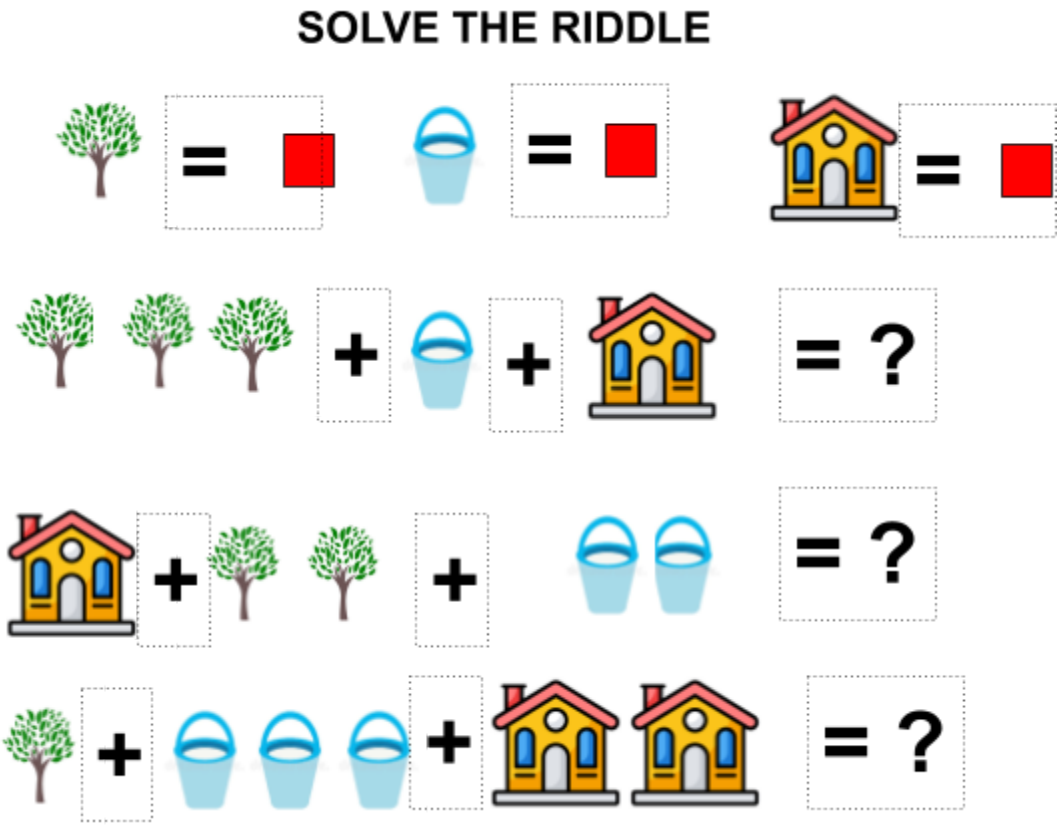
CREATE THE IN-GAME OPTIONS FOR **VOLUME 2: IMPERIAL AGES**

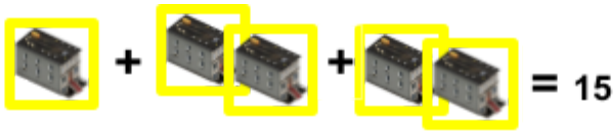
Mathematics: basic algebra, Number theory and Combinatorics.
This is done through the quizzing functions within a time.

Math

1. Number set - Counting - Fill-in-Multiple-Blanks



2. Ratios, rates percentages Matching.



What is the value of a house?

What is the value of a well ?

What is the value of an apple ?

Match the following problems to their following solutions

What is the ratio of stones trees?

If you collects 5L of water from the well and 2L is consumed daily, what is the rate of water consumed ?

Last week , the crops were harvested in 30 mins.This week they were harvested in 20 mins. What is the difference in harvesting rate of both weeks?

If there is a gravitational acceleration of 10 m/s2 and the bucket has a mass of 2kg. Find the force applied on the bucket.

HINT

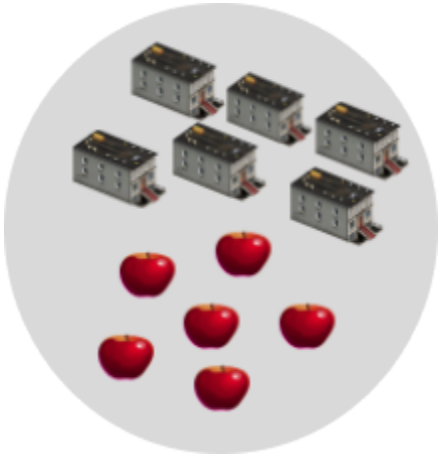
1/6

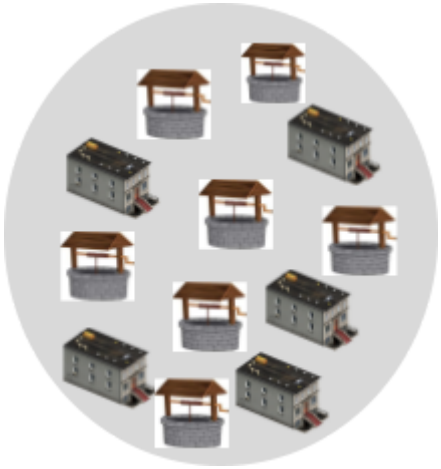
3/2

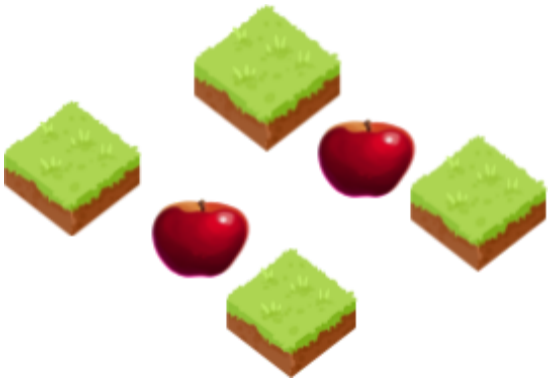
20

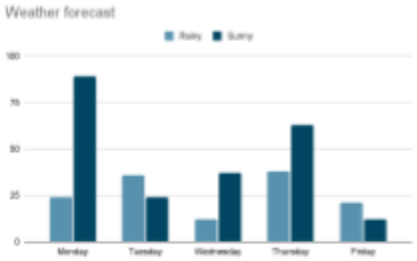
10

40%









This exercise will be in form of a dropdown box; 5 options (Mon-Fri)

Interpret the information on the graph and choose the correct answer below.

On which day is it most appropriate for harvesting?

Which day should you avoid for harvesting?

Is Tuesday or Thursday the better day to harvest crops?

What is the total number of rainy days?

What is the total number of sunny days?

3. **Representation of data** [True/False]

The mean of 4,5,6,7,8 is 23? False
The mode of 1,2,3,4,6,9,1 is 1 ? True
The Median of 0,7,2,1,40,7,9,6,2 is -3 ? True

5,9,5,1,4,9,4,3
The mean will increase if the number 1 replaced one of the 9's in the set? False

Look at this set of 5 numbers:
9,1,4,6,8
The range will be unchanged if the number 7 replaces the number 4 in the set?True

4. **Expressing data as algebra expressions Multiple Choice**

Solve the following expression:

3x + 18 - 8x = -17

Four options are 1 6 5 7

Simplify by combining like terms
-7x-2-9y+10x
Four options are 2x-2y-4 3x-9y-2 4x -y +4 6 x -2y -1

Solve the following expression
14 + x = 18
Four options are 4 -4 2 -2

Write an expression for the verbal phrase:
Seven is less than s
Four options are s<7 s>7 s-7=0 s=7

Write and solve an equation based on the verbal phrase.
5 more than x is equal to 32

Four options are 37 17 27 39

5. **Geometric and Linear relationship Fill-in-the-Blank**

What is the slope of the line with the equation y = 2x+5
Ans 2

Solve for m
-4(5m-7) = 10m - 2 ,
Ans 3

What is the slope of this equation?
Y = -5x-3
Ans -5

What is the Y-intercept of 4x+10 = -2y?
Ans -5

What is the X-intercept of 5y+3x = 9?
Ans 3

6. **Understanding probability Multiple Choice**

Of the 8 tools used for harvesting, 4 tools are made from wood.
What is the probability that a randomly selected tool will be made from wood?
Four options are 0.5 4 8 2

4 out of the 16 fruits in a bunch are apples.
What is the probability that a randomly selected fruit will be an apple?
Four options are 0.25 4 16 0.5

There are 8 houses of which 1 is made from concrete.
What is the probability that a concrete house is randomly selected?
Four options are 0.125 0.5 0.25 8

A farmer has 18 carts to transport crops, including 2 defective carts.
What is the probability that a randomly selected cart will not be defective?
Four options are 0.89 0.76 0.63 0.57

Technology: Show the influences of technological innovations. The player will discover new innovations while moving to the Early Modern Era.

These technologies will be implemented directly in the gameplay.Population size increases.

1. Basic technologies -, Use of irons - spades,pitchforks and shoes for horses

Spades and pitchforks will be used in farming crops.  Multiple choice quiz
- Question window pop-up about advantages of using iron for tools.
-Multiple choice answers (More than one answer could be possible).

-Rotation between different questions.

These tools will be given to the player directly
Iron shoes will be made for transporting animals. *Player needs resources to buy the iron shoes.*

2. Transportation innovation Boats, carts Drag and drop
   Boats will be used as a means of fishing
   Carts will be used to carry crops or people.

   - Image of a boat on the left and a cart on the right.
   -

3. Construction technology Mills, bigger houses, castles , different buildings (made of wood and stone) Multiple choice quiz
   - Question window pop-up about advantages of new types of buildings.
   -Multiple choice answers (More than one answer could be possible).
   -Rotation between different questions.

Wind Mills and castles will be added in the gameplay
Player will need more resources for bigger houses , buildings such as ironsmiths or warehouses to stock crops

Volume 3 : The Modern Era

Science

Learn animal and plant cells, organs Mix and Match

- One window with different images of animal cells, plant cells and organs.

- The names of the organ and cells will be at the bottom of the window.

- Drag the names to the correct images to win.

- Hint buttons will be available at the top corners of the images.

- Hints will be in the form of riddles.

Learn effects of *technology to improve human health True or False

- Question window pop-up about advantages of new medicine and medical techniques.

- Rotation between different questions.

Learn chemical reactions Mix and Match

- Window pop-up with names of different chemical reactions on the left and images of those reactions on the right.

- Each name will have a hint button next to them.

- Each hint will consist of a very short and brief summary of the chemical in name.

Learn the process for making chemical products

Learn use of chemicals in daily life Drag and Drop

- Window pop-up with image of ceramic flooring.

- The ceramic flooring will have a stain on it.

- The window will also have the image of a sponge on its left bottom corner and detergent on its right bottom corner.

- The player will drag the image of the sponge towards the image of the detergent to power it up.

- The powered-up sponge will remove the stain.

Learn effects of global climate change on natural environment Multiple choice quiz
- Question window pop-up about the main consequences of climate change.
-Multiple choice answers (More than one answer could be possible).
-Rotation between different questions.

Learn how climate change affects human beings True or False

- Question window pop-up about possible effects climate change could have on humans.

- Rotation between different questions.

Learn properties of light and colors (Multiple choices)

- Question window pop-up about the different properties of light and colors.

- Rotation between different questions.

Understand how light is produced

Learn how to use other forms of energy True or False

- Question window pop-up about the purpose of the different forms of energy.

- Rotation between different questions.

Learn about the forms of force (Control board)

- On a window there will be an image of a metal wall with a digital screen on it.
- Around that screen there will be contraptions such as a rope, a push button, a spring, a box on a platform.
- The screen will display a series of tasks for the player to accomplish and each task will be themed by a different force.
- The form of force will be a theme for the task at hand and the task itself will have a short one line description.

Math

1. Investigate and solve Quadratic Relations
2. Solve problems involving Linear Algebra
3. Solve problems involving Geometric Properties
4. Graphing of Algebra equations
5. Identify and Interpret Quadratic Relations

- **Technology:** learn about the different advancements as age progresses. The player will discover new innovations while moving to other ages.

Communication models
Better Technology in the environment
Computer Technology skills
Better Construction technology - use of construction tools Match-3 type of mini-game

- Window with a board of 3 by 3 images, images of three set tools of similar function or similar workfield. The sets aligned can unlock a possible upgrade for the tools in question.
- After all the sets have been aligned a small window pops up with information about the use of each set of tools and how they were improved.

Healthcare- provide medical services
Computing Fundamentals - Binary Language and Data Representation Fill in the blanks

- Window with the images of a closed vault pops up.

- Tapping on the vault opens a black window with 4 holed sequences of ones and zeros with resulting numbers from 1 to 9.
- Under each component of the sequence there will be an indicator of which power of 2 their position corresponds
- After all of the sequences are completed, each of the sequences will shrink and merge into its corresponding letter or number. (Visual representation for the player that each letter and numbers we see on a computer screen is a combination of a certain sequence of ones and zeros)
- After the merges, go back to the vault window and change its image from closed to open and the player will receive bonus resources as a reward.

Engineering: Learn how to use simple and complex machines through tutorials. The player will need the technology learned from previous worlds to use those machines.

Implement machines or tools to interact with the technologies.

Recycling Scenario and Game Component

The Recycling Quiz Show Game is an interactive teaching tool to teach students about various topics involving recycling. It comes pre-loaded with three levels of recycling questions targeted towards grade 8 to grade 10 grade levels and includes a custom

Even though the Recycling Quiz Show Game was originally developed as a teaching aid, this game is a fun learning experience and entertainment for children

How to Play

You can play by answering every question with a correct answer, If a question is answered correctly, points are awarded. If the question is answered incorrectly, points are taken away.

1. Choose a category

You choose an answer from 4 possible answers in a MCQ quiz game style. The game keeps track of which questions have already been selected.

2. Attempt to answer your question

You are given the corresponding question and when you have the answer, click the Answer button. *

Note: some of the questions will be worth double points. These questions will be preceded by a short animation (sound/music) if answered correctly.

3. Find out the score

The answer is displayed along with an image to support the answer (not all questions have images). Once the player has finished answering all the questions, click the Scores button to register the scores.

Game Components

Drag and Drop button
There will be various types of waste collections. The player will have to recycle appropriate wastes and earn back resources while doing so.

The player will be using new recyclable materials
Animation on using compost for growth of crops

Renewable Energy
There are five major renewable energy sources
The major types or sources of renewable energy are:

Solar energy from the sun
Geothermal energy from heat inside the earth
Wind energy
Biomass from plants
Hydropower from flowing water

They are called renewable energy sources because they are naturally replenished. Day after day, the sun shines, plants grow, wind blows, and rivers flow.

Solar panels
Show briefly how those machines are useful

Wind turbines
Add the animations of wind turbines in the map
Show how the energy is collected through data

7. Representation of data True/False
8. Expressing data as algebra expressions Multiple Choice
9. Geometric and Linear relationship Fill-in-the-Blank
10. Understanding probability Multiple Choice

CREATE THE GAME OPTIONS AND INCLUDE GRAPHICS TO EXPLAIN THOSE FUNCTIONS

NOTE: THESE CONCEPTS ARE FROM GRADE 9 BUT HINTS WILL BE PROVIDED FOR GRADE 8 STUDENTS. (SAME RULE FOR GRADE 9)