

## Transformations Build a Game Project

Moving polygons and geometric shapes around a grid can be a difficult math concept to visualize.

One of the best ways to understand transformations is make them real: things we move around with tracing paper, reflection through mira's, and physically slide across a page or desk. Transformations, with some creativity, could easily be turned into a game.

Your project is to **Build a Transformation Game for 1-4 people**. The game can be an actual board game, a paper and pencil game, or even a physical movement game. The goal of this game is to be a math tool that helps teach students about transformations. If your game is effective at teaching transformations to students, it may be used in future grade six math classes.

Some Materials that can be used are:

- Use types of poster paper
- colouring supplies,
- decks of cards
- dice
- cardstock
- grid paper
- Mira
- Tracing paper
- additional materials that student requires for project

The majority of the work on this project will be done **during school hours**. If you require specific supplies, please speak with your teacher to see if the school may have these supplies on hand.

**You may work in teams of 1-4 for this project.** If you choose to work with others, you will be responsible to complete a self-assessment form to keep track of your contribution to the project. It is expected that each group member will make equal contribution to this project.

## Rubric

### **Use of proper transformation language (5).**

When designing your game, proper transformation language must be used. This allows the players to learn about transformations, how to communicate about them clearly and shows your teacher that you understand the different concepts related to transformations

Some examples of proper language are:

- use of horizontal and vertical reflection lines through x-axis or y-axis
- reflections/flips
- slides
- rotations (clockwise and counterclockwise)
- successive and combined transformations
- Original Shape or Shape ABCD, polygons

### **Creativity of Game Concept (3)**

The best way to encourage someone to play your game is to give it a creative hook - something like a storyline or unique gameplay features that draws the player into the game. This can include using extra materials (like dice, cards, shapes), adding an artistic element to the game, or even designing a game that uses physical movements to teach transformation concepts.

### **Gameplay (5)**

One way to tell the quality of a game is how easy or difficult it is to play. As you build your game, it will be important for you to pay attention to some of the following gameplay features:

- Is there an instruction manual?
- How many people can play at once?
- Is it competitive or cooperative?
- Am I playing the game with manipulatives or just paper and pencil?
- Does the game include slides, reflections and rotations as part of the gameplay?

### **Accuracy of Transformations (5)**

The purpose of our Build a Game Project is to create an education game for ourselves and others to learn and practice transformations. In order to do this properly, there must be some way to make sure the game players are accurate with the transformations they are doing.

Examples of ways that accuracy can be supported are:

- other players double check transformations to make sure they are accurate
- providing specific directions that only allow for only one transformation

### **Quality of final product (2)**

For people to enjoy and understand the game they are playing, it should be of good quality. A game that is hard to understand, built with poor attention to detail, instructions that are unclear and manipulatives that are too delicate will take away from the game play. Make sure that your game is created with high quality. Some ways to make sure your game is of high quality are

- create a draft game to work out initial design areas and problems
- pay attention to adding clear writing, bold colours and interesting designs
- when using extra materials, make sure they are of high quality (paper, objects, dice, etc)

## Group Project Self - Assessment Recording Sheet

You have chosen to work in a group to create your Transformations Build a Game.

**List Group members in the spaces below:**

\_\_\_\_\_

**Self Assessment - Name:** \_\_\_\_\_

**I have contributed to Build a Game project by working on:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**I would record my contribution to the Build a Game Project as (place an "X" along this line):**

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small contribution

contributed equally

large contribution

**I would record the contribution of my group members to the Build a Game project as (place and "X" along this line):**

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small contribution

contributed equally

large contribution

**I would like to acknowledge one group member who did excellent work on our Build a Game project**

**Who are you acknowledging:** \_\_\_\_\_

**How did they do excellent work:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**What would change in the Build a Game Project in the future:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_