

### **Calculator Mode**

- The application shall include a calculator mode that performs basic arithmetic operations.
  - The calculator shall support addition, subtraction, multiplication, and division.
  - Each operation must be accessible via clearly labeled buttons on the calculator interface.
- The calculator mode shall provide a user-friendly interface suitable for children.
  - The interface must feature large buttons and bright colors.
  - The design shall include fun animations or sounds to engage the user.

### **Math Problems Mode**

- The application shall offer a math problems mode focused on teaching basic arithmetic.
  - The mode shall include addition, subtraction, multiplication, and division questions.
  - Questions must be generated randomly to provide varied practice.
- The math problems mode shall provide instant feedback on user answers.
  - Correct answers shall yield XP and display a cat fact.
  - Incorrect answers shall prompt a review of the correct answer and provide an explanation.

### **Math Drill Mode**

- The application shall feature a math drill mode for rapid practice of addition and subtraction.
  - The mode shall operate on a timer to encourage quick responses.
  - Users must be able to set the duration of the drill session.
- The math drill mode shall track user performance and progress.
  - Users shall receive XP based on accuracy and speed.
  - A summary of performance must be displayed at the end of each session.

### **Experience Points (XP)**

- The application shall include a reward system based on XP accumulation.
  - Users must receive XP for completing math problems and drills correctly.
  - XP can be used to unlock special avatars in the shop.
- The XP system shall be visible to users at all times.
  - The home screen shall display the current XP total.
  - A progress bar showing XP toward the next level must be included.

## **Home Screen Navigation**

- The application shall feature a clear and intuitive home screen.
  - Buttons must be labeled with recognizable icons and text.
  - The layout must accommodate children's attention spans with bright visuals.
- The home screen shall provide direct access to all game modes.
  - Each mode button must be easily distinguishable.
  - The buttons must respond with animations to indicate they are clickable.

## **Animal Fact Pop-up**

- The application shall display animal facts in a pop-up window upon correct answers.
  - The pop-up must include colorful visuals related to the fact.
  - The pop-up must have a clearly labeled close button for easy dismissal.
- The animal facts presented must be educational and engaging.
  - Facts should be simple and suitable for the target age group.
  - The facts should focus on cats, with a few general animal facts included.

## **Mistake Review**

- The application shall allow users to review their mistakes after answering questions.
  - Users must have access to the correct answer and an explanation.
  - The review should be initiated by a button press after an incorrect answer.
- The mistake review system shall provide encouragement for improvement.
  - Messages should encourage users to try again without discouragement.
  - A positive reinforcement message must follow each review session.

## **Excitement to Play**

- The application shall create an engaging user experience to promote excitement.
  - The app must include animations and sound effects that appeal to children.
  - The onboarding process should be fun and interactive.
- The app shall feature rewards and achievements to motivate continued use.
  - Users should receive notifications for milestones achieved.
  - Avatars and XP awards must be visually appealing to keep users engaged.

## **Unlocking Avatars**

- The application shall have a system for unlocking and collecting avatars.
  - Users must unlock avatars using XP earned through gameplay.
  - A gallery should display available avatars and their requirements.
- The avatar collection system shall provide a sense of achievement.
  - Users should receive notifications upon unlocking new avatars.
  - Users must be able to showcase their avatars on their profile.

**Validate Math Question Mode**

- Top-Level Requirement: The application shall be tested to ensure that the math question mode correctly assesses answers and provides XP and animal facts.
  - Tests must verify that correct answers trigger XP awards and facts.
  - The testing process must document any discrepancies in the reward system.