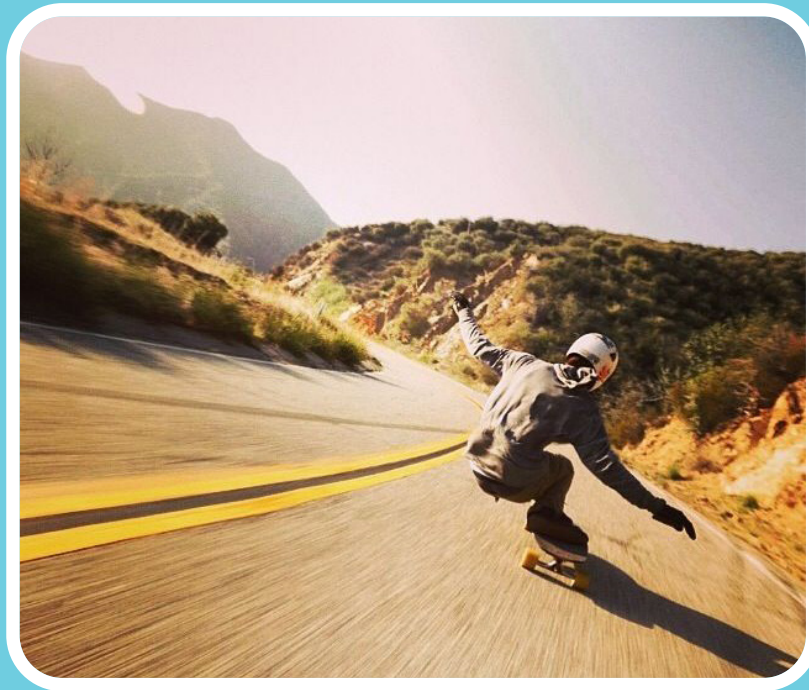


STEM *Sims*™

Speed Skater

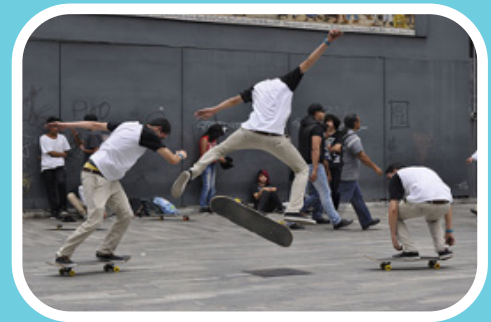


Speed Skater

**Do you need an idea for a scientific study?
Try out one of our ideas or make one of your own.**

Skateboarders in a skatepark use their skills and energy changes to complete some impressive moves on their boards. Take the following brief quiz to see how much you already know about energy changes. See the bottom of page 4 to check your answers.

1. Who is credited with inventing the first skateboard?
 - a. Aristotle
 - b. Richard
 - c. Young
 - d. Smith
2. What was the first skateboard named?
 - a. Super Skater
 - b. Hang Ten
 - c. Street Skater
 - d. Roller Derby
3. In what year was the skateboard invented?
 - a. 1900
 - b. 1926
 - c. 1944
 - d. 1958
4. Which country banned the use of skateboards between the years 1978 - 1989?
 - a. United States
 - b. Brazil
 - c. Norway
 - d. Japan
5. According to 2022 records, about how many skateboards are sold each year in the United States?
 - a. 7.6 million
 - b. 760,000
 - c. 76,000
 - d. 7,600



Making the Loop

Many modern roller coasters have riders experience a loop in which they travel in a circle before continuing moving on their path. Newer coasters have wheels that secure the coaster to the track. Is it possible to have a coaster complete a loop without being attached to the track? Get started now investigating this phenomenon.

2- 15-cm pieces of masking tape
1- small marble or steel ball

Materials

6-foot-long piece of 1.5 inches in diameter pipe insulation
scissors or utility meter stick

Procedure

1. Make sure to have permission before conducting this investigation.
2. Use extreme caution with the scissors or utility knife.
3. Carefully cut the pipe insulation lengthwise, making two 6-foot-long half pipes.
4. Curl one piece of the cut pipe insulation forming a loop about 30 centimeters from one end of the cut pipe as shown in Figure 1 below. The diameter of the loop should be about 30 centimeters.
5. Use the two pieces of masking tape to secure the pipe loop as shown in Figure 1 below.
6. Raise the free end of the cut pipe to a height of 15-centimeters as shown in Figure 1.
7. Place the marble at this height on the half pipe and release the marble.
8. Record in Table 1 whether the marble did or did not complete the loop.
9. Repeat steps 7 – 8 at the other heights listed in Table 1. Make sure to record your results in the table.

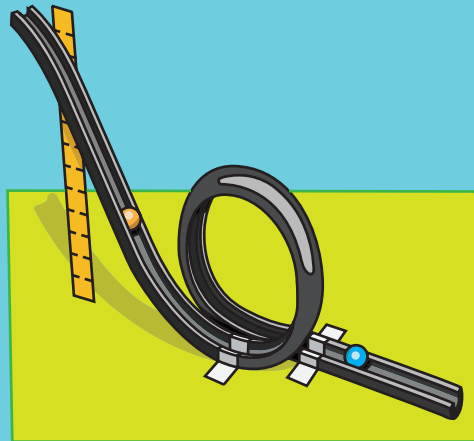


Table 1. Marble and Loop Data

Marble Release Height (centimeters)	Did the Marble Complete the Loop?
15	
30	
45	
60	
75	
90	

Questions

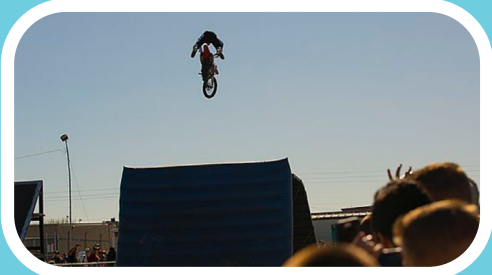
1. Which type of energy did the marble have when it was initially placed at the marble release height?
2. Which type of energy did the marble have when the marble entered the loop?

Speed Skater

Calculating the Jump

One of the most exciting events to observe is a motorcycle jumping over a long line of vehicles. The most famous “jumper” of all time was Evil Knievel. He attempted more than 75 motorcycle jumps flying from one ramp to another ramp. His longest attempt was trying to launch his motorcycle over the Caesars Palace fountain in Las Vegas, Nevada. To successfully make the jump he had to travel a distance of more than 43 meters (141 feet) through the air. Unfortunately, he failed in this attempt and broke more than six various bones in his body.

Evil’s most famous jump attempt was to “fly” a rocket motorcycle called a “skycycle” over the Snake River Canyon in Utah. The steam-powered rocket cycle was supposed to safely launch him from one side of the canyon to the other side; however, the safety parachute deployed prematurely, and this attempt failed. A stuntman named Eddie Braun recreated the jump in September of 2016 and successfully made the crossing from one side of the canyon to the other side.



During his career, Evil Knievel reportedly experienced over 433 bone fractures, yet he lived to be 69 when he quietly passed away due to pulmonary disease. His son, Robbie Knievel has taken up where his father left off doing hundreds of stunt motorcycle jumps over the course of his career.

Please visit our site for more helpful information:
STEMsims.com

Answers: 1) b, 2) d, 3) d, 4) c, 5) a. Page 3 Answers: 1) All potential energy. 2) All kinetic energy.

© 2022 STEM Sims. All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable, and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent or other industrial or intellectual property rights.