Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_ **Lab Report** [](http://www.google.com/imgres?start=255&hl=en&sa=X&tbo=d&rls=com.microsoft:en-us:IE-Address&rlz=1I7TSNA_enUS372US372&biw=1366&bih=643&tbm=isch&tbnid=IjUyafhDtJBdjM:&imgrefurl=http://turuturuschoolroom2.blogspot.com/2012/06/roller-coaster-ride-discriptive-writing.html&docid=CFcy0-GnRRCfMM&imgurl=http://4.bp.blogspot.com/-wH0qeIBGo8M/T9Fd3R--WII/AAAAAAAACLw/iOtWrwoX_sc/s1600/rollercoaster.jpg&w=720&h=306&ei=zM68UJ_uF-qP0QG7t4CwAg&zoom=1&iact=hc&vpx=391&vpy=147&dur=322&hovh=146&hovw=345&tx=143&ty=73&sig=107893627258077206511&page=10&tbnh=122&tbnw=270&ndsp=28&ved=1t:429,r:64,s:200,i:196)

Part A

1. Why is the ball started by removing the pencil and not just dropping the ball? \_\_It is done to ensure that gravity is just the force that is moving the ball and there is no other push\_\_\_\_\_\_

1. Record the data from your trials below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Height of the incline (cm)** | **Distance Ball Traveled (cm)**  **Trial 1 Trial 2 Trial 3 Trial 3** | | | | **Average distance ball traveled (cm)** |
| Incline 1 |  |  |  |  |  |  |
| Incline 2 |  |  |  |  |  |  |
| Incline 3 |  |  |  |  |  |  |
| Incline 4 |  |  |  |  |  |  |

1. List the factors that affected how far the ball rolled. \_eight of\_\_height of release of the ball, mass of the ball, surface of the track, friction\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Explain the relationship between stopping point of the ball and the release height of the ball.

\_\_the higher the release height, the greater the distance the ball rolled down the track\_\_\_\_\_\_

1. Does doubling the height of the incline make the marble travel twice as far? \_\_no\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Explain the changes you observed in potential and kinetic energy. \_\_At the point of release, the ball has all potential energy. As it is release, it is converted to kinetic energy. The surface of the track and friction are forces that slow it down until it stops. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part B**

1. How far is your chosen spot from the wall? \_\_\_\_\_answers vary\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the height of your incline? \_\_\_\_\_\_\_\_\_\_\_\_answers vary\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the difference in your prediction and the place where the ball stopped? Answers vary

**Part C**

1. What is the relationship between the initial hill and the second hill on the track? Does the initial hill need to be higher, lower or equal height compared to the second hill? \_\_\_Initial hill has to be the highest point. The second high must be higher than the third. Some of the energy is lost to friction. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Draw your set up for the initial hill with two smaller ones in the space below. Record the heights of the hills and the distances between them.
3. How did the stopping distance of the ball vary each time the track changed? \_\_\_Stopping distances should be the same, however, changes occur due to friction and the changing shape of the track and the contact of the surface with the ball\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What does Conservation of Energy mean using the roller coaster as an example? \_Energy is not created or destroyed but converted from one form to another \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Draw your roller coaster with a loop. Record the heights of the hills and the distances between them.
6. Write a summary about the kinetic and potential energy in your roller coaster. \_\_\_\_\_\_\_\_\_\_\_\_

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Based on activity “*Homemade Roller Coaster”* from Exploring Energy with Toys , Beverly A.P. Taylor.