PBI Simple 5E Template

Name of Lesson	Transformation Charades
Author of lesson (UFTeach Student):	Darcy and Mayra
Sources used to compose lesson:	Chapter 4 Geometry Honors Textbook
Summary of STEM concepts:	• Students can apply a given transformation rule to a figure on a coordinate grid. • Students can identify a transformation based on its visual representation. • Students can use precise geometric vocabulary and notation to describe transformations.
Materials you will need to have on hand (including technology)	Slide show Transformation Cards Coordinate Grades Whiteboards and markers

NGSSS / B.E.S.T./ Florida CS Standards: *Include both content standards and Nature of science / mathematics thinking and reasoning standards/ computational thinking and reasoning standards as appropriate.*

Call Letters	Description
MA.912.GR.2.1	Perform and describe translations, reflections, rotations, and dilations.
MA.912.GR.2.2	Identify transformations that do or do not preserve distance.

Engage: *How will you invite students into the lesson, access prior knowledge, get them excited?*

Goal	What you will say / do	Expected student responses / actions
The goal of this bell ringer is to review reflections and translations so students can recall transformation rules, vocabulary, and visual patterns before starting the "Transformation Charades" game. It activates prior knowledge and ensures everyone is ready to identify and describe rigid motions using coordinate rules.	I'll display the "Name That Transformation!" bell ringer on the board and say, "Before we play our transformation game, let's warm up by identifying some transformations. For each example, decide whether it's a reflection or translation, write the coordinate rule, and describe how the figure moves." I would like it to be a discussion-style where students can raise their hands, and I'll fill it out on the whiteboard.	Students are expected to come in quietly, read the bell ringer directions, and complete all four quick review problems. They should use their notes or prior knowledge to identify each transformation type, the correct coordinate rule, and describe the movement clearly.

Explore: *How will you organize student activities and thinking as they explore the STEM concepts in this lesson?*

Goal	What you will say / do	Expected student responses / actions
The goal of the "Transformation Charades" game is for students to demonstrate and identify translations and reflections using coordinate grids. It helps them apply transformation rules, visualize rigid motions, and explain their reasoning while working collaboratively in a fun, competitive format.	I will explain that we're playing "Transformation Charades," where each group will use grids to act out transformations through drawings instead of words. I'll go over the five steps on the board, show a quick example of how one might draw and transform a figure silently, and remind students that they must guess the rule, not just the type. Then, I'll organize the class into four groups, distribute materials, and begin the first round. After each round, I'll announce the winning team and have them demonstrate their transformation on the board while I collect the group grids as evidence of understanding.	Students are expected to stay with their group, participate respectfully, and focus on the task. The student who picks up the card should draw carefully and apply the transformation rule correctly on their grid without talking. Group members must observe the drawing closely, discuss quietly, and agree on their final answer before signaling the teacher. The winning group should confidently explain their reasoning on the board using correct transformation vocabulary and notation. All students should turn in their completed grids at the end for review.

Explain: *How will you help students make sense of the experiences they had in the exploration?*

Goal	What you will say / do	Expected student responses / actions
The goal is to allow students to clearly communicate their understanding of transformations by explaining the reasoning behind their grid drawings. This part allows students to connect the visual process of applying a transformation to the mathematical explanation using coordinate rules and vocabulary.	After each round, I will invite the winning group to come to the board and present their transformation. They will redraw their figure and its image, then explain which transformation they performed and how they know it matches the given rule. I will guide their explanation by asking clarifying questions such as, "How do you know this was a reflection and not a translation?" or "What stayed the same in your figure after the transformation?" I will use this time to correct any misconceptions, emphasize key vocabulary, and ensure that all students understand the reasoning process.	Students are expected to listen attentively and engage while their peers present. The group presenting should use correct mathematical language, describe their process clearly, and justify how their drawing demonstrates the transformation rule. The rest of the class should observe, compare with their own grids, and be ready to ask or answer questions for clarification. All students should use this time to strengthen their understanding and make connections between visual and algebraic representations of transformations.

Elaborate: *How will you connect this experience with other ideas or real world applications?*

Goal	What you will say / do	Expected student responses / actions
The goal is to help students connect their understanding of translations and reflections to real-world contexts and to see how these transformations appear in everyday life, technology, and design. This stage allows students to apply mathematical thinking beyond the classroom and recognize the relevance of geometry in their surroundings.	After the game and board explanations, I will lead a short class discussion that connects what students practiced to real-world applications. I'll provide examples, such as reflections in mirrors, symmetry in architecture, and logo designs (like the Target or Batman logos), as well as translations in video game graphics, tiling patterns, and animations when an object moves smoothly across a screen. I will ask students to share examples they can think of from daily life like reflections in water or window glass, or sliding movements in sports and robotics. To tie it back to the math, I'll point out that designers, engineers, and programmers use coordinate transformations to model these effects precisely.	Students are expected to participate in the discussion by identifying or describing real-world examples where transformations occur. They should make connections between the transformations they modeled on grids and how those same concepts are applied in art, technology, and physical movement. Students should be able to explain how a translation or reflection maintains congruence in shape and size but changes position or orientation.

Evaluate: *How will you assess the extent to which learning goals are met, during / by the end of the lesson?*

Goal	What you will say / do	Expected student responses / actions
The goal is to assess students' understanding of translations and reflections throughout the activity, ensuring they can apply transformation rules accurately, use correct mathematical language, and justify their reasoning both individually and collaboratively.	During the game, I will circulate around the classroom, observing each group's work on their grids and listening to their discussions. I'll check that students are correctly applying transformation rules from their cards and identifying the types of transformations when guessing. I will ask quick, formative questions such as, "How do you know that's a reflection?" or "What would your coordinate rule look like for that move?" After each round, I will collect the group grids as student artifacts to review accuracy and clarity in their drawings. I will also assess understanding during the winning team's explanation at the board, listening for correct vocabulary,	Students are expected to stay engaged, collaborate respectfully, and show their reasoning clearly on their grids. Each student should participate either by applying the transformation, discussing the group's answer, or helping explain during the class demonstration. Their accuracy, effort, and ability to communicate how they know a transformation is correct will demonstrate their understanding. All completed grids and class discussions will be used as formative assessment evidence for mastery of translations and reflections.

	justification, and reasoning.	

Attach (link) to this document: any slides / handouts / formative assessments you will be using during your lesson.

https://docs.google.com/presentation/d/1RpbqNvOZs2RGWAtdsgfMV4j20KDG9QxCPI4RNpKuZ7A/edit?usp=sharing

https://docs.google.com/document/d/1P7ZOG8_kszm3wJX3M8JwxSZW9lwsq0SbcJgSBoT412k/edit?usp=sharing

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