

Will Legg

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REFLECTION PROMPT: This is the last reflection question for the semester.

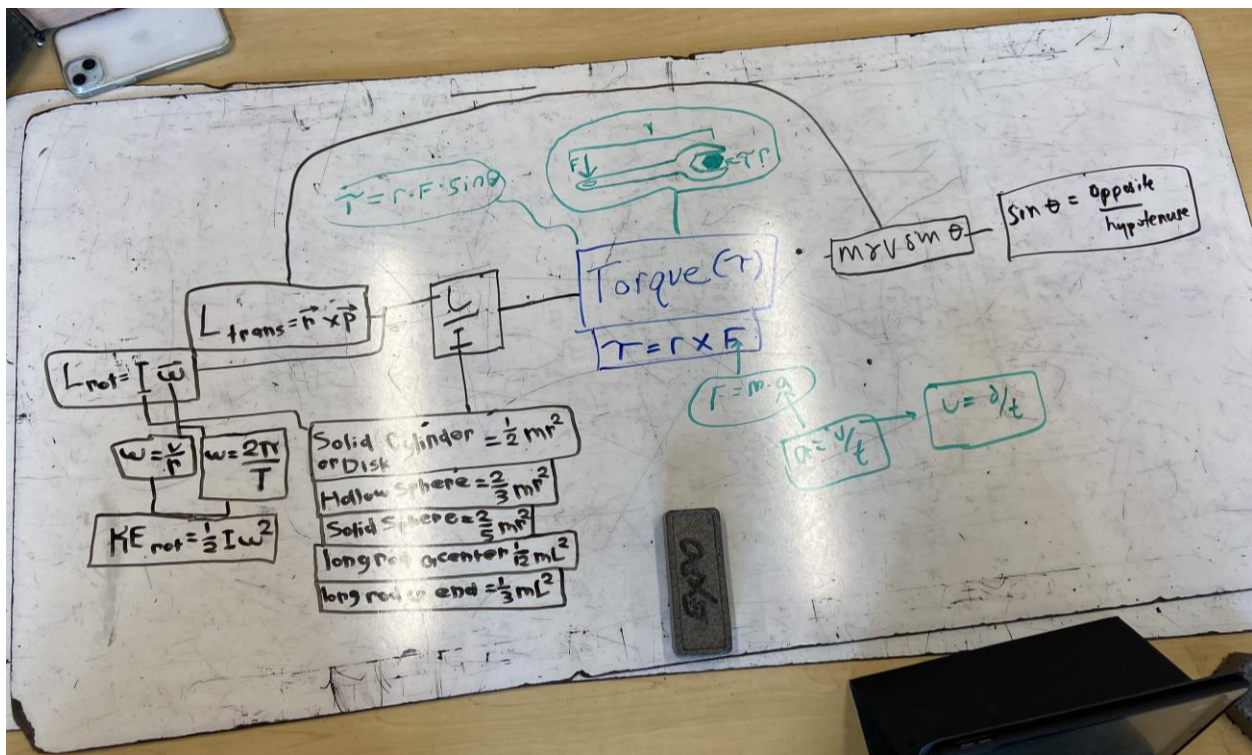
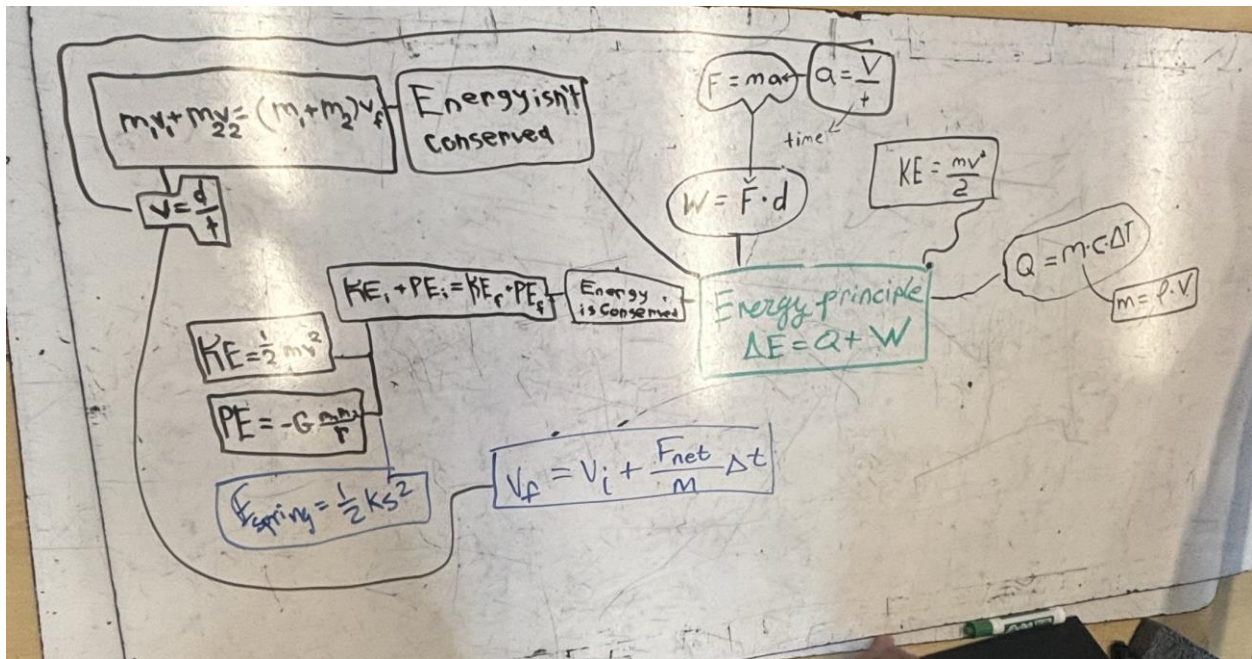
Reflecting back on the semester, what do you think your strengths were, and this physics class what did you learn about yourself in relation to group work, if anything?

Reflecting back on the semester, I believe my strengths in this physics class were centered around my ability to stay engaged and involved in group work. Throughout the semester, I consistently made an effort to contribute to all aspects of our group's problem-solving process, from identifying the problem to brainstorming solutions and refining our model. This commitment allowed me to deepen my understanding of the course material.

Do you think you have developed any particular group-based skills or identified a role that you like to play in learning groups? In terms of group work, this class has taught me the importance of effective communication and collaboration. By actively engaging with my groupmates and asking clarifying questions, I was able to ensure that we were all on the same page and working towards a common goal. This experience highlighted the value of clear communication and the ability to work together cohesively.

Also, reflecting back across the whole semester, what do you think your strengths were in this class? Looking back on the entire semester, I believe my strengths in this class lie in my dedication to thorough problem-solving and my willingness to actively participate in group activities. By consistently engaging with the material and contributing to group discussions, I was able to deepen my understanding of physics concepts and develop valuable teamwork skills. Moving forward, I aim to continue building on these strengths while also exploring new ways to enhance my learning and contribute to group success.

PASTE IMAGES OF YOUR THURSDAY WHITEBOARDS HERE:



The Problem

Eugene got a flat tire. He must remove nut from wheel. Each nut requires 200 Nm to remove. Eugene has infinitely extendable wrench. Eugene can provide 1 N of force. Determine how long Eugene needs to make the wrench to unscrew the nut.

part B

The moment after Eugene releases the nut he is hit by a very hot bullet, and he is uniformly and instantaneously heated to the point of liquification. The heat required to liquify Eugene and his bones is 3000 K. Given the bullet is 1g and Eugene is 40 kg, find the heat of the bullet.



1. Solve for length of Wrench

$$\tau = r \cdot F \cdot \sin \theta$$

$$200 = r \cdot 1 \cdot \sin(45)$$

$$1 \cdot \sin(45)$$

$$r = 2.869.44 \text{ m}$$

2. Find Heat of bullet

$$m_b c_b \Delta T_b = m_b c_b \Delta T_b$$

$$m_b c_b (T_f - T_i) = m_b c_b (T_f - T_i)$$

$$\frac{m_b c_b (T_f - T_i)}{m_b - c_b} - T_f = -T_i$$

$$\frac{40 \cdot 2000 \cdot (3000 - 310)}{0.001 \cdot 236} - 3000 = T_i$$

$$T = 911861406.78 \text{ K}$$

3. Find moment of Inertia of bro

$$I = 40 \cdot 0.35^2$$

$$I = 4.9$$

4. Find ω if car is going 40 m/s

$$C = 2\pi r$$

$$\omega = 18.189 \text{ rad/s}$$

$$C = 2.199 \text{ m}$$

$$V_o = 40 \text{ m/s}$$

5. Find angular momentum

$$L = I \omega = 89.127$$

$$L = 4.9 \cdot 18.19 \text{ kg m/s}$$