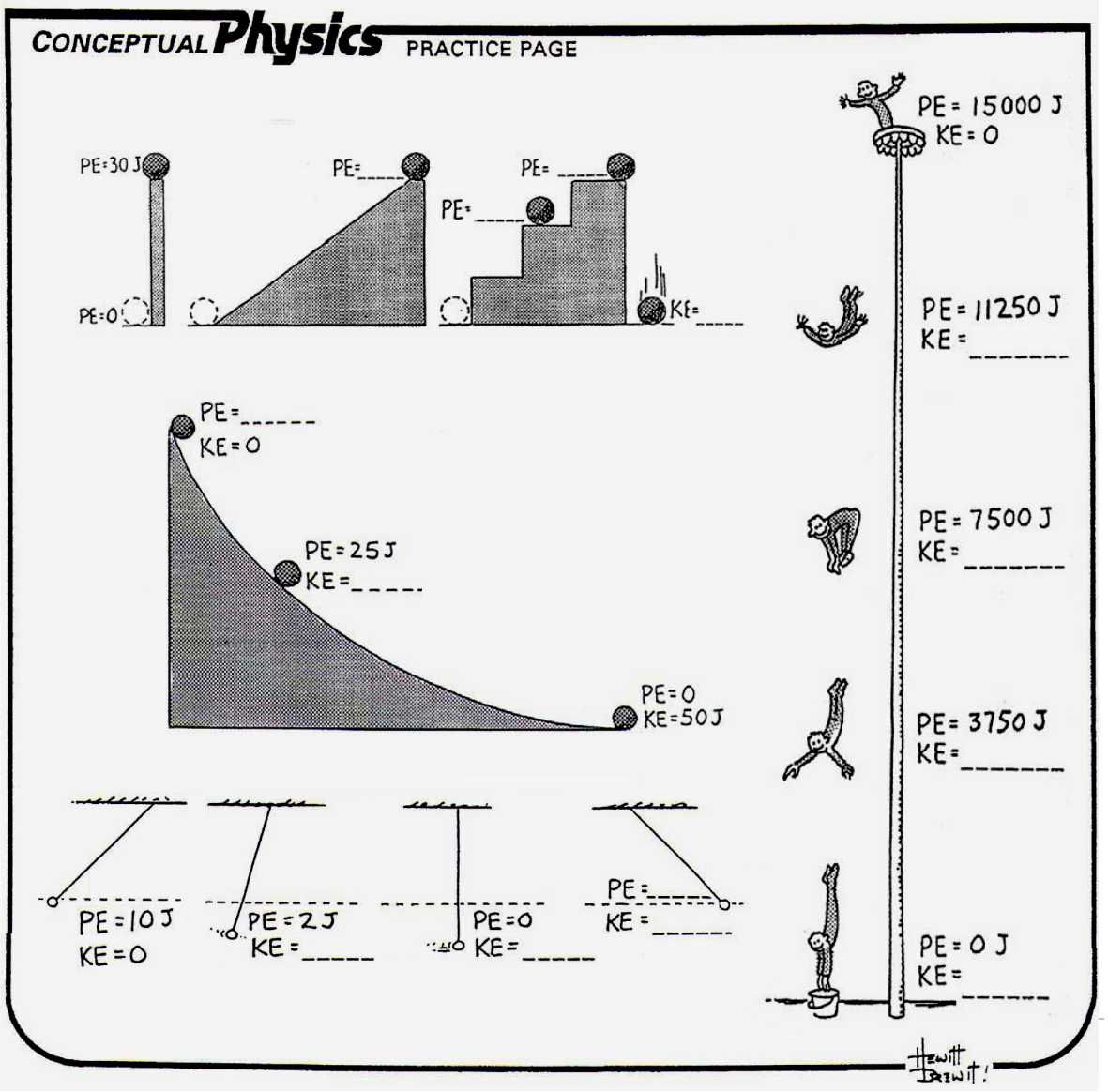
The Law of Conservation of Energy

Pre-Class Questions

Problem Set (due next time)
Ch 7 – 42, 49, 50a, 52

Lecture Outline

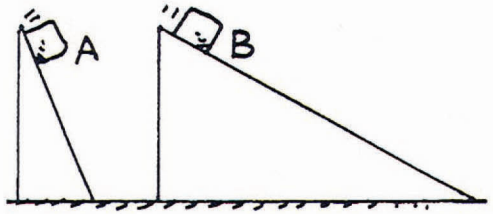
1. Understanding the Law of Conservation of Energy
2. Solving Problems with the Law of Conservation of Energy


CONCEPTUAL Physics PRACTICE PAGE
PE=30 J
PE=0
PE=_____
PE=_____
PE=_____
KE=_____
PE=_____
KE=0
PE=25 J
KE=_____
PE=0
KE=50 J
PE=10 J
KE=0
PE=2 J
KE=_____
PE=0
KE=_____
PE=_____
KE=_____
PE=15000 J
KE=0
PE=11250 J
KE=_____
PE=7500 J
KE=_____
PE=3750 J
KE=_____
PE=0 J
KE=_____
Hewitt Drew it!

Example 1: A 100g car is rolled down two different 10.0cm high ramps. One is straight and one is curved. Find the speed of the car at the bottom and half way down for (a)the straight ramp and (b)the curved ramp.

CONCEPTUAL Physics PRACTICE PAGE

Which block gets to the bottom of the incline first? Assume no friction. (Be careful!) Explain.



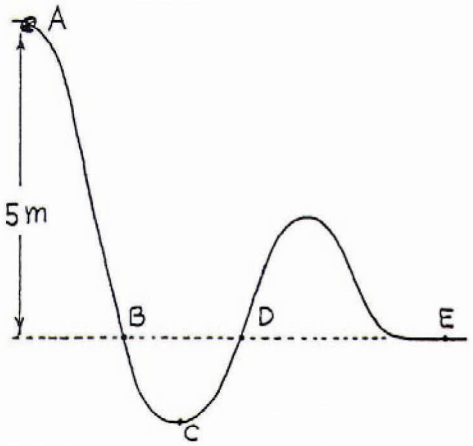
A big metal bead slides due to gravity along an upright friction-free wire. It starts from rest at the top of the wire, Point A, as shown in the sketch. How fast is it traveling as it passes

Point B? _____

Point D? _____

Point E? _____

Maximum speed occurs at Point _____



Hewitt Draw it!

Example 2: A 500gm mass is attached to a horizontal spring with a spring constant of 10.0N/m. The mass is pulled 50.0cm and released. It oscillates back and forth. Find (a)the maximum speed of the weight and (b)the position where it reaches maximum speed.

Lecture 18 - Summary

The Law of Conservation of Energy

"Energy may be transformed from one type to another, but the total energy always remains constant."

$$K_o + U_o = K + U$$