

# **Math Quizz**

*GDD (Game Design Document)*

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# GAME CONCEPT

## INTRODUCTION

Math Quizz is a game 2D that mixes quick thinking and puzzles with different mathematical equations and algebra. The game consists of random equations according to the active modifiers and a table with random numbers and the correct answer, the player needs to move the squares through the empty spaces to place the correct answer in the lower right corner to go to the next level.

## GENRE

The genre of the game consists of puzzle inspired in gameplay of “Klotski sliding blocks”, mixed with quick thinking about various mathematical equations and algebra. With modifiers referring to each type of equation, making customized experiences and learning more focused on a theme possible.

## PLATFORM

The game will be developed for mobile.

# GAME PROPOSAL

## MARKET ANALYSIS

Puzzle games in mobile are increasingly popular recently, because of the ease of playing anywhere, but several games that have been released are still not innovative or have boring gameplay.

In general, the most negative comments about puzzle games on mobile are about repetitive patterns, lack of progression, unbalanced levels, inconsistent difficulty, and lack of tutorials.

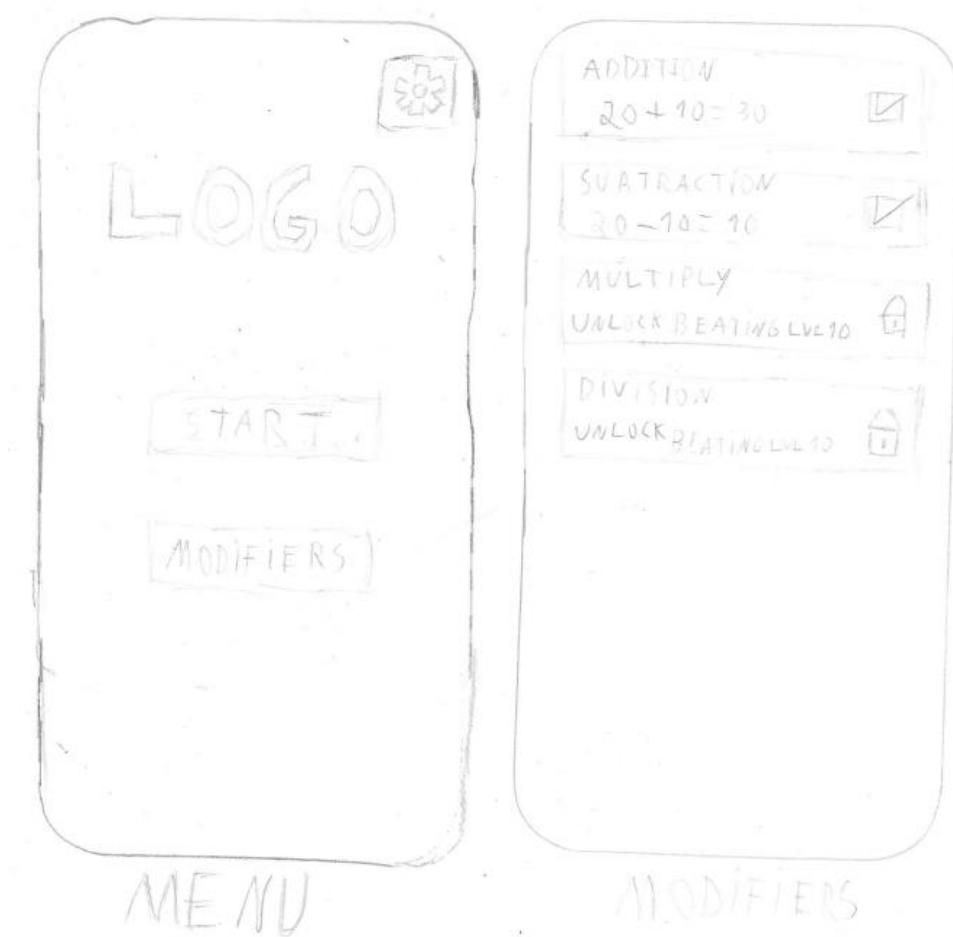
## PROPOSAL

The proposal is to offer a game with more randomness and gameplay that goes beyond just getting the answer right, incorporating mechanics that encourage other aspects of reasoning, with the first mechanic inspired by "Klotski".

Also included is a progression system where the player unlocks new modifiers (types of equations) as they achieve goals such as "reaching level 10 with the addition modifier activated", as well as allowing the player to activate or deactivate modifiers for a more customized experience and to avoid frustration if they don't feel ready for a particular equation.

# GAME DESIGN

## GAME MECHANICS + GAMEPLAY



In the menu, we have the options for modifiers, by default the addition and subtraction ones are unlocked and activated, all the other locked modifiers appear with a padlock and a description of how to unlock them, the already unlocked modifiers show a basic example of the equation.

If the player doesn't have any modifier selected, the game should display a message preventing them from starting a game.

Future changes for the modifier screen are:

- Adding new equations;

- Adding a panel with a more detailed explanation about the equation;

Future changes for the menu screen are:

- A new panel with new types of mechanics that go beyond "Klotski";

- A new panel with player statistics (highest level achieved, unlocked modifiers, etc.).



The game screen is divided into 3 parts.

Top:

- It has a visible timer that, when it runs out, the player loses. The time is only increased when the player gives a correct answer. (Both the initial time and the increment can be modified according to the player's preferred difficulty level);
- It has a text indicating the player's current level;

Center:

- In the center, there is a 5x4 table, and each position has a square with a random number. (It needs to be flexible for possible other table formats, which can be defined by the player according to their preferred difficulty level);
- The program must randomly select one of the squares to place the correct answer;
- The program must make the random numbers close to the correct answer;
- The empty space always starts in the bottom right corner;
- Only squares adjacent to the empty space can be moved. (Adjacent squares have an animation of increasing and decreasing size);
- When a square with a number is in the bottom right corner, the number is displayed on the lower screen. (The number has an animation of increasing and decreasing size to signal that it is clickable);
- To select the answer, you must click on the number on the lower screen of the question. (If the answer is correct, it increments the time and moves on to the next equation. Otherwise, the player loses the game);

Bottom:

- The equations are taken from a queue that contains all the modifiers selected by the player;
- This panel must be completely customized to accommodate all possible types of equations;
- The missing number can be from other parts of the equation. (Example:  $X + 10 = 20$ );
- If the equation has more than one missing number, the answers must be placed in order from left to right of the equation. (Example:  $X + Y = 20$ , first the number X must be placed and then the number Y);
- To confirm the number in the position, you must click on the number in the respective square of the equation;

Future changes for the game include:

- New mechanics for reasoning challenges;
- Possibilities to change the mechanic for each level passed;
- Allowing several equations on the lower screen. (Can use images and graphics);
- Other themes for user comfort.

# TUTORIAL



The game is simple to play.

1.0 - At the top of the screen, we have the time and the current level.

1.1 - If time runs out, you will lose.

2.0 - In the center of the screen we have squares with different numbers.

2.1 - The squares that can move will be increasing and decreasing in size (Can only move squares into empty space).

2.2 - The objective is to take the square with the correct answer to the lower right corner of the screen.

2.3 - When a square with a number is in the corner (2.2) the number on the lower screen will increase and decrease in size showing that it is clickable (Read 3.3 and 3.4).

3.0 - At the bottom of the screen, the proposed question will appear and the empty space for the expected number.

3.1 - The numbers are random.

3.2 - The types of accounts vary according to the active modifiers.

3.3 - When you click on the answer, if it is correct, you will go to the next level, with another question and gain more time.

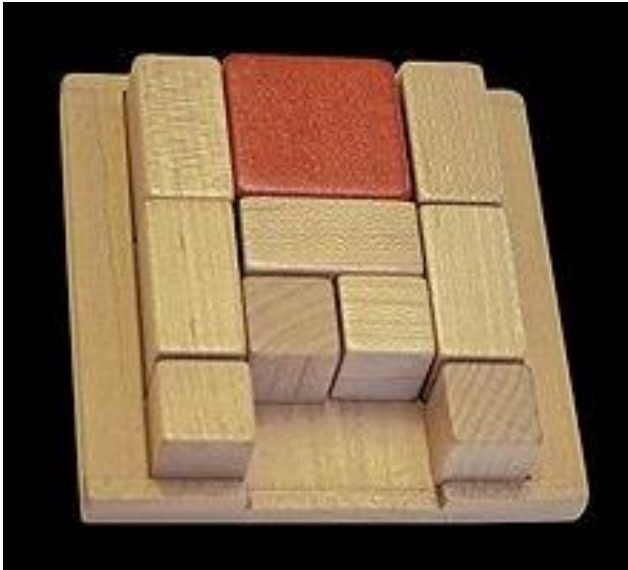
3.4 - If the answer is wrong, you lose.



# REFERENCES

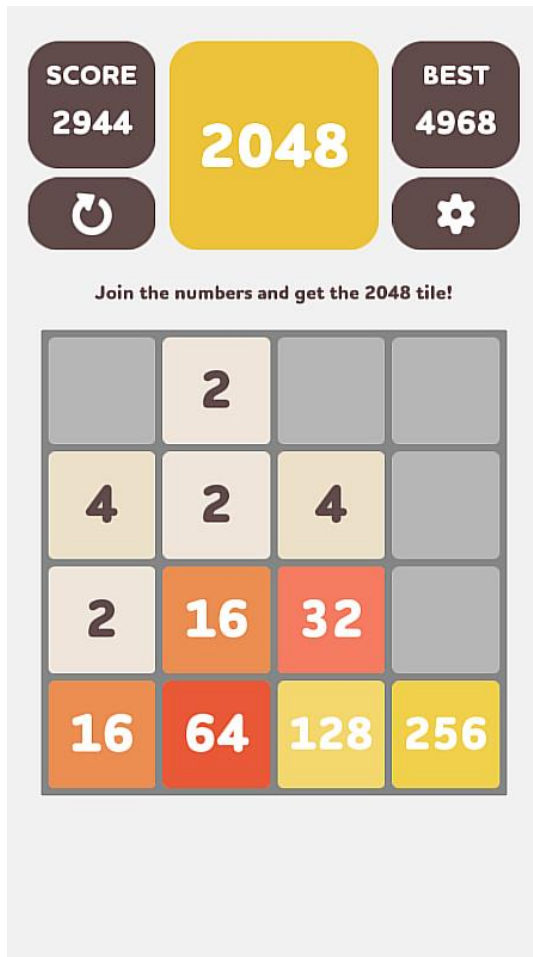
## Klotski

Like other sliding-block puzzles, several different-sized block pieces are placed inside a box, which is normally 4×5 in size. Among the blocks, there is a special one (usually the largest) which must be moved to a special area designated by the game board. The player is not allowed to remove blocks, and may only slide blocks horizontally and vertically. Common goals are to solve the puzzle with a minimum number of moves or in a minimum amount of time.



## 2048

Sliding block puzzle game that was created by Gabriele Cirulli in 2014. The game's objective is to slide numbered tiles on a grid to combine them to create a tile with the number 2048. The grid is typically a 4x4 board, and each turn allows the player to slide all the tiles in one of the four cardinal directions (up, down, left, or right).



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ENTER

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## Math Exercises for the brain

Math Games - Tricky Riddles is an addictive free brain puzzles & math game with a series of tricky riddles teasers for training the brain. Interesting riddles and tricky tests will improve your mind.

