

Transformation Rules Sheet

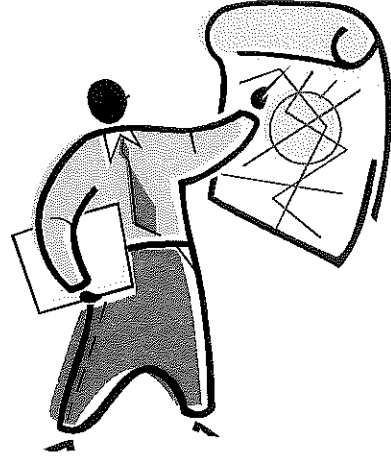
Line Reflections:

$$r_{x\text{-axis}}(x, y) = (x, -y)$$

$$r_{y\text{-axis}}(x, y) = (-x, y)$$

$$r_{y=x}(x, y) = (y, x)$$

$$r_{y=-x}(x, y) = (-y, -x)$$



Point Reflection:

$$R_{180^\circ}(x, y) = (-x, -y)$$

Rotations:

$$R_{90^\circ}(x, y) = (-y, x) \text{ (counter clockwise)}$$

$$R_{180^\circ}(x, y) = (-x, -y) \text{ (counter clockwise)}$$

$$R_{270^\circ}(x, y) = (y, -x) \text{ (counter clockwise)}$$

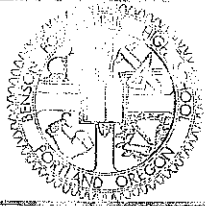
$$R_{-90^\circ}(x, y) = (y, -x) \text{ (clockwise)}$$

Translation:

$$T_{a,b}(x, y) = (x + a, y + b)$$

Dilation:

$$D_k(x, y) = (kx, ky)$$



ESSENTIAL QUESTION:

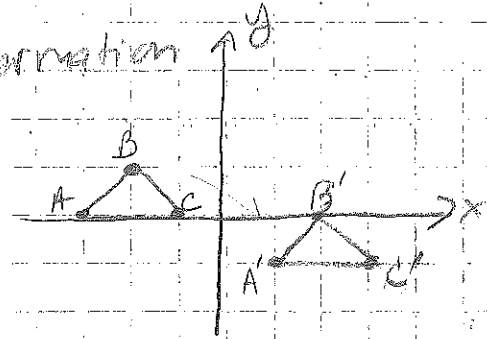
How do we do transformations?

QUESTIONS:

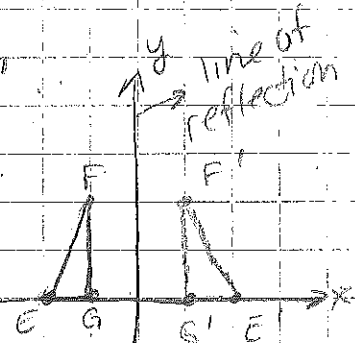
NOTES:

Transformation - general term for 4 specific ways to move a shape, point, or line.

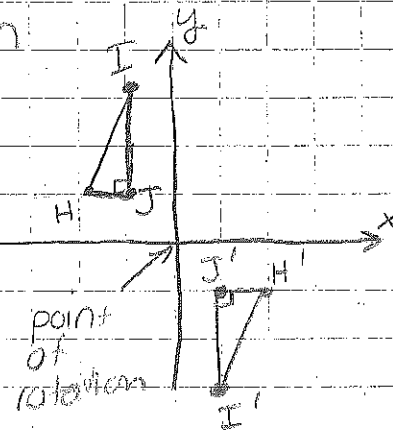
① Translation - a transformation that preserves the size, shape, and orientation while sliding



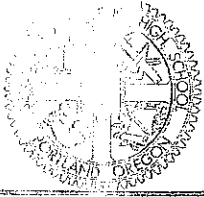
② Reflection - a transformation that preserves the size and shape of a figure across a line of reflection. i.e. "FLIP" "mirror image"



③ Rotation - a transformation that preserves size and shape while "turning" or "spinning" the figure about a fixed point



SUMMARY:



TOPIC/OBJECTIVE

CONTENT/CLASS:

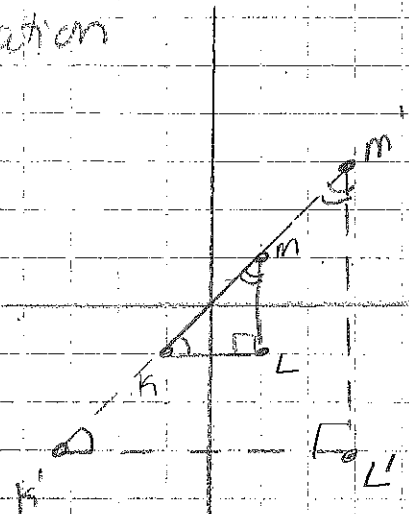
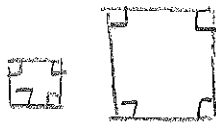
PERIOD:

ESSENTIAL QUESTION:

QUESTIONS:

NOTES:

④ Dilation - transformation which makes a figure similar to the original figure by "shrinking" or "expanding".



Prime Notation
signify the transformed shape/figure.

$$\triangle ABC \xrightarrow{T} \triangle A'B'C'$$

$$\square ABCD \xrightarrow{T} \square A'B'C'D'$$

SUMMARY:

Essential Question:

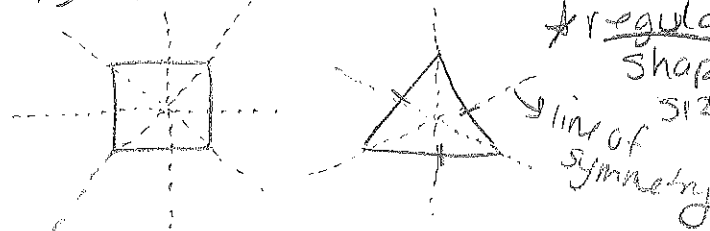
How can I find the different types of symmetry?

Questions:

Notes

Reflection Symmetry: a type of symmetry in which one half of the object is the mirror image of the other half.

A line of symmetry is anywhere you can fold the object in half and it is the exact same on both sides.



* regular polygons shapes w/ same size sides

line of symmetry

Rotational Symmetry: an object has rotational symmetry if there is a center point around which the object is rotated a certain number of degrees less than 360° and the object looks the same.

* If $n = \#$ of lines of symmetry, then the degree of rotation is $\frac{360^\circ}{n}$

Summary:

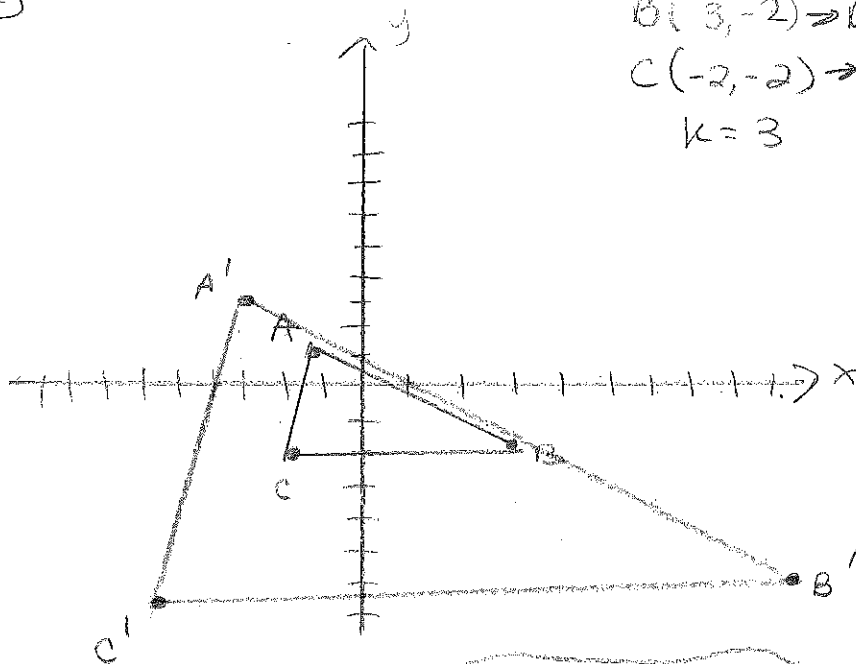
Questions:

Notes:

Dilations: on the x-y Grid
whenever an object is dilated on
the x-y plane with origin (0,0)
as the center, we only need to
multiply the coordinates (x,y) by
the scale factor (k) to get the
new points (coordinates) for the
dilated image.

ex)

$$\begin{aligned} A(-1, 1) &\rightarrow A'(-3, 3) \\ B(3, -2) &\rightarrow B'(9, -6) \\ C(-2, -2) &\rightarrow C'(-6, -6) \\ k &= 3 \end{aligned}$$



ex) $A(-2, 2)$ $B(4, 6)$ $C(8, 2)$ $k = \frac{1}{2}$
 $A'(-1, 1)$ $B'(2, 3)$ $C'(4, 1)$

Summary: