Concept: Transformations

Name:

PART A: COMPUTER COMPONENT

Instructions: In UMATH X follow the **Content Menu** path:

Graphing > **Transformations**

💻 Work through all Sub Lessons of the following Lessons **in order**:

- *What is a Transformation?*
- *Introduction to Common Transformations*
- *Translations – An Introduction*
- *Reflections – An Introduction*
- *Rotations – An Introduction*
- *The Transformation Machine*
- *Lines of Symmetry*
- *Symmetry Match*
- *Tessellations*
- *Tangrams*

NOTE*:* You will not be finishing the entire section before stopping to complete some **OFF COMPUTER EXERCISES**.

Additional Required Materials: Graph paper, scissors

✎ As you work through computer exercises, you will be prompted to make notes in your notebook/math journal.

When you reach the end of the lesson *Tangrams*, leave the computer and move on to **PART A: SUMMARY** below.

PART A: SUMMARY

1. *Fill in the spaces below with the correct 'transformation' term.*

A transformation occurs when the ***position*** or the ***size*** or the ***shape*** of the original object changes.

We call the original figure the ***object.***

The figure resulting after the transformation has taken place is called the ***image.***

2. ***The Transformation Machine***
Record your predictions of the transformations that would move the *blue object* to the *red image*. ***(Predictions will vary for each of these)***

Example
*1*_____

*Example 2*_____

*Example 3*_____

*Example 4*_____

*Example 5*_____

3. **Tessellations**

Record your predictions of the transformations for the Tessellation.

(Predictions will vary for each of these)

Example 1

What transformations would move Red to Green?

_____

Example 2

What transformations would move Red to Blue?_____

Example 3

What transformations would move Red to Orange?_____

Example 4

What transformations would move Red to Purple?_____

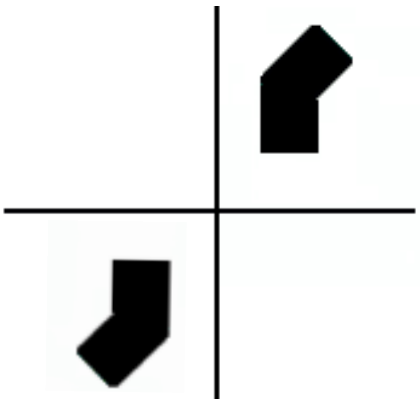
Example 5

What transformations would move Red to Yellow?_____

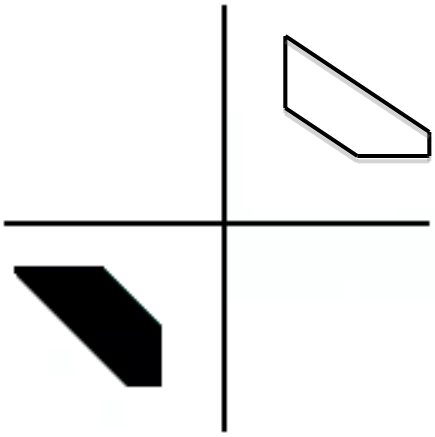
OFF COMPUTER EXERCISES

1. Draw a translated image of the object below.

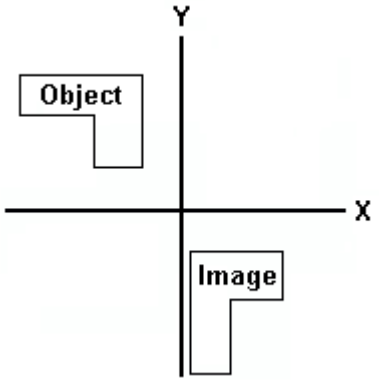
2. Draw a rotated image of the object below.



3. Draw a reflected image of the object below.

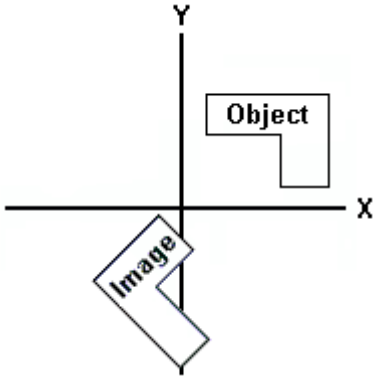


4. Record the transformations that have moved the object to the image.



(a)

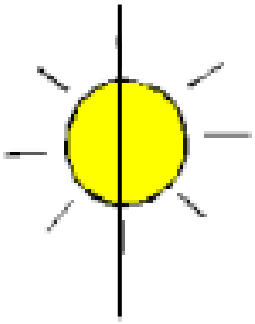
Rotation 90° clockwise, reflection over line y clockwise and a reflection over line x.

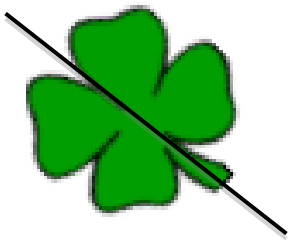


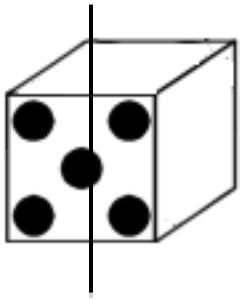
(b)

135° rotation counter- and a translation over line x.

5. Draw the line of symmetry onto each object below.

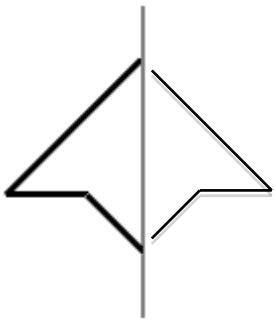


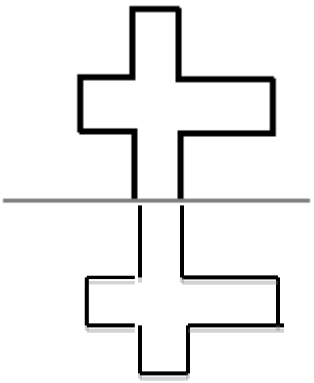


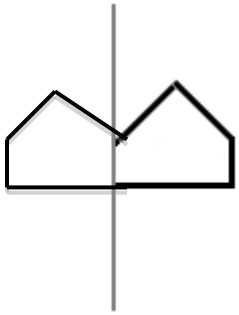


NOTE: *No line of symmetry as a cube*

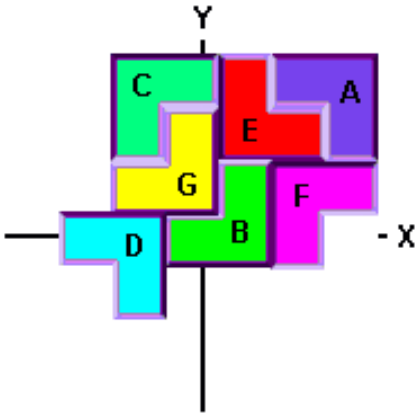
6. Draw the other half of the images below, using the line of symmetry as a guide.







7. In the following tessellation, what transformations would move:



(a) F to D? ***A rotation clockwise 90 °and translation left and a translation down.***

b) C to A? ***A translation right and a reflection.***

c) G to E? ***A translation up and a reflection.***

d) B to F? ***A reflection and rotation clockwise 90°.***

8. ***'Tantalizing Tangrams'***
Carefully cut the shapes out and begin to make *new* shapes with the pieces. Trace the outline of the shapes you made and give them to a friend. See if your friend can fit the blocks into the outline correctly.

(Answers will vary)