Science 122
Friday, December 9/16

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1. Assignment: Nuclear Decay, Half-Life, Decay Constants & Activity
   Due: Monday, Dec. 12/16

2. Formative - Photoelectric Effect and Energy Levels
   - Monday, Dec. 12/16

3. SA - Nuclear Physics
   - Wed., Dec. 14/16

4. Worksheet - Energy of Photons, Work Function, Etc.
   Worksheet - Energy Levels

5. Topic Thermodynamics

6. Intro to Thermodynamics

7. Thermal Expansion

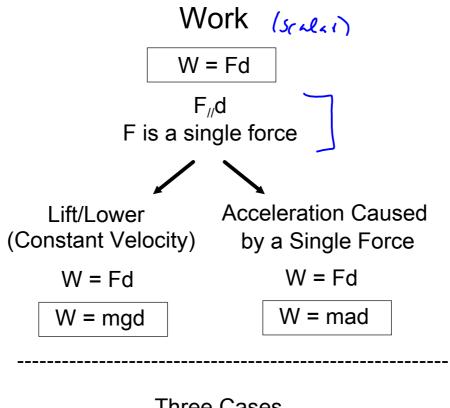8. Linear Expansion and Coefficient of Linear Expansion
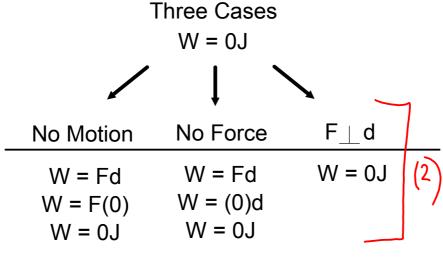   - To Be Continued

Physics 112
Friday, December 9/16

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1. Formative Assessment - Hooke's Law and Elastic Energy

2. Check -> Worksheet: C6 - Hooke's Law Page 258: PP # 35-37
   C6 - Elastic Potential Energy Page 261: PP #38-40
   Worksheet: Work, Types of E and Work-Energy Theorems
   C6 - Page 275 - #17, 18, 20, 23, 27, 30, 31

3. Summary for Monday's SA

4. SA - U3 S1 and S2: Monday, Dec. 12/16
   Format: MC, Fill in the Blanks, Problems

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5. Concept Sheet -> U3 S3 - Power and Efficiency

6. Power

7. Efficiency

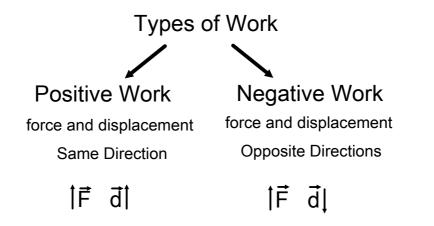8. Concept Sheet -> U3 S4 - Systems and Energy Conservation

Formative Assessment: Hooke's Law and Elastic Energy
Friday, Dec. 9/16

A slingshot has an elastic cord tied to a Y-shaped frame. A force is applied to the cord stretching it by 15 cm and giving it 7.8 J of potential energy.
a) What is the spring constant of the elastic cord?
b) What is the magnitude of the force applied to the elastic cord?
c) What is the magnitude and direction of the restoring force from the elastic cord?

Work (scalar)

$$W = Fd$$

$F_{//}d$
F is a single force

Lift/Lower
(Constant Velocity)

$W = Fd$

$$W = mgd$$

Acceleration Caused
by a Single Force

$W = Fd$

$$W = mad$$

Three Cases
$W = 0J$

No Motion	No Force	$F \perp d$
$W = Fd$	$W = Fd$	$W = 0J$
$W = F(0)$	$W = (0)d$	
$W = 0J$	$W = 0J$	

(2)

Types of Work

Positive Work

force and displacement

Same Direction

$\uparrow \vec{F} \quad \vec{d} \uparrow$

Negative Work

force and displacement

Opposite Directions

$\uparrow \vec{F} \quad \vec{d} \downarrow$

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Types of Energy (scalars)

Kinetic Energy
(due to motion)

Constant Speed

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

Changing Speed

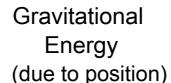$$E_{ki} = \frac{1}{2}mv_i^2$$

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

Change in E_k

$$\Delta E_k = E_{kf} - E_{ki}$$

Work-Kinetic Energy Theorem

$$W = \Delta E_k$$

Potential Energy
(stored energy)

Gravitational Energy
(due to position)

*reference level required

$$E_g = mgh$$

| h_f | $E_{gf} = mgh_f$ |

↑

| h_i | $E_{gi} = mgh_i$ rl $E_g = 0J$ |

Change in E_g

$$\Delta E_g = E_{gf} - E_{gi}$$

Work-GP Energy Theorem

$$W = \Delta E_g$$

Elastic Energy
(due to condition)

$$F = kx$$

$$F = F_R$$

(opposite directions)

$$E_e = \frac{1}{2}kx^2$$

*elastic limit

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1. SA - Simple Harmonic Motion
   - Assignment - Thursday, Dec. 8/16
   - Multiple Choice and Problems (4)

2. Worksheet - Circular Motion

3. Banked Curves

4. Unbanked Curves

5. Worksheet - Banked and Unbanked Curves

Science 10
Friday, December 9/16

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1. Assignment - Average Speed, Constant Velocity and Average Velocity

2. Worksheet - Position vs Time Graph
   Worksheets - Velocity vs. Time Graphs } HW for Monday

3. Roller Coasters