Electric Marble Maze

How to Build It:

Materials:

- ☐ Matboard or cardboard for the base
- ☐ Plenty of craft sticks
- ☐ Scissors
- ☐ Hot glue guns and hot glue
- ☐ Markers
- ☐ Paperclips
- ☐ Insulated wire
- ☐ AA batteries
- ☐ AA battery holder
- ☐ Christmas light
- ☐ Marble covered in tinfoil

Procedure:

1. Build the maze! Draw a maze pattern onto the matboard or cardboard making sure that the marble will be able to fit through all the walls! Don't forget to mark where the start and finish will be.

2. Cut craft sticks to fit the pattern and use hot glue to attach the craft sticks to the maze.

3. Color or decorate the maze to your liking!

4. Electrify the maze by adding paperclip switches.

To build a switch:

5. Solder the red wire from the battery pack to a paperclip.

6. Solder the black wire from the battery pack to one side of a Christmas light.

7. Solder the other side of the Christmas light to a different paperclip.

8. Place the paperclips on the maze in a spot where they are likely to get hit at the same time by the tinfoil covered marble. Good places are the corners or walls that are too close together for the marble to pass through. You may need to adjust the paperclips to find a good spot for them.

How it Works:

The way our maze is set up is so that the light bulb is connected to an incomplete circuit that ends at two paperclips. We could complete the circuit and turn on the lightbulb by touching the paperclips together, but to make it more interesting, we have covered our marble with tinfoil, a conductor, so that when the marble bumps into both the paperclips at the same time, the electricity will pass from one paperclip to the other through the tinfoil on the marble. This completes the circuit and the light turns on!

Experiment!

Can you attach more than one lightbulb?

Can you use more than one switch?

What other types of switches can you come up with? Can you use materials other than paperclips?

Can you put a switch somewhere other than in a corner?