

Objective

By the end of this lesson, Gentry will understand the basic principles of gravity, motion, and simple engineering concepts through hands-on activities using the National Geographic marble run. Gentry will also develop problem-solving skills and creativity while building different track designs.

Materials and Prep

- National Geographic Marble Run set
- Space to build the marble run (a table or flat surface)
- Marbles (included in the set)
- Paper and crayons for drawing designs
- Timer (optional, for challenges)

Before the lesson, ensure that the marble run set is complete and that there is enough space for Gentry to build and experiment with the tracks. Familiarize yourself with the different pieces of the marble run to help guide Gentry during the activities.

Activities

- **Build a Track:**

Gentry will start by building a simple marble run track. Encourage Gentry to use different pieces and experiment with different heights and angles.

- **Marble Race:**

Once the track is built, Gentry can have a marble race! Time how long it takes for the marble to reach the bottom. Gentry can then try to improve the design to make it faster.

- **Draw Your Design:**

Before building, Gentry can draw a design of what the marble run will look like. This helps with planning and creativity.

- **Experiment with Gravity:**

Gentry can change the angle of the track and observe how it affects the speed of the marble. Ask Gentry to make predictions before each change!

Talking Points

- "What do you think will happen when we let the marble go?"
- "Why do you think the marble goes faster on a steep track?"
- "Can you tell me what gravity does? It helps pull the marble down!"
- "What happens if we change this piece? Let's try it and see!"
- "How can we make our track even better? Let's think of some ideas!"
- "What was your favorite part of building the track?"