

Energy Homework Questions

(1)

① Explain Conservation of Total Energy

Ring of Truth Movie Qs

② Describe 4 different ways energy was transformed in the movie's plastic box

③ How did the Tour-d'France bike riders use up their energy? List as many ways as you can.

④ What was the largest loss of energy? (mechanically speaking)

⑤ What was the "hidden" energy loss mechanism?

$$\boxed{PE + KE = \text{Constant} = E_{\text{TOTAL}}}$$

⑥ Calculate the potential energy of a pot of flowers ($m = 2 \text{ kg}$) sitting on a railing of an apartment porch; a) compared to the porch floor 1.2 m down, b) compared to the sidewalk 1.2 m down, and c) compared to the porch railing above (at 3.5 m above).

Energy HW Qs

Phy 101

(2)

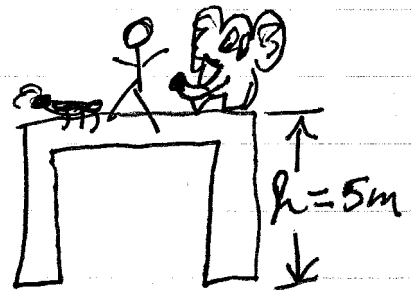
7. Calculate the kinetic energy of a 0.015 kg fly a) sitting on your leg, b) flying away at $v = 0.95$ m/s, and c) buzzing about at $v = 0.32$ m/s.

8. What has the greatest PE? Which the greatest KE (before landing)? Calculate each after guessing.

a. Ant $m = 0.02$ kg

b. Person $m = 85$ kg

c. Elephant $m = 1500$ kg



9. A ball drops from 2 m height. Describe the relative KE & PE at following pts.

a. 2 m

b. 1.75 m

c. 1 m

d. just before hits floor ~ 0 m

10. Calculate PE & KE at each point above. (you can leave the mass as a variable, or use $m = 0.7$ kg)

11. Calculate the speed at each point a \rightarrow d.

Energy HW Qs

Phy 101

(3)

12. a) Draw a roller coaster with 4 hills & 3 valleys between them. Label top of each hill A → D, & bottom of each valley E → G.

b) List in order from greatest to least each point above

a. PE

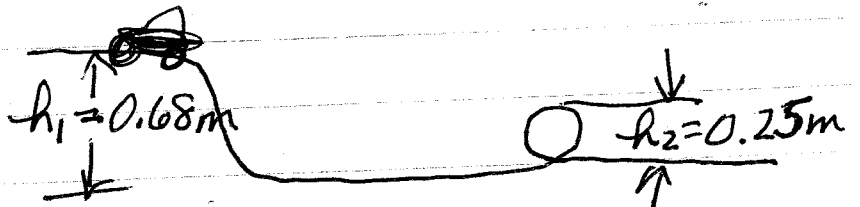
b. KE

c. Speed

c) what general conclusions can you draw from this?

13. A pendulum swings back & forth. If it is traveling at 5.7 m/s at the bottom of its swing, how high does it go at the top of its swing?

14. A child's car set has a hill followed by a flat section of track & then a loop-de-loop.



a) calculate PE at h_1

b) Calculate speed on flat

c) Calculate PE & KE at top of loop

d) Calc. speed at h_2