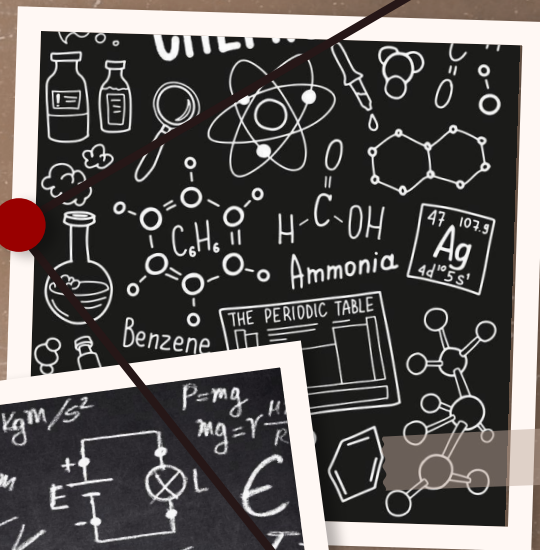


# MURDER MYSTERY GAME INTEGRATIVE PROJECT DELIVERABLE 1

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# PROJECT IDEAS



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<u>PROJECT IDEAS</u>	<u>DESCRIPTION</u>
<b>Maths and Physics Simulator</b>	<ul style="list-style-type: none"><li>- simulate physical phenomena that are intimately connected to math concepts, as seen during Cegep</li></ul>
<b>Waves and Optics Lab Game</b>	<ul style="list-style-type: none"><li>- (visualizing abstract formulas from Waves and Optics physics course through graphics and animations)</li></ul>
<b>Climate Change Simulator Game</b>	<ul style="list-style-type: none"><li>- see how each action YOU take affects the world around you, and the science behind it</li><li>- allow players to explore 4 phenomena that occur due to human actions and contribute to climate change, through mini-games that simulate events, coupled with scientific explanations and solutions.</li></ul>
 <b>Murder Mystery game</b>	<ul style="list-style-type: none"><li>- players solve science and math-based challenges to uncover clues and eliminate suspects</li></ul>

# SCIENCE CONCEPTS

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## OPTICS

light rays bending, eye defects, power of the lens, image convergence



## CHEMISTRY

enthalpy (energy difference between products & reactants), bond energies, calorimetry

## KINEMATICS

movement of objects thrown in the air under gravity, variables



## MATH

matrices, properties, manipulations





## 02 CONCEPT ASPECTS

- Main aspects of the concept: problem addressed, proposed solution, solution category.
- Possible variable parameters

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# MAIN ASPECTS

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## PROBLEM ADDRESSED

Math and science concepts are unengaging when taught in a traditional way



## PROPOSED SOLUTION

An approach to learning through play, applying the concept in a practical way



## SOLUTION CATEGORY

Gamified learning, problem-based learning, visualization

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01

## HINT/THEORY BUTTONS

Get small hints when stuck on a challenge, encourages problem solving

02

## CLUE WINDOW

a clue window will appear, displaying a piece of information that helps narrow down the list of suspects

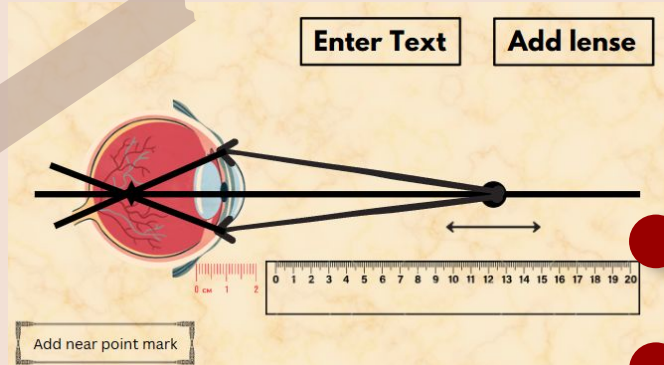
03

## LIMITED ATTEMPTS

Limited attempts to enter the correct answer, encourages critical thinking



# REFRACT LAB



01

## VARIABLE PARAMETERS

- Object distance from the eye
- Lense addition
- Near point marks (on eye and ruler)

02

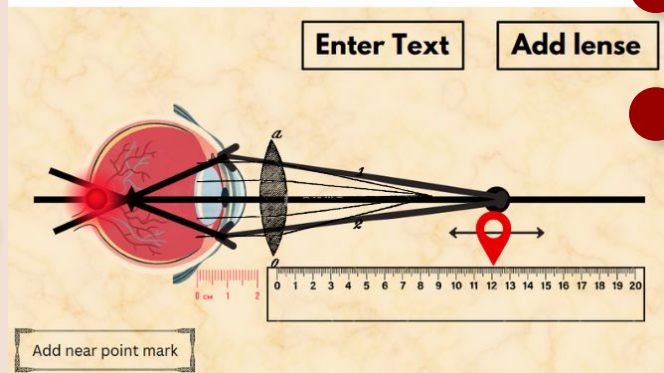
## TYPICAL INPUT

- Mouse → Drag slider
- Mouse → Click buttons
- Keyboard → Values

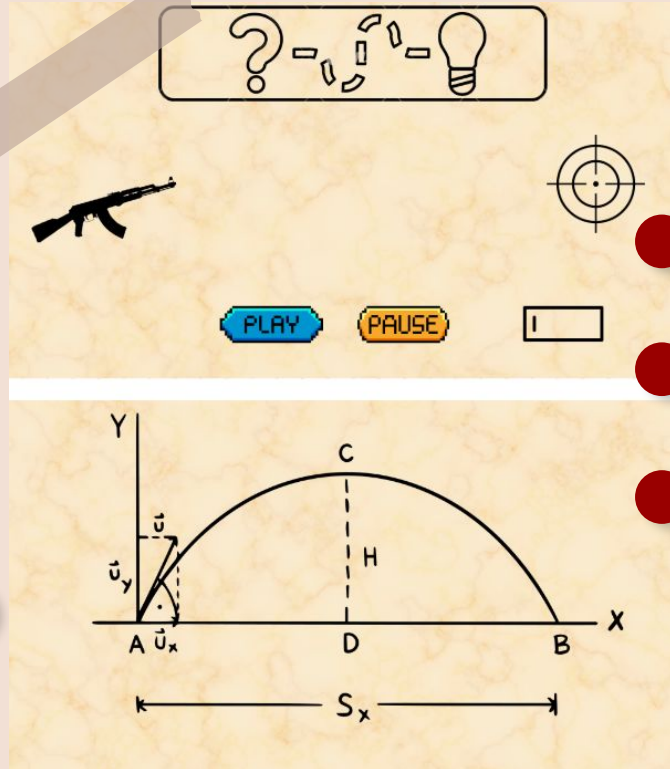
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## EXPECTED OUTPUT

- Rays move
- Marks added to interface
- Lense added triggers right/wrong ans event



# PROJECTILE PUZZLE



01

## VARIABLE PARAMETERS

- Play/Pause buttons control animation
- Initial height/angle control bullet trajectory (x,y coordinates)

02

## TYPICAL INPUT

- Keyboard → Numerical values
- Mouse → Click on buttons

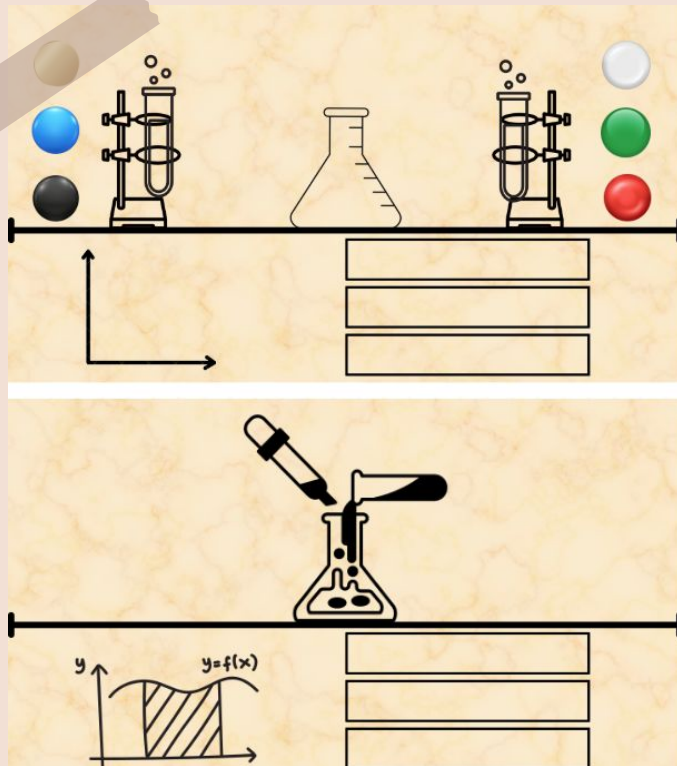
03

## EXPECTED OUTPUT

- Play animation
- Pause animation
- Bullseye trigger right ans event
- Else, wrong ans event



# TOXIC TINTS



01

## VARIABLE PARAMETERS

- Nature of solution

02

## TYPICAL INPUT

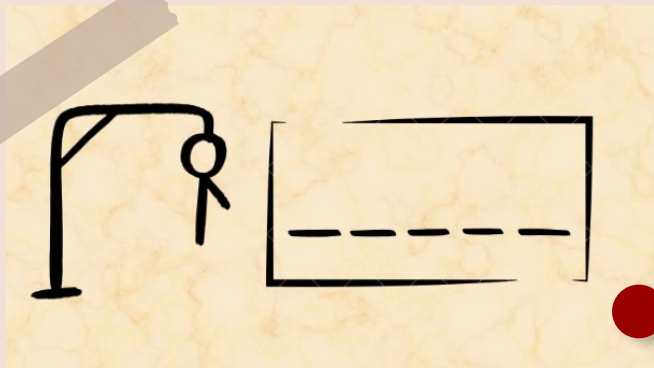
- Mouse → Buttons
- Mouse → Drag Tubes

03

## EXPECTED OUTPUT

- Tubes content change colors
- Mixing solutions → Animation (R/W)
- → Dynamic enthalpy graph
- → Boxes display info of reaction

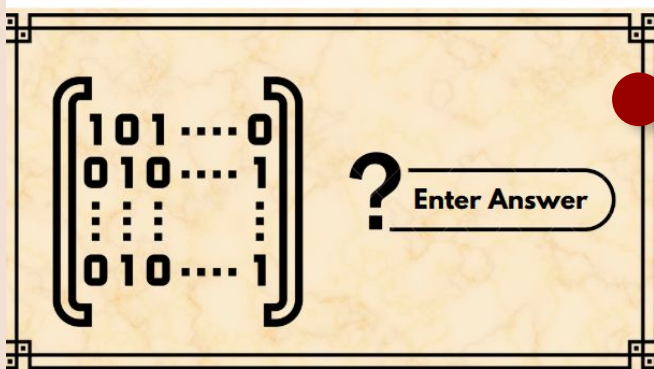
# HANGMATH CULPRIT



01

## TYPICAL INPUT

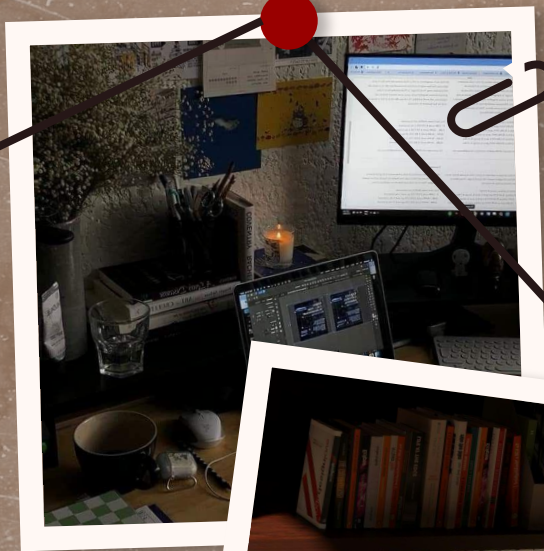
- Mouse → Click on letter spaces
- Keyboard → Values



02

## EXPECTED OUTPUT

- Letter space opens problem window
- Submit answer trigger right/wrong ans event



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03

# FEASIBILITY

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# JAVAFX ELEMENTS AND IMPLEMENTATION COMPONENTS

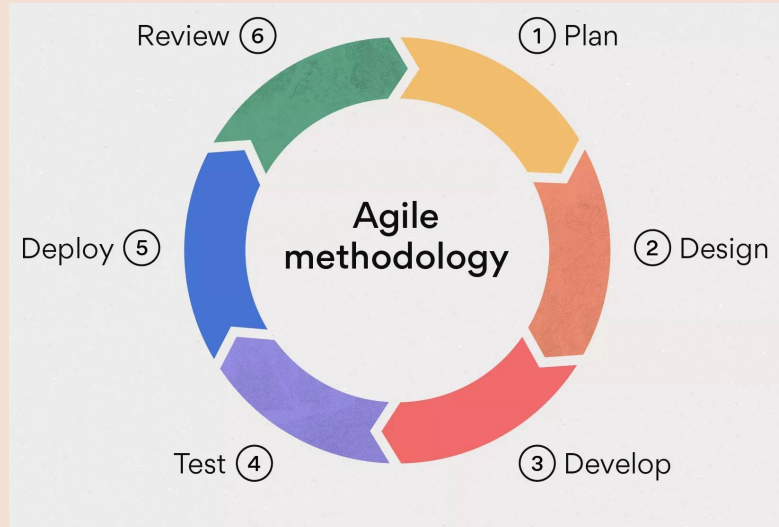
<u>GAME</u>	<u>CONTAINERS</u>	<u>EFFECTS</u>	<u>CONTROLS</u>
Refract lab	HBOX VBOX PANE GRIDPANE BORDERPANE	Animations Shapes Graphs	Sliders, draggable objects
Projectile puzzle			Buttons, Textfield
Toxic tint			Draggable objects
Hangmath culprit			Clickable objects, textfield



# TIMELINE

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- 1. Plan (Jira Kanban Board, Diagram)
- 2. Design
- 3. Work on application
- 4. Test



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