

Energy 1

D4: Conservation of E

name: _____

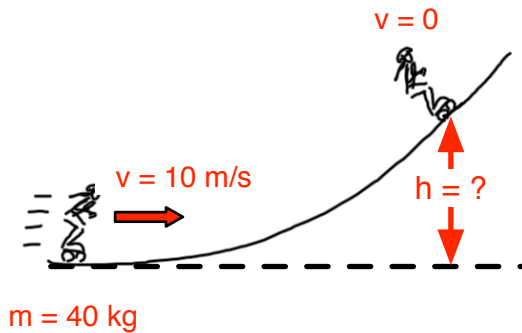
SHOW WORK

IDEALLY: Ignore drag, friction and anything else that might convert energy to heat.

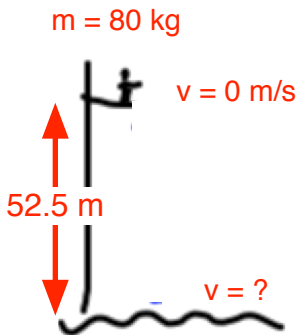
Conservation of Mechanical Energy

$$\underbrace{mgh + \frac{mv^2}{2}}_{\text{earlier spot}} = \underbrace{mgh + \frac{mv^2}{2}}_{\text{later spot}}$$

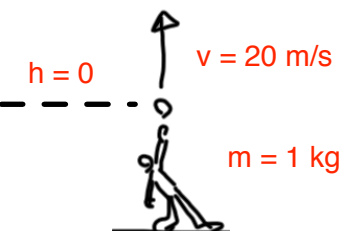
Assuming no friction or drag



1. The 40 kg skater glides up the hill. She started at the bottom with 10 m/s. When she runs out of velocity what will her height be?

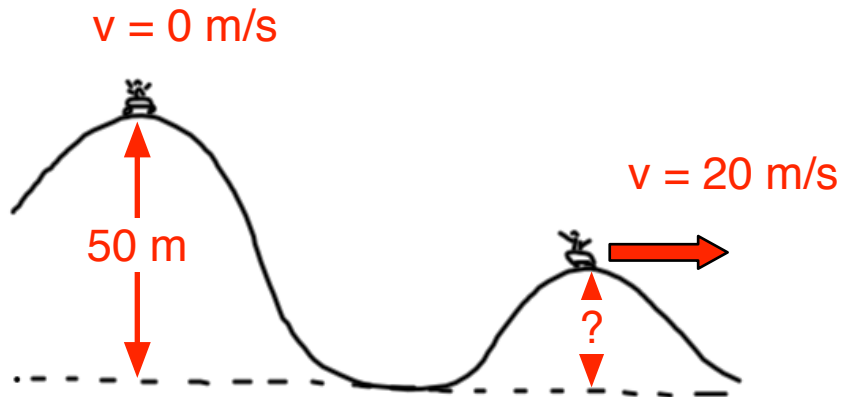


2. For his high jump, Dana Kunze jumped from a height of 52.5 meters. His mass was about 80 kilograms. Assuming he started from zero velocity, what was his velocity just before impact (when he has no height left)?



3. The man throws a 1 kg ball upward at 20 m/s. Taking its starting point as zero height, how much higher will it go before it runs out of velocity?

Make up a mass for each problem - it will not affect your answer.
(Why not?)



4. The 800 kg coaster starts from a height of 50 m with no velocity, Its velocity on the second hill is 20 m/s - how high is that hill?



5. Someone put Kryptonite in Superman's back pocket and he failed to take off. What was his velocity just before impact (when he had zero height)?