PHYSICS DAY CROSSWORD

\[ P\text{E} = m \cdot g \cdot h \]

When you get in the Cannibal roller coaster car, an elevator lifts the car to the top of the tower. From here, the car exits the tower and begins the thrilling ride.

Useful Equations

'\( h \)' is the height of the track, found on page 6

'\( m \)' is the mass (assume 1000 kg for the mass of the car)

'\( g \)' is the acceleration due to gravity

'\( P\text{E} \)' is the potential energy

Questions

1. What provides the potential energy for Cannibal?

2. What is the potential energy of a Cannibal car where the track actually exits the tower?

3. What is the potential energy at the bottom of the tower?

GRAVITY'S NUDGE

USEFUL UNITS

It is very useful to know how to convert from one unit to another. That’s why, in this exercise, you’re going to practice this. Have fun as you convert these useful units into some not-so-useful ones (except perhaps for Captain Nemo from Jules Verne’s 20,000 Leagues Under the Sea!)

Hint: A simple way to do unit conversions has the form

\[ \text{Value in } A \text{ units} = \text{Value in } B \text{ units} \times \left( \frac{A \text{ units}}{B \text{ units}} \right) \]

The term in parentheses comes from simple unit conversions like those listed on page 5.

Questions

1. From page 6, how many leagues from the Cannibal tower are you standing?

2. On page 7, you used 9.8 m/s\(^2\) for the acceleration of gravity. What is the acceleration of gravity in fathoms/hr\(^2\)?

3. You know how fast the Cannibal car is traveling in m/s from page 8. Now, find the final velocity in feet/fortnight.