



# MAGICAL MARBLE COASTER

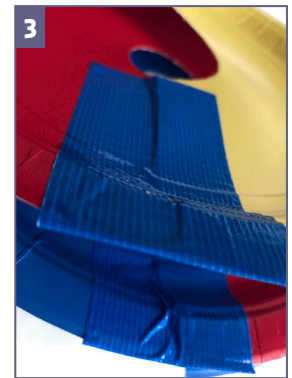
You don't have to be The Grand Jerome to build a roller coaster! With the basic technique described here, you can create a marble coaster full of twists and turns—just like in Adventure Kingdom!



## YOU'LL NEED:

- 1 paper towel tube
- Pencil
- 6 large paper plates with high edges
- Scissors
- Duct tape
- Marbles

1. Use one end of the paper towel tube to trace a circle in the center of each plate.
2. Use scissors to cut a straight line from the edge of a plate to the center circle, then cut out the circle. Repeat on four more plates.
3. Stack the plates with their cut edges lined up. Use duct tape to attach one cut edge of the top plate to the opposite cut edge of the plate below it, as shown. Repeat with the remaining three plates, creating a spiral.



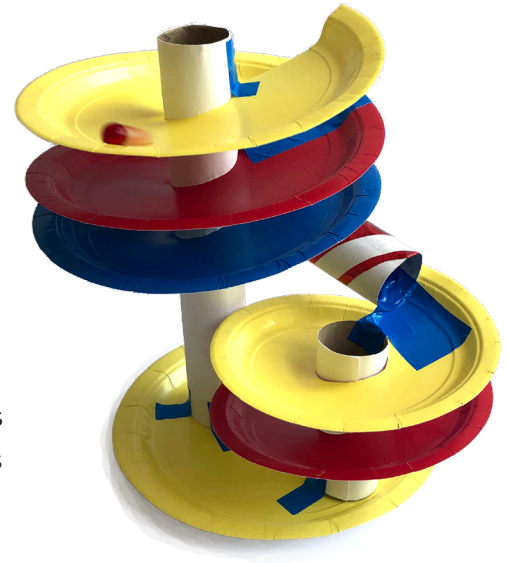
Use a longer tube and more plates to create a taller, more gravity-defying spiral!

4. Slide the tube through the center of the plates. Position the top plate about 1 inch from the top of the tube, and tape the inside edge of the plate to the tube. Repeat with the remaining plates, spacing them about 2 inches apart.
5. Tape the bottom of the tube to the center of the uncut plate, and tape down the bottom of your spiral. Put your marbles at the top of the coaster and send them for a spin!



# MAGICAL MARBLE COASTER (CONT.)

Try adding a second spiral of smaller plates or connecting multiple spirals with smaller cardboard tubes, or experiment with steeper spirals and different building materials! How do these different configurations affect the speed (velocity) of the marble? Note your observations and hypotheses below, then conduct a few tests to see if you were right!



OBSERVATION	HYPOTHESIS	EXPERIMENT	OUTCOME