

## Science 10

Friday, June 1/18

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Roller Coaster: Due: Friday, June 1/18 -> Wednesday, June 6/18

Optional Assignment - Graphing Characters (Max. 2)

- Due: Friday, June 1/18

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### Roller Coasters

1. Topics - SA Physics #3

2. Review - SA Physics #3

3. SA Physics #3 - wed - Next week

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## 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

Friday, June 1/18

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1. Exam Review - Problem #5 -> See Next Page
2. Last Set of Worksheets
3. SA - Types of Energy and Work-Energy Theorems  
- Wednesday, June 6/18
4. Switcheroo - Thursday
5. Exam Format + Review

## Exam Review - Kinematic Problem #5 - June 1

A car moving with a velocity of 3.45 m/s [W] accelerates uniformly for 5.21 s over a distance of 110 m. Determine the final velocity of the car.

$$\checkmark \vec{v}_i = -3.45 \text{ m/s} \quad \textcircled{1} \quad 2 \vec{d} = \left[ \frac{1}{2} (\vec{v}_i + \vec{v}_f) \right] t$$

$$\checkmark t = 5.21 \text{ s}$$

$$\checkmark d = 110 \text{ m} \quad \textcircled{1}$$

$$\vec{v}_f = ?$$

$$2 \vec{d} = (\vec{v}_i + \vec{v}_f) t$$

$$2 \vec{d} = \vec{v}_i + \vec{v}_f$$

$$\vec{v}_f = \left[ \frac{2 \vec{d}}{t} \right] - \vec{v}_i$$

$$\vec{v}_f = \frac{2(-110)}{5.21} - (-3.45)$$

$$\vec{v}_f = -38.8 \text{ m/s} \quad \textcircled{1}$$

WS

→ 38.8 m/s [W]

~~-38.8 m/s~~

38.8 m/s [W]

# Physics 122

Friday, June 1/18

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## 1. Worksheets - Speed, Period, Etc.

- \* Changes made to exam outline.
  - \* FA for last section instead of SA.
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## Science 122

Friday, June 1/18

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1. Science 122 - Exam Topics and Format
2. Chemistry 30:  
Unit 6: Redox Reactions and Electrochemistry
3. Last Assessment -> FA

## Science 122- Topics - Final Exam Topics

### Magnetism

- magnetic domains
- magnetic field lines (N  $\rightarrow$  S)
- RHR/LHR's #1, 2 and 3 + Modified Versions
- symbols: in and out of page
- parallel wires
- electric motor: decide direction of armature or I
- force acting on a straight wire
- force acting on a single charged particle
- radius of a single particle in a uniform magnetic field
- velocity selector (perpendicular B and E fields,  $v$ )
- mass spectrometer (q to m ratio)
- electromagnetic inductance
- Lenz's Law
- EMF
- Ohm's Law
- self-inductance and mutual inductance
- transformers (primary and secondary coils, turns ratio, power)

### Optics

- Plane Mirror: ray diagram and POST
- Spherical Mirrors:
  - concave (converging) and convex (diverging)
  - labelled ray diagrams and POST
  - mirror and magnification equations (sign conventions)
- Lenses:
  - focal length - shape and index of refraction
  - convex (converging) and concave (diverging)
  - labelled ray diagrams and POST
  - lens and magnification equations (sign conventions)
  - double lens problems

## Fluid Mechanics

- hydrostatics
  - mass density
  - specific gravity
  - pressure
  - hydrostatic pressure equation
  - gauge pressure
  - pressure gauges (ie/ open-tube manometer)
  - Pascal's Principle
  - Archimedes's Principle
    - buoyant force
    - apparent weight
- hydrodynamics
  - steady (streamline)/unsteady flow
  - compressible/incompressible flow
  - viscous/non-viscous flow
  - mass flow rate
  - continuity equation
  - volume flow rate
  - Bernoulli's Equation

## Nuclear Physics

- atom, nucleons (protons and neutrons) and electrons
- isotopes, nuclides, notation (mass number/atomic number)
- radioactive decay (alpha, beta (2), gamma)
- half-life, activity, decay constant
- electron-volt
- Planck: quantization of energy
- Einstein: photons and photoelectric effect (work function, cut-off frequency)
- wave-particle duality, deBroglie wavelength
- Bohr: atomic structure, energy level diagrams



### Electrochemistry

- electrochemistry
  - oxidation and reduction reactions
  - oxidizing agents and reducing agents
  - balanced half-reactions
  - balanced net ionic equations
  - building table of redox half reactions
  - determining the spontaneity of redox reactions
  - oxidation numbers/states
  - balancing redox reactions using oxidation numbers
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## **June 2018**

### **Tentative**

MC - 20

Problems - Double Lens

Hydrostatic Fluid

Hydrodynamic Fluid

Nuclear Activity/Decay Constant, Etc.

Photoelectric Effect

Energy Levels

Velocity Selector/Mass Spectrometer

Induced EMF

Determine the Spontaneity of a Redox Reaction

Balance a Redox Reaction Using Oxidation #'s