



Maze Measuring - Time is distance - Weight Hunt

BETI



BL^{with} Robotics

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Scenario title/name of the game: Maze Measuring; Time is distance; Weight Hunt

Children's age (primary school students): 7 years old

The time needed: 30-45 minutes

Content/Subject: Problem-solving and measurements

Aim of the activity: to help children develop their problem-solving and critical thinking skills while also learning about measurement and spatial reasoning.

INTRODUCTION

Measurement is an important concept in everyday life and understanding measurement concepts is crucial for children as they grow and develop. The Measurement Master game is designed to help children aged 7 years old understand and apply measurement concepts such as length, weight, and volume by solving a series of measurement-based problems.

The games are not only educational but also fun and engaging for children. By using a programmable robot to solve problems, children get to develop their coding and problem-solving skills while also learning about measurement concepts. The game also encourages friendly competition between the children, as they compete to see who can solve the most problems and become the Measurement Master.

Through playing these games, children will learn how to measure length, weight, and volume using different units of measurement and how to convert between different units. They will also learn how to apply these concepts in real-life situations, such as when baking or measuring ingredients for a recipe.

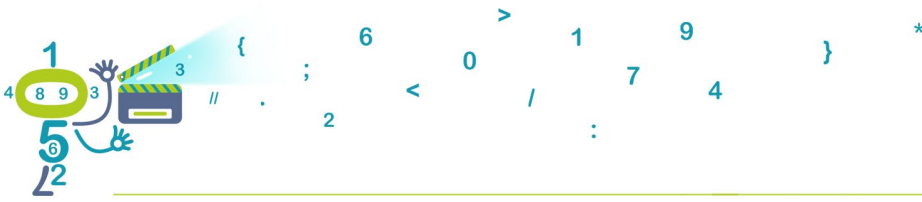
Overall, the games are a fun and interactive way for children to learn about measurement concepts, develop their coding and problem-solving skills, and prepare for real-life situations that require them to apply these concepts.

MAZE MEASURING

Resources:

Programmable robot: this is the main resource needed for the game, as it is the tool that students will use to navigate through the maze. Robots can be purchased online or through educational supply stores.

Maze measuring mats: these are mats with pre-drawn mazes that students can use to program their robot through. There are various maze measuring mats available online, or you can create your own using paper or cardboard.



Marking tools: students will need something to mark the distance traveled by their robot. This can be done using markers, tape, or stickers that are placed on the maze measuring mat.

Programming guides: depending on the skill level of your students, you may want to provide programming guides or instructions to help them get started with programming their robot.

Assessment tools: to assess student learning and progress, you may want to use tools such as rubrics, checklists, or exit tickets to evaluate how well students are grasping the concepts being taught.

Online resources: there are many online resources available for the maze measuring game, including lesson plans, activity ideas, and interactive games that can be used to reinforce learning. Some useful websites include websites, educational blogs, and teacher resource websites.

A DETAILED DESCRIPTION OF THE SCENARIO

At the start of the activity, the teacher will introduce the concept of measurement and spatial reasoning, and explain how the robot can be used to navigate through the maze while also measuring the distance traveled. The teacher can provide a brief demonstration of how to program the robot and navigate through a simple maze.

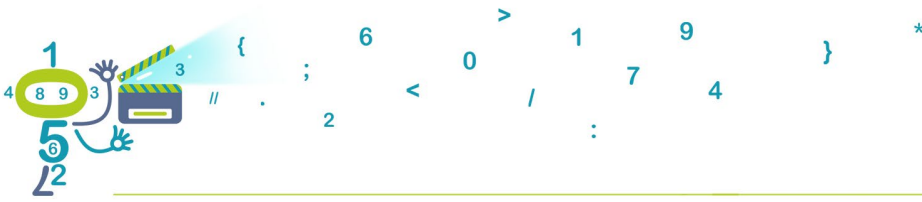
Once the concept has been introduced, students will be given the opportunity to experiment with programming robot and navigating through the maze. They will need to plan out their route and adjust their programming as needed, considering the markings on the floor to measure the distance traveled and avoid obstacles.

Students can work individually or in groups to complete the maze-measuring task. The teacher can provide guidance and support as needed, and encourage students to experiment with different programming options and see how their choices affect the robot's movement through the maze.

At the end of the activity, students can share their experiences and discuss the strategies they used to complete the maze measuring task. The teacher can facilitate a class discussion to reinforce the key math and problem-solving concepts that were learned during the activity.

STEPS

1. Set up a maze on the floor using tape or other markings. The maze can be designed with various levels of complexity, from simple straight paths to more intricate and challenging configurations.
2. Introduce the concept of measurement and spatial reasoning, and explain how the robot can be used to navigate through the maze while also measuring the distance traveled. Provide a brief demonstration of how to program the robot and navigate through a simple maze.
3. Give each student or group a robot and challenge them to program it to navigate through the maze and reach a specific point.
4. Students will need to plan out their route and adjust their programming as needed, considering the markings on the floor to measure the distance traveled and avoid obstacles.
5. Students can work individually or in groups to complete the maze measuring task. The teacher can provide guidance and support as needed, and encourage students to experiment



Stopwatch or timer: You will need a stopwatch or timer to measure the time it takes the robot to move along the path.

Path markers: You can use markers or tape to create a path on the floor for the robot to follow.

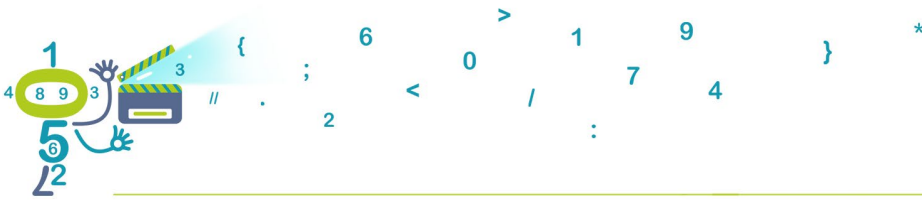
A DETAILED DESCRIPTION OF THE SCENARIO

The time measuring game using a robot is a fantastic activity for primary-age children to learn about time measurement concepts. It is a fun and interactive way to develop programming skills and understanding of time measurement. This game can be easily adapted to suit different levels of difficulty and provides students with a hands-on and interactive way to learn about time measurement.

To play this game, students need to program the robot to move along a path and stop at different time intervals. The path can be straight or winding, depending on the level of difficulty you want to create. The aim of the game is to get the robot to stop at specific points along the path at different time intervals. This requires students to estimate the time it will take for the robot to reach the stopping point and program the robot accordingly.

STEPS

1. Introduce the concept of time measurement: Begin by introducing the concept of time measurement and explaining how it can be used in daily life. Provide some examples such as telling time, estimating time, or measuring duration.
2. Demonstrate programming: Show students how to program the robot to move along a path for a specific amount of time. For example, you can program the robot to move forward for 10 seconds.
3. Create a path for the robot: Create a path on the floor using markers or tape. The path can be straight or winding, depending on the level of difficulty you want to create. Make sure the path is wide enough for the robot to move along without veering off the path.
4. Practice programming: Provide students with opportunities to practice their programming and time measurement skills by creating different challenges or tasks. For example, you can have them program the robot to move along a path and stop at different time intervals, or create a maze for the robot to navigate through using time intervals.
5. Provide visual aids: Use visual aids such as a stopwatch or timer to track the time that the robot takes to move along the path. This will help students to better understand the concept of time measurement.
6. Assess students' understanding: After completing the task, have students compare their results with one another and discuss any differences or similarities they found. You can also provide a self-assessment or reflection exercise for students to think about what they learned about time measurement and how they can be applied in other areas of their learning.
7. Reflect on learning: Finally, have students reflect on what they learned about time measurement and how they can be applied in real-world situations. Encourage them to think about how they can use a robot and time measurement to solve problems or complete tasks in their daily lives.



TIPS AND TRICKS FOR THE TEACHER

Start with the basics: Before starting the game, ensure that students have a basic understanding of time measurement concepts such as seconds, minutes, and hours. You can use visual aids such as a clock or timer to help students understand these concepts.

Keep it simple: Start with simple tasks and challenges that allow students to get comfortable with programming and estimating time intervals. As students become more confident, increase the complexity of the tasks and challenges.

Provide opportunities for collaboration: Encourage students to work in pairs or groups to complete tasks and challenges. This will foster a collaborative learning environment and allow students to share ideas and strategies.

Use technology to enhance learning: Consider using interactive tools such as online timers or digital clocks to help students understand time measurement concepts.

Create a safe learning environment: Emphasize the importance of safety when using a robot, especially when creating more complex tasks and challenges. Encourage students to work carefully and avoid running robot into obstacles or other students.

Encourage creativity: Provide opportunities for students to create their own tasks and challenges for the robot. This will allow them to apply their programming and time measurement skills in new and creative ways.

Provide feedback: Provide regular feedback to students on their progress and offer suggestions for improvement. This will help students to stay motivated and engaged in the game.

WEIGHT HUNT

Resources:

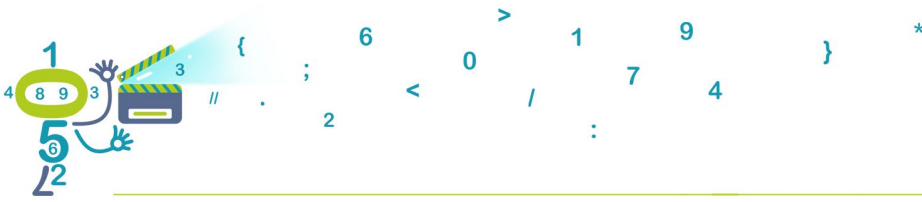
Programmable robot: You'll need a robot for each group of students or for each student. The programmable robot that can be used to teach various concepts to young children, including measuring weight.

Scales: You'll need some scales to weigh different objects. You can use digital scales or traditional weighing scales, depending on what you have available.

Objects of different weights: You'll need objects of different weights to weigh and compare. You can use anything from blocks or books to fruits and vegetables.

Worksheets: You can use worksheets to help students record their measurements and compare the weights of different objects. You can create your own worksheets or find pre-made ones online.

Visual aids: You can use posters, charts, and other visual aids to help students understand the concept of weight and the units of measurement used.



Books and videos: You can use books and videos to introduce the concept of weight and measuring to the students. There are many children's books and videos available on the topic.

Measuring cups and spoons: You can use measuring cups and spoons to teach the concept of volume and how it relates to weight. You can use them to compare the weight of different liquids, such as water and milk.

Interactive whiteboard: An interactive whiteboard can be useful for displaying visual aids and demonstrating how to use the scales and the robot to measure weight.

Manipulatives: Manipulatives, such as blocks or cubes, can be used to teach weight and measurement in a hands-on way.

Worksheets with word problems: Once students have a basic understanding of measuring weight, you can provide them with word problems to solve using their knowledge.

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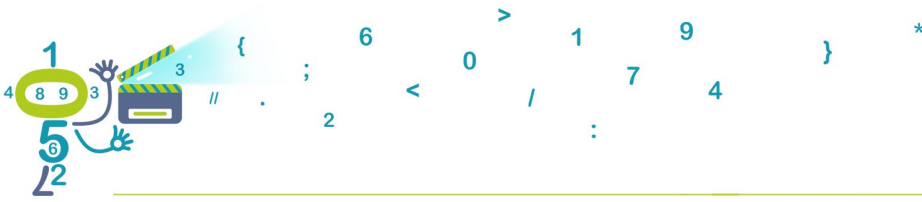
The concept of the game is to teach primary school children about the concept of weight and how it is measured, using a robot as a fun and interactive tool. The game involves programming the robot to move through a maze, collecting objects of different weights, and then weighing and comparing them using scales. Through this game, children will learn about the units used to measure weight, how to read a scale, and how to compare and contrast different weights. It is a hands-on and engaging way for children to learn about this important scientific concept.

The game is useful because it allows children to develop their critical thinking skills as they program the robot to navigate through the maze and collect objects of different weights. It also helps them understand the importance of measurement in everyday life, such as when weighing ingredients for cooking or weighing objects for mailing.

Furthermore, using a robot to learn about weight measurement helps children develop their STEM (science, technology, engineering, and math) skills. They learn to problem-solve, think logically, and develop spatial awareness as they program the robot to move through the maze.

STEPS

1. Set up a maze: Set up a maze on the floor using tape or cardboard boxes. The maze should have various pathways and obstacles that the robot must navigate through to collect different objects of varying weights.
2. Introduce the concept of weight: Begin by introducing the concept of weight and the units used to measure weight, such as grams and kilograms. Explain to the students that they will be programming the robot to collect objects of different weights and weighing them using scales.
3. Program the robot: Divide the students into groups and give each group a robot. Instruct them to program the robot to move through the maze, collecting objects of different weights along the way. Encourage them to use trial and error to refine their programming skills.



4. Weigh the objects: Once the students have collected all of the objects, have them weigh each one using scales. Ask them to record the weight of each object on a chart.
5. Compare and contrast: After weighing all of the objects, have the students compare and contrast the weights of the objects. Ask them to determine which objects are the heaviest and which are the lightest.
6. Reflect on the learning: As a class, discuss what the students have learned about weight and weight measurement through this activity. Encourage them to share their reflections and ask any questions they may have.
7. Extend the learning: As an extension activity, you can have the students use the objects they collected and weighed to create a visual representation of their weights, such as a bar graph or pie chart.

TIPS AND TRICKS FOR THE TEACHER

Use age-appropriate language: When introducing the concept of weight, use age-appropriate language that is easy for the students to understand. For example, instead of using technical terms like "mass," use simpler terms like "heaviness" or "weight."

Provide guidance and support: While the students are programming the robot to move through the maze, be available to provide guidance and support. Encourage them to work together as a team and help them troubleshoot any programming challenges they may face.

Incorporate real-world objects: Use real-world objects of different weights for the students to collect and weigh. This will help them understand the relevance and practical applications of weight measurement.

Encourage critical thinking: Ask open-ended questions that encourage the students to think critically about weight and weight measurement. For example, ask them to compare and contrast the weights of different objects and explain their reasoning.

Foster collaboration: Encourage the students to work collaboratively in small groups, sharing ideas and problem-solving together. This will help them develop communication, teamwork, and leadership skills.

Provide extension activities: Provide extension activities that allow students to explore weight measurement further. For example, you can have them measure their own weight using a bathroom scale and record the results, or you can have them research and report on famous inventions related to weight measurement, such as the spring scale.