

## Dragon Folding

1. Take a strip of paper, fold the right edge to the left. Unfold. You will see one "valley" fold in the middle of the strip. Now make two consecutive folds folding right edge to left. Unfold. You will see "mountain" "valley" "valley" folds.

We will use a V for a valley fold, and  $\Lambda$  for a mountain fold.

1st iteration: V

2nd iteration:  $\Lambda$  V V

Can you predict the next iteration?

2. Create and document several more iterations. What patterns do you see? Can you predict each subsequent iteration? Can you write a rule for any iteration?
3. Fold your strip of paper as many times as you can. Do you see a pattern as you unfold the strip?
4. You can only fold a piece of paper in half so many times (12 was the last record I heard of). Can you create a recursive rule that will generate any number of folds? You may want to use 1s and 0s to represent the mountain and valley folds.
5. If you unfold your strip of paper, and lie it on its side with each fold making a 90 degree angle, what shape do you have? Do you notice that it never doubles back on itself? Why do you think this is true?
6. The result of your folds is called the Dragon Curve. It is fractal because it is self-similar. Where can you see smaller copies of itself?

