Name _____ Hr ____

Chapter 9 Guided Notes

Properties of Transformations

Chapter Start Date:_____
Chapter End Date:_____
Test Day/Date:_____

4.8 Perform Congruence Transformations

Term	Definition	Example
transformation		
image		
translation		
Coordinate Notation for a Translation		
reflection		
line of reflection		
Coordinate Notation for a Reflection in the x-axis		
Coordinate Notation for a Reflection in the y-axis		
Coordinate Notation for a Reflection in the line $y = x$		
rotation		

center (point) of rotation		
direction of rotation		1. **Clockwise** 2. **Counterclockwise**
angle of rotation		
congruence transformation		

6.7 Perform Similarity Transformations

Term	Definition	Example
dilation		
similarity transformation		
center of dilation		
scale factor of a dilation		
reduction		
enlargement		
Coordinate Notation for a Dilation		

9.1 Translate Figures and Use Vectors

Term	Definition	Example
transformation		
image		
preimage		
prime notation		
translation		
isometry		
Theorem 9.1 Translation Theorem		
vector		
Vectors		
component form		

9.2 Use Properties of Matrices

Term	Definition	Example
matrix (matrices)		
element		
dimensions		
adding and subtracting matrices		
image matrix		
multiplying matrices		

9.3 Perform Reflections

Term	Definition	Example
reflection		
line of reflection		
Theorem 9.2 Reflection Theorem		Case 1: Case 2: Case 3: Case 4:

Coordinate Rules for Reflections
1. If (a,b) is reflected in the *x*-axis, its image is the point (___, ___).
2. If (a,b) is reflected in the *y*-axis, its image is the point (___, ___).
3. If (a,b) is reflected in the line $y = x$, its image is the point (___, ___).
4. If (a,b) is reflected in the line $y = -x$, its image is the point (___, ___).

Reflection Matrices	
Reflection in the *x*-axis	Reflection in the *y*-axis
To use reflection matrices,	

9.4 Perform Rotations

Term	Definition	Example
rotation		
center of rotation		
angle of rotation		
direction of rotation		
rotations about the origin		
Theorem 9.3 Rotation Theorem		Case 1: Case 2: Case 3:

Coordinate Rules for Rotations about the Origin
When a point (a,b) is rotated counterclockwise about the origin, the following are true:
1. For a rotation of 90°, (a,b) → (_____, _____).
2. For a rotation of 180°, (a,b) → (_____, _____).
3. For a rotation of 270°, (a,b) → (_____, _____).

Rotation Matrices (Counterclockwise)			
90° Rotation	180° Rotation	270° Rotation	360° Rotation

9.5 Apply Compositions of Transformations

Term	Definition	Example
glide reflection		
composition of transformations		
Theorem 9.4 Composition Theorem		
Theorem 9.5 Reflections in Parallel Lines Theorem		
Theorem 9.6 Reflections in Intersecting Lines Theorem		

9.6 Identify Symmetry

Term	Definition	Example
line symmetry		
line of symmetry		
rotation symmetry		
center of symmetry		
point of symmetry		
angle of rotation		

9.7 Identify and Perform Dilations

Term	Definition	Example
dilation		
similarity transformation		
center of dilation		
scale factor of a dilation		
reduction		
enlargement		
Coordinate Notation for a Dilation		
matrices— scalar multiplication		