learning focus:

✓ generalize the properties of orientation and congruence of figures after transformations

✓ use algebraic representations to explain the effect of transformations

✓ identify and represent reflections, rotations, translations and dilations on the coordinate plane

TRANSFORMATIONS 8th GRADE
UNIT
11 DAY CCSS-ALIGNED UNIT

Unit: Transformations
Student Handout 5

Name _____
Date _____ Pd ___

IDENTIFYING TRANSFORMATIONS

PART A: Four students graphed the transformations below. Apply what you've learned to write a description of each transformation below as well as an algebraic rule.

MARCUS

AMBER

RULE:

RULE:

TRANSFORMATIONS UNIT
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TRANSFORMATIONS UNIT
PACING GUIDE

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Basics of Transformations	Translations on the Coordinate Plane	Reflections on the Coordinate Plane	Rotations on the Coordinate Plane	Identifying Transformations

| DAY 6 | DAY 7 | | | |
| Student Handout Homework 1 | Student Handout Homework 2 | Student Handout 3 Homework... | | |

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TRANSFORMATIONS

8th GRADE

ready-to-go, scaffolded student materials

TRANSFORMATIONS UNIT
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TRANSFORMATIONS

8th GRADE

student friendly + real-world application

scaffolded concepts

Unit: Transformations
Student Handout 1

Name _____
Date _____ Pd_____

BASICS OF TRANSFORMATIONS

To transform a shape or figure means to _____ it. In general, we can change the size, location and direction that a figure is facing.

PRE-IMAGE AND IMAGE
- The figure before a transformation is called the ___-_____, or the original figure. Afte
- If the pre-image we pronounced "A _____

The table below gives an overview of the image and the image in each example and

TYPES OF

_____   _____

KEYWORDS: KEYWORDS:

Where do you see transformations in the re

Translations:	Reflections:

CONGRUENCE & ORIENTATION
- Congruence refers to whether the pre-image and image have the same _____ and _____.
- Orientation of the _____ refers to whether the pre-image and image are facing the same direction on the coordinate plane.
- Orientation of the _____ refers to the order in which the vertices are labeled, clockwise or counterclockwise.

In 1-4, label the type of transformation between the pre-image and image and

1
Transforma

Congruence

Orientation:
- Figure
- Vertices

3
Transforma

Congruence

Orientation:
- Figure
- Vertices

Liv and Hassan graphed the transform the given criteria by writing "Liv," "Has

LIV   HA

Unit: Transformations
Homework 1

Name _____
Date _____ Pd_____

BASICS OF TRANSFORMATIONS

Students were asked to create true statements about transformations. Circle the names of the students who correctly completed the task. Then, unscramble the underlined letters of the circled names to answer the riddle at the bottom.

LAVERNA
Triangle JKL was translated from quadrant I to III.

ALFONSO
A translation will never change the orientation of a figure's vertices.

AUTUMN
Congruence was preserved in the reflection shown.

WILLA
The vertices of the original figure in a transformation are labeled with prime notations.

IGNACIO
The graph represents a dilation which changes a figure's size but not a figure's orientation.

NAPOLEON
A reflection will never change the orientation of a figure.

KATHYRN
A dilation will always preserve both the orientation of a figure and the orientation of the vertices.

TITUS
A rotation flips a figure, creating a mirror image.

LAWRENCE
Triangle PQR was rotated from quadrant IV to II.

HOW DID THE ROTATION GET LOST?

_____

self-checking practice

TRANSFORMATIONS

8th GRADE

an 11 day CCSS-aligned unit
CCSS: 8.G.1, 8.G.2, 8.G.3, 8.G.4

streamline your planning process with unit overviews

✓ **key vocabulary**

✓ **vertical alignment**

sample pacing calendar

teaching ideas

TRANSFORMATIONS
OVERVIEW

CCSS

STANDARDS

8.G.1 Verify experimentally the properties of rotations, reflections and translations; Lines are taken to lines, and line segments to line segments of the same length. Angles are taken to angles of the same measure. Parallel lines are taken to parallel lines.

8.G.2 Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.

8.G.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

8.G.4 Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.

BIG IDEAS

- Two-dimensional figures ca... the figure's coordinates, orie...
- Transformations will change...

ESSENTIAL QUESTI...

- Where do you see the variou...
- What are some key things t...
- What is the difference betwe...
- Which transformations pres...

TRANSFORMATIONS UNIT
PACING GUIDE

CCSS

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Basics of Transformations	Translations on the Coordinate Plane	Reflections on the Coordinate Plane	Rotations on the Coordinate Plane	Identifying Transformations
Student Handout 1 Homework 1	Student Handout 2 Homework 2			
DAY 6	**DAY 7**			
Translations, Reflections and Rotations Quiz	Scale Factor and Dilations			
Quiz 1	Student Handout 6 Homework 6			
DAY 11				
Transformations Unit Test				
Test				

TRANSFORMATIONS UNIT
PACING GUIDE

CCSS

TOPIC	TEACHING TIPS
Basics of Transformations	• Visit www.teachertube.com and search "Geometry Transformations Video" for a quick, simple video that introduces all 4 transformations through different real-world examples.
Translations	• Help students remember it's a **sl**ide by underlining the "sl" in tran**sl**ation. • Remind students that since the x-axis runs from left to right, translations to the left or right will affect the x-value. Similarly, since the y-axis runs up and down, translations up or down will affect the y-value.
Reflections	• Help students remember it's a **fl**ip by underlining the "fl" in re**fl**ection. • Since a common error is reflecting over the wrong axis, I like to have students highlight the line of reflection.

Rotations	• When determining the coordinates for a figure that will be rotated, I try to simplify the rotation "rules" by having students remember the following:
	  1. The x and y values **only** switch places when rotating 90° or 270°
	  2. Determine which quadrant the image will be in to determine the signs of your x and y values. (For example, a point on an image in Quadrant IV must have a positive x and negative y value.)

Dilations	• Remind students that they can determine the scale factor used in a dilation by setting up a ratio of the corresponding side lengths, but also by the corresponding values in the coordinates of the image and pre-image, depending on which is easier.
All Transformations	• Visit http://www.mangahigh.com/games/transtar for a game reviewing all transformations. Some of the reflections are over lines other than the x and y-axis, but it is still great practice and explains examples if students are unable to complete a round successfully. (Must have Adobe Flash Player to play.)

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8th GRADE

unit study guide + assessments

✓ quizzes

✓ editable unit test

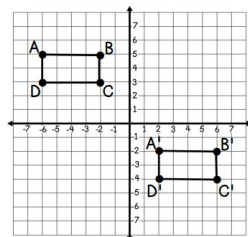Unit: Transformations
Quiz 1

Name _____
Date _____ Pd _____

QUIZ: TRANSLATIONS, REFLECTIONS AND ROTATIONS

Answer each question and be sure to show work when necessary.

Answers
1. _____
2. _____
3. _____

1. Which describes the transformation shown below?

A. Translation left and up
B. Rotation 180° clockwise
C. Reflection over the x-axis
D. Translation right and down

2. Which rule best represents the transformation graphed below?

3. Which is not a true statement about the transformation shown below?
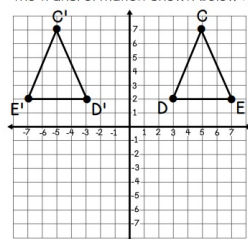
A. The two figures are congruent.
B. The pre-image is in Quadrant I.
C. The orientation of the vertices stayed the same.
D. The transformation is a reflection.

Unit: Transformations
Review

Name _____
Date _____ Pd _____

TRANSFORMATIONS STUDY GUIDE

Solve each of the problems below. Be sure to ask questions if you need more help with a topic.

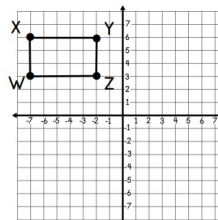**I CAN VERIFY THE PROPERTIES OF TRANSFORMATIONS.**

1. Reflect the figure over the x-axis. Then, mark the statements as true or false.

2. Translate the figure 8 units left and 2 units up. Then, mark the statements as true or false.
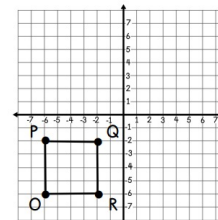
_____ a. The corresponding sides in image and image are congruent.

_____ b. The reflection changed the _____ of the vertices.

3. Rotate the figure 90° clockwise. Th_____ the statements as true or false.

_____ a. The orientation of the figur_____ change.

_____ b. The corresponding angle m_____ the pre-image and image are

EIGHTH GRADE CURRICULUM

TRANSFORMATIONS

UNIT SEVEN: ANSWER KEY

answer keys included

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