Physics 112

Wednesday, February 20/19

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1. Questions?
   SA - Basic Knowledge and Skills
   - Topics
   - Date: Thursday, Feb. 21/19
2. Vectors: Direction, Notation and Representation - Continue
3. Physical Quantities to Know
4. Adding Vectors Graphically - 2 Methods
5. Worksheet - Order of Vector Addition
6. Range of Resultant Magnitudes

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7. Review: Law of Pythagoras and Primary Trig Ratios
8. Rubric - Adding Vectors Analytically
9. Worksheet - U1 S1: Vector Analysis

Topics - SA: Basics Knowledge/Skills

1. physics - definition
2. metrology - definition
3. physical quantity - definition
4. measurements - two parts
5. scientific notation $125\,kg \Rightarrow 1.25 \times 10^{2}\,kg$
6. accuracy/precision - definitions, interpret scenario
7. percent error calculation * formula
8. significant digits - in a given measurement
   - Precision (+ and -) & Certainty (x and ÷) Rules

   dd s>
9. SI system - quantities and 7 base units (names/symbols) Chart
   - derived units
10. SI prefixes - names, symbols and powers of ten
11. metric conversions - 1 step
    - 2 steps
    - m/s ⟷ km/h
12. rearranging equations

Physics 122

Wednesday, February 20/19

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1. FA - Force Problem - Type I - Pull
   FA - Force Problem - Type I - Push
   FA - Force Problem - Type II - Simple
   FA - Force Problem - Type II - Complex

2. Worksheet: Type III (Inclined Planes)

3. FA - Force Problem - Type III - Inclined Plane

3. Worksheet: Review Force Problems (I, II and III)

4. Unit 1: Section 2 - Static Torque

5. Center of Mass

6. Tyes of Motion

7. Torque

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8. Net Torque

9. Static Torque Problems

Science 122

Wednesday, February 20/19

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1. FA - Ray Diagrams: Convex and Concave Lenses

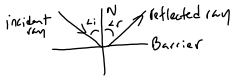
2. Lenses in Combination

3. Worksheet - Practice Problems on Lenses in Combination
   Worksheet - Extra Problems - Double Lenses

4. Review Problems (Mirrors and Lenses)

5. SA -> Optics
   -> Date: ~~Thursday, Feb. 21/19~~ -> Friday. Feb. 22/19

Law of Reflection. $\angle i = \angle r$



Refraction: $V_s = \frac{c}{n_s}$ $c = 3.00 \times 10^8$ m/s

3 Cases: ① $n_i < n_R$, $\angle i = 0°$

air water
1.00 1.33

② $n_i < n_R$, $\angle i \neq 0°$

→ bend toward the normal

$\angle i > \angle R$

③ $n_i > n_R$, $\angle i \neq 0°$

water air $\angle i < \angle R$

→ light bends away from the normal

$\uparrow V_s = \frac{c}{n_s} \downarrow$

Snell's Law.

$n_i \sin i = n_R \sin R$

Mirrors

1. Plane Mirror (flat)
   - → Complete a labelled diagram
   - → Post] 1 set of characteristics.
2. Spherical Mirrors (curved)

(i) Concave (Converging).

→ 5 ray diagrams.

→ 5 sets of Post

$R = 2f$ → Mirror Equation, Magnification Eq] Sign* Conventions

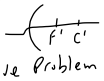
$\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_o}$

$m = -\frac{d_i}{d_o} = \frac{h_i}{h_o}$

(ii) Convex (diverging)

→ 1 Case → draw ray diagr

1 set of Post



→ Solve Problems

Lenses.

* material of the lens (index of refraction)] affect (f)
* Shape

(i) Convex lenses (converging)

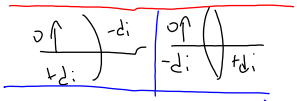
→ 5 Cases / diagrams

→ Problems.

lens eq. $\frac{1}{f} = \frac{1}{d_i} + \frac{1}{d_o}$

magn. eq. $m = -\frac{d_i}{d_o} \quad \frac{h_i}{h_o}$

* Convex lens f ⊕



(ii) Concave lens (diverging)

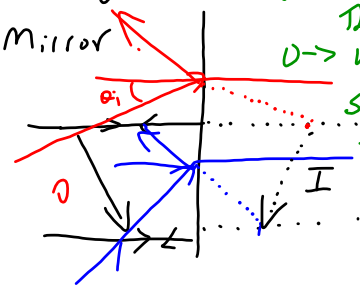
→ 1 Case / Diagram

1 set of Post

→ Word Prob. !

Ray Diagrams. P → behind the mirror. U → upright S → same T → virtual.

1. Plane Mirror



2. Spherical Mirrors.

1. Convex (diverging)

2. Concave (converging)

5 cases.

3. Lenses

1. Concave (div).

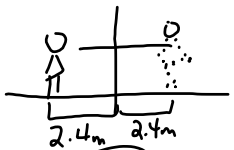
2. Convex (conv).

5 cases.

4 Ray Diagrams

MC → 5

Prob → 4/5



① Snell's Law

$v = \frac{c}{n}$, $n_i \sin i = n_R \sin R$.

② Concave mirror

③ Convex mirror

④ Concave lens

⑤ Convex lens

$R = 2f$

$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$

$m = -\frac{d_i}{d_o} = \frac{h_i}{h_o}$

Science 10

Wednesday, February 20/19

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1. SA - Chem #1
   - Topics
   - Date: Friday, February 22/19

2. Assignment: Periodic Table of Me, Myself and I
   Date: Friday, Feb. 22/19

3. Review: SA - Chem #1

4. Ions

5. Periodic Table of Ions

6. Worksheet: Bohr-Rutherford Diagrams Atoms to Ions

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7. Monatomic Ions

8. Simple Binary Ionic Compounds

Topics: SA - Chem #1

1. chemistry
2. matter
3. types of properties: physical and chemical
4. types of changes: physical and chemical
5. atoms -> building blocks of matter
   -> three subatomic particles: p^+, n, e^-
   -> locations of three subatomic particles
   -> electrically neutral: $\#p^+ = \#e^-$
6. element
7. chemical symbols
8. periodic table of the elements - periods (rows)
   - groups/families (columns)
   - family and period names
   - location of metals, nonmetals and metalloids
9. atomic number = number of protons
10. standard atomic notation
11. Bohr-Rutherford Diagrams

proton
neutron
electron