1. The game will have a world with an ocean, islands, and environmental elements
    1.1. The game will generate 3-5 explorable islands per game session
        1.1.1. The game will mark explored islands visually to prevent re-exploration
2. The game will maintain a day/night cycle that affects gameplay visibility and difficulty
    2.1. Map visibility will decrease during the night
    2.2. Difficulty will increase during the night
    2.3. The day/night cycle should correspond to an in-game clock loop that corresponds to 24 real world minutes
3. The game will generate grade-appropriate math problems aligned with 8th-grade standards
    3.1. The game will show one of 5 different types of problems
        3.1.1. The game will create linear equation problems (ax + b = c format)
        3.1.2. The game will create systems of equations problems
        3.1.3. The game will create geometry problems (area, perimeter, volume)
        3.1.4. The game will create percentage and ratio problems
        3.1.5. The game will create word problems with real-world context
    3.2. The game will present math problems through an interactive UI overlay
    3.3. The game will provide immediate feedback on answer correctness
    3.4. The game will track problem-solving accuracy rate per student session
    3.5. The game will adjust problem difficulty based on student performance
4. The player will be able to explore the ocean and travel to islands on the raft
    4.1. The player can use WASD or arrow keys to control the raft
    4.2. The player will need to solve math questions to find the distance and slope of the line from their current position to the next island
        4.2.1. When the slope and distance have been found, the coordinates of the island will be displayed
    4.3. Randomly while traveling the ocean, a shark will attack the raft
        4.3.1. There will be a greater chance of a shark attack during the night
        4.3.2. The player must answer a question in order to deal damage to the shark
            4.3.2.1. If the player answers correctly and in time, the player will deal damage to the shark and the shark will deal no damage
            4.3.2.2. If the player answers incorrectly or runs out of time, the shark will take no damage and the shark will deal damage to the raft
                4.3.2.2.1. The damage the shark deals will scale with difficulty, quality of ship, and type of shark
            4.3.2.3. This process will repeat until the shark is fended off or the raft is destroyed
    4.4. There will be a separate island with places for players to upgrade their gear
        4.4.1. The player will buy the upgrades with resources
        4.4.2. The player will be able to buy rafts
        4.4.3. The player will be able to buy resources
        4.4.4. The player will be able to buy weapons
        4.4.5. The player will be able to buy armor
        4.4.6. The player will be able to buy player upgrades
5. The game will display all necessary information
    5.1. The information will only be displayed during the day
    5.2. The game will display all resource quantities

- 5.2.1. Resources will be stored in an inventory location for the player
  - 5.2.1.1. Player can toggle inventory from the backpack icon or B key
- 5.3. The game will show the current date and time of day.
- 5.4. The game will display raft health with visual health bar
  - 5.4.1. The UI for the raft health and visual health bar should display towards the bottom right of the screen as separate icons.
- 5.5. The game will show math problem text, input field, and submit button
  - 5.5.1. The math problem text should display as a UI popup
- 5.6. The game will display reward/penalty preview before answer submission
- 5.7. The game will display the answer to the question if the player answers incorrectly or runs out of time
6. The game will trigger math challenges when the player enters island zones
   - 6.1. The player will have the option to decline the challenge
   - 6.2. The player will get a reward if the challenges are completed in time
   - 6.3. The player will lose resources if the challenges are not completed in time
7. The player will be able to explore the islands
   - 7.1. The player can use WASD or arrow keys to move around the island
   - 7.2. The islands will contain loot
     - 7.2.1. The quality of loot will depend on progression and island difficulty
   - 7.3. The islands will spawn zombie enemies during island raids
     - 7.3.1. The number and difficulty of zombies will increase proportionally with difficulty
     - 7.3.2. 1 to 3 zombies will be spawned on each island
     - 7.3.3. Players will attack zombies by running into them or by zombies running into them
     - 7.3.4. The player must answer a question in order to defeat the zombie
       - 7.3.4.1. If the player answers correctly and in time, the player will defeat the zombie
       - 7.3.4.2. If the player answers incorrectly or runs out of time, the zombie will take no damage and the zombie will deal damage to the player
         - 7.3.4.2.1. The damage the zombies deal will scale with difficulty
     - 7.3.5. Players will be rewarded with resources upon defeating a zombie
8. The game will contain resources
   - 8.1. Players will begin the game with no resources
   - 8.2. The game will contain five resource types: wood, scrap, rope, food, and water
   - 8.3. The player will get resources through completing island challenges, loot raids, defeating zombies, or answering problems
     - 8.3.1. More resources will be given for harder questions
     - 8.3.2. Answering questions incorrectly will deduct resources
       - 8.3.2.1. More resources will be deducted for harder questions
9. The game will contain different types of equipment
   - 9.1. Players will start the game with first tier of raft and no weapon, armor, or upgrades
   - 9.2. There will be 4 tiers of equipment
     - 9.2.1. Higher tiers of equipment will cost more resources
   - 9.3. The game will contain weapons
     - 9.3.1. Better weapons will deal more damage and increase problem difficulty
       - 9.3.1.1. There will be 4 different tiers of weapons

9.4. The game will contain rafts
- 9.4.1. Rafts will need resources to maintain health
- 9.4.2. Rafts will lose 20 health per day when resources reach zero
- 9.4.3. Better rafts will travel faster, increase problem difficulty, and use more resources to maintain
  - 9.4.3.1. There will be 4 tiers of rafts
  - 9.4.3.2. Rafts will be repairable with resources

9.5. The game will contain armor
- 9.5.1. Better armor will reduce damage taken and increase problem difficulty
  - 9.5.1.1. There will be 4 tiers of armor

9.6. The game will contain player upgrades
- 9.6.1. Upgrades will consist of night vision goggles and running shoes
  - 9.6.1.1. Night vision goggles will improve visibility at night
    - 9.6.1.1.1. The player will be able to see as if it was daytime
    - 9.6.1.1.2. The UI will have the same visibility at night as during the day
- 9.6.2. Running shoes will allow the player to run 1.5x faster on land
- 9.6.3. Upgrades will last permanently once obtained

10. The game will have a pause menu
- 10.1. The game will be paused while the player is in the pause menu
- 10.2. The menu will contain a slider to adjust volume
- 10.3. The menu will allow the player to restart the game
- 10.4. The menu will allow the player to view game control instructions

11. The game will contain sound
- 11.1. Background music will be played
  - 11.1.1. More intense music will be played during battles
- 11.2. A rewarding sound effect will sound when a question is answered correctly
- 11.3. A disappointing sound effect will sound when a question is answered incorrectly or time runs out

12. The game will be 2D and played from a top-down view
13. The game will end when raft health reaches zero