

Science 122

Friday, October 14/16

Midterm - Tuesday, Nov. 15/16

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1. SA - Mirrors -> Monday, Oct. 17 -> Ray Diagrams
 - (1) plane
 - (1) convex
 - (2) concave-> Word Problems
 2. Check -> Worksheet - Convex Lens - Ray Diagrams
 3. Lens Equation and Magnification Equation
 4. [Worksheet - Lenses/Mirrors and Lenses \(Calculations\) - HW](#)
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Physics 112

Friday, October 14/16

Midterm - Wednesday, Nov. 9/16

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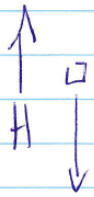
1. Check -> Worksheet - Freely Falling Bodies
2. Formative Assessment - Kinematic Problem
3. Worksheet - Extra Motion Problems
4. **Summative Assessment - U1 S3 -> Monday, Oct. 17/16
- Kinematic Problems**

5. Unit 2 - Dynamics
6. Introduction to Forces
7. Force of Gravity/Weight
8. Practice Problems (PP) - C4 - Weight - Page 137: 1-4

Formative Assessment - Freely Falling Body

Friday, October 14/16

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 the package to reach the ground?



Formative Assessment - Freely Falling Body
Friday, October 14/16

$$\begin{aligned}\vec{v}_i &= +5.00 \text{ m/s} \\ \vec{a} &= -9.80 \text{ m/s}^2 \\ d &= -105 \text{ m} \\ t &= ?\end{aligned}$$

Solution 1

$$\begin{aligned}d &= \vec{v}_i t + \frac{1}{2} \vec{a} t^2 \\ -105 &= 5.00t + \frac{1}{2}(-9.80)t^2 \\ -105 &= 5.00t - 4.90t^2 \\ -4.90t^2 + 5.00t + 105 &= 0\end{aligned}$$

$$t = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$t = \frac{-(5.00) \pm \sqrt{(5.00)^2 - 4(-4.90)(105)}}{2(-4.90)}$$

$$t = \frac{-5.00 \pm \sqrt{2083}}{-9.80}$$

$$t = \frac{-5.00 \pm 45.64}{-9.80} \leftarrow \text{keep extra digit}$$

$$t = 5.17 \text{ s} \text{ or } t = -4.15 \text{ s}$$

It took 5.17 s.

Solution 2

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

$$\begin{aligned}\sqrt{\vec{v}_f^2} &= \sqrt{\vec{v}_i^2 + 2\vec{a}d} \\ \vec{v}_f &= \sqrt{(5.00)^2 + 2(-9.80)(-105)}\end{aligned}$$

$$\vec{v}_f = -45.64 \text{ m/s}$$

↑ ↑ keep an extra digit
⊖ because package is falling

$$\vec{a} = \frac{\vec{v}_f - \vec{v}_i}{t}$$

$$t = \frac{\vec{v}_f - \vec{v}_i}{\vec{a}}$$

$$t = \frac{-45.64 - (5.00)}{-9.80}$$

$$t = 5.17 \text{ s.}$$

It took 5.17 s.

Physics 122

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Midterm - Tuesday, Nov. 8/16

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1. Return -> SA - Force and Static Torque Problems -> Monday

2. Torque Lab - Due: Wed., October 19/16

3. Relative Velocity

4. Velocities Along the Same Line

5. Notation

6. Relative Velocities Involving Angles - Boat

- Plane

- Intersection

Science 10

Friday, October 14/16

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1. Double Replacement Reactions
 2. [Worksheet - Single and Double Replacement Reactions - HW](#)
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3. Combustion Reactions
 4. Worksheet - Combustion Reactions
 5. Worksheet - Types of Reactions
 6. Assignment - Identifying and Balancing Chemical Reactions
- 8 Chemical Reactions
 7. Worksheet - Translating Word Equations to Balanced Chemical Equations