

Project 21

Run Brick Run

Objective: Child will understand how various forces work to amplify or impede movement.

Essential Question(s): What do you need to think about to build a marble run? What helps the marble go faster? What makes the marble get stuck?

Special Materials: toilet paper tubes and marbles

Bricks Required: 8x8 plates, 4x4 plates, 2x4 plates, 2x4 tiles, 2x2 tiles, 2x2 plates, 1x4 bricks, 2x4 bricks

Project Structure:

Engage/Explain:

1. Ask child if they've ever played with a marble run before, or marbles in general.
 - a. What makes a marble go?
 - b. How does a marble steer?
 - c. In a marble run, what sorts of things influence the marble?

Explore/Explain:

1. Work together with your child to build a marble run. You can build a tower of varying heights according to the pictures below (alternating 1x4s).
 - a. Lead child in making the top connectors and corner turns (a 2x4 and 2x2 tile down the center of a 4x4 plate with corresponding plates underneath to create the grooves for the toilet paper rolls, framed by 1x4 bricks to keep the marble centered; corner turns are similar but on 8x8 plates).
2. Child can put the towers together in groups, line them up and connect them with toilet paper tubes and start testing their work. Questions to consider:
 - a. How far does the marble go?
 - b. Why does it get stuck where it does?
 - c. What happens when you change the order of the towers?
 - d. If there's a marble of a different size, how does that impact things?
 - e. What's the minimum height difference necessary to make the marble go?

