



MARBLE RUN Activity Kit

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This kit includes two activities:
Activity #1: Roller Coaster
Activity #2: Playdoh Marble Run

Both activities focus on gravity's effect on the marble.

Gravity- Definition: The force that pulls an object down to another physical object.

Application to Activities:

The marble will begin to go lower down on the track, and may even fall on the ground due to gravity pulling the marble down.

Activity #1: Marble Roller Coaster

Have you ever been to an amusement park?
Do you enjoy riding on roller coasters?
Have you ever thought about how roller coasters work or how they are built?
Today's your lucky day. We are going to be building roller coasters!

Materials Needed for this Activity

- 3ft-6ft tubing
- 1-3 different sized marbles
- Tape
- Index Card (for catching marbles)

Visit the Science Circus Website for additional information about this materials list.



Building Your Marble Roller Coaster

We are going to practice building different sections of track commonly found in a roller coaster ride. Once you have built each section with your tube, with adult permission search the internet for images of roller coasters whose track looks the same.

Step 1:



step 1:

Bend your tube into a u-shape. Once in a u-shape, place the marble on the track.. How did the marble move? Why do you think the marble moved that way?



Adult supervision advised. Ages 5+
Choking hazard, small parts
Use for intended purposes only

Step 2:

Make your u-shape tube so that it has a second incline and drop. Place your marble on the track and see if the marble is able to go over the second incline.



Did your marble stay on the track? Did your marble travel to the end of the track? If your answer to either of these questions is “no,” change the height of your initial drop and second incline. Does this help?

Step 3:

Create a loop (a spiral or circle) with your track. You will have to play around with the loop so that the marble is able to go around the whole track without flying off.



Additional Concepts

Accelerate- when an object speeds up

Application: The marble when dropped on the track will pick up speed and accelerate due to gravity.

Decelerate- when an object slows down

Application: The marble begins to decelerate when it moves up the track because gravity is slowing it down.

Stop & Think

1. What causes a marble to accelerate (go faster)?
2. What are two or more things that can cause your marble to decelerate (go slower)?
3. How did you design your track to allow the marble to make it to the end?
4. How did you design your track to prevent the marble from flying off?
5. What allows the marble to make it around the loop without falling?



Activity #2: Playdoh Marble Run

In this activity you will apply what you've learned about gravity and engineering a roller coaster track to make a playdoh marble run. Using motion to your advantage you will set your marble down a play-doh track so the marble goes as fast as possible without flying off.

Materials Needed for this Activity

- Cardboard
- 2 containers of Play-Doh
- 1 marble

Building Your Play-Doh Marble Run

step 1:



Step 1: Open your play-doh and use a small piece to roll into a ball

step 2:



Step 2: Once in a ball create a long snake the size of your finger. Make sure it isn't too thick or too thin

step 3:



Step 3: Place your play-doh snake on the cardboard, this is where the marble will roll from one end to the other. Make sure you don't press too hard or the marble will fall off half way. Think of the play-doh as a bridge that supports the marble. The marble should stay on what you create so try different play-doh sizes/thicknesses and adjust your board angles to make it work.

Step 4:



Step 4: Repeat this process so that you create a track of little play-doh bridges your marble can roll down from. Your finished project should look something like the fourth image.



Are you up for a challenge? Here's some ideas

- Make little jumps from platform to platform
- Make your marble run course have 3 turns
- Create two drops for your marble
- Add in a special trick that your marble will go through

- Key terms -

Speed- How fast or slow your marble travels through the track

Angle- The position of how you lay your cardboard. When you lean your cardboard against a wall it forms an angle

Friction- When the marble rubs against another object that slows it down

Stop & Think

1. What causes the marble to accelerate (go faster)?
2. What are two or more things that can cause your marble to decelerate (go slower)?
3. Does the angle you set your cardboard at cause the speed of the marble to change?
4. Does the smoothness of the playdoh matter? If so, why? If the playdoh is not smooth does it make the marble go slower or faster?

