



# MARBLE RUN

ENGINEERING: INVESTIGATION, DESIGN, EVALUATION

*Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.*

## OBJECTIVE OF THIS INVESTIGATION:

Children will improve a marble run to get a marble to a designated end point.

## VOCABULARY:

- compare/contrast
- improve
- test
- notice/observe
- plan
- prediction

## MATERIALS:

- Marble run or found materials to construct a marble run, such as paper towel tubes, blocks, and empty yogurt containers with a hole cut in the bottom
- Balls or marbles to put through the marble run

## PROGRESSION STEPS (ENGINEERING: INVESTIGATION, DESIGN, EVALUATION):

Visit [STEMIE Learning Trajectories](#) for details

- Trial and Error Investigator
- Guided Designer
- Guided Evaluator

## THIS INVESTIGATION:

- Set up a simple marble run with a designated endpoint but build the track so that the marble doesn't make it to that endpoint.
- Gather children together and show them what you built. Point out where the marble goes off the track and tell them where you want the marble to end up. **(Guided Designer)**

**"I built this marble run so that the marble would end up here, but it falls off over here instead. Can you help me fix the path so that the marble makes it to the end?"**

- Let children take the lead in making an adjustment. **(Trial and Error Investigator)**
- Encourage children to change one thing at a time.
- As children make a change, encourage them to test the track to see if the change worked. **(Guided Evaluator)**

**"Let's test it and see what happens."**

- If the change works, ask children why they made the change they did.
- If the change doesn't work, congratulate children on their attempt and encourage them to try something else. As long as children are interested, keep trying. Have a solution at the ready so you can support children if they become frustrated.

## ADAPTATIONS:

- See [A Guide to Adaptations](#) for general ideas and strategies

### Environment:

- Marble run can be built on a table or on the floor, whatever is easiest for children to access.

### Materials:

- If marbles are a choking hazard or difficult to grasp, you can use ping pong balls or other larger objects to put down a maze made from found objects like toilet paper rolls, PVD pipe, etc.





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## ADAPTATIONS (CONTINUED)

### Instruction:

- If children struggle to improve the marble track, encourage children to experiment with changing the track and noticing how the movement of the ball changes. **(Actions Investigator)**

## HOW TO CONTINUE THIS INVESTIGATION:

- To increase challenge, encourage children to consider an improvement prior to implementing a change. What might be wrong? What change could be made to fix the problem? **(Planner Designer)**

SUPPORT MATERIALS: Use the blank ones to create your own!

