MARYVILLE UNIVERSITY

Caine's Arcade
Grade Band Elementary

Physical Science	**Next Generation Science Standards**
1-PS4-1	Investigate how objects interact (game movement, sensory triggers).
3-PS2-1	Investigate the effects on how force affects motion.
4-PS3-4	Design a device that converts energy(smart motor) to motion (moving part of the arcade game).
5-PS2-1	Explain effects of gravity and force on a game component.
Engineering Design	
K-2 3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
K-2 3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints.
K-2 3-5-ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Reading	**English Language Arts (Reading & Writing)**
RI.2.3 to RI.5.3	Describe steps in making the arcade game.
SL.2.1 to SL.5.1	Engage in collaborative game planning and sharing.
SL.3.4 to SL.5.4	Present how the game works using logical explanations and vocabulary.
Writing	
W.2.2 to W.5.2	Write to explain the purpose, setup, and motor function in your arcade game.

Measurement and Data	**Mathematics**
2.MD.1 to 5.MD.2	Measure lengths, time, and distances (e.g, ball travel, game duration).
4.MD.5 to 5.MD.3-5	Apply angles and 3D shapes in design layout..
Operations & Algebraic Thinking	
3.OA.3 to 5.OA.3	Use patterns or operations in gameplay mechanics or scoring logic.
Geometry	
5.G.1-2	Use graphing or data analysis of game trials (e.g., number of wins/losses).
Mathematical Practice Standards	**Modeling & Problem Solving**
MP2	Reason quantitatively about garden space and sensor data.
MP4	Model a real-world problem using math.
MP5	Use appropriate tools (e.g., sensors, measurement tools, graphing tools).
Computer Science	**Missouri K-5 Draft Standards**
DA.K-5.1	Collect and represent data in various ways.
AP.K-5.2	Develop programs with sequences and simple loops to solve problems.
AP.K-5.3	Break down complex tasks into smaller steps (build, wire, program, decorate).
AP.K-5.4	Test and refine programs based on feedback or performance.
IC.K-5.1	Understand how computing impacts daily life and the environment.

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