

Wednesday, May 29/13  
Physics 112/111

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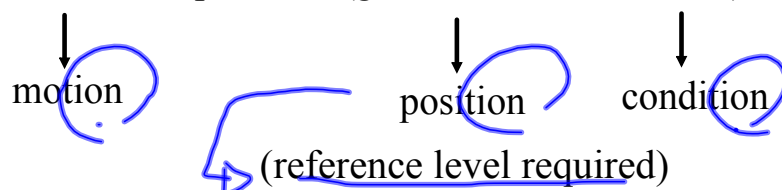
1. ICA: Power, Efficiency and Energy Conservation  
(Still to Be Returned)
2. Exam Outline: Topics - C6 and C7
3. Worksheet - Wave Equation and More -> **HW P4**
4. Wave Behaviours - Reflection, Refraction...

**HW 2** - Be prepared to complete diagrams for  
refraction cases #1, 2 and 3 tomorrow.

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# Exam: Outline - Chapter 6 and Chapter 7

- work (scalar quantity)  $W$  joules.
- three cases when work is not done  $mc$  (2)
- positive and negative work  $mc$ .
- energy (scalar quantity)  $E$  1 joules.
- types of energy: kinetic and potential (gravitational and elastic)



- work-kinetic energy theorem  $W = \Delta E_k$
- work-gravitational potential energy theorem  $W = \Delta E_g$  \*

- Hooke's Law - applied force and restoring force
  - compression and extension
  - spring constant  $\rightarrow$  slope
  - elastic limit

- power (scalar quantity)  $P = \frac{W}{t} = \frac{F \cdot d}{t} = F \cdot v$

- efficiency
- conservation of energy:  $E_{ki} + E_{gi} + E_{ei} = E_{kf} + E_{gf} + E_{ef}$  \*

$$E_{Ti} = E_{Tf}$$

$\sim 3$  problems.  $\left[ \begin{matrix} 2 \\ 4 \\ 3 \end{matrix} \right] 9$

## Exam: Outline - Chapter 4 and Chapter 5

- force (vector quantity)
- five examples: gravitational force (weight), applied, normal, force of friction (static and kinetic), tension
- coefficient of friction (static and kinetic)  $\mu$  - no unit  
 $\mu < 1$
- contact/non-contact forces
- FBDs (free body diagram)
- state of equilibrium ( $F_{\text{net}} = 0 \text{ N}$ ,  $\mathbf{v} = 0 \text{ m/s}$  or  $\mathbf{v}$  is uniform)
- Newton's Three Laws of Motion
  - 1st:  $F_{\text{net}} = 0 \text{ N}$  (Chapter 4) ( $L \sim Q \text{ static}$ )
  - 2nd:  $F_{\text{net}} = m\mathbf{a}$  (Chapter 5)
- \* May need kinematic equations in C5.  $\swarrow$  Review 12/5/5
- 3rd: For every action there is an equal but opposite reaction.
- Atwood's Machine and Fletcher's Trolley  $\leftarrow L1$
- momentum (vector quantity)  $\vec{p}$
- impulse (vector quantity)  $\vec{J}$
- impulse/momentum theorem  $\vec{J} = \Delta\vec{p}$

$\sim 4$  problems

C4  
C5  $\rightarrow \text{O}$   
 $\rightarrow \text{O}$   
 $\vec{J} = \Delta\vec{p}$

