Practice Exam

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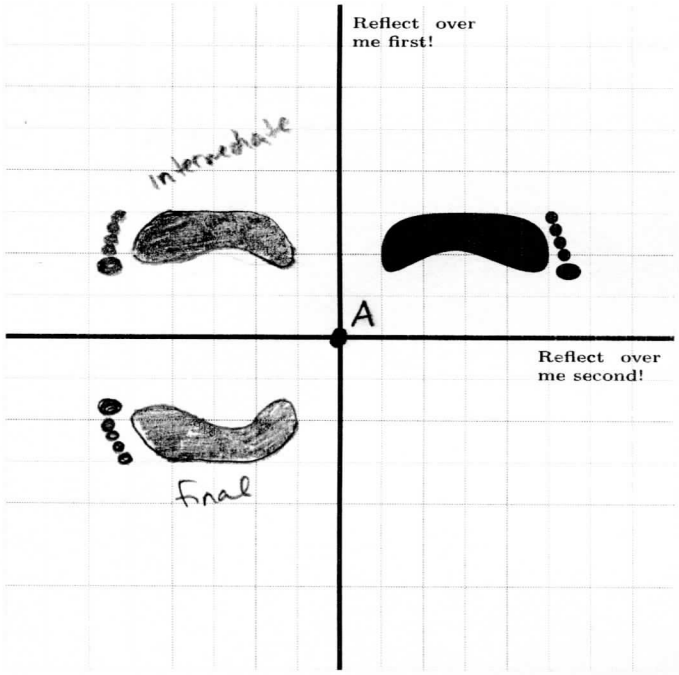
MA111-003
2012-04-02

Part I: Applying Rigid Motions (reflections)

(1) Apply the first rigid motion to the printed foot, resulting in an intermediate foot.
(2) Apply the second rigid motion to your intermediate foot, resulting in a final foot.
(3) Describe a single rigid motion that takes the printed foot to the final foot.

(1) and (2) are graded on location, angle, and left-vs-right. (3) is graded on the type (verb) and parameters (adverb) like "rotation about P of 37 degree clockwise"

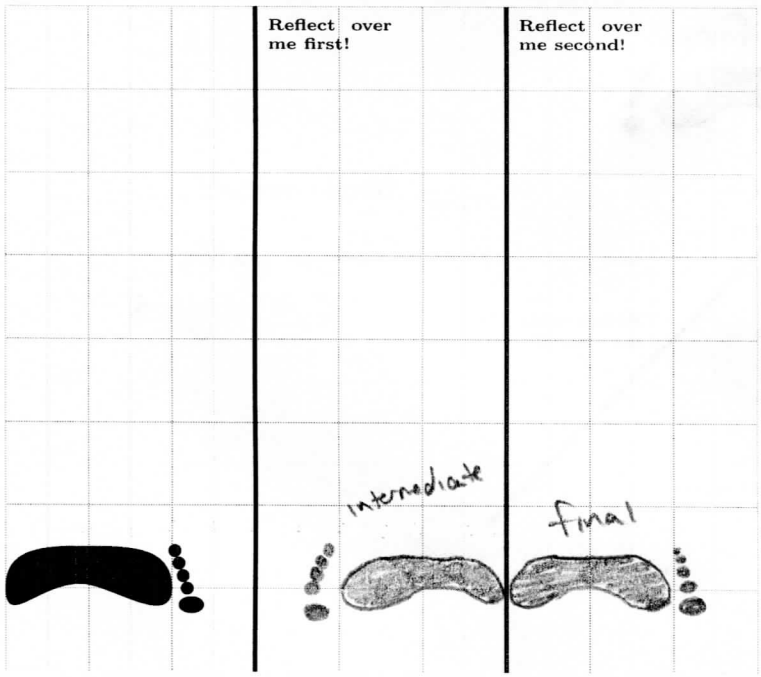
(a)



Single motion:

Rotate 180° around A

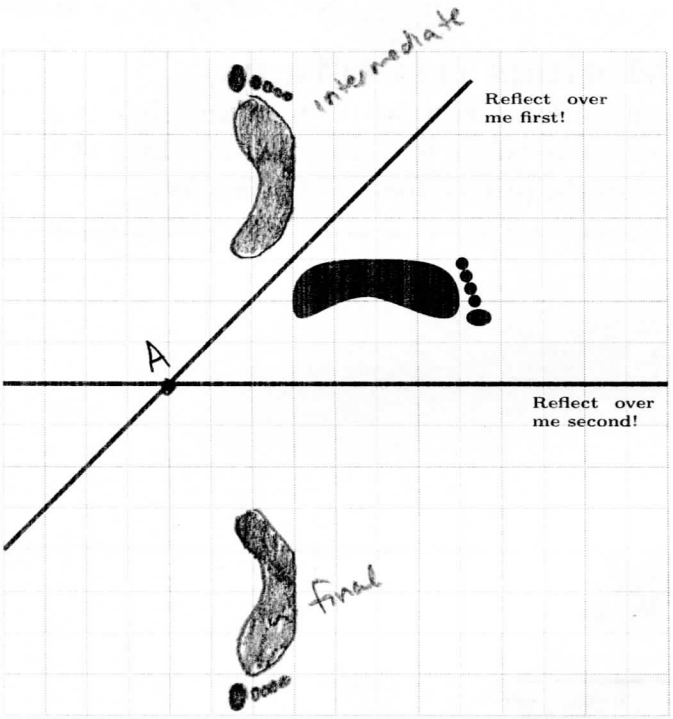
(b)



Single motion:

Shift right 12

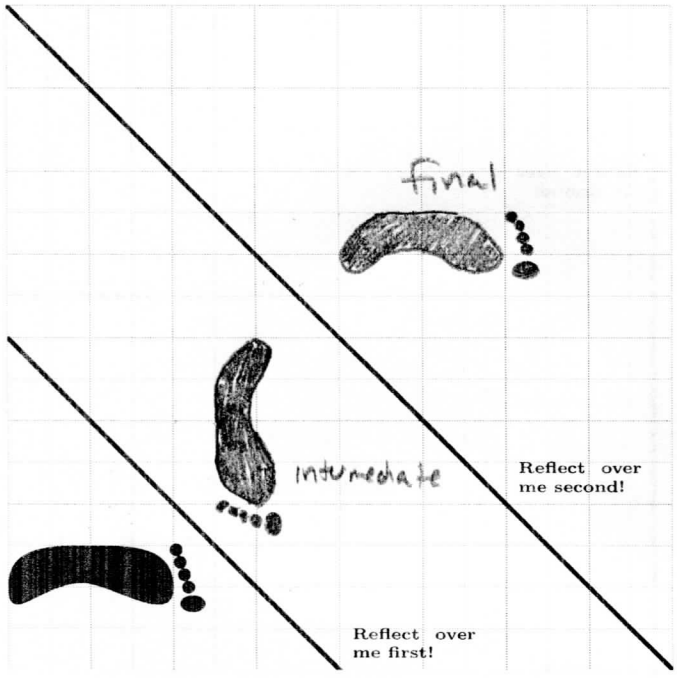
(c)



Single motion:

Rotate 90° clockwise around A

(d)



Single motion:

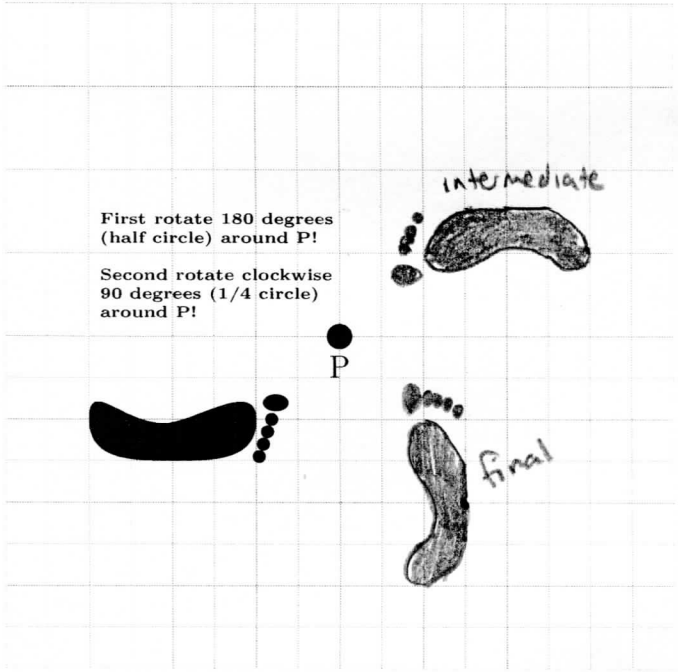
Shift up 8, right 8

Part II: Applying Rigid Motions (rotations)

(1) Apply the first rigid motion to the printed foot, resulting in an intermediate foot.
(2) Apply the second rigid motion to your intermediate foot, resulting in a final foot.
(3) Describe a single rigid motion that takes the printed foot to the final foot.

(1) and (2) are graded on location, angle, and left-vs-right. (3) is graded on the type (verb) and parameters (adverb) like "rotation about P of 37 degree clockwise"

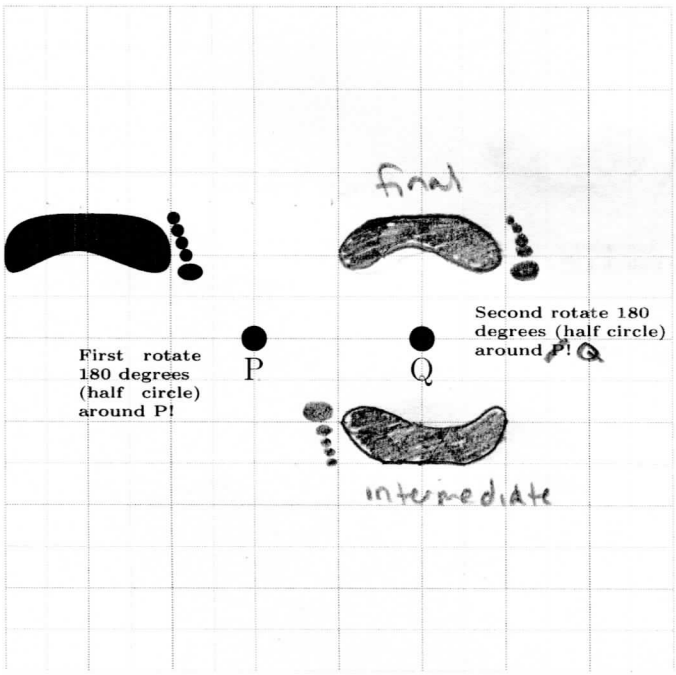
(a)



Single motion:

Rotate 90° counterclockwise around P

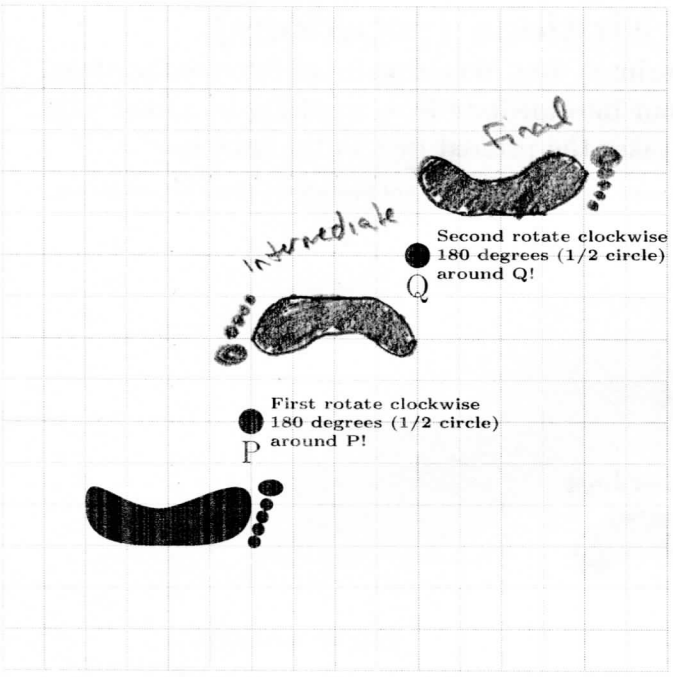
(b)



Single motion:

Shift right 8

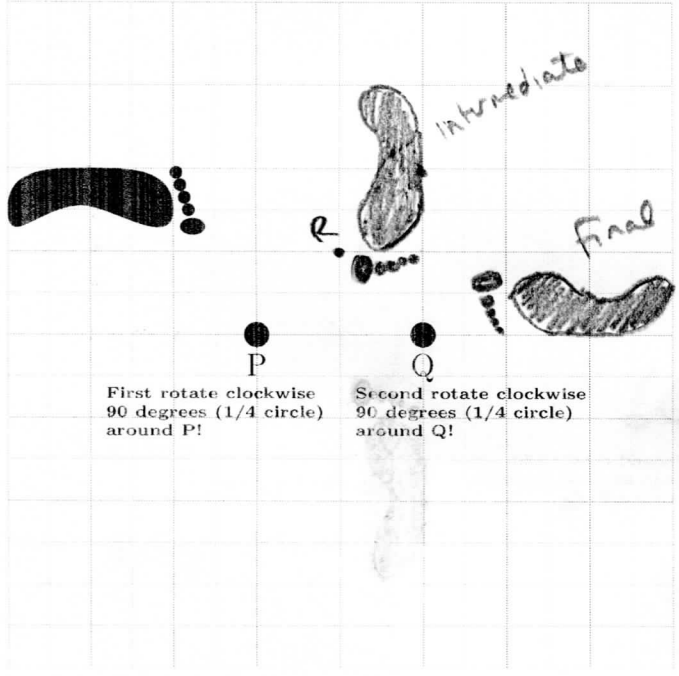
(c)



Single motion:

Shift up 8, right 8

(d)

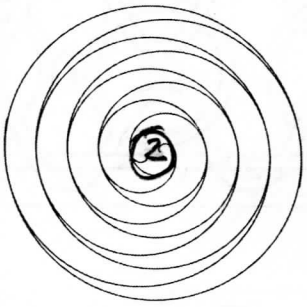


Single motion:

Rotate 180°
around R

Part III: Identify Symmetry Elements

Draw and label the elements of symmetry (lines of reflection and centers of rotation) of the following figures:

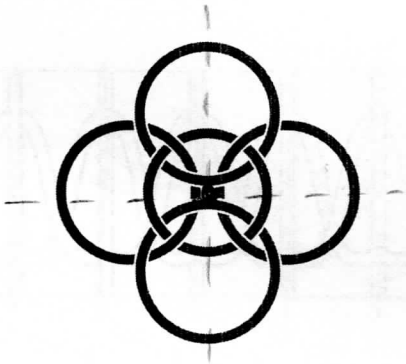


center of rotation

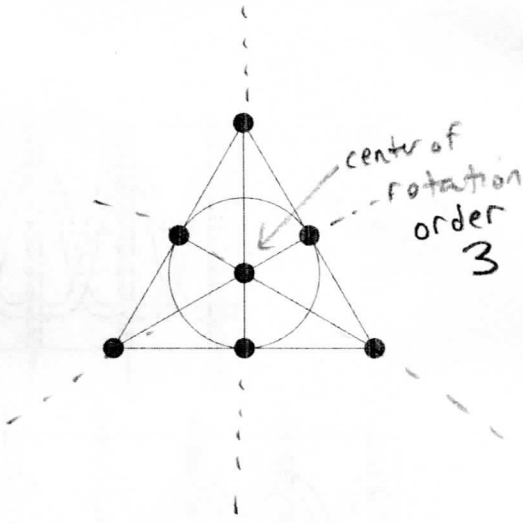
center of rotation

line of symmetry

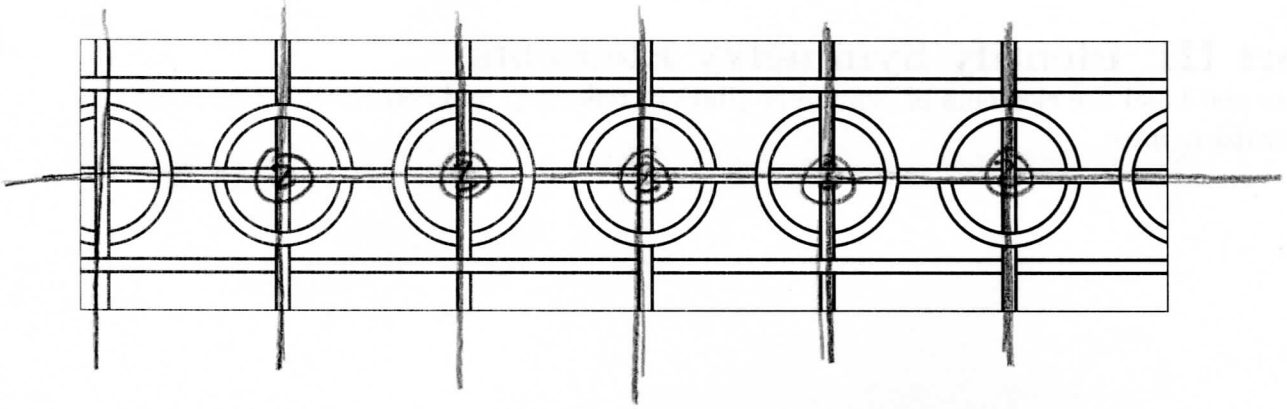
Center of rotation



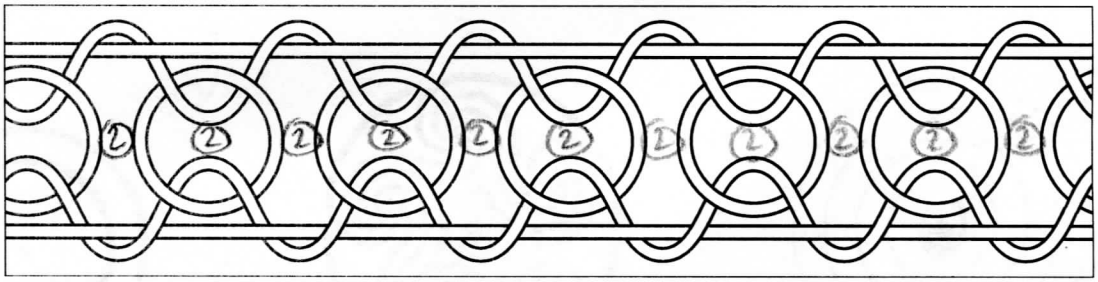
two lines of symmetry
Center of rotation
order 2



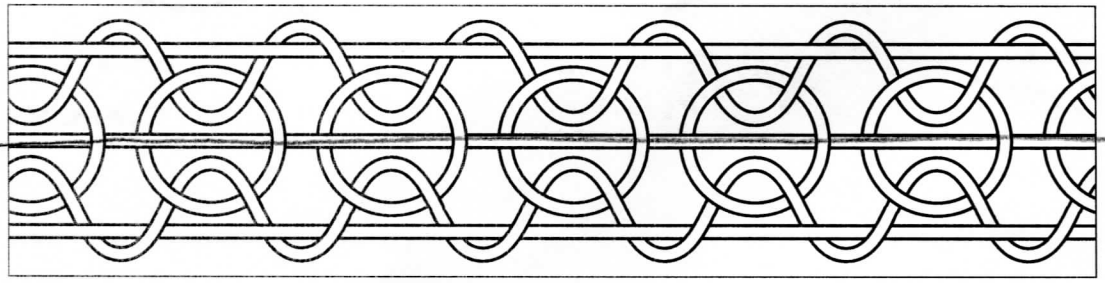
3 lines of symmetry



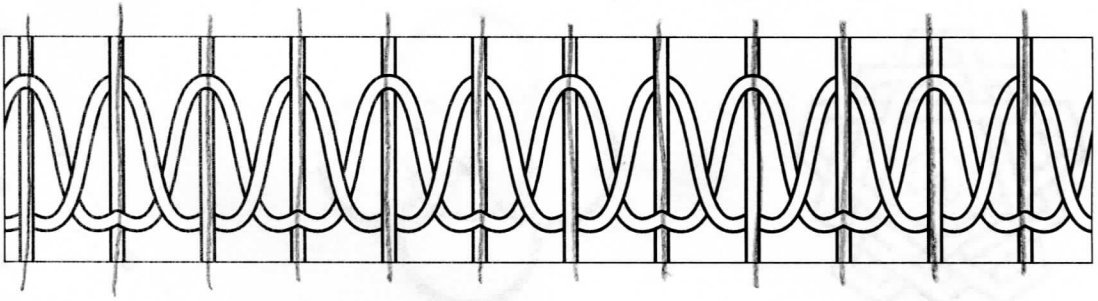
each circle center is a center of rotation, order 2



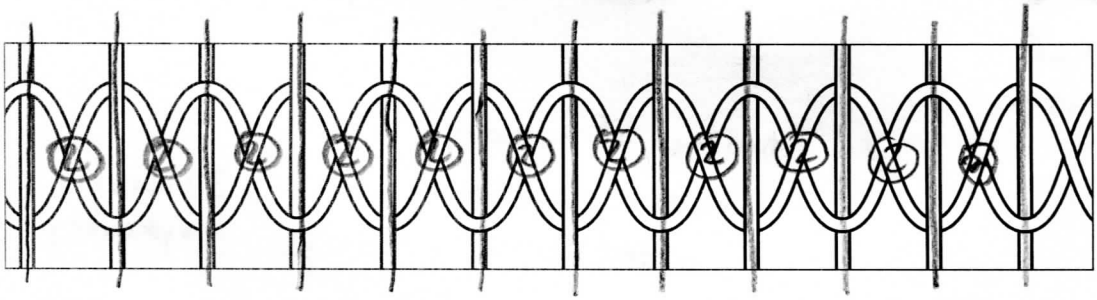
no reflections



no rotations

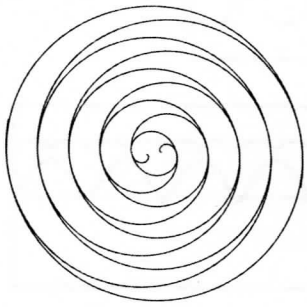


no rotations



Part IV: Identify Rosette Groups

Identify the symmetry groups of the following "Rosettes":



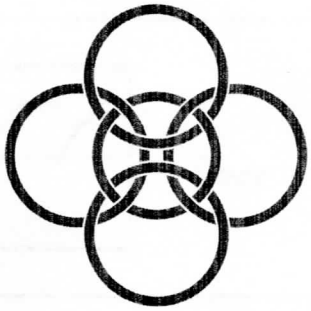
Z_2

Z_3

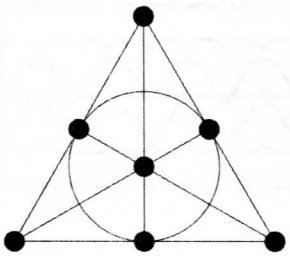
Z_5

D_1

Z_5

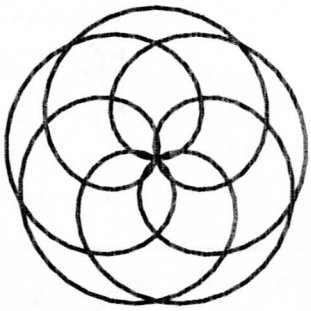


D_2



D_3

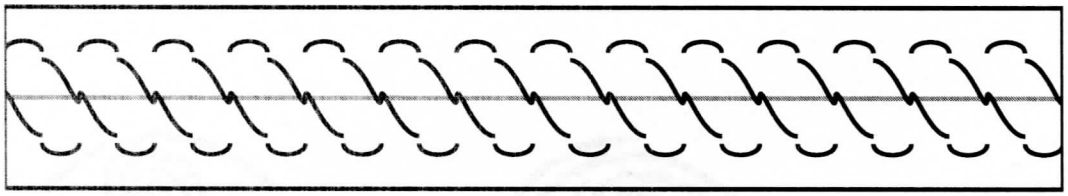
Z_1



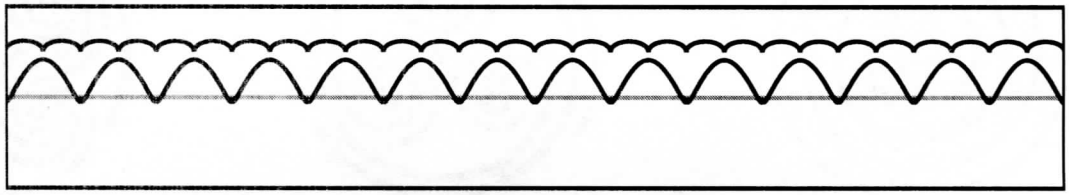
D_5

Part V: Identify Frieze Groups

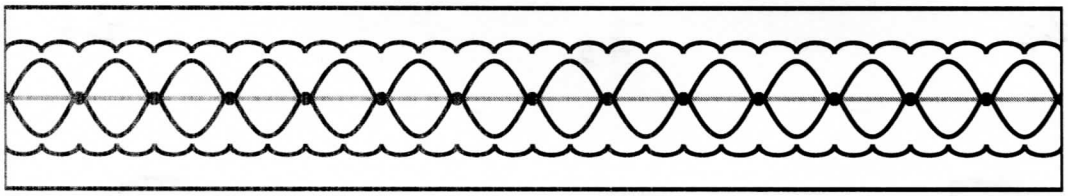
Identify the symmetry groups of the following "Friezes":



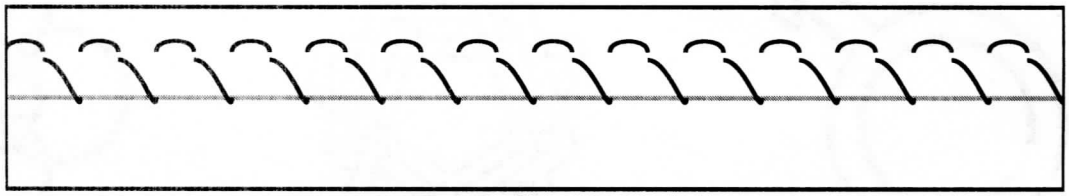
spin hop



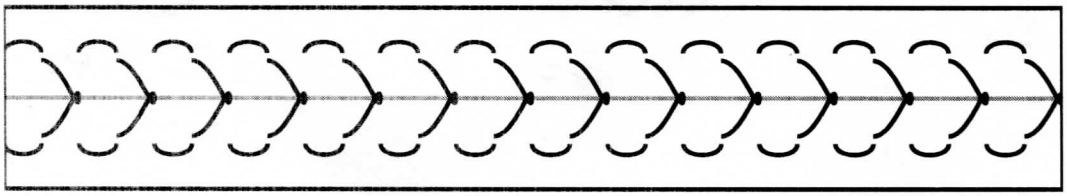
sidle



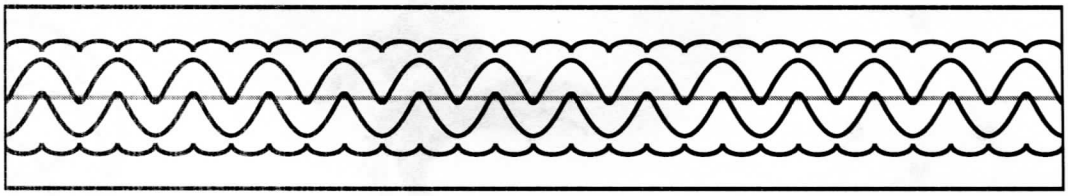
spin jump



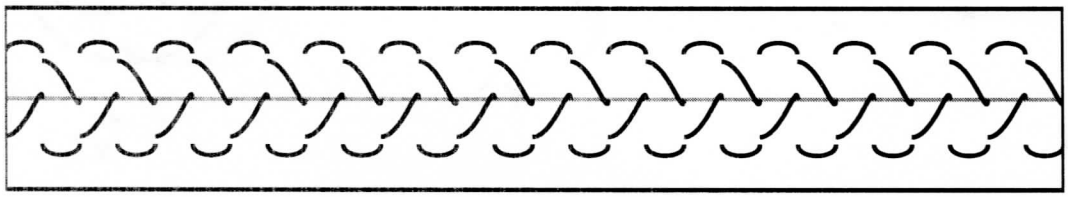
hop



jump

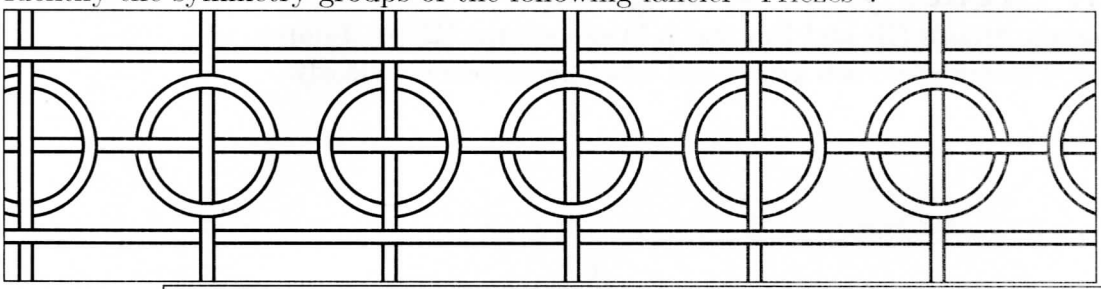


spin sidle

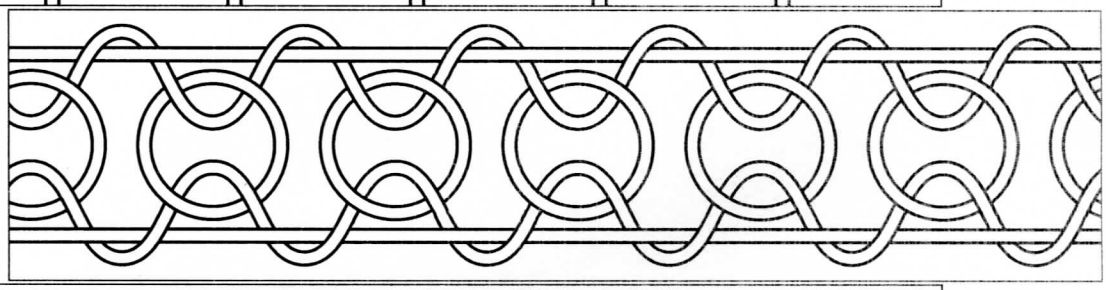


walk

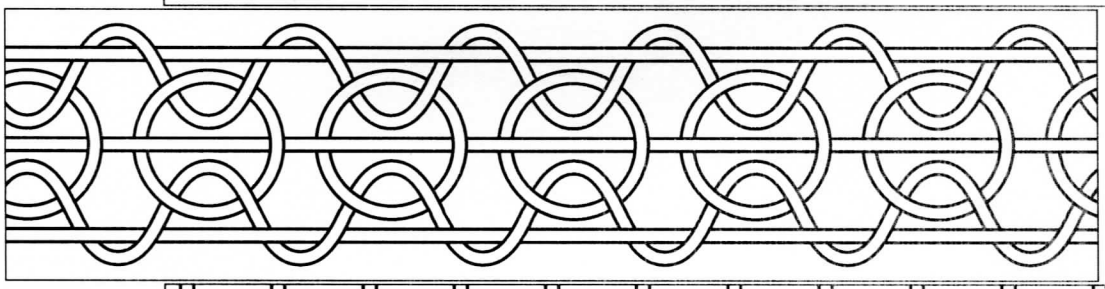
Identify the symmetry groups of the following fancier "Friezes".



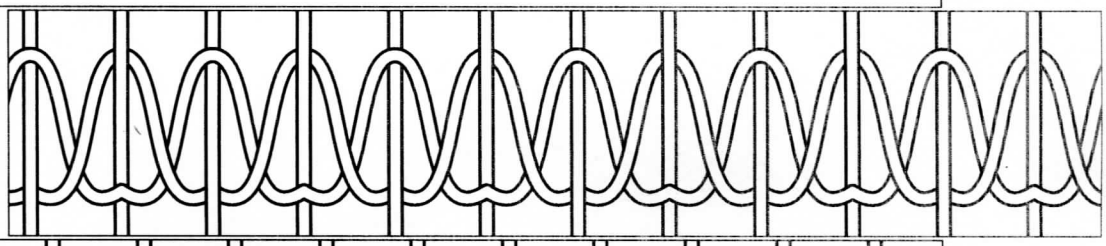
spin jump



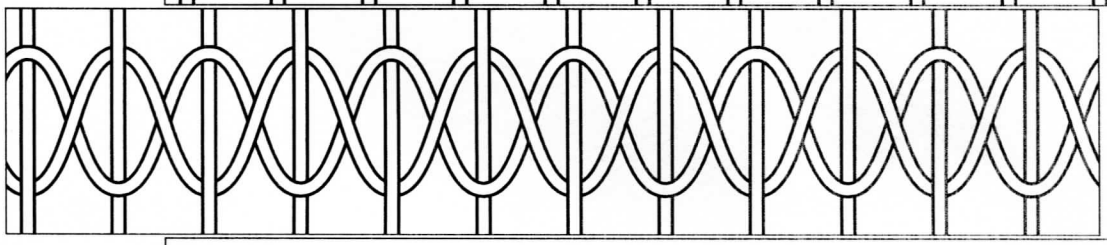
spin hop



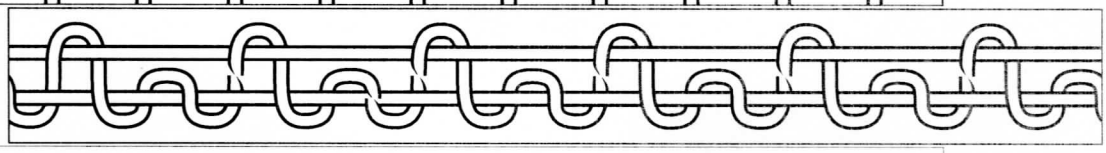
jump



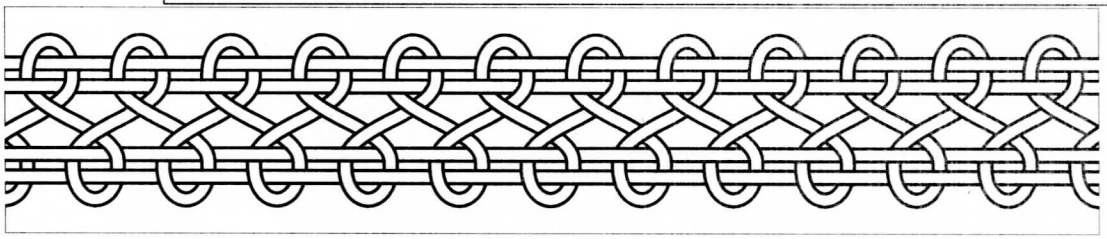
sidle



spin sidle



hop



walk