

Science 10

Monday, May 28/18

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Roller Coaster: Due: Friday, June 1/18
Optional Assignment - Graphing Characters (Max. 2)
- Due: Friday, June 1/18

1. SA - Physics #2 - Still to be written by some.
 2. FA - Position and Displacement
 3. Resultant Displacement
 4. Average Velocity
 5. [Worksheet: Constant and Average Velocity Problems](#)
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6. Position vs Time Graphs
7. Worksheets - Position vs Time Graphs
8. Velocity-Time Graphs
9. Worksheet - Velocity vs Time Graphs
10. Acceleration
11. Comparing Directions of Velocities and Accelerations
12. Sample Problems - Acceleration
13. Worksheet - Acceleration

Physics 112

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1. Exam Review - Problem #1 -> See Next Page
 2. Return -> FA - E_k and Work- E_k Theorem
 3. Check:
Worksheet: C6 PP #27 and 29 -> Grav. Pot. Energy
C6 PP #30-33 -> W- E_g Theorem
 4. Restoring Force
 5. Hooke's Law
 6. Elastic Limit
 7. Model Problem
-
8. Elastic Potential Energy
 9. Model Problem
 10. Worksheets:
Textbook - C6 PP #35-37 -> Hooke's Law
Textbook - C6 PP #38-40 - Hooke's Law and E_e
Textbook - C6 PFU

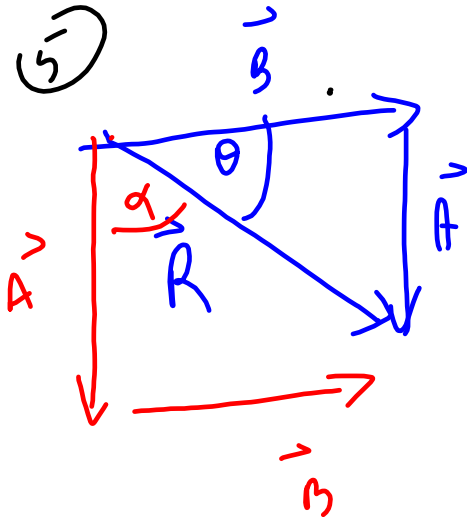
Exam Review - Calculating \vec{R} #1 - May 28

$\vec{A} = 28.9 \text{ m/s}^2, \text{ S}$ and $\vec{B} = 37.1 \text{ m/s}^2, \text{ E}$. Calculate \vec{R} . (10)

$$\vec{A} = 28.9 \text{ m/s}^2, \text{ S}$$

$$\vec{B} = 37.1 \text{ m/s}^2, \text{ E}$$

Sketch:



$$R^2 = A^2 + B^2$$

$$(2) \quad R = \sqrt{A^2 + B^2} \quad \leftarrow$$

$$R = \sqrt{(28.9)^2 + (37.1)^2}$$

$$R = 47.0 \text{ m/s}^2$$

$$(2) \quad \tan \theta = \frac{28.9}{37.1} \quad \leftarrow$$

$$\theta = 37.9^\circ$$

$$\vec{R} = 47.0 \text{ m/s}^2, 37.9^\circ \text{ S of E} \quad (1)$$

$$52.1^\circ \text{ E of S}$$

Physics 122

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1. SA: U2 - S1 and S2 - Tuesday, May 29
 2. Kepler's Three Laws of Planetary Motion - Experiment 8.1
Due: Tues → May 29 (at the latest)
 3. Topics for Final Exam
Exam Review - Problem #1
 4. Check:
[Worksheet - Kepler's Third Law Problems](#)
-

5. Universal Law of Gravitation
6. Worksheet - Universal Law of Gravitation
7. Gravitational Field Strength
8. Calculating the Value of "g"
9. Orbital Speed
10. Three Basic Orbits
11. The Period of an Orbiting Object
12. Worksheets - Speed, Period, Etc.

Physics 122/121 - Topics - Final Exam

Unit 1

- > force problems
 - push/pull
 - suspended objects
 - incline plane
- > static torque
 - horizontal
 - involving an angle
- > relative velocity (boat, plane and intersection problems)
- > collisions
 - 1 D
 - simple
 - elastic/inelastic
 - 2D
 - collision/explosion

Unit 2

- > projectiles
 - horizontal
 - fired at an angle
- > circular motion
 - horizontal circular motion
 - banked and unbanked curves
- > Kepler's Laws (3)
- > Law of Universal Gravitation
- > g , v and T of satellites, moons, planets, etc.
- > SHM
 - pendulum
 - mass on a spring

Unit 3

-> electrostatics

- types of electrical charges (2)
- transfer of charge between identical objects/conservation of energy
- charging objects
 - by electrification by friction
 - by conduction
 - by induction
- electric force - Coulomb's Law
 - 2 charges
 - 3 charges
- electric fields
 - diagrams
 - electric field strength
- electric potential energy
- electric potential difference

-> electric current

- conventional current/electron flow
- circuit symbols
- open/closed circuits
- ammeters/voltmeters
- resistance in a wire?
- Ohm's Law
- power
- circuits
 - VIR chart
 - series
 - parallel
 - complex

June 2018

Format - multiple choice = 20
problems = 10

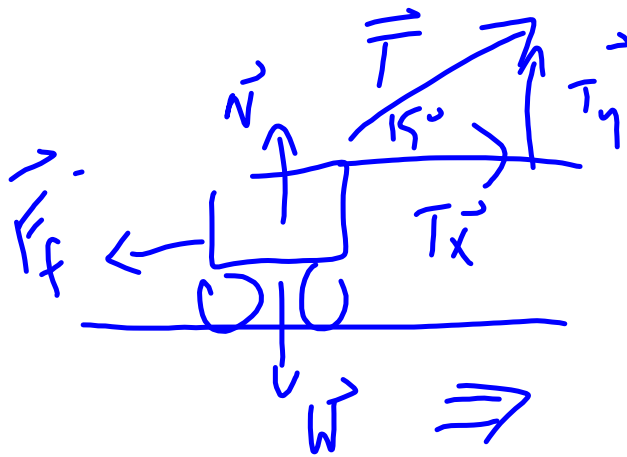
1. push/pull OR inclined plane problem
2. circular motion OR relative velocity
3. static torque problem
4. 2D collision/explosion
5. projectile fired at an angle
6. Law of Universal Gravitation and g , v and T of satellite or planet, etc.
7. SHM - mass on a spring
8. Coulomb's Law - 3 charges
9. electric field - diagram, magnitude and direction
10. circuit - complete VIR chart

P122 - Exam Review - Problem #1

Pull Problem

 $6.6 \times 10^2 \text{ N}$

A 200 kg cart is pulled along a level surface by a rope angled at 15° above the horizontal. If the cart's speed increases at a rate of 1.6 m/s^2 , what is the magnitude of the tension in the cable? Assume the coefficient of friction between the cart and the surface is 0.18.



$$F_{\text{net}} = ma$$

$$+T_x - F_f = m(a)$$

$$T \cos 15^\circ - \mu N = ma$$

$$N \neq W$$

$$N + T_y - W = 0$$

$$T \cos 15^\circ - \mu (mg - T \sin 15^\circ) = ma$$

$$N = W - T_y$$

$$N = mg - T \sin 15^\circ$$

$$T \cos 15^\circ - \mu mg + \mu T \sin 15^\circ = ma$$

$$T \cos 15^\circ + \mu T \sin 15^\circ = ma + \mu mg$$

$$T = \frac{ma + \mu mg}{\cos 15^\circ + \mu \sin 15^\circ}$$

$$T = 6.6 \times 10^2 \text{ N. } \checkmark$$

The magn. of tension is _____.

Science 122

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1. Return -> FA - Build a Table of Redox Half-Reactions

2. 5 Steps For Predicting Redox Reactions

3. [Worksheet: #64](#)

4. Oxidation Numbers/States

5. Rules for Assigning Oxidation Numbers

6. Worksheet - Assigning Oxidation Numbers

7. Balancing Redox Reactions Using Oxidation Numbers

8. Chemistry 30:

Unit 6: Redox Reactions and Electrochemistry