

§16 Paper Cutting and Musical Frieze Patterns

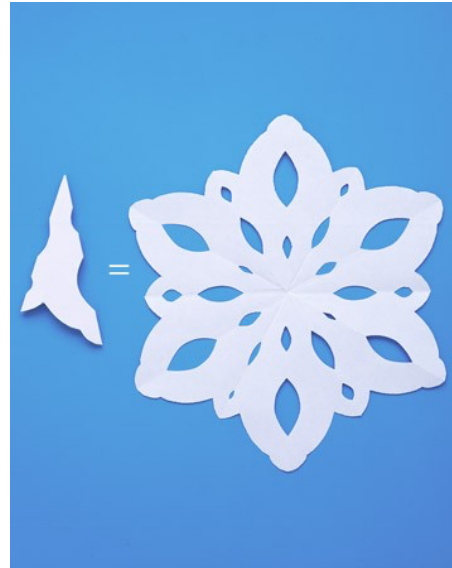
The goal for this part is to create rosettes and frieze patterns in paper strips and recognize frieze patterns in music.

Supplies:

- Paper strips
- tape
- scissors

Paper snowflakes

- As a child, you may have made snowflake patterns by folding a piece of paper and cutting along the edges. Make snowflakes representing as many of these symmetry groups as you can: D_2 , D_3 , D_4 , D_5 , D_6 , D_7 , D_8 , D_9 , D_{10} .
- Devise a way to make a snowflake with C_n symmetry for any values of n that you choose. Hint: you will need to make an extra cut.



See Vi Hart's Snowflakes video.

Paper frieze patterns

- Take a long strip of paper and roll it around several times into a cylinder. Do not flatten the cylinder, but cut through one side of it, cutting out an asymmetric motif. Unroll and classify the pattern.
- Fold a long strip of paper in a zigzag and cut out an asymmetric motif. Unfold and classify the pattern.
- Devise methods for producing the other five frieze patterns by paper cutting.

Musical Frieze Patterns

Vi Hart has several videos involving rosettes and frieze patterns, including:

- Fruit by the Foot
- Snowflakes,
- Folding Space Time
- Mobius Music Box
- Doodle Music
- Sound Braid