Physics 112

Thursday, December 13/18

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1. Questions?
   Worksheet -C6 PP #19-21 -> Kinetic Energy
         - C6 PP #22-25 -> E_k and Work-E_K Theorem

2. FA - Kinetic Energy
   FA - Work-E_k Theorem   } Do and check in class.
   FA - Work-E_k Theorem (Problem)

3. Worksheet - C6 PP #27 and 29 -> Gravitational Pot. Energy
         C6 PP #30-33 -> W- E_g Theorem

4. FA - Gravitational Potential Energy   } Tomorrow
   FA - Change in Gravitational Pot. Energy

5. Restoring Force, Hooke's Law and Elastic Limit

6. Elastic Potential Energy

7. FA - Elastic Potential Energy

8. Worksheet - C6 PP #35-37 -> Hooke's Law
             C6 PP #38-40 - Hooke's Law and E_e
             C6 PFU #16-17, 20 , 23-25, 27-28, 30-31

9. SA - U3S2 - Types of Energy and Work-Energy Theorems
         - _____Wednesday, Dec. 19/18_____

Kinetic Energy
(motion)

uniform motion

$$E_K = \frac{1}{2}mv^2$$

acc'd motion

$$E_{Ki} = \frac{1}{2}mv_i^2$$

$$E_{Kf} = \frac{1}{2}mv_f^2$$

$$W = \Delta E_K$$

Formative Assessment – Kinetic Energy

You serve a volleyball that has a mass of 2.1 kg. With what speed
does the ball leave your hand if it has 945 J of kinetic energy?

$$m = 2.1 \text{ kg}$$

$$E_{k_f} = 945 \text{ J}$$

$$v_f = ?$$

$$E_{k_f} = \left(\frac{1}{2} m v_f^2 \right)$$

$$\sqrt{\frac{2 E_{k_f}}{m}} = v_f$$

$$v_f = 30 \text{ m/s}$$

WS

Formative Assessment – Work-Kinetic Energy Theorem

Given the following variables, what version of the work-kinetic energy theorem should be used?

a) m, v_i, F, d, v_f

$$W = \Delta E_k$$
$$Fd = E_{kf} - E_{ki}$$
$$Fd = \tfrac{1}{2} m v_f^2 - \tfrac{1}{2} m v_i^2$$

b) d, $\triangle E_k$, F

$$Fd = \Delta E_k$$

c) v_i, W, m, E_{kf}

$$W = \Delta E_k$$
$$W = \underline{E_{kf}} - E_{ki} \quad \leftarrow$$
$$W = E_{kf} - \tfrac{1}{2} m v_i^2$$

d) Eki, d, F, Ekf

$$Fd = \underline{E_{kf}} - \underline{E_{ki}}$$

Formative Assessment – Work-Kinetic Energy Theorem (Problem)

A 80.3 kg student wearing frictionless roller skates moving at 1.2 m/s on a horizontal surface is pushed by a friend with a constant force of 45 N. How far must the student be pushed so that her final kinetic energy is 352 J?

$m = 80.3 kg$

$v_i = 1.2 m/s$

$F = 45 N$

$E_{kf} = 352 J$

$W = \Delta E_k$

$\left[Fd = E_{kf} - \frac{1}{2}mv_i^2 \right]$

$d = \dfrac{E_{kf} - \frac{1}{2}mv_i^2}{F}$

$d = 6.5 m$ W5J

Physics 122

Thursday, December 13/18

1. FA - Horizontal Projectiles - Deadline:<u>Wed., Dec. 12/18</u>

2. Worksheet - Projectiles Fired at an Angle
   - C11, Text 543, PP #9-12
   Worksheet - Projectiles Fired at an Angle
   - C11, Text 549, PP #13, PP #14 (Level 1)
   - C11, Text 570, PFU #17, 19, 20 (omit graph)
   Worksheets - Mixed Horizontal and Fired at an Angle Projectiles (2)

3. FA - Projectile Fired at an Angle - Deadline:<u>Thurs., Dec. 13/18</u>

4. FA - Mixed SHM and Projectile Motion (Optional)

5. SA - U2 S3&4 - SHM and Projectile Motion
   - 5 Problems (10 min/Prob)
   - Monday, Dec. 17/18

6. Unit 3 - Section 1 - Electrostatics

7. Electrostatics

8. Types of Charge

9. Transfer of Charge

10. Law of Conservation of Electric Charge

11. Electrostatic Force

12. Coulomb's Law

13. Worksheet -Charge and Coulomb's Law (Two Objects)

Science 10
Thursday, December 13/18

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1. Science Articles - Complete 8 by the end of the semester.
   Optional Assignment - Graphing Characters (Max. 2)
                                    - Due: Dec. 21/18

2. More Examples: Average Speed Problems

3. Worksheets - Average Speed Problems (3)

4. SA - Physics #2
       - Topics (See Next Page)
       - Date: Tuesday, Dec. 18/18

5. Review: SA Physics #2

6. Roller Coasters and/or Intervention

Science 10
Topics - SA: Physics #2

1. Plot and label points in the four quadrants.

2. Write the coordinates of a plotted point.

3. Determine the slope of a line using:

$$m = \frac{rise}{run} \quad \text{OR} \quad m = \frac{y_2 - y_1}{x_2 - x_1}$$

4. Draw and label a distance vs. time graph.

5. Be able to determine the speed of an object from a distance vs. time graph.

6. Answer questions about distance vs. time graphs.

7. Match a graph to a story/interpret a graph.

8. Solve average speed problems.