

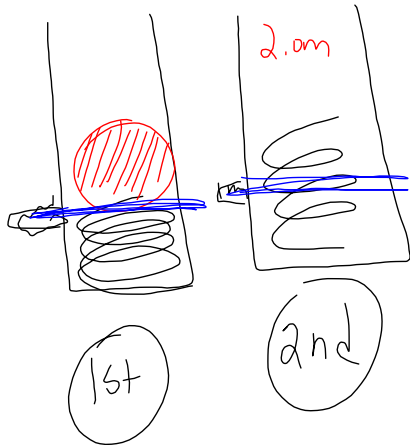
Thursday, January 8/15
Physics 112/111

1. Investigation 6A - Force and Spring Extension (Page 255)
- Due: Dec. 15/14
 2. Explosion Lab - Pass in Friday for Second Marking
 3. Assessment - C7 -> ICA (2 problems) - Friday
 4. Types of Waves
 5. Parts of Waves - Continue Tomorrow
-

6. Physical Quantities

7. Wave Behaviours
- > Reflection
 - > Diffraction
 - > Refraction

~~m~~ \rightarrow m_{max}
 $v_f = 0 \text{ m/s}$
 $E_k \Rightarrow v?$
 $E_g \Rightarrow h?$
 $E_e \Rightarrow x?$



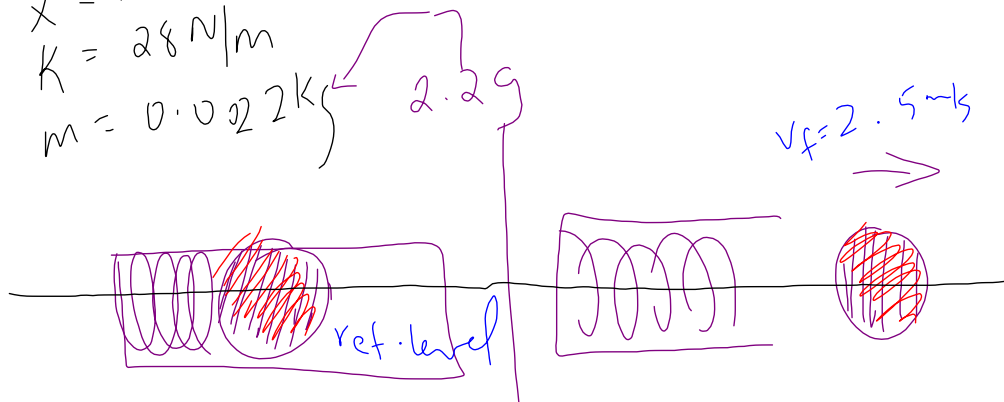
~~$E_{ki} + E_{gi} + E_{ei} = E_{kf} + E_{gf} + E_{ef}$~~
 ref. level. $h=0$

$E_{ei} = E_{gf}$
 $\frac{1}{2} k x_i^2 = mgh_f$

$E_e = \frac{1}{2} k x^2$

$h_f = \frac{k x_i^2}{2mg}$

$x = 10 \text{ cm} = 0.10 \text{ m} \div 1000$
 $k = 28 \text{ N/m}$
 $m = 0.022 \text{ kg} \leftarrow 2.2 \text{ g}$

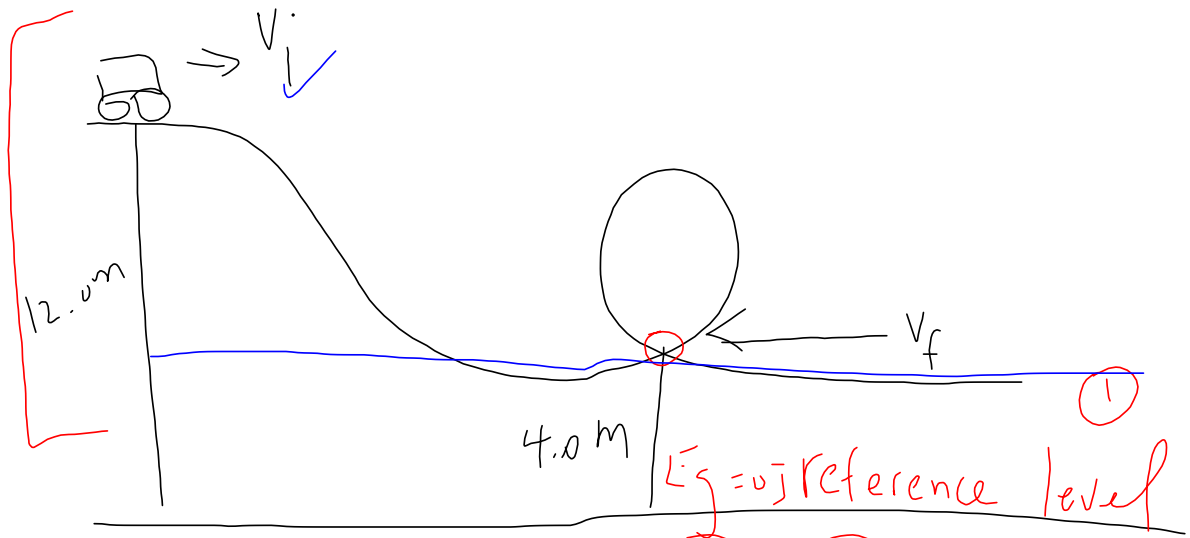


~~$E_{ki} + E_{gi} + E_{ei} = E_{kf} + E_{gf} + E_{ef}$~~

$E_{ei} = E_{kf}$

$\frac{1}{2} k x_i^2 = \frac{1}{2} m v_f^2$

$k x_i^2 = m v_f^2$
 \downarrow
 $\text{cm} \rightarrow \text{m}$ $\rightarrow g \rightarrow kg$



$$\cancel{E_{ki}} + \cancel{E_{gi}} + \cancel{E_{ei}} = \cancel{E_{kf}} + \cancel{E_{gf}} + \cancel{E_{ef}} \quad (4)$$

$$\frac{1}{2} m v_i^2 + m g h_i = \frac{1}{2} m v_f^2 + m g h_f \quad (1)$$

$$2 \left(\frac{1}{2} v_i^2 + g h_i \right) = 2 \left(\frac{1}{2} v_f^2 + g h_f \right) \quad (1)$$

$$v_i^2 + 2 g h_i = v_f^2 + 2 g h_f$$

$$\sqrt{v_i^2 + 2 g h_i - 2 g h_f} = v_f \quad (1)$$

$$v_f = \underline{\hspace{2cm}} \text{ m/s.}$$

Spring

ref. l.

$$E_K = \frac{1}{2} m v^2$$

~~$E_{K_i} + E_{g_i} + E_{e_i} = E_{K_f} + E_{g_f} + E_{e_f}$~~

~~$E_{K_i} + E_{g_i} + E_{e_i} = E_{K_f} + E_{g_f} + E_{e_f}$~~

reference level

max.

Formative Assessment - Freely Falling Body

Thursday - January 8/15

Level 2

A helicopter is ascending vertically with a speed of 5.00 m/s. At a height of 105 m above the ground, a package is dropped from a window. How much time does it take for the package to reach the ground?

Level 1

An apple thrown straight upward rises to 24 m above its launch point. At what height has apple's speed decreased to one-half of its initial value?

Physics 112/111 - Final Exam

C2 and C3

- > SI base/derived units and prefixes
- > significant digits
- > rearranging equations
- > uniform/uniformly accelerated motion
- > types of quantities (scalar and vector)
- > **resultant**
 - minimum/maximum values
 - **tip to tail**/parallelogram methods
 - graphical/**analytical methods**
- > velocity-time graphs
 - time or velocity from the graph
 - maximum velocity/speed
 - acceleration/average acceleration
 - displacement/distance
 - time stopped/reversed direction
- > comparison of velocity and acceleration directions to determine if an object speeds up or slows down
- > **kinematic problems**
- > **freely falling body problems** } L1 & L2

C4

- > types of forces
- > FBDs
- > **force problems (constant velocity)**/rest

C5

- > Newton's Three Laws of Motion
 - inertia
 - net force and acceleration
 - action/reaction forces
- > **force problems (acceleration)**
- > momentum
- > impulse
- > **impulse-momentum theorem**
- > (Atwood's machine/Fletcher's trolley)

C6

- > work (done, not done, positive/negative)
- > **types of energy (kinetic, gravitational, elastic)**
- > reference line/zero line
- > Hooke's Law
- > (force vs extension graph (spring constant and elastic energy))
- > **work-energy theorems**
- > (power)
- > (efficiency)

C7

- > **energy conservation** } L1 & L2

C8 and C9

- > pulse/wave
- > types of waves
- > parts of a wave
- > physical quantities - measures of a wave
- > **wave problems**
- > wave behaviors
 - (boundary behaviors)
 - reflection
 - diffraction
 - refraction
 - index of refraction
 - **speed of light in a medium**
 - **Snell's law**
 - three cases
 - **critical angle**
 - **total internal reflection**

multiple choice = 35
problems = 12

Electromagnetic Spectrum

