A Project of STEM Game

This is a team project. Your team needs to collaboratively contribute to the project. The goal of the project is to evaluate how to integrate STEM related subject in real-world scenarios through design activity.

Background:

As student assistants, your team needs to design a curriculum for a STEM summer camp for middle school students and create a learning website with the curriculum and instructional materials. The curriculum includes a series of computer games, animation, or simulation projects to cover multiple learning objectives in various disciplines. The curriculum is based on project-based learning and constructionism, meaning that students will learn through creating computer artifacts. Therefore, your team needs to design detailed instructional materials so that students can follow.

Learning Objectives:

After completion of the project, middle school students will be able to describe and apply major **math concepts** in *Common Core* and apply related **computer science standards** in game design process.

Duration: 4 weeks

Game Engine: Scratch/GameMaker

Total Points: 300 (group grades will be distributed to each team/student equally with adjustment based on your contribution to the entire work).

Project Requirements:

1. Each team of 3-4 students will need to identify ONE major math concept for middle school students by searching Common Core Standards on the Internet, e.g., coordinate plane. Create one web page to paste the standards. (10 points)
2. Each team needs to search on the Internet and find 5 multiple-choice questions about the selected concept and paste the questions on the same individual web page. (10 points)
3. All teams integrate their multiple choice questions together and reorganize all questions as a pre-test. Create a new page for the pre-test. (10 points)
4. All team integrates their math concepts together and reorganize all concepts on a new page. (10 points)
5. Each team needs to create a simulation or game to apply the selected math concept. Use Scratch to create the simulation/game. Make sure to have a title at the beginning of the simulation/game. Edit the previous web page to explain how the simulation/game applies the selected concept. Use snapshots of the created game. (10 points; Simulation/Game 100 points)

6. Each team needs to edit their individual web page to explain what exactly the selected concept is, e.g., what is coordinate plane and how to find x and y value. (10 points)
7. Each team needs to edit their individual web page to give a few examples that the selected concept can be used in simulation/games and guide students to brainstorm what simulation/games they can create to apply the concept. (10 points)
8. At the end of the web page, each team needs to create a step-by-step instruction of how your sample simulation/game is created. (100 points)
9. All teams work together to create a home page to introduce the concepts of math in game/simulations. At the navigation section, create hyperlinks to include all works, the pre-test and the individual web page that each team creates. The format of the web site should look like following: (30 points)

Home	Pre-tests	Math concepts	Game 1	Game 2	Game 3

Group Contribution:

What is the scale of each team's contribution to the entire work?

Team 1_____

Team 2_____

Team 3 _____

Team 4_____

Team 5_____