

Border Projects

Geometric Structures: A Text for
Prospective Elementary Teachers

Three examples of students work on the Border
Project activity page are included in this
document.

Oklahoma State University
Spring 2004

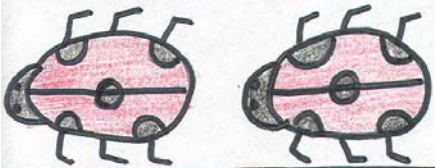
Border Projects -- Spring 2004



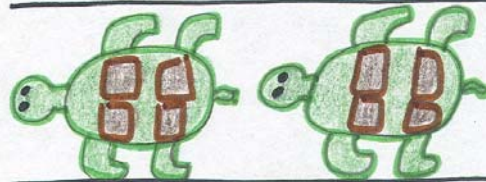
type 11
translation



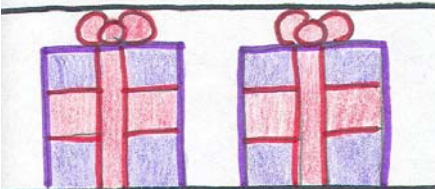
type 11
translation



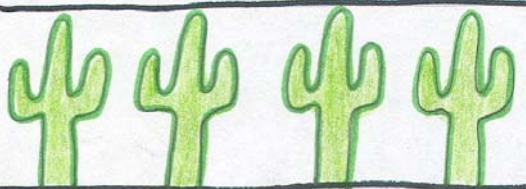
type 1 m
translation
reflection



type 1 m
translation
reflection

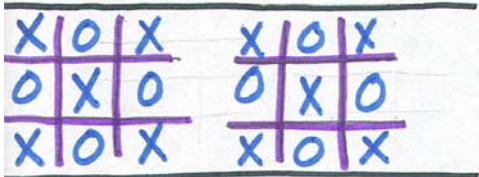


type m 1
translation
reflection



type m 1
translation
reflection

Jacqueline McLemore



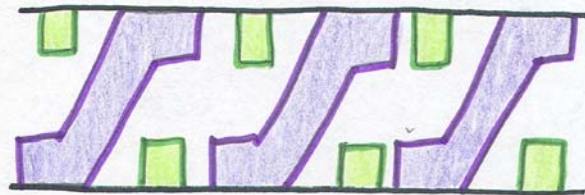
type mm
 translation
 reflection
 rotation
 glide reflection



type mm
 translation
 reflection
 rotation
 glide reflection

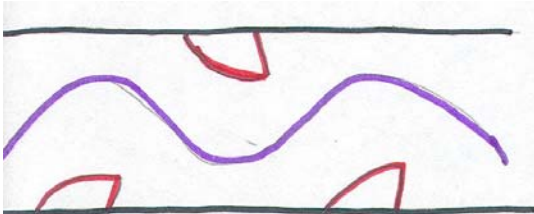


type 12
 translation
 rotation

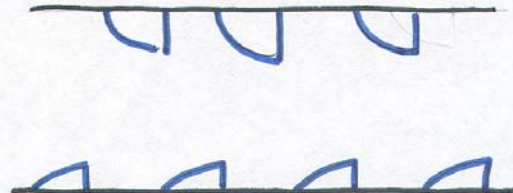


type 12
 translation
 rotation

Jacqueline McLemore



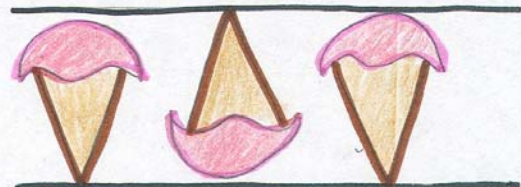
type 1g
translation
glide reflection



type 1g
translation
glide reflection



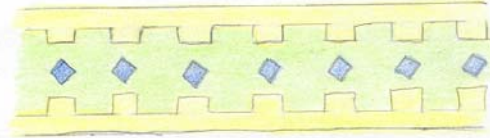
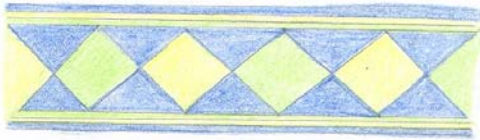
type mg
translation
rotation
glide reflection
reflection



type mg
translation
rotation
glide reflection
reflection

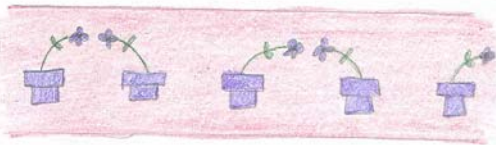
Jacqueline McLemore

mm



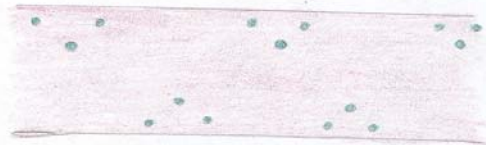
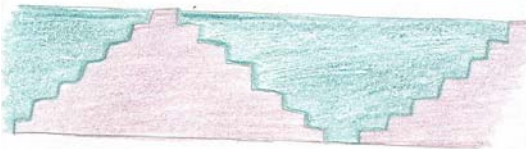
These borders have all 4 kinds of symmetry: translation, centerline and crossline reflection, half turn rotational symmetry, and glide reflection

mi



These borders have translational symmetry and crossline reflectional symmetry

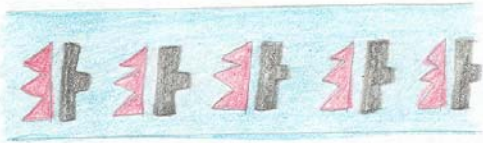
mg



These borders have translation, crossline reflection, half-turn rotation, and glide reflection.

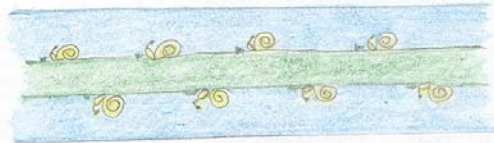
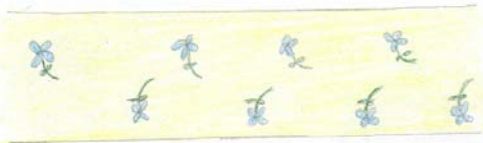
Crystal Davis

1m



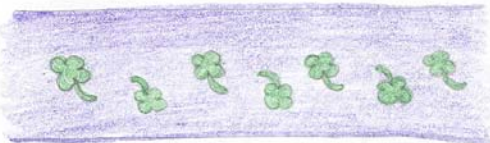
These borders have translation, centerline reflection, and glide reflection symmetry.

1g



These borders have glide reflection symmetry.

12



These borders have half-turn rotational symmetry.

11



These borders have no symmetry

Crystal Davis

There are seven types of borders: **mm**, **mg**, **m1**, **1m**, **1g**, **12**, and **11**. Let's look at each one and the types of symmetry they have.

mm



Symmetries of mm: translational, reflectional, rotational, and glide reflectional symmetry.



Symmetries of mg: translational, reflectional, rotational, and glide reflectional symmetry.



Symmetries of m1: translational and reflectional symmetry.

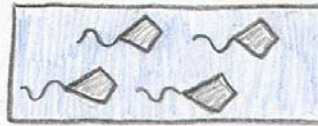
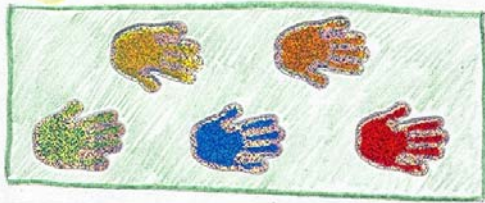
Cheryl Jenkins

1M



Symmetries of $1m$: translational, reflectional, and glide reflectional symmetry.

1g



Symmetries of $1g$: translational, and glide reflectional symmetry.

12



Symmetries of 12 : translational and rotational symmetry.

11



Symmetries of 11 : translational symmetry.

Cheryl Jenkins