(8th) Unit 2: Transformations

Content Area: **Math**
Course(s): **Math**
Time Period: **October**
Length: **4 weeks**
Status: **Published**

Unit Overview

In this unit, students will learn about the following topics:

- Translations in the coordinate plane

- Reflections in the coordinate plane

- Rotations in the coordinate plane

- Dilations in the coordinate plane

- Congruent figures in the coordinate plane

- Congruent pieces of congruent figures

- Similar figures

- Perimeter & area of similar figures

Enduring Understandings

SWBAT:

- Perform a translation on a figure in the coordinate plane

- Perform a translation on the coordinates of a figure

- Perform a reflection on a figure in the coordinate plane

- Perform a reflection on the coordinates of a figure

- Perform a rotation on a figure in the coordinate plane

- Perform a rotation on the coordinates of a figure

- Perform a dilation on a figure in the coordinate plane

- Perform a dilation on the coordinates of a figure

- Perform more than one transformation at a time

- Identify congruent figures in the coordinate plane

- Identify corresponding congruent parts between two figures

- Solve for missing side lengths, perimeters, or areas between two similar figures

- Solve a proportion

- Solve real-world problems involving transformations

Essential Questions

How can we:

- identify a translation?
- find the coordinates of a translates figure?
- use coordinates to transform a figure?

How can we:

- identify a reflection?
- find the coordinates of a figure reflected in the x-axis or y-axis?
- find the coordinates of a figure reflected in any horizontal or vertical line?
- use coordinates to reflected a figure in the x-axis or y-axis?

How can we:

- identify congruent figures?
- define rigid motion?
- describe a sequence of rigid motions between two congruent figures?

How can we:

- identify a rotation?
- find the coordinates of a figure rotated about the origin?
- find the coordinates of a figure rotates about a given point?
- use coordinates to rotate a figure about the origin?
- use coordinates to rotate a figure about a point?
- solve real-world problems modeled by a coordinate plane?

How can we:

- identify a dilation?
- find the coordinates of a figure dilated with respect to the origin?
- use the coordinates to dilate a figure with respect to the origin?
- find a scale factor between two images where one has been dilated?

How can we:

- identify similar figures?
- describe a similarity transformation between two similar figures?

How can we:

- use corresponding side lengths to compare perimeters of similar figures?
- use corresponding side lengths to compare areas of similar figures?
- use similar figures to solve real-world problems involving perimeter and area?

Instructional Strategies & Learning Activities

- Guided Practice
- Daily Do Now
- Extra Practice & Puzzle Time (Resources)
- Scavenger Hunts
- Coloring Activities
- Task Cards (Around the World)
- Maze Activities
- Quizizz Online Assignments
- Kahoot! Online Games
- GimKit Online Games

Integration of 21st Century Themes and Skills

P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
9.4.8.CT.1	Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).
9.4.8.CT.2	Develop multiple solutions to a problem and evaluate short- and long-term effects to determine the most plausible option (e.g., MS-ETS1-4, 6.1.8.CivicsDP.1).
9.4.8.CT.3	Compare past problem-solving solutions to local, national, or global issues and analyze the factors that led to a positive or negative outcome.
9.4.8.TL.5	Compare the process and effectiveness of synchronous collaboration and asynchronous collaboration.
CRP.K-12.CRP1.1	Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater

	good.
CRP.K-12.CRP2.1	Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.

Technology & Design Integration

8.1.8.DA.4	Transform data to remove errors and improve the accuracy of the data for analysis.
8.1.8.AP.4	Decompose problems and sub-problems into parts to facilitate the design, implementation, and review of programs.
8.2.8.ED.2	Identify the steps in the design process that could be used to solve a problem.
TECH.8.1.8.F	Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.
TECH.8.2.8.D.CS1	Apply the design process.

Interdisciplinary Connections

L.KL.8.2.A	Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases.
L.KL.8.2.B	Gather vocabulary knowledge when selecting a word or phrase important to comprehension or expression.
L.VL.8.3.A	Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase.
L.VL.8.3.B	Analyze the impact of specific word choices on meaning and tone.
L.VL.8.3.C	Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., precede, recede, secede).
L.VL.8.3.D	Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech.

Differentiation

Definitions of Differentiation Components:

- Content – the specific information that is to be taught in the lesson/unit/course of instruction.
- Process – how the student will acquire the content information.
- Product – how the student will demonstrate understanding of the content.
- Learning Environment – the environment where learning is taking place including physical location and/or student grouping

Differentiation occurring in this unit:

- High-achieving students will assist low-achieving students in mixed ability groupings for games and activities.
- High-achieving students can complete sudoku puzzles and logic puzzles as extension activities.

- Limit number/difficulty of problems for low-achieving students to demonstrate mastery.
- Narrow down problem choice to core concepts for low-achieving students.
- Leveled group-based activities, determined by formative assessment.

Modifications & Accommodations

- High-achieving students will assist low-achieving students in mixed ability groupings for games and activities.
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Benchmark Assessments

Schoolwide Benchmark assessments:

- Linkit Benchmarks (Form A in September, Form B in January, Form C in June): Linked to NJSLA standards

Additional Benchmarks used in this unit:

- IXL Diagnostic + continued practice during IXL periods

Formative Assessments

Formative Assessments used in this unit:

- Kahoot! Games

- Quizizz Games

- Homework

- Q & A

- Scavenger Hunts

- Coloring Activities

- Task Cards

- Partner Activities

Summative Assessments

Summative assessments for this unit:

- Chapter Test
- Quizzes

Instructional Materials

1. Big Ideas Math: Math & You 6th Grade Textbook
2. Quizizz
3. Kahoot!
4. Scavenger Hunts
5. Task Cards
6. Coloring Activities
7. GimKit

Standards

8.G.A.1.a	Lines are transformed to lines, and line segments to line segments of the same length.
8.G.A.1.b	Angles are transformed to angles of the same measure.
8.G.A.1.c	Parallel lines are transformed to parallel lines.
8.G.A.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.A.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.
8.G.A.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.