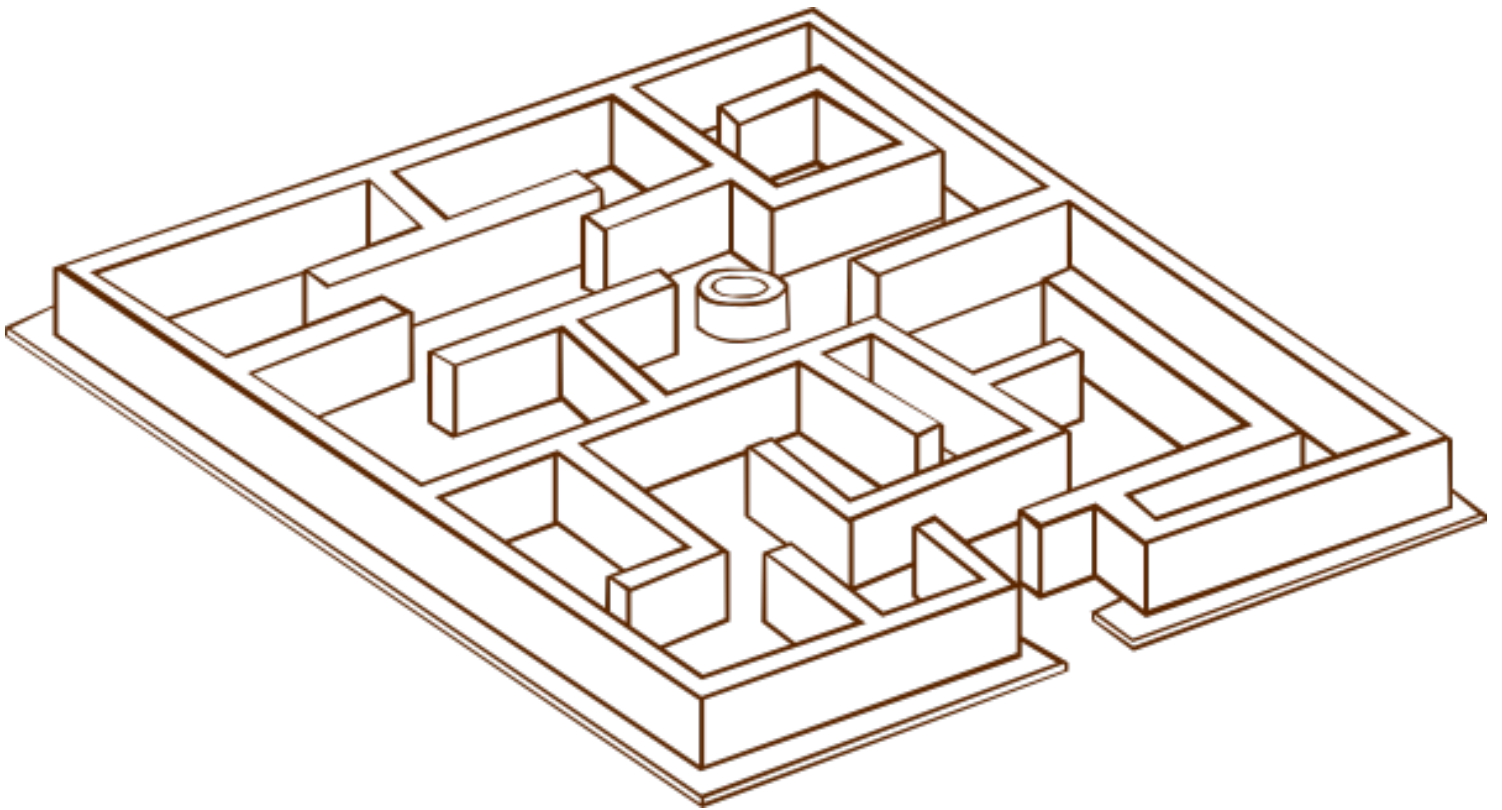


STEM MARBLE MAZE STUDENT PACKET



NAME

SECTION



STEM VOCABULARY

What Is Energy?
Energy is the ability to do work or heat objects.

Electrical Energy Mechanical Energy Chemical Energy Gravitational Energy
Radiant Energy Nuclear Energy Magnetic Energy

sciencenotes.org

The sum of the kinetic and the potential energy of an object



mechanical energy

Potential Energy
Height and the pull of gravity give this ball potential energy.

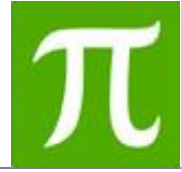
Kinetic Energy (energy of motion)
As the ball begins to roll down the hill, kinetic energy increases and potential energy decreases.

A change in an object's position

motion

pushes and pulls - forces and motion





STEM- Marble Maze

Building Background Knowledge

Working Packet

Directions: Click on the following links and respond to the questions below.

<https://app.discoveryeducation.com/learn/player/892d4ebe-8260-45e1-ba8d-330b167edf08?shared=true>

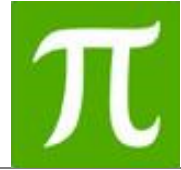
<https://www.campsilos.org/the-story-of-corn/students/amazing-mazes/>

<https://youtu.be/xnVHbxHBIAo?si=Ya6QLtrDVzjAnaIE>

Respond

1. What is the difference between a labyrinth and a maze?

2. What forces are needed to complete a marble maze?



Research

STEM Marble Maze

Group # _____

Section: _____

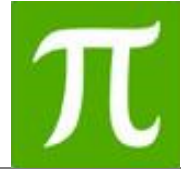
Student Name: _____

Partner's Name: _____

Challenge: How can you design and build a maze with two right angles and at least two dead ends, that can get a marble from beginning to end in at least 10 seconds?

Research

Directions: Search the internet and find **pictures and text** about different types of mazes.



Group # _____

Section: _____

Student Name: _____

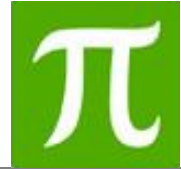
Partner's Name: _____

Design the Prototype

(Create a labeled diagram of your prototype.)

Materials

- | | |
|---|---|
| <ul style="list-style-type: none">• Construction paper• Cardstock paper• Index cards• Recycled pizza boxes• cardboard tubes | <ul style="list-style-type: none">• Crayons/pencils/colored pencils• Scissors• Ruler• Masking tape |
|---|---|



Group # _____

Section: _____

Student Name: _____

Partner's Name: _____

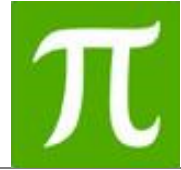
Test your Prototype - Collect your Data

Original Prototype

Calculate Perimeter ($P=2(l + w)$)

Calculate Area ($A=l \times w$)

Time (seconds):



Group # _____

Section: _____

Student Name: _____

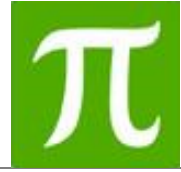
Partner's Name: _____

Improve the Prototype

(Improve your Prototype. Create a labeled diagram of your improved prototype.)

Materials

- | | |
|---|---|
| <ul style="list-style-type: none">• Construction paper• Cardstock paper• Index cards• Recycled pizza boxes• Cardboard tubes | <ul style="list-style-type: none">• Crayons/pencils/colored pencils• Scissors• Ruler• Masking tape |
|---|---|



Group # ____ - ____ Section: ____
Student Name: _____
Partner's Name: _____

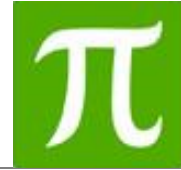
Retest your Prototype - Collect your Data

Improved Prototype

Calculate Perimeter ($P=2(l + w)$)

Calculate Area ($A=l \times w$)

Time (seconds):



Group # _____

Section: _____

Student Name: _____

Partner's Name: _____

Reflection

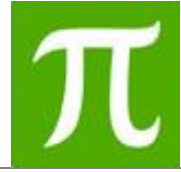
1. What was the hardest part of building your marble maze, and how did you solve that problem?

2. How did you make sure your maze included at least 2 right angles and 2 dead ends, and why were those important?

3. If you could rebuild your marble maze, what would you change to make the marble travel for at least 10 seconds more easily?

4. Record a video of each person in your group communicating the results of the challenge by sharing the following information and share it on Seesaw along with your graph.

- what was the project about
- what were the results of the 2 designs when tested
- what did you change in your redesign
- what would you do better



Create a Graph – Use Numbers and following the instructions below and create a graph. Share the graph on **Seesaw**.

Instructions: Create a graph on Numbers using the following parameters:

1. Must have a **title**.
2. Labeled X Axis (independent)
3. Labeled Y Axis (dependent)
4. Must be a Bar Graph