MATH 122
(Day 7)

The Seventeen Tessellation Patterns

Richard Hammack

KEY

Axis of reflection: ————————————

Axis of glide reflection: - - - - - - - - - - - - - - -

Point of rotation: ●

Patterns Without Rotation Symmetry

Patterns Without Rotation Symmetry

(p1)

Patterns Without Rotation Symmetry

(p1) Reflections: NO
      Glide reflections: NO

Patterns Without Rotation Symmetry

(p1) Reflections: NO
       Glide reflections: NO

(pm)

Patterns Without Rotation Symmetry

(p1) Reflections: NO
Glide reflections: NO

(pm) Reflections: YES

Patterns Without Rotation Symmetry

(p1) Reflections: NO
Glide reflections: NO

(pm) Reflections: YES
Glide reflections: NO

Patterns Without Rotation Symmetry

(p1) Reflections: NO
       Glide reflections: NO

(pm) Reflections: YES
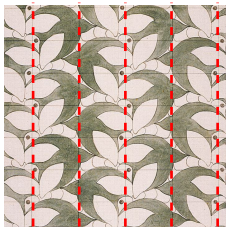   Glide reflections: NO

(pg)

Patterns Without Rotation Symmetry

(p1) Reflections: NO
Glide reflections: NO

(pm) Reflections: YES
Glide reflections: NO

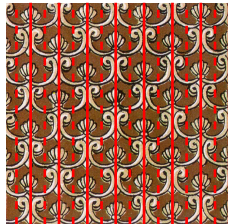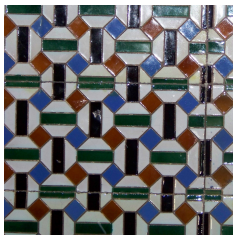(pg) Reflections: NO

Patterns Without Rotation Symmetry

(p1)   Reflections: NO
       Glide reflections: NO

(pm)   Reflections: YES
       Glide reflections: NO

(pg)   Reflections: NO
       Glide reflections: YES

Patterns Without Rotation Symmetry

(p1) Reflections: NO
Glide reflections: NO

(pm) Reflections: YES
Glide reflections: NO

(pg) Reflections: NO
Glide reflections: YES
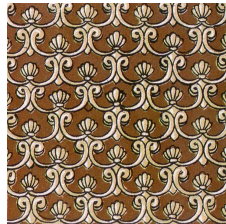
(cm)

Patterns Without Rotation Symmetry

(p1)   Reflections: NO
       Glide reflections: NO

(pm)   Reflections: YES
       Glide reflections: NO

(pg)   Reflections: NO
       Glide reflections: YES
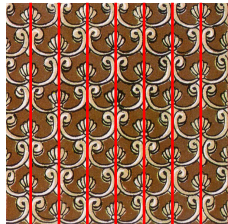
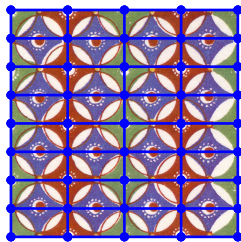(cm)   Reflections: YES

Patterns Without Rotation Symmetry

(p1)   Reflections: NO
        Glide reflections: NO

(pm)   Reflections: YES
        Glide reflections: NO

(pg)   Reflections: NO
        Glide reflections: YES

(cm)   Reflections: YES
        Glide reflections: YES

Patterns with Rotation by 180°

Patterns with Rotation by 180°

(p2)

Patterns with Rotation by 180°

(p2)

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

(pmm)

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

(pmm)

Patterns with Rotation by 180°
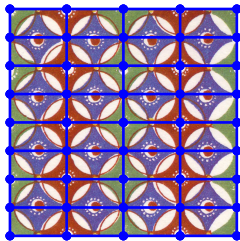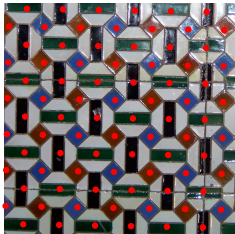

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES

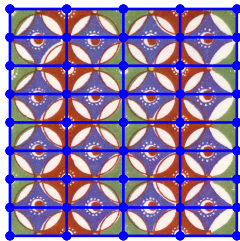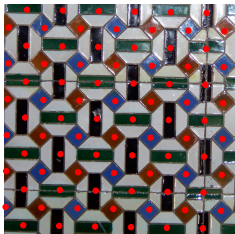# Patterns with Rotation by 180°
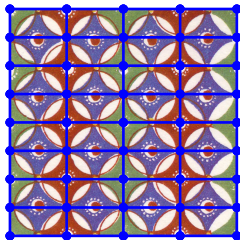

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES

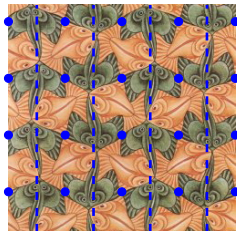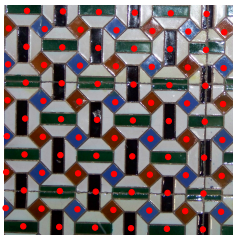# Patterns with Rotation by 180°
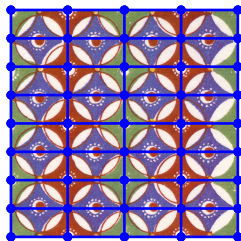

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

Patterns with Rotation by 180°

(p2) Reflection: NO
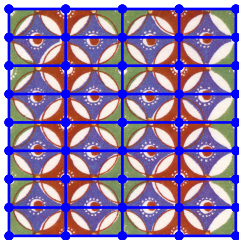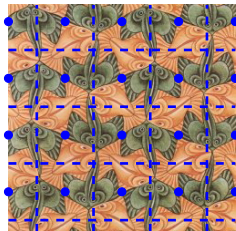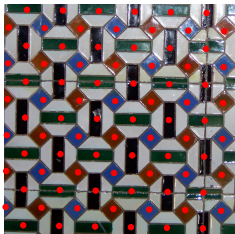Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

(pgg)

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

(pgg)

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO
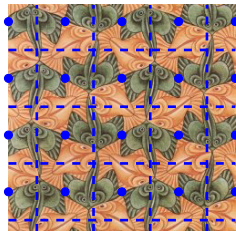

(pgg) Reflection: NO

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

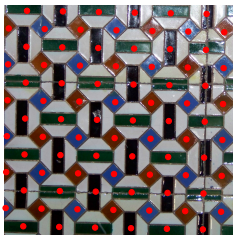(pmm) Reflection: YES
Glide reflection: NO

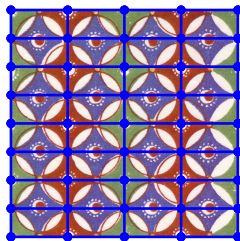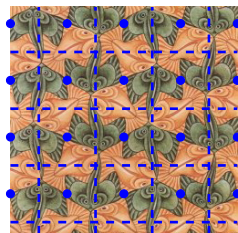(pgg) Reflection: NO
Glide reflection: YES

Patterns with Rotation by 180°

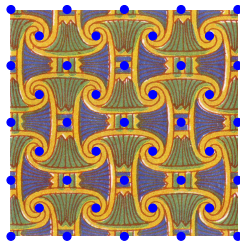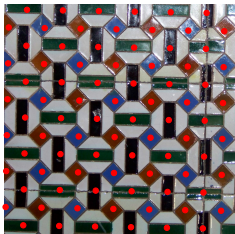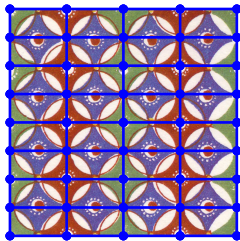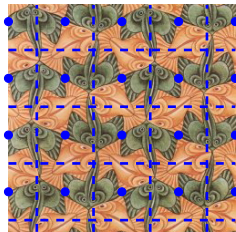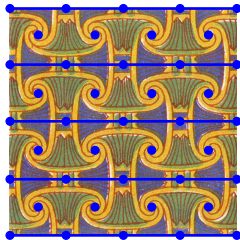(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

(pgg) Reflection: NO
Glide reflection: YES

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

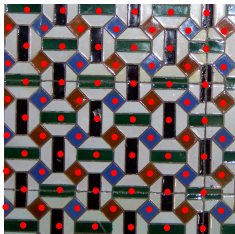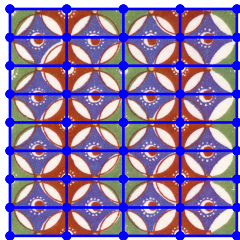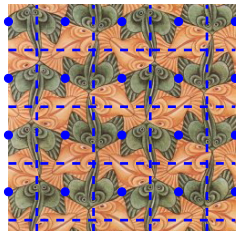
(pgg) Reflection: NO
Glide reflection: YES

(cmm)

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

(pgg) Reflection: NO
Glide reflection: YES

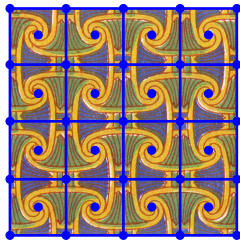(cmm)

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

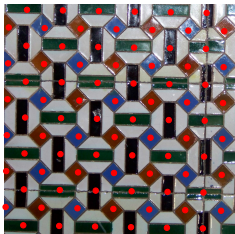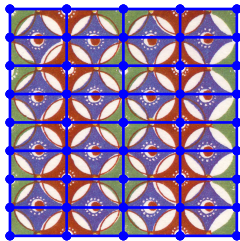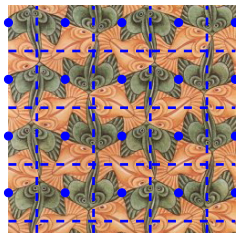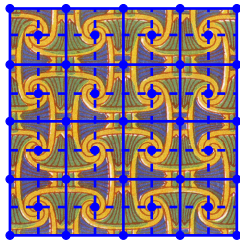(pmm) Reflection: YES
Glide reflection: NO

(pgg) Reflection: NO
Glide reflection: YES

(cmm) Reflection: YES

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

(pgg) Reflection: NO
Glide reflection: YES

(cmm) Reflection: YES

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

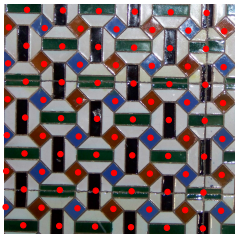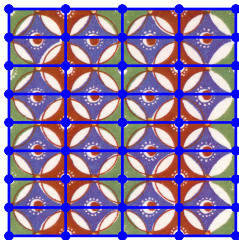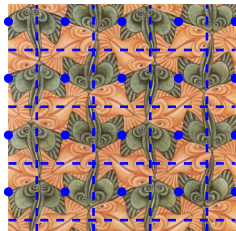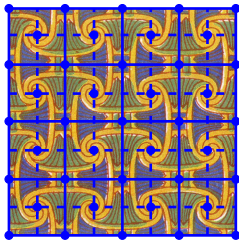(pmm) Reflection: YES
Glide reflection: NO

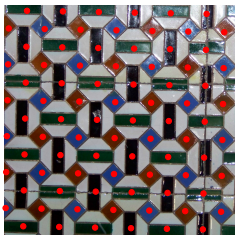(pgg) Reflection: NO
Glide reflection: YES

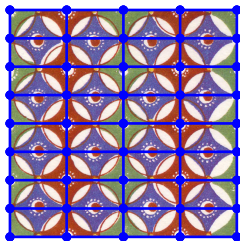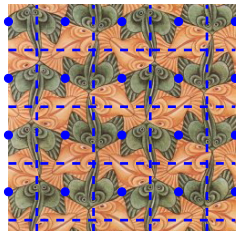(cmm) Reflection: YES
Glide reflection: YES
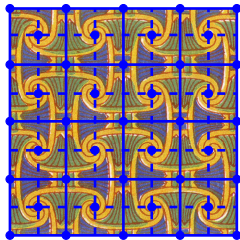
Patterns with Rotation by $180°$

(p2) Reflection: NO
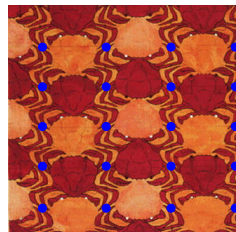Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

(pgg) Reflection: NO
Glide reflection: YES

(cmm) Reflection: YES
Glide reflection: YES

(pmg)

Patterns with Rotation by 180°

(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

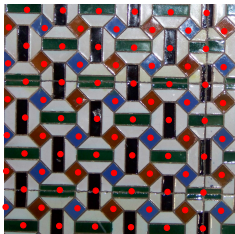(pgg) Reflection: NO
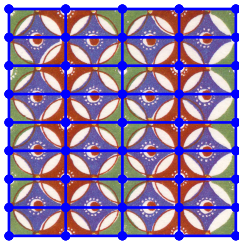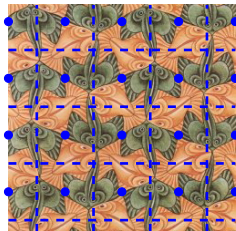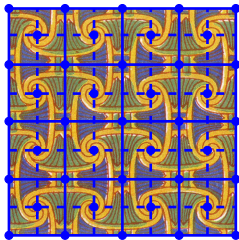Glide reflection: YES

(cmm) Reflection: YES
Glide reflection: YES

(pmg)

Patterns with Rotation by 180°

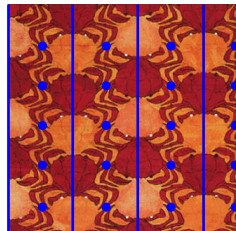(p2) Reflection: NO
Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO
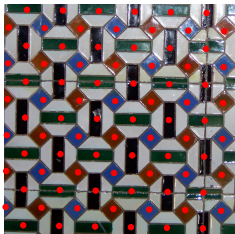
(pgg) Reflection: NO
Glide reflection: YES

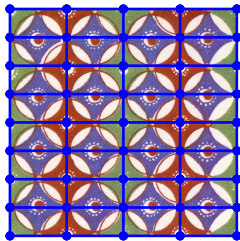(cmm) Reflection: YES
Glide reflection: YES
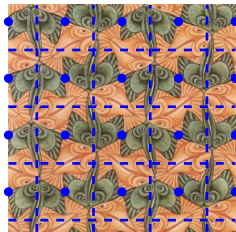
(pmg) Reflection: YES
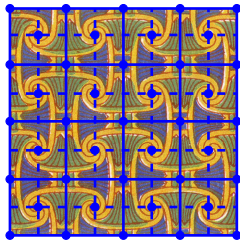
Patterns with Rotation by 180°

(p2) Reflection: NO
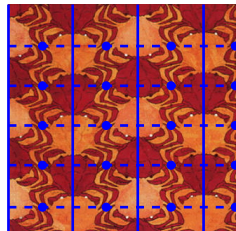Glide reflection: NO

(pmm) Reflection: YES
Glide reflection: NO

(pgg) Reflection: NO
Glide reflection: YES

(cmm) Reflection: YES
Glide reflection: YES
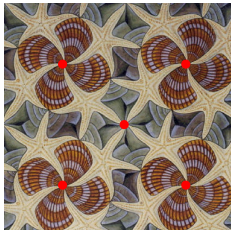
(pmg) Reflection: YES
Glide reflection: YES

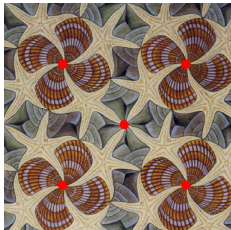# Patterns with Rotation by 90°

Patterns with Rotation by 90°

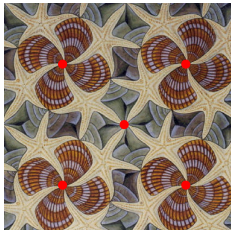(p4)

Patterns with Rotation by 90°

(p4)

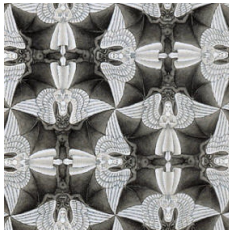# Patterns with Rotation by 90°

(p4) Reflections: NO
Glide reflections: NO

Patterns with Rotation by 90°
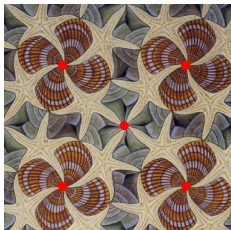

(p4) Reflections: NO
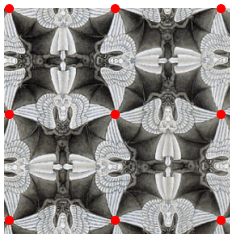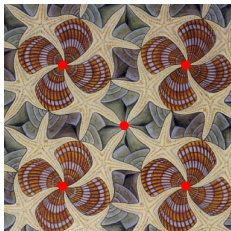   Glide reflections: NO

(p4g)

Patterns with Rotation by 90°

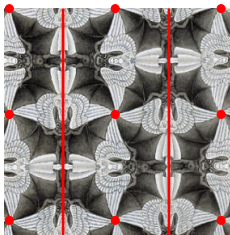(p4)   Reflections: NO
       Glide reflections: NO
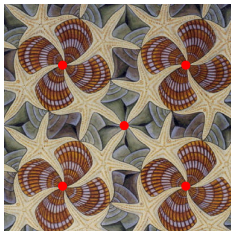
(p4g)

Patterns with Rotation by 90°

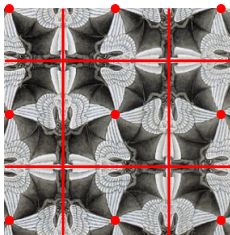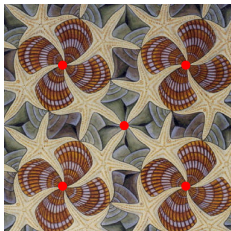(p4) Reflections: NO
Glide reflections: NO

(p4g) Reflections: YES

Patterns with Rotation by 90°

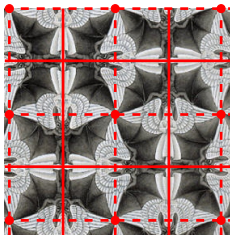(p4) Reflections: NO
Glide reflections: NO

(p4g) Reflections: YES
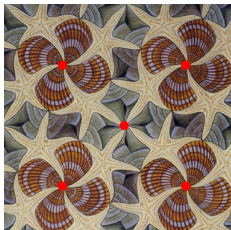
Patterns with Rotation by 90°

(p4) Reflections: NO
Glide reflections: NO

(p4g) Reflections: YES
Glide reflections: YES

Patterns with Rotation by 90°

(p4) Reflections: NO
Glide reflections: NO

(p4g) Reflections: YES
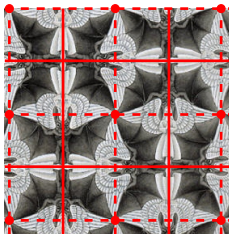Glide reflections: YES

(p4m) Reflections: YES
Glide reflections: YES
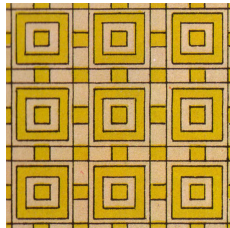
Patterns with Rotation by 90°

(p4) Reflections: NO
Glide reflections: NO

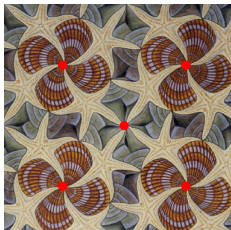(p4g) Reflections: YES
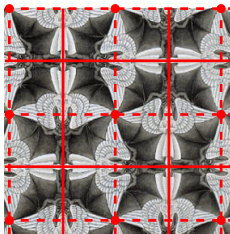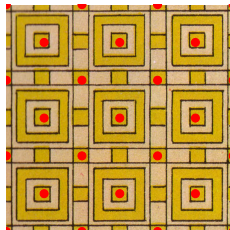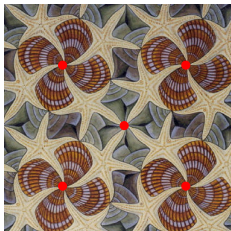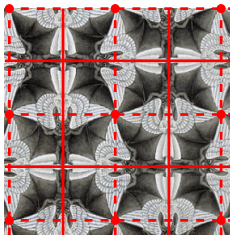Glide reflections: YES

(p4m) Reflections: YES
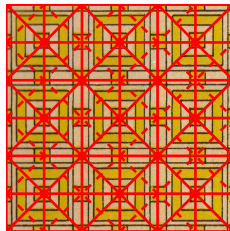Glide reflections: YES

Patterns with Rotation by 90°

(p4) Reflections: NO
Glide reflections: NO

(p4g) Reflections: YES
Glide reflections: YES

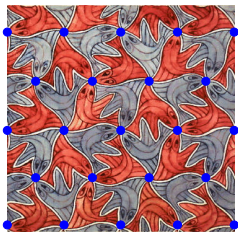(p4m) Reflections: YES
Glide reflections: YES

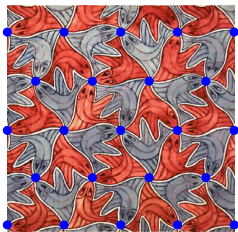Patterns with Rotation by 120°

Patterns with Rotation by 120°

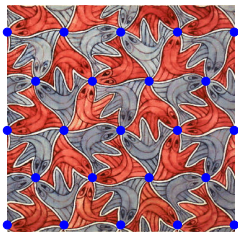(p3)

Patterns with Rotation by 120°

(p3)

Patterns with Rotation by 120°

(p3) Reflections: NO
      Glide reflections: NO
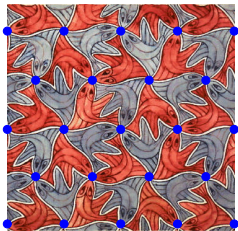
Patterns with Rotation by 120°
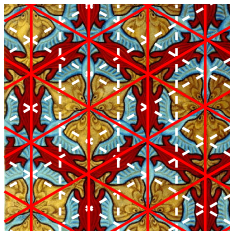

(p3) Reflections: NO
Glide reflections: NO

(p3m1)
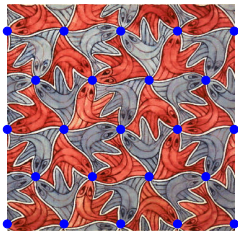
Patterns with Rotation by 120°

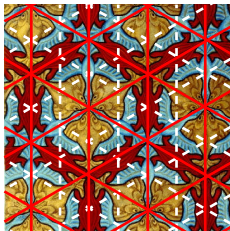(p3) Reflections: NO
Glide reflections: NO

(p3m1) Reflections: YES
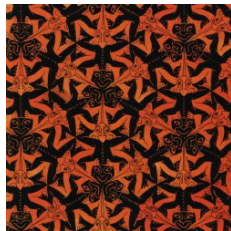Glide reflections: YES

Patterns with Rotation by 120°

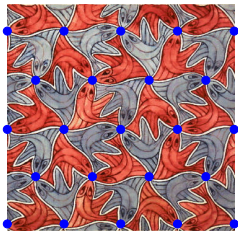(p3) Reflections: NO
Glide reflections: NO

(p3m1) Reflections: YES
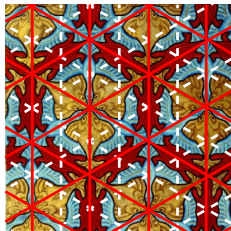Glide reflections: YES

(p31m)

Patterns with Rotation by 120°

(p3) Reflections: NO
Glide reflections: NO

(p3m1) Reflections: YES
Glide reflections: YES

(p31m) Reflections: YES
Glide reflections: YES

Patterns with Rotation by 60°

(p6)

Patterns with Rotation by 60°

(p6)

Patterns with Rotation by 60°

(p6)   Reflection: N0
       Glide reflection: NO

Patterns with Rotation by 60°

(p6)   Reflection: N0
       Glide reflection: NO
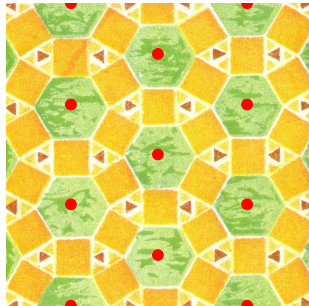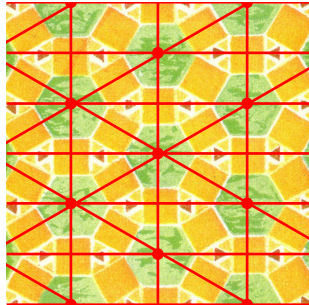
(p6m) Reflection: YES
       Glide reflection: YES

Patterns with Rotation by 60°

(p6)   Reflection: N0
          Glide reflection: NO

(p6m) Reflection: YES
            Glide reflection: YES

Patterns with Rotation by 60°

(p6) Reflection: N0
       Glide reflection: NO

(p6m) Reflection: YES
       Glide reflection: YES

Patterns with Rotation by 60°

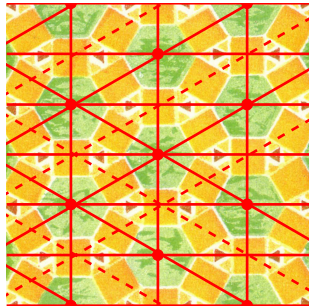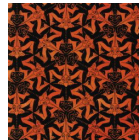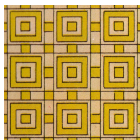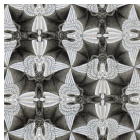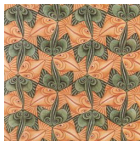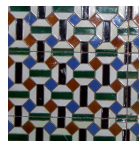(p6) Reflection: N0
      Glide reflection: NO

(p6m) Reflection: YES
      Glide reflection: YES

The 17 Tessellation Symmetry Types

www.people.vcu.edu/~rhammack/Math122/