

MATH 110 Mathematical Patterns Activity I

Asymmetric design (unit of replication)



Describe how these designs are produced using the operations:
rotation, reflection, translation and glide reflection

Design 1



Design 2



How are Design 1 and 2 similar? How are they different?

How would Design 1 change if you moved the point of rotation?

Try it:

How would Design 2 change if you moved the line of reflection?

Try it:

Create your own asymmetric unit and use the same operations that formed Design 1 and Design 2 using that pattern.

Design 3

Describe how these designs are produced:



Design 4



How are Design 3 and Design 4 similar? How are they different?

What would happen to Design 3 if we change the direction of the translation?

Try it:

What would happen to Design 4 if we change the directions of the translation and the reflection?

Try it:

Using the same asymmetric unit you created above, use the same operations that produced Design 3 and Design 4.

What do Designs 1 and 2 have in common with Designs 3 and 4?

Match the Japanese Family Crests (or designs made using crests) below to Designs 1 through 4:

