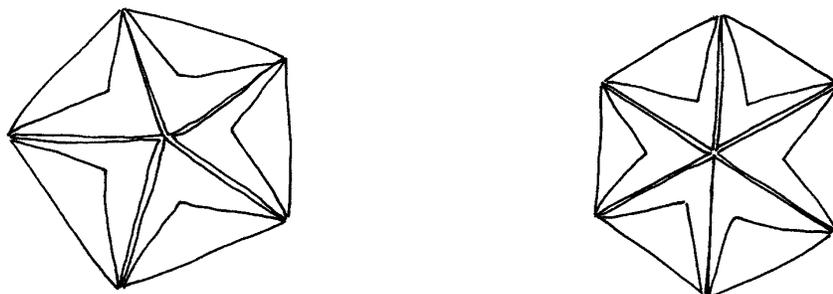


Window Format Carousel Books

Copyright, 2000, Emily Martin, updated 2014

The first carousel books date from the late 1930's. This format is related to the tunnel book compositions in that there are layers in each segment and the viewer usually looks in a window or frame at the front of each segment. Structurally the front layer does not have to be a frame but consideration must be given to hiding the raw edges of the layers at the fore edge. This format works best with divisions of 5 or 6 equal sized segments. The following examples use dimensions that are easily divisible by 5 or 6. Carousel books can be made any size using the same formula.



The math for a 6-segment carousel book:

A carousel book is a circle. A circle has 360° , 6 segment carousels are made up of 6 equilateral triangles, 60° each. Meaning that all three sides of the triangle are the same length. Using 5" for our example, each side of the back panels will be 5" long. Each segment is made up of two panels, 6 pieces each 10" long if making individual segments; if making a continuous accordion, 12 panels combined would be 60" long, with a 1" tab at each end, 62" total. The front panel will be half the length of the back panel because two sections of the front panel make up the front of the triangle. In this example, the front panels would each be $2\frac{1}{2}$ " long. **IMPORTANT:** Because paper has thickness, allowance must be made for the build-up of the layers so the front panels must be made slightly longer to accommodate the added bulk. How much ease will depend on the thickness of the paper you are using. So in actuality for this example the front panels will each be $2\frac{3}{4}$ " long. If making individual segments $\frac{1}{2}$ " tabs must be added on either side to cover the raw edges of all the layers, so the front segments will be 6 pieces each 6" long; if making a continuous accordion, 12 panels combined will be 33" long, with a 1" tab at each end, 35" total. The middle panel or panels must be shorter than the back panel and must not be longer than the front panel. In this example, the middle panel will be $3\frac{3}{4}$ " long, 6 pieces each $7\frac{1}{2}$ " long if making individual segments; if making a continuous accordion, 12 panels combined would be 45", with a 1" tab at each end, 47" total. The height of the carousel can be any size.

The math for a 5-segment carousel book:

I often find it easiest to figure for a 6-segment book and then transpose to 5. You can also use the mathematical formula of $C = \pi d$, C is circumference and d is diameter, π is 3.14 approximately. The triangles are not equilateral they are isosceles triangles, two sides are equal in length and one is of a different length in this case longer. Staying with the example from above the circumference is 30", for 5 segments, $30 \div 5 = 6$. The front panels would be half that measure in this case $3" + \frac{1}{4}"$ ease for paper thickness = $3\frac{1}{4}"$ for each panel, two per segment = $6\frac{1}{2}"$ total length. The middle panels would be somewhere in between the front and back panels in length.

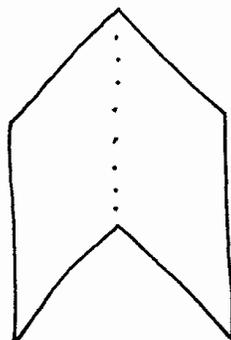
General Construction:

The grain of the paper should be parallel to the folds of the accordion. To get the length of the longer continuous accordions it is usually necessary to splice paper together. The splices can be hidden at the folds of the spine edge. The single segments are nested together, aligned at the fore edge and the

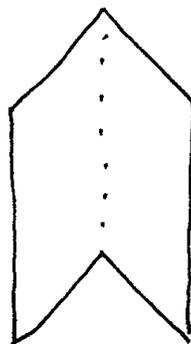
segments are attached to each other using PVA or double-sided tape. The tabs of the front segments are attached last to cover all the other layers. A cover is attached at each end to cover the tabs and allow for the attachment of a tie closure. The continuous accordions are nested together and either glued or preferably sewn at each fore edge using a pamphlet stitch. Use a template so the stitching holes are all in alignment. The tabs can be trimmed to varying lengths to smooth out the layers. A cover is attached at each end to cover the tabs and allow for the attachment of a tie closure. Magnets can be embedded in the cover boards near the fore edge before covering to replace a tie closure.

5 or 6 Segment Carousel book made from individual segments:

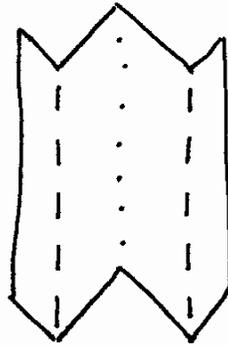
Using the methods of calculation discussed above to determine panel lengths, it is possible to make a carousel book of individual segments. The front panels have $\frac{1}{2}$ " tabs added at each side to hide all the raw edges and are made slightly wider to allow for paper thickness, the rest of the panel pieces are cut to exact length. Remember that two panel lengths make up each segment. Using the dimension of 5" for our example, each side of the back panels will be 5" long, 10" total, cut 6 for the 6 segment, 5 for the 5 segment:



The middle panel or panels must be shorter than the back panel and must not be longer than the front panel. Remember that two panel lengths make up each segment. For the 6 segments each side of the middle panels will be $3\frac{3}{4}$ " long, $7\frac{1}{2}$ " total, cut 6. For the 5 segments book each side of the middle panels will be 4" long, 8" total, cut 5:

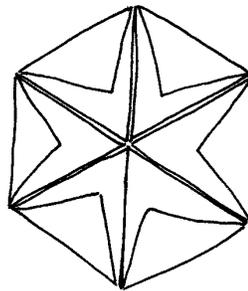


For the 6 segments, the front panels will be half the length of the back panels, $2\frac{3}{4}$ " long, with $\frac{1}{2}$ " tabs at each side, $6\frac{1}{2}$ " total, cut 6. For the 5 segments, the front panels are $3\frac{1}{4}$ " long, with $\frac{1}{2}$ " tabs at each side, $7\frac{1}{2}$ " total, cut 5:



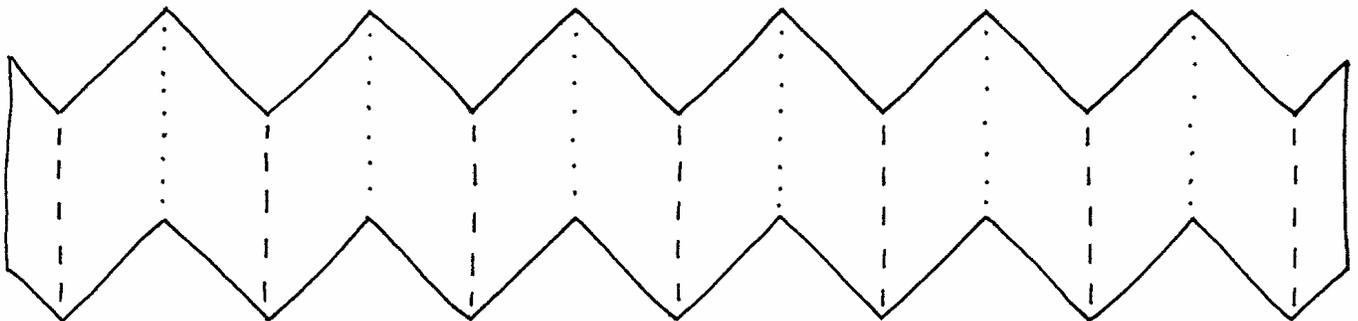
The segments are then assembled individually and attached to each other using double stick tape or PVA. A cover is attached at each end to cover the tabs and allow for the attachment of a tie closure. Magnets can be embedded in the cover boards near the fore edge before covering to replace a tie closure.

6 Segment Carousel Book made with continuous accordions:

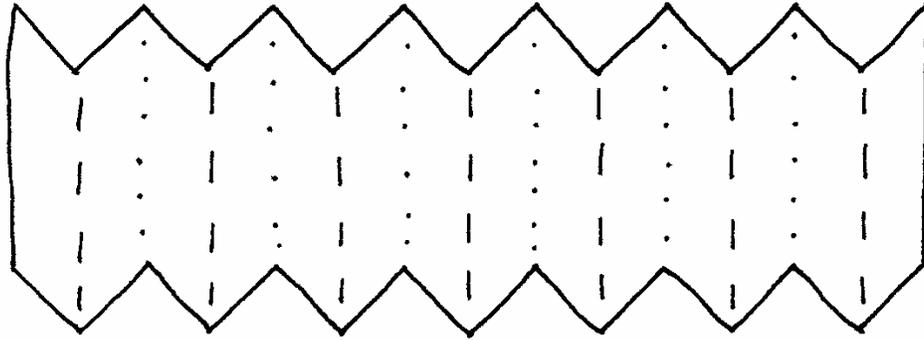


Top view

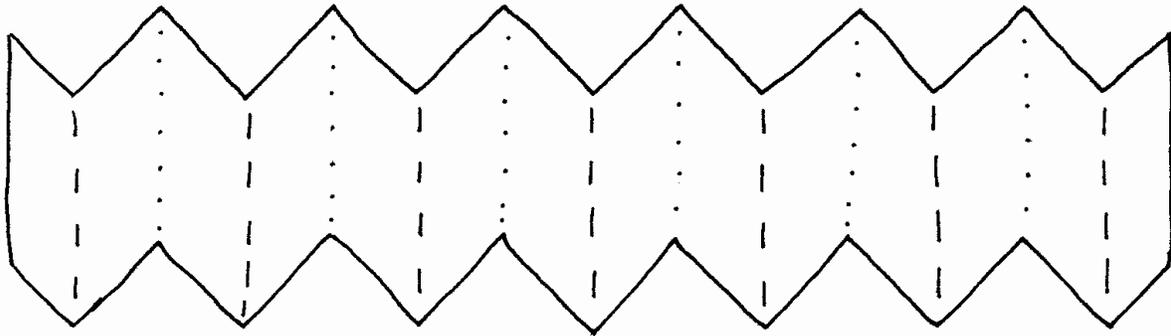
Using 5" for our example, each side of the back panels will be 5" long. Each segment is made up of two panels, 12 panels (60"), with a 1" tab at each end, 62" total:



The front panel will be half the length of the back panel because two sections of the front panel make up the front of the triangle. Allowance will also be made for paper thickness. In this example, the front panels will each be $2\frac{3}{4}$ " long, 12 panels (33"), with a 1" tab at each end, 35" total:

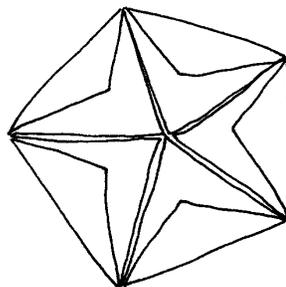


The middle panel or panels must be shorter than the back panel and must not be longer than the front panel. In this example, the middle panel will be $3\frac{3}{4}$ " long, 12 panels (45"), with a 1" tab at each end, 47" total:



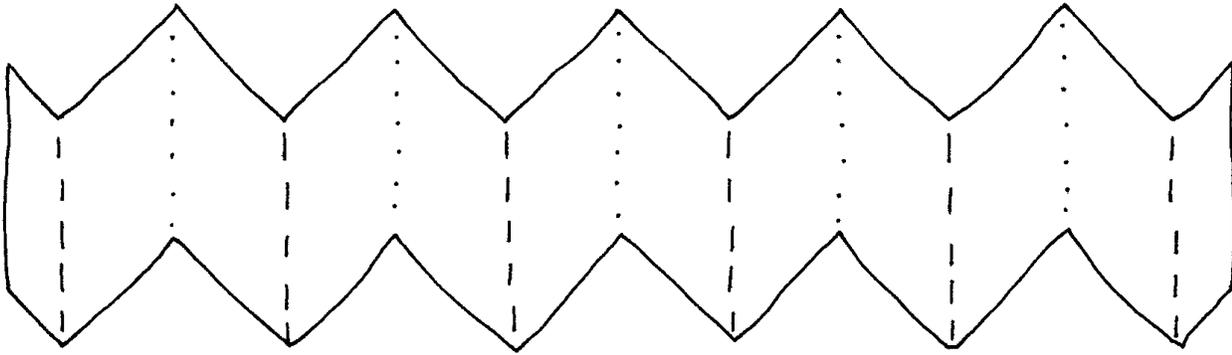
The accordions are then nested together and either glued or preferably sewn at each fore edge using a pamphlet stitch. Use a template so the stitching holes are all in alignment. The tabs can be trimmed to varying lengths to smooth out the layers. A cover is attached at each end to cover the tabs and allow for the attachment of a tie closure. Magnets can be embedded in the cover boards near the fore edge before covering to replace a tie closure.

5 Segment Carousel Book made with continuous accordions:

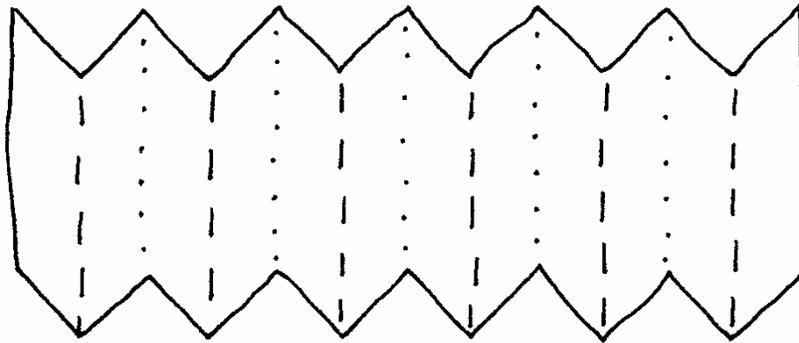


Top view

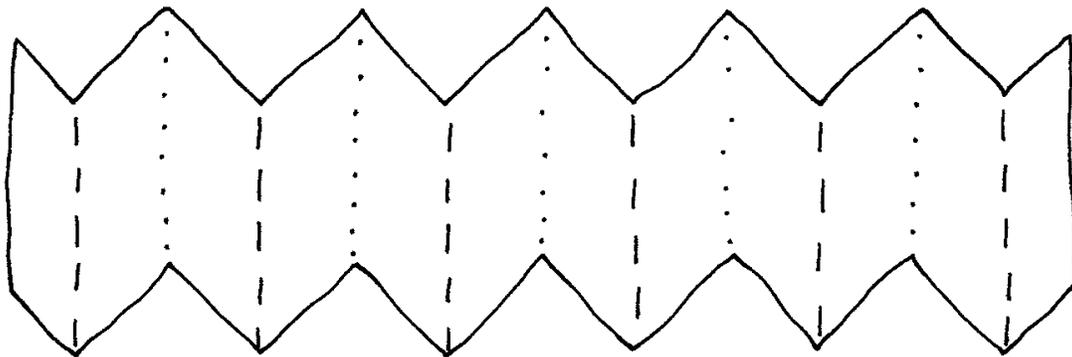
Using the dimension of 5" for our example, each side of the back panels will be 5" long, 10 panels (50"), with a 1" tab at each end, 52" total:



The front panel must be long enough to form a full circle. We know that a circle with a 5" radius (the length of a back panel) has a 30" circumference. Divide 30" by 5" and the result is 6". Divide this in half to get the length of each front panel, remember to add ease to allow for the thickness of the paper (each segment is half the length of the back panel because two sections of the front panel make up the front of the triangle) In this example, the front panels will each be 3 ¼" long, 10 panels (32 ½"), with a 1" tab at each end, 34 ½" total:



The middle panel or panels must be shorter than the back panel and must not be longer than the front panel. In this example, the middle panel will be 4" long, 10 panels (40"), with a 1" tab at each end, 42" total:

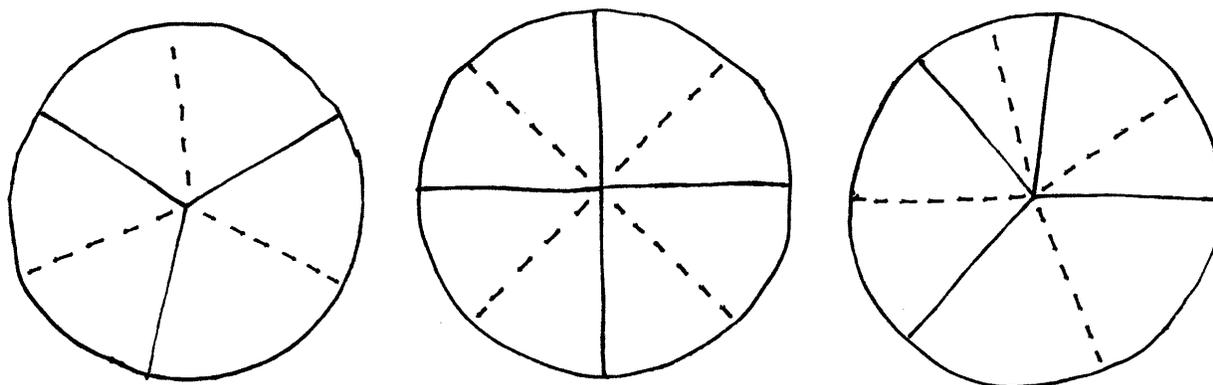


The accordions are then nested together and either glued or preferably sewn at each fore edge using a pamphlet stitch. Use a template so the stitching holes are all in alignment. . The tabs can be trimmed to varying lengths to smooth out the layers. A cover is attached at each end to cover the tabs and allow for the attachment of a tie closure. Magnets can be embedded in the cover boards near the fore edge before covering to replace a tie closure.

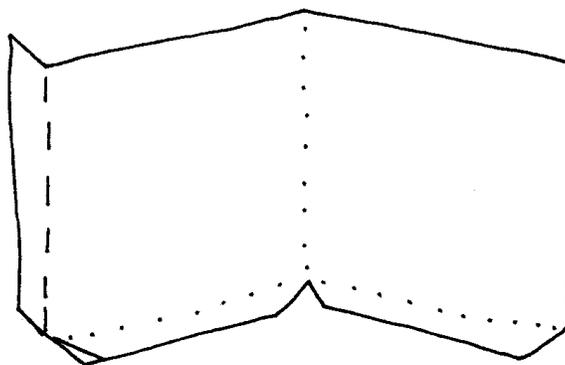
Floor & Wall Format Carousel Books

This format works well for as few as 3 segments and on up. This method can be constructed with equal size segments or can allow for segments of different sizes. Remember that each segment will fold in half with a mountain fold. This format is compatible with some types of pop-up additions. Carousel books can be made any size using these formats.

Determine the size circle you wish to use, this circle becomes the floor of the carousel. Like the other examples, the circle has a radius of 5". Divide the circle into pie shaped wedges the division can be equal sized or different sizes.



Construct a wall piece to fit each of the floor segments, 5" for each side of the wall, and a 1/2" tab on one side, 10 1/2" total; there is also a 1/2" tab along the bottom of the wall to attach the floor segment. The height of the wall can be any size.



Fold along the mountain and valley lines and using double stick tape or PVA; attach the tabs to the floor segments. Repeat with the other floor segments. The segments are attached to each other using the tabs and either double stick tape or PVA. One tab will not be needed and can be cut off before attaching the cover. A cover is attached at each end to cover the ends of the book and allow for the attachment of a tie closure. Magnets can be embedded in the cover boards near the fore edge before covering to replace a tie closure.