

Physics 112

Tuesday, January 8/19

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1. Review - Conservation of Energy

2. Questions?

[Worksheet - C7 - Conservation of Mechanical Energy](#)

[Page 287: PP# 1-4, 6-7](#)

[Worksheet – Extra Practice - Conservation of Energy](#)

3. SA - U3S3 - Conservation of Energy

- Friday, January 11/19

- Format - Problems

4. Exam Review - Problem #4 - First Law Problem

- Completed in Class

Review - Conservation of Energy

1. system - isolated and closed
2. mechanical energy

$$ME = \text{Kinetic energy} + \text{potential energy}$$

$$ME = E_k + E_g + E_e$$

Reminders:

$$E_k = \frac{1}{2}mv^2 \quad \text{speed?}$$

$$E_g = mgh \quad \text{on or how far from the ref. level?}$$

State

$$E_e = \frac{1}{2}kx^2 \quad \text{stretched/compressed?}$$

Spring/force constant (N/m)

Amount stretched or compressed (m)

$$* F = kx \quad \text{Hooke's Law}$$

→ Skateboarder problem.

$$\textcircled{1} ME = \textcircled{2} ME = \textcircled{3} ME$$

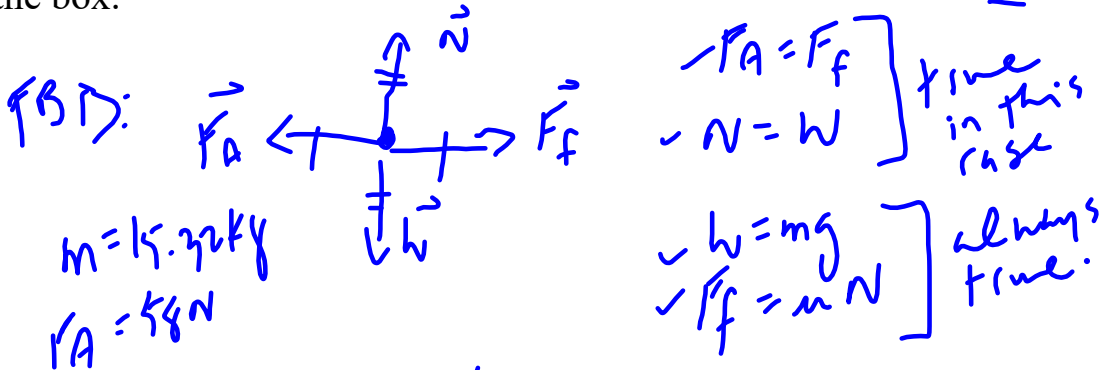
$$E_{kj} + E_{gj} + E_{ej} = E_{kf} + E_{gf} + E_{ef}$$

Exam Review - Problem #4 - First Law Problem

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 $v_{\text{const}} \leftarrow \rightarrow$ constant speed

A box of mass 15.32 kg is being pulled to the left across a horizontal surface by an applied force of 58 N. The box is moving at constant speed. What is the coefficient of kinetic friction? Include an FBD for the box.



$$\textcircled{1} F_f = \mu N$$

$$\textcircled{1} F_A = \mu N$$

$$\textcircled{1} F_A = \mu W$$

$$\textcircled{1} F_A = \mu mg$$

$$\textcircled{1} \frac{F_A}{mg} = \mu$$

$$\textcircled{1} \mu = \frac{15.32 \text{ kg}}{(58)(9.8)}$$

$$\textcircled{1} \mu = 0.39 \quad \mu < 1$$

W.S. \rightarrow The coefficient of friction is 0.39.

0.39

Physics 122

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1. FA - Coulomb's Law - Three Charged Bodies in a Line
FA - Coulomb's Law - Three Charged Bodies at Angles
 2. Questions?
Textbook: Page 646, #11-14 } Electric Field Strength
Textbook: Page 655, #20-24 }
 3. Review - Gravitational Potential Energy
 4. Electric Potential Energy
 5. Electric Potential Difference
 6. Topics - U3 S3 - Electrostatics
 7. U3 S2 - Electric Circuits
 8. Potential Difference and Flowing Charge
 9. Ohm's Law
 10. VIR Chart
 11. Series Circuits - To Be Continued
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12. Series Circuits -Textbook: Page 719, #27-31
 13. Parallel Circuits
 14. Parallel Circuits - Textbook: Page 724, C15 - PP#32-35
 15. Combination/Complex Circuits
 16. Combination/Complex Circuits - Textbook: Page 728, #36-37
Textbook: Page 749, #33-34

Science 10

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1. Science Articles - Complete 8 by the end of the semester.
 2. Practice Exam - Available
 3. Types of Physical Quantities
 4. Position and Displacement
 5. [Worksheet - 100 Hundred Acre Wood - P5](#)
 6. Velocity
 7. Calculating Velocity - P4 -> To Be Continued
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8. Resultant Displacement
9. Average Velocity
10. Worksheet: Constant and Average Velocity Problems
11. Position vs Time Graphs
12. Worksheet: Position vs. Time Graph
13. Velocity-Time Graphs
14. Worksheet - Velocity vs Time Graphs
15. Acceleration
16. Calculating Acceleration
17. Comparing Directions of Velocity and Acceleration
18. Worksheet - Acceleration