**GAME DESIGN DOCUMENT**

Practice Math

Problem Solver



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# Game Analysis

In Problem Solver, the player will be solving math equations. They will have shapes that they can move around to help them visualize the problem at hand. They will gain points for every equation they solve correctly. They will not be set back if they do not get the question right, but they will instead be able to try again. There is also a timer feature which they can choose to turn on or off at any time. It will turn green if they answer the equation faster or as fast as the last fastest time they answered.

# Mission Statement

The educational game, Problem Solver, for the PC, will help you become more accustomed to math equations and help you familiarize and visualize problems given to you.

# Learning Outcomes

The learning targets for Problem Solver is to first, help kids visualize math equations in a form they can understand in a low stakes environment. The timer will be there for kids who really want to challenge themselves. The shapes will be the main factor in helping them visualize the problem so they can move them around however they choose to.

Next, they must also be able to become familiar with the math equations so that they can become comfortable solving them. Ensuring that they don’t lose anything is key, so they won’ get frustrated with the problem.

Finally, letting them have autonomy for deciding whether the timer is on or off gives them a choice and empowers them on their journey in solving math equations.

# Genre

Educational

# Platforms

PC

# Target Audience

Kids in K-5th grade looking for a tool to familiarize and visualize math problems.

# Gameplay

## Overview of Gameplay

Problem Solver will be an educational game designed for PC. It will be going all in on the educational side, allowing the player to understand the math problems in their own way. The player being able to move virtual shapes to help understand the equation at hand will be the main selling point. Problem Solver will only have one game mode and one difficulty.

## Player Experience

You will be met with a screen that shows you how many problems you have solved at the top middle of the screen, what the current equation is in the middle of the screen, and an answer box for you to type the answer into. There will be 20 total shapes you will be able to move around the screen in between your points and the equation. In the bottom left, there are instructions for how to turn on the timer and reset the shape positions. The timer will appear under the answer box if you choose to turn it on.

## Gameplay Guidelines

This game is meant for K-5th grade, so no obscene language or themes. Nothing beyond Teen rating.

## Game Objectives & Rewards

This is where you present more details on how the gameplay will motivate the player to progress through the game. Discuss rewards and penalties and the difficulty level. You can use the table below to help break down objectives and rewards.

|  |  |  |
| --- | --- | --- |
| Rewards | Penalties | Difficulty Levels |
| They will get more points in the problem solved section. | The equation will turn red, indicating that the answer was wrong. They will not get or lose points. | They will have addition, subtraction and a mix of the two with at most 3 variables. |

## Gameplay Mechanics

This is the where you start getting more specific on how some of the systems in the game will work. This includes how characters move in the game, what gameplay actions are available, item inventory and attributes, and how the game progresses from level to level.

|  |  |
| --- | --- |
| **Character Attributes** |  |
| **Character** | **Movement Abilities / Actions Available** |
| Player | Enter an answer into the answer box, move shape, and toggle a timer. |
|  |  |
| **Game Modes** |  |
| Normal | The player will solve addition and subtraction problems with at most 3 variables. |
| **Scoring System** |  |
| **Points/Coins/Stars/Grades/Etc.** | **How it’s Awarded & Benefits** |
| Problems solved | They are awarded this when they solve equations correctly. The higher the number, the more equations they’ve solved correctly. |

# Control Scheme

Describe the control setup for the game. Does your game use touch input, a controller, or mouse & keyboard? Discuss the functionality of each button/touch. It may help to insert a diagram/pic to help explain the actions.

|  |  |
| --- | --- |
| **Button/ Touch Input** | **Action it Performs** |
| Left Click | Selecting either the answer field or a shape |
| R | Resets the shape’s positions |
| T | Toggles the timer on or off |

# Game Aesthetics & User Interface

The game will utilize basic Unity assets such as the 3D shapes and UI elements that are given in any Unity 3D project. Whether the player get something right or not, the color of certain text will change based on which is more relevant. If the answer was correct, the Problems Solved text will change to yellow for a second to indicate that the number has increased. If it was incorrect, the equation will turn red for a second to indicate that it needs another answer. If the player has the timer on and answer a question faster than the previous tries, the timer will turn green to indicate that was the fastest they’ve solved an equation.

Important text pertaining to the equation at hand will be in the middle of the screen, the points will be at the top middle and other instructions will be off to the side in the bottom left corner.