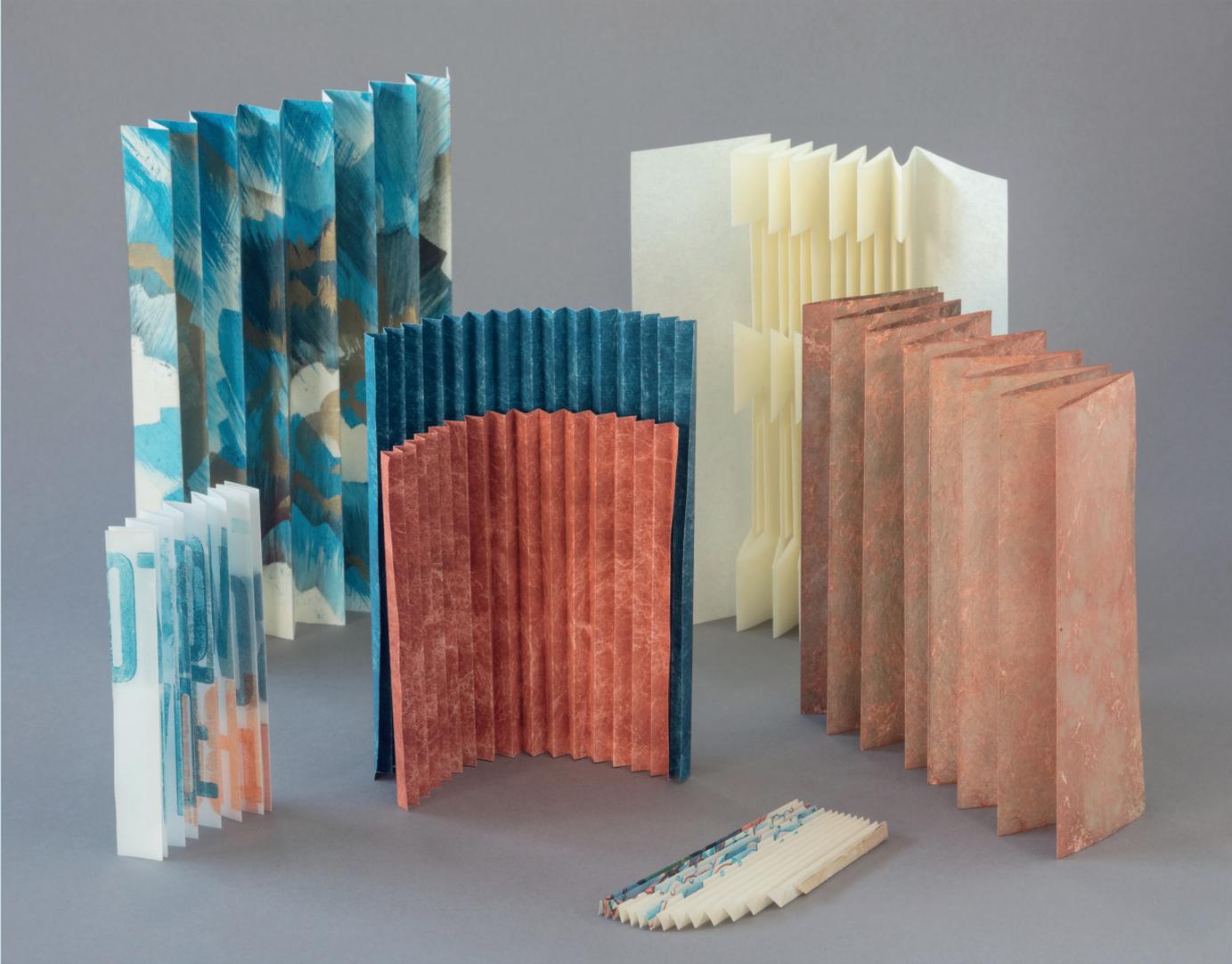
The Accordion

Just as the name implies, accordion folds are named after the musical instrument that effectively operates by contracting and expanding mountain and valley folds. As a book form, the accordion has achieved high status for centuries in countries like Japan, China and Korea. The subtle beauty and lightness of Asian papers contributes to its success. In the Western world the accordion book is encountered as a useful format with unequalled potential, as it is able to stand up on its own displaying a continuous array of pages or a fantastic panorama. It can be viewed in different ways – two pages at a time or in one long spread. This is of great advantage for display purposes where the accordion can also be viewed from the front and the back. It lies completely flat when opened – a characteristic not found in many books.

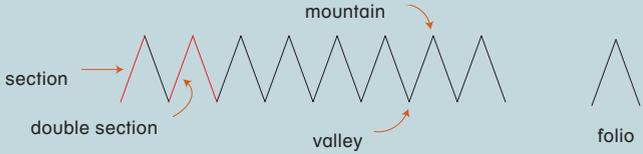
Throughout the chapters, we use the term “accordion” rather than switching back and forth among the other names

you will most likely encounter: concertina, leporello, zigzag, fold book, fan book, folded binding, screen folds, Orihon and Sutra binding. While some of these terms indicate their origin and represent a specific style or purpose, many are being used interchangeably today. The accordion’s physical presence is everywhere. We are increasingly fascinated by the playful mechanical function of the zigzag.

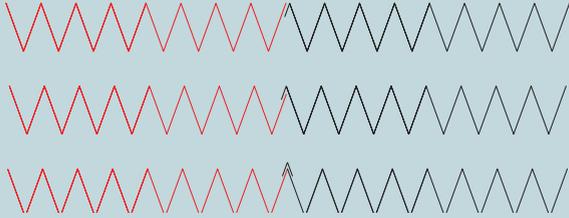
The accordion fold as an independent component is our focus point in this book. It is one of the most versatile ingredients in making books and its possibilities are endless. We have embraced the accordion fold for decades and discovered many varieties. In this book we are pleased to introduce to you a selection of our favorites. Let us start with a brief visual display of a variety of folding styles. Hopefully they will inspire you to grab some paper and start folding!



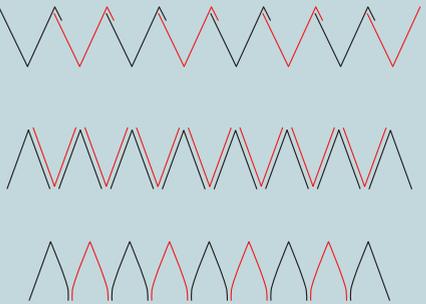
The accordion, in its most fundamental form, is created by folding a sheet of paper into uniform-sized sections. This diagram includes some terminology that we will use in the following chapters.



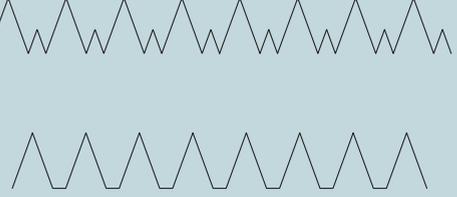
Two accordions can be joined by the addition of a small hinge.



An accordion can also be constructed by joining folded sections (folios). Following are three examples from Japanese album structures, showing options for joining folios at the back edge; joining by alternating folios front to back; and joining folios at the fore-edge.



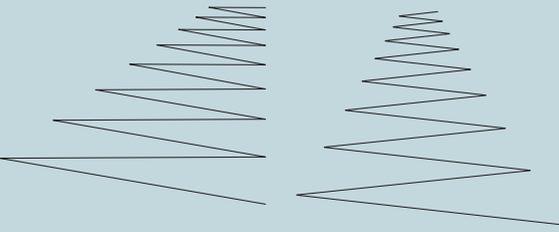
Folding in an irregular pattern, alternating one large double section and one single small section, the resulting accordion yields surprising results. We explore this further in Chapter 3, One-Sheet Books.



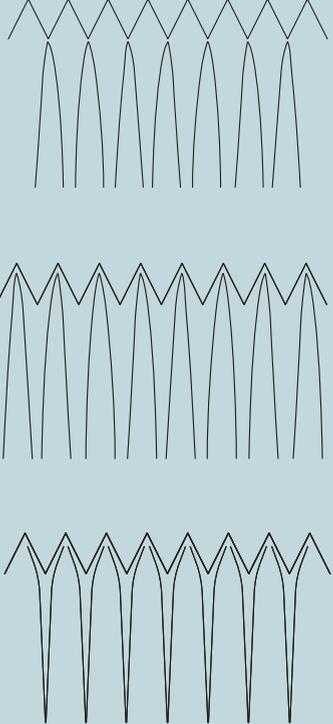
By folding a pattern of one small and one large section, a pleating effect results, allowing the accordion to lie flat and spread out.

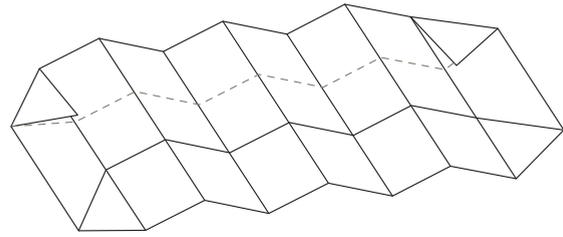


A further development is that of folding in incremental decreases.

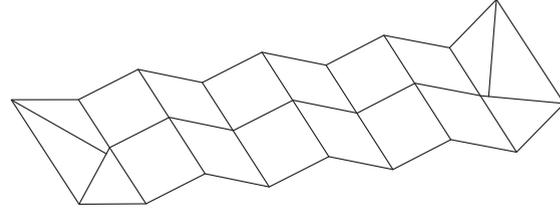


The accordion can also be employed as a spine. In these three examples individual folios are: sewn onto the mountain fold; sewn into the valley fold; and attached around a mountain fold.

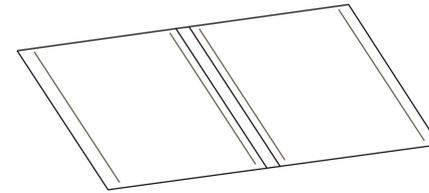




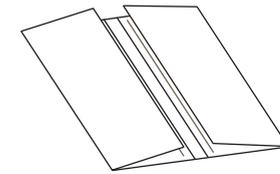
3. Fold the top edge down toward the middle, creating a small overlap.



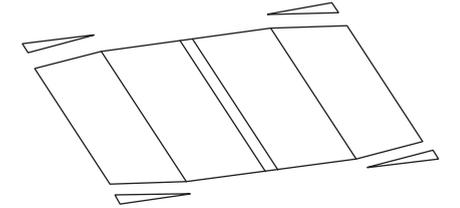
4. Tuck the top edge under the bottom edge.



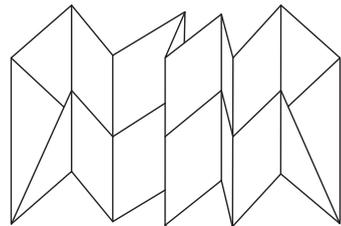
9. Open the cover and draw pencil lines on both sides of the spine $\frac{1}{4}$ in. (6 mm) away.



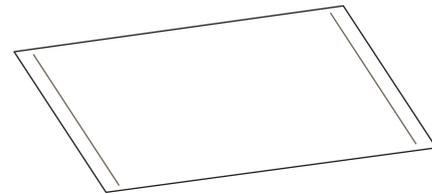
10. Fold the right and left edges inward to meet those lines and crease well.



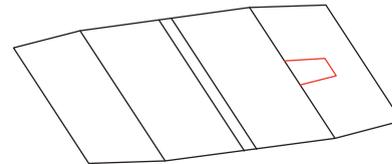
11. Cut off narrow angles at the corners of the cover, as shown.



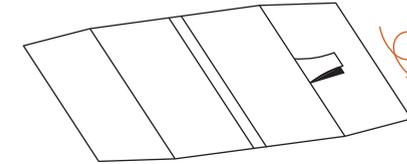
5. Refold the accordion, starting at the middle mountain fold.



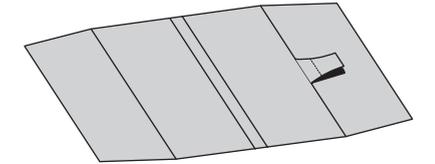
6. Prepare the cover. Confirm that the height of the cover is the exact height of your folded pocket accordion. Trim or cut the cover slightly larger if necessary. Draw pencil lines $\frac{5}{16}$ in. (8 mm) away from the short edges.



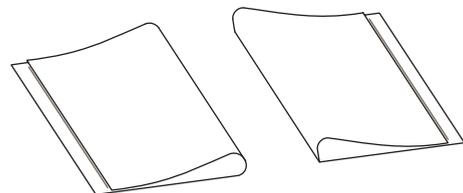
12. Mark and cut a tab at the back of the inner cover. We centered and tapered the tab as shown. Feel free to come up with your own version.



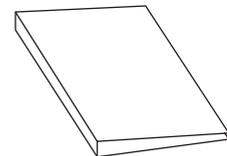
13. Turn the cover over.



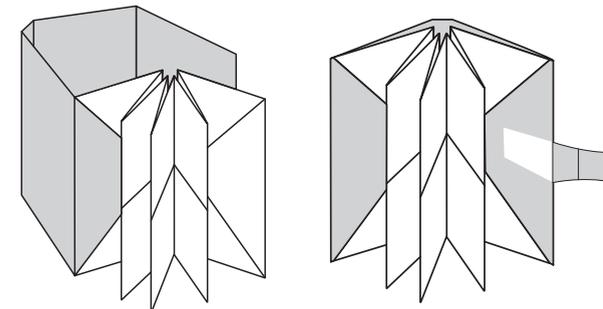
14. Score the tab $\frac{5}{16}$ in. (8 mm) away from the fore-edge fold.



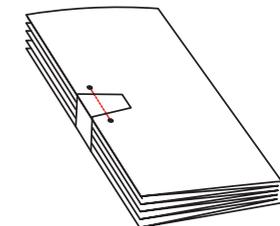
7. Bring the right short edge to the left pencil line and crease well. Repeat with the left edge.



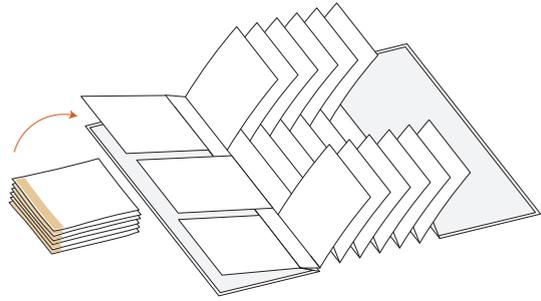
8. This will establish a folded spine exactly in the middle of the cover piece.



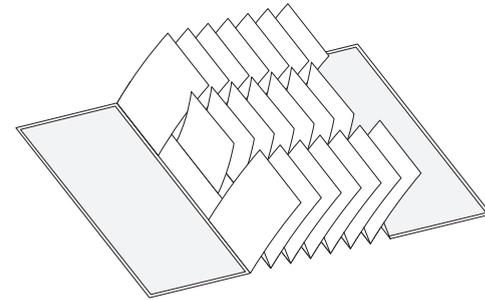
15. Insert the cover into the pockets. It should fit snugly and the cover should match the height of the structure.



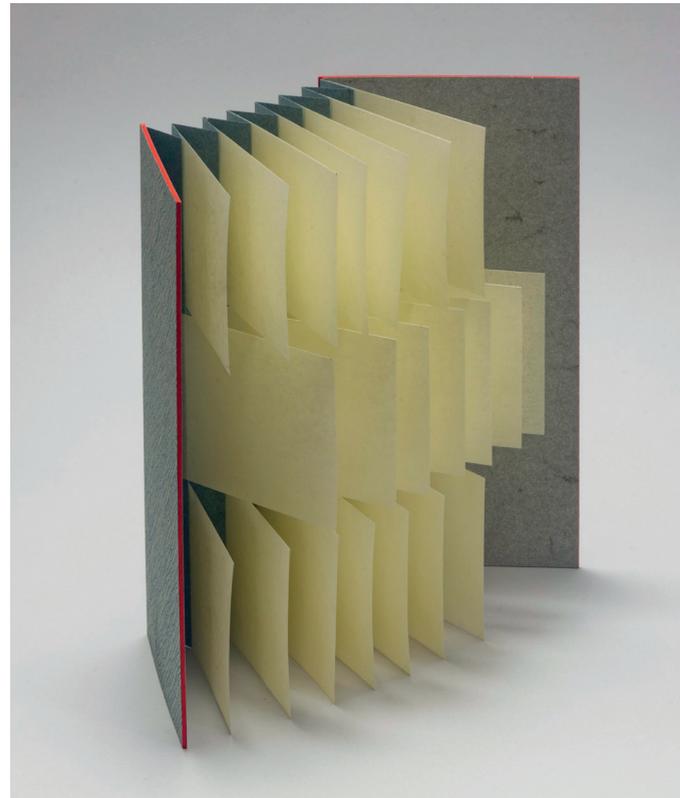
16. Wrap the tab around to the front cover and mark for a slit the tab can slip into. To cut this slit, take the front cover out of the pocket and make the cut on a mat. Reassemble and fill with the inserts.



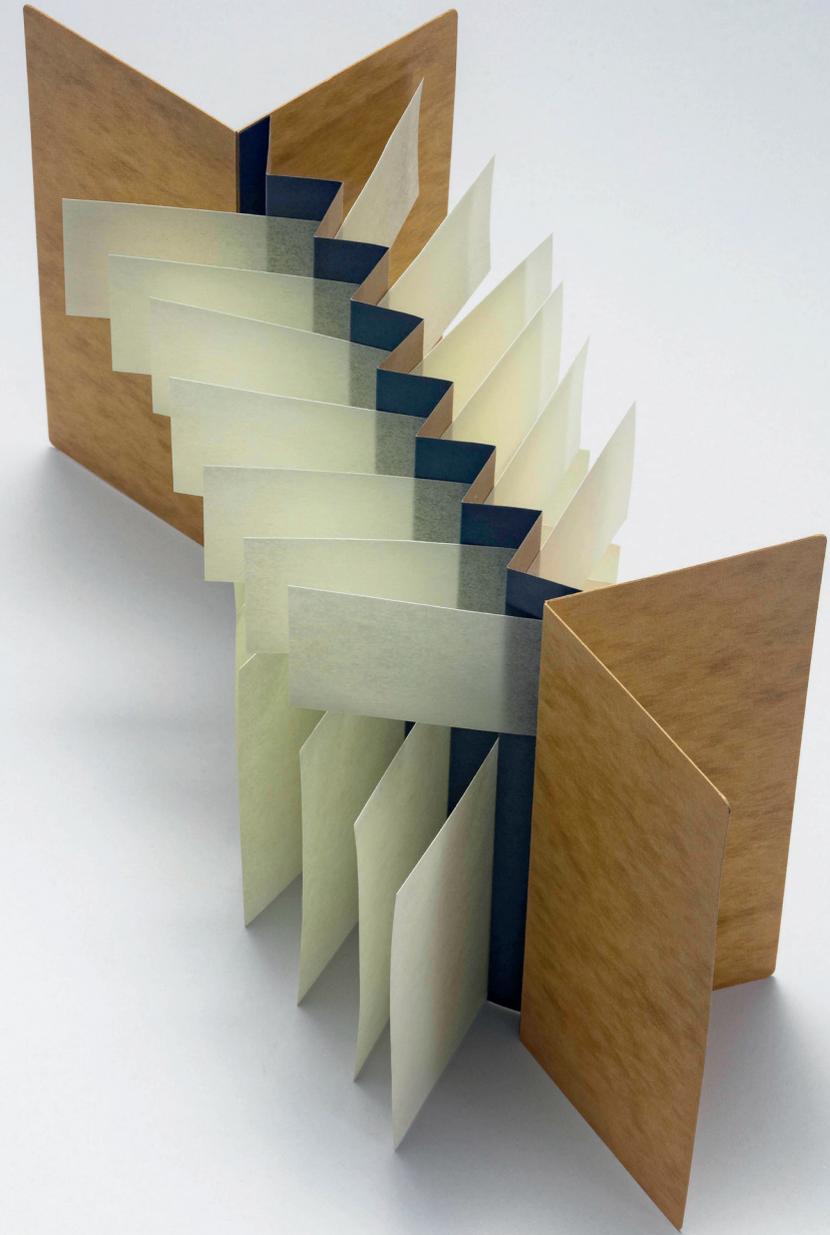
15. Take the third stack of flags and position next to the front cover. Turn the first double section of the accordion down to your left. Peel off the backing paper from the tape from one flag and adhere it, centering it between the other two.



16. Continue with the remaining six flags to the end of the row.



10 Two-Sided Flag Book



11 Interlocking Loops

Interlocking Loops, a relative of the Flag Book, features flags that resemble loops. The alternating directions of the loops make it an effective and lively display for a collection of symbols, photographs or practically anything you can think of. Because of its three-dimensional structure, it stands up very well. As the loops are double sided, why not cut a window in the top layer to view images underneath? Why not shape the loops themselves or increase their size and number? A particular curiosity presents itself as the covers are pulled apart and the loops are stretched out flat, barely recognizable. Upon bringing the covers close together with a wriggling, shaking motion, the loops re-establish themselves thanks to the memory of the fold.

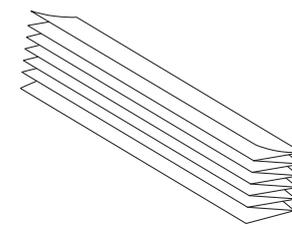
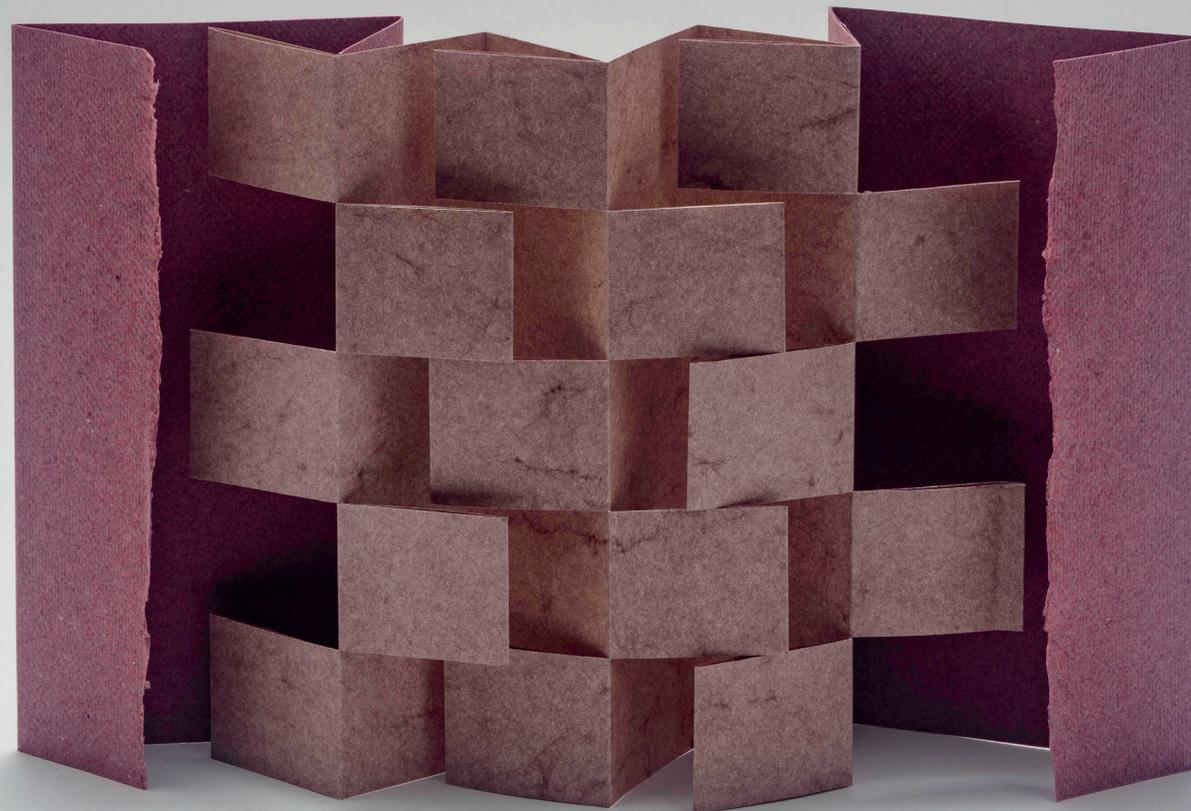
COMPONENT	DIMENSIONS	QTY	MATERIAL
ACCORDION	8 x 22½ in. 20 x 60 cm	1	Text-weight paper: Elephant hide paper, 110 gsm
COVERS	8 x 8 in. 20 x 20 cm	2	Cover-weight paper or cardstock: Japanese linen cardstock, 244g Handmade Zaansch bord

FINISHED DIMENSIONS:
8 x 4 in. (20 x 10.5 cm)

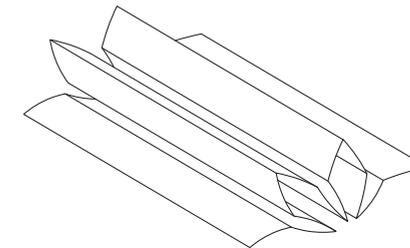
TECHNIQUES:
Folding an Accordion 3–6–12, pages 33–34

TOOLS:
Self-healing cutting mat / Straight edge / Sharp knife or paper cutter
Bone folder / Pencil / Ruler / Awl
Double-sided tape

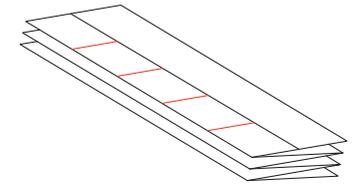
Dividing into an Odd Number of Sections, page 20



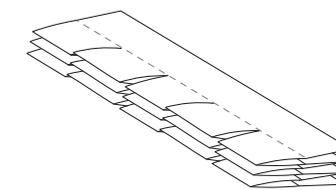
1. Fold the accordion strip into 12 sections.



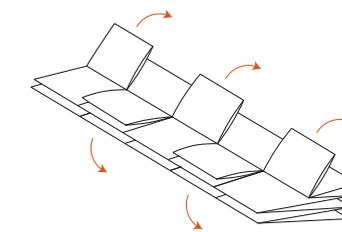
2. Refold it into six sections, using the existing folds.



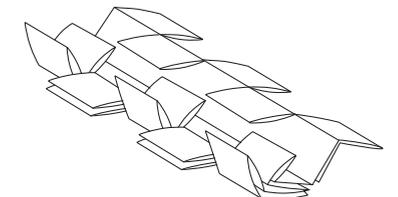
3. Divide the center fold line on the top section into five equal parts. Lightly draw four perpendicular lines from the center fold to the left fore-edge.



4. Cut along these four pencil lines through all six layers. Start the cuts at the fold rather than at the fore-edge.



5. Fold the first, third and fifth loops of the first double section to your right and crease well.



6. Turn that double section over and fold the second and fourth loops to your left.

13 Wheel of Fortune



The Wheel of Fortune was a coincidental discovery, the result of not following our own rules – namely that the middle space, the zone between the two unit squares, has to be at least one square high. It is true that what results doesn't really function as a book, but we find it to be a whimsical toy that rolls and twirls.

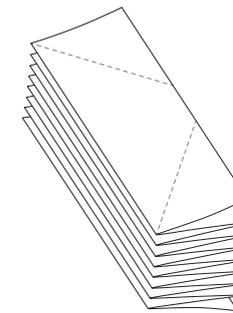
COMPONENT	DIMENSIONS	QTY	PAPER
ACCORDION	3¾ x 24 in. 10 x 60 cm	2	Lightweight or text-weight paper on a roll

FINISHED DIMENSIONS:
2 x 3 in. (5.5 x 8 cm)

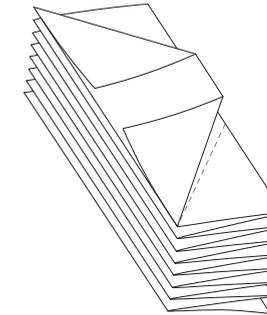
TOOLS:
Self-healing cutting mat / Straight edge / Ruler / Sharp knife / Bone folder / Double-sided tape / Awl

TECHNIQUES:
Folding an Accordion 2–4–8, pages 30–32

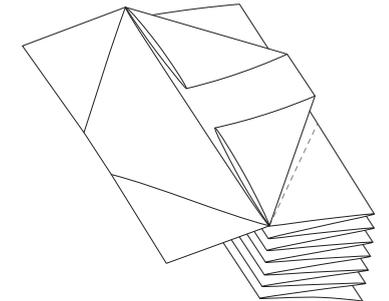
Inside Reverse Fold, page 22



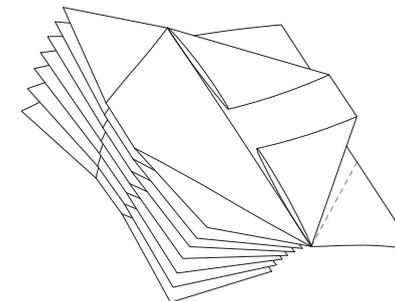
1. Fold a 16-section accordion from one of the two strips. The open side should be facing to the right. Set aside the other strip for a second wheel.



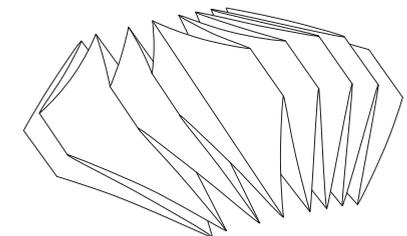
2. Fold right-angle triangles at the head and tail of the first single section.



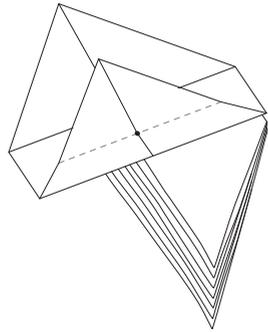
3. Crease well, unfold and turn the section to the left. Fold triangles at the next double section, taking care to line up the triangles with the vertical folds for accuracy.



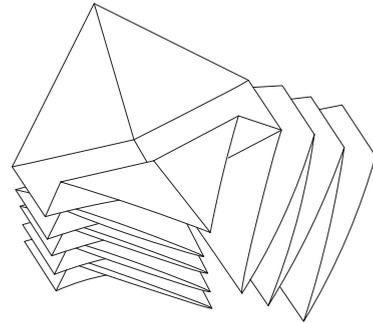
4. Unfold and turn the section to the left. Repeat with the remaining six double sections and the last single section, folding, unfolding and turning to the left.



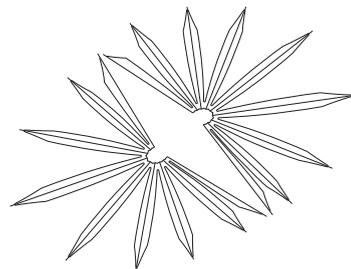
5. Inside reverse fold all the triangles (see Blizzard Book step 5, page 71).



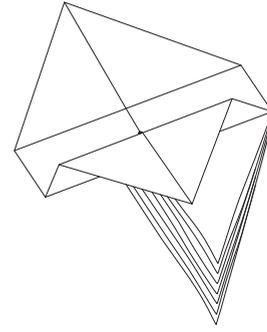
6. Gather up the sections. Open the first single section to the left and fold the tip of the lower triangle along the center fold. Mark the center of the rectangle below with an awl, piercing through all sections.



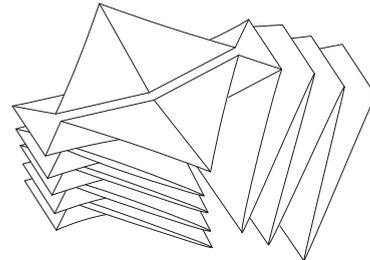
8. Repeat with all the sections, folding the lower triangles up and back.



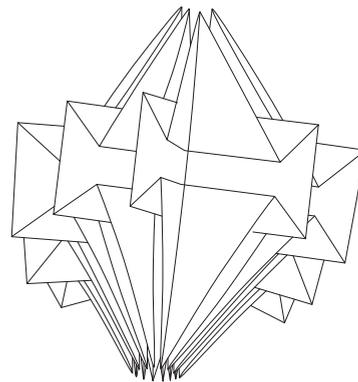
10. For a more voluminous wheel, repeat steps 1 through 9 with the remaining strip of paper. Nestle the two wheels together and attach at the single-layer "spokes" with a bit of double-sided tape.



7. At the awl mark, fold the lower triangle back on itself and turn this double section to the left.



9. When you come to the end, turn the stack around and repeat steps 6, 7 and 8 with the other triangle, turning the double sections to the left. When you come to the end of the stack, your Wheel of Fortune is complete.



11. This object has the potential to be made in a variety of proportions by increasing the height of the sheet of paper ever so slightly. As the photos show, wheels of different proportions play nicely with each other!

14 Blizzard Box



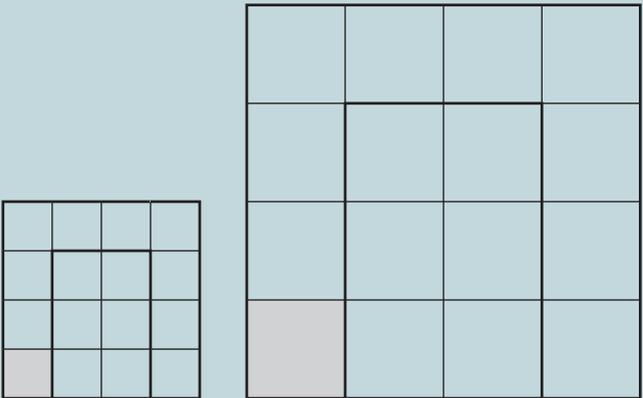
One-Sheet Books

Many of the techniques and projects in this chapter arise from an interest in and fascination with origami, map folds and other applications of collapsible folds. A book folded from a single sheet of paper, including covers, offers a unique opportunity to consider the content and cover as one comprehensive design exercise. We explore the coming together of printing, layout and folding. One-sheet books are a means to transform a large print (composition) into smaller divisions for a book-like sequential viewing. It is helpful to make a mock-up first, number the

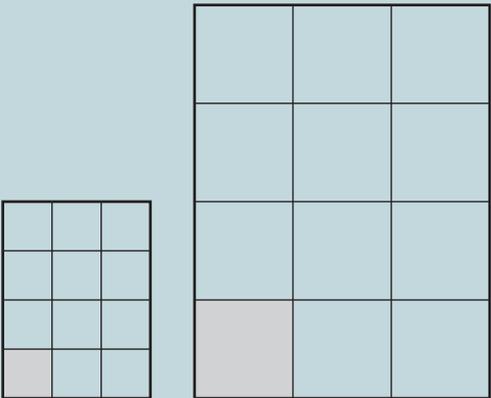
pages and identify the covers to guide you with the placement of areas to be printed. Depending on the book structure you choose, some of the pages will be upside down in the layout and a few end up on the back of the paper. The cover design may be broken up and appear in several places. Once the book is folded, however, everything falls into place. Consider these structures for group collaborations in which each person designs a page. To generate more spontaneous content, drawing, painting and writing are alternatives to printing.

The conventions of our drawings are not meant to be exactly the same as those found in origami books, but you will notice strategic arrows to help you through the steps – some of which are tricky to fold. For this chapter, it would be helpful to familiarize yourself with the concept of the inside reverse fold, the squash fold, mountain and valley folds, and dividing into even and odd numbers of parts in our techniques section (pages 18–25).

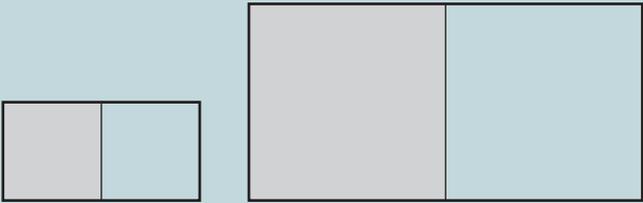
Four projects in this chapter have a proportional relationship between the height and width of the initial paper size built in to their success. To scale the size of structure up or down, we use a unit square for layout. Increase or decrease the size of the unit square and then multiply by the number of squares shown in the following diagrams.



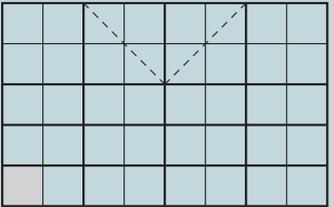
Triangular Book / ratio 4:4



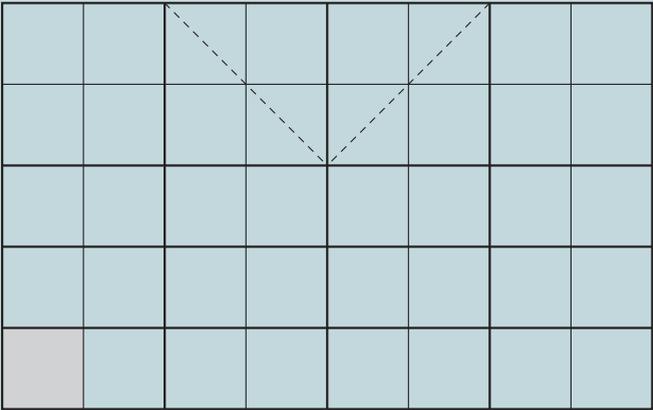
Diagonal Pocket / ratio 4:3

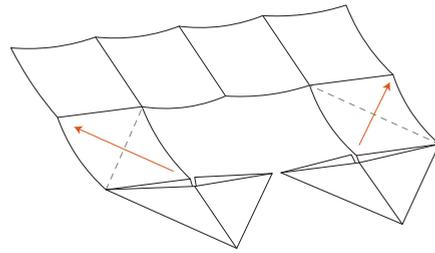


Four-Way Map Fold / ratio 1:2

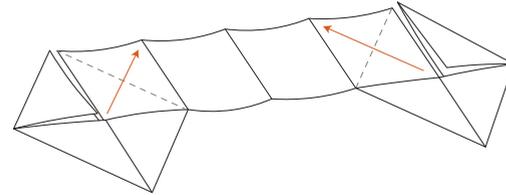


Franklin Fold / ratio 5:8

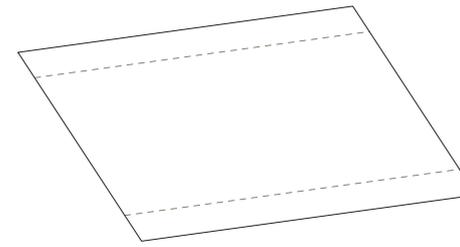




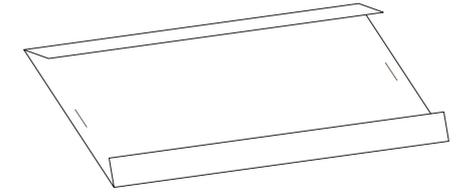
7. Fold the triangles up and away from each other. Crease.



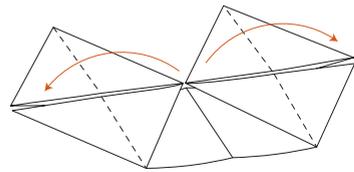
8. Fold the triangles up and toward each other to create two squares. Crease.



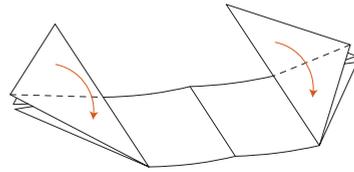
16. Retrieve the saved cover piece. Fold in 1 in. (2.5 cm) at the head and tail of the long dimension.



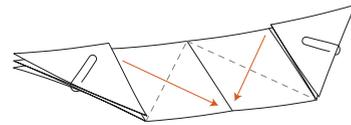
17. Measure the thickness of your spine and transfer this measurement to the short dimensions of the cover piece.



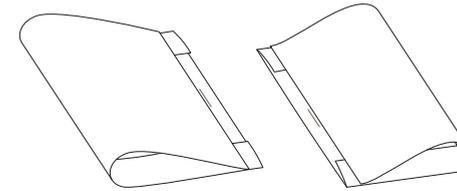
9. Fold the squares in half, away from each other, creating two triangles again.



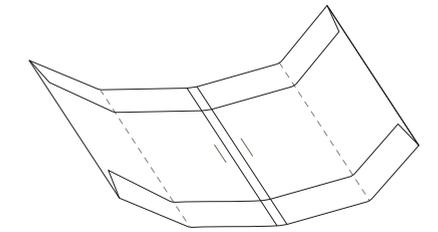
10. Divide these triangles in half again by bringing the upper parts down toward you.



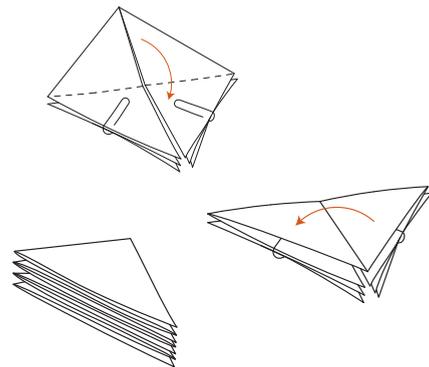
11. At this stage, it is helpful to use paper clips to secure the stacks of triangles. Bring the outer tips of the triangles toward each other and at an angle toward you. Crease.



18. Fold the left side over to the right mark and crease. Fold the right side over to the left mark and crease. A spine thickness is created at the center.



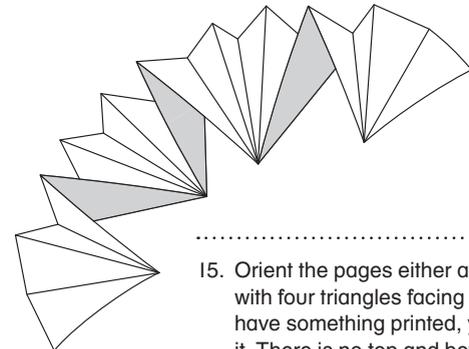
19. Make two marks, approximately 1/4 in. (5 mm) on either side of the spine folds and bring the corresponding edges to that mark. Crease well.



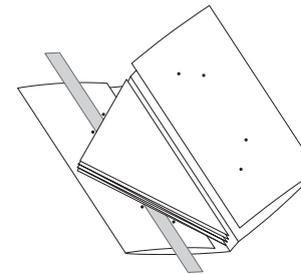
12. Bring the rear triangle forward along the existing fold lines.

13. Fold in half one last time. The text block is now complete. The long leg of the triangle is effectively the spine.

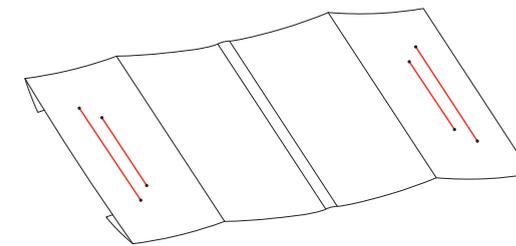
14. Remove the paper clips.



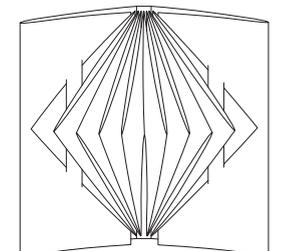
15. Orient the pages either as shown, with four triangles facing you or, if you have something printed, you can rotate it. There is no top and bottom to this structure. Reassemble as a compact triangle and place under weight while preparing your covers.



20. To create slits to hold the book in place, nestle the book block (the triangles) inside the cover. Position a 3/8-in. (1-cm) strip of paper between the text block and the cover. With a sharp pencil, mark each side of the strip where it meets the triangles, approximately in the middle of the cover. Repeat this step on the other cover.



21. Remove the text block, open up the cover and cut slits between the marks made in the previous step.



22. Refold the cover along its original crease lines and place the text block inside the cover again, inserting the first and last pages through the corresponding slits.

27 Spider Book



In a folding workshop many years ago, an architect, Per Tamsen, showed us a folding sequence he had developed that in turn inspired us to create this structure. By increasing the spaces between mountain and valley folds, space is created between the layers of paper. This was a particularly exciting discovery, as the challenge with albums is always how to allow expandable space for low-relief content. Initially, we designed this book with only four pages on each side of the triangular spine. Held upside down it really did resemble a daddy long legs spider – thus the name for the book was coined.

COMPONENT	DIMENSIONS	QTY	PAPER
PAGES	$\frac{6}{14} \times 14\frac{1}{2}$ in. 14 x 37 cm	6	Cover-weight paper or cardstock: Japanese linen cardstock, 244g
COVERS	$\frac{6}{14} \times 14\frac{1}{2}$ in. 14 x 37 cm	2	Cover-weight paper or cardstock: Japanese linen cardstock, 244g
SPINE	$\frac{6}{14} \times 6$ in. 14 x 14 cm	1	Cover-weight paper or cardstock: Japanese linen cardstock, 244g

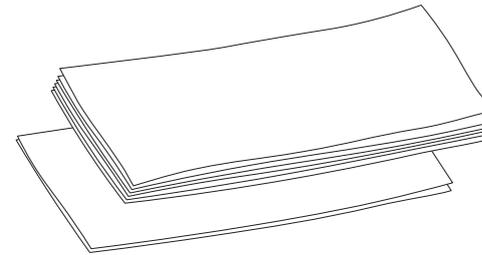
NOTE

For this project, we recommend working with the key stock and box corner assembly. The key stock is used for scoring and is described in Techniques (page 20). As an alternative use a clear gridded ruler; or make your own scoring templates out of strips of medium-weight cardstock, at least 6 in. (14 cm) high and using the following dimensions for widths: $\frac{1}{4}$ in., $\frac{1}{2}$ in., $\frac{3}{4}$ in., 1 in., $1\frac{1}{4}$ in., $1\frac{1}{2}$ in. (1 cm, 1.5 cm, 2 cm, 2.5 cm, 3 cm, 3.5 cm).

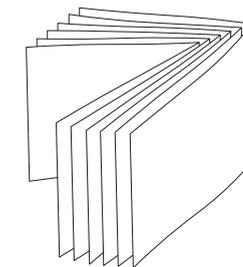
FINISHED DIMENSIONS:
6 x 8½ in. (14 x 22 cm)

TOOLS:
Self-healing cutting mat / Straight edge / Sharp knife / Clear plastic gridded ruler / Bone folder / Awl / Pencil / Needle / Bulldog clips (4) / Key stock / Double-sided tape / Barbour linen No 18/3 thread or similar

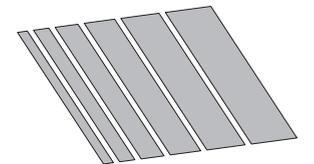
TECHNIQUES:
Using Key Stock and Box Corner Assembly, page 20
Preparing a Sewing Template, page 24
Sewing Folios, page 24
Measuring Devices: Paper Strips, page 18



1. Cut eight pieces of paper to the given dimensions. The pages and covers are the same dimension. Set the covers aside.



2. Fold the six pages in half to create folios.



3. Line up your key stock or scoring templates.