Science 10

Tuesday, June 5/18

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Roller Coaster: Due: Wednesday, June 6/18 → Friday

1. Review - SA Physics #3
2. SA Physics #3 - Wed.
3. Exam Topics and Practice Exam
4. Roller Coasters

Staple ✓

Resource Packet ✓

Topics - SA Physics #3

1. definitions: physical quantities, scalar quantity, distance, time, speed, average speed, vector quantity, reference point, magnitude, direction, position, displacement, velocity, resultant displacement, average velocity, acceleration, uniform motion, uniformly accelerated motion
2. symbols and units for physical quantities
3. rearrange an equation for a specified variable
4. perform metric conversions using conversion factors
5. use rise and run to determine the slope of a line
6. (i) draw and label a distance vs. time graph
   (ii) answer questions about distance vs. time graphs
7. (i) draw and label a position vs. time graph
   (ii) answer questions about position vs. time graphs
8. (i) draw and label a velocity vs. time graph
   (ii) answer questions about velocity vs. time graphs
9. draw a velocity-time graph for a given position-time graph
10. describe the motion of an object by comparing the directions of the object's velocity and acceleration
11. provide full solutions for the following types of word problems:
    (i) average speed
    (ii) displacement
    (iii) constant velocity
    (iv) average velocity
    (v) acceleration

Physics 112

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1. Exam Review - Problem #7 and #8 -> See Next 2 Pages
2. Last Set of Worksheets
3. SA - Types of Energy, Work-Energy Theorems and Energy Conservation
   - Wednesday, June 6/18
4. Switcheroo (Optional) - Thursday
5. Exam Format + Review (Problems and MC)

Formula Sheet: $ME = E_k + E_g + E_e$

Exam Review - Work-Energy Theorem #7 June 5

A 2.5 g bullet hits a tree and slows uniformly to a stop while penetrating a distance of 12 cm into the tree's trunk. If a force of magnitude 1276 N was exerted on the bullet to bring it to rest, what was the initial kinetic energy of the bullet?

$m = 2.5\,g \div 1000 = 0.0025\,kg$

$v_f = 0\ m/s$

$d = 12\,cm = 0.12\,m$

$F = 1276\,N$

$E_{K_i} = ?$

E_K gained.

$\Delta E_K = +$

lost

E_g x_i

ΔE_g x_f

$W = Fd = \Delta E_K$

$Fd = \Delta E_K$

$Fd = E_K - E_{K_i}$

$Fd = E_{K_i}$

$E_{K_i} = Fd$

$E_{K_i} = (1276)(0.12)$

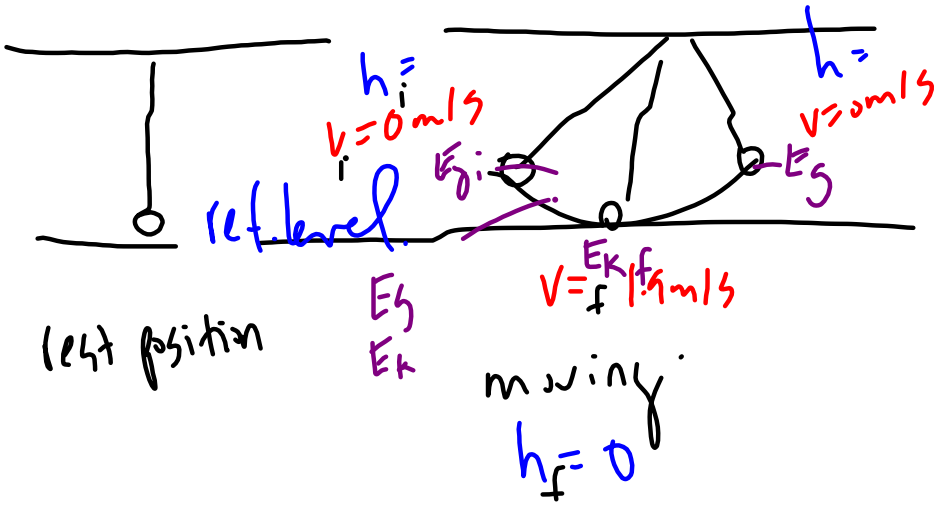
$E_{K_i} = 1.5 \times 10^2\,J$

Wb.

Exam Review - Conservation of Energy

#8 June 5

A pendulum bob is released from some initial height such that the speed of the bob at the bottom of the swing is 1.9 m/s. What is the initial height of the bob?



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

moving? when?

$$E_{gi} = E_{kf}$$

$$mgh_i = \frac{1}{2}mv_f^2$$

$$h_i = \frac{v_f^2}{2g}$$

$$h_i = \frac{(1.9)^2}{2(9.8)}$$

$$h_i = 0.18\ m \leftarrow$$

18 cm

WS

Overview

Types of Energy

Kinetic Energy

① $E_K = \frac{1}{2}mv^2$

Const. vel.

velocity is changing

$E_{K_i} = \frac{1}{2}mv_i^2$

$E_{K_f} = \frac{1}{2}mv_f^2$

① $W = Fd = \Delta E_K$

Work

$= E_{Kf} - E_{Ki}$

$= \frac{1}{2}mv_f^2 - \frac{1}{2}mv_f^2$

In Most Word prob. (horizontal motion)

Potential Energy

Gravitational

$E_g = mgh$

* identify a ref. level.

$E_{gi} = mgh_i$

$E_{gf} = mgh_f$

① $W = Fd = \Delta E_g$

$= E_{gf} - E_{gi}$

$= mgh_f - mgh_i$

vertical motion

Elastic

$E_e = \frac{1}{2}Kx^2$

①

K → N/m

x → m

$F = kx$

Energy Conservation

$ME = E_K + E_g + E_e$

mechanical energy

① Skateboarder

$ME_i = ME_f$

$E_{ki} + E_{gi} + E_{ei} = E_{Kf} + E_{gf} + E_{ef}$ ①

6 Prob

Physics 122

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* Changes made to exam outline.
  (MC = 20, Prob = 10 - Circ. and Rel. Vel no longer a choice)
* FA for last section instead of SA.

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1. Worksheets - Speed, Period, Etc.
2. FA - Problems from Last Section
3. Last Semester's SAs for Exam Review
4. Day for Switcheroo - 3 Problems: Thursday.

Science 122

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1. Science 122 - Exam Topics and Format

2. Chemistry 30:
   Unit 6: Redox Reactions and Electrochemistry

3. Last Assessment -> FA

4. Switcheroo - Problems : Friday. 15