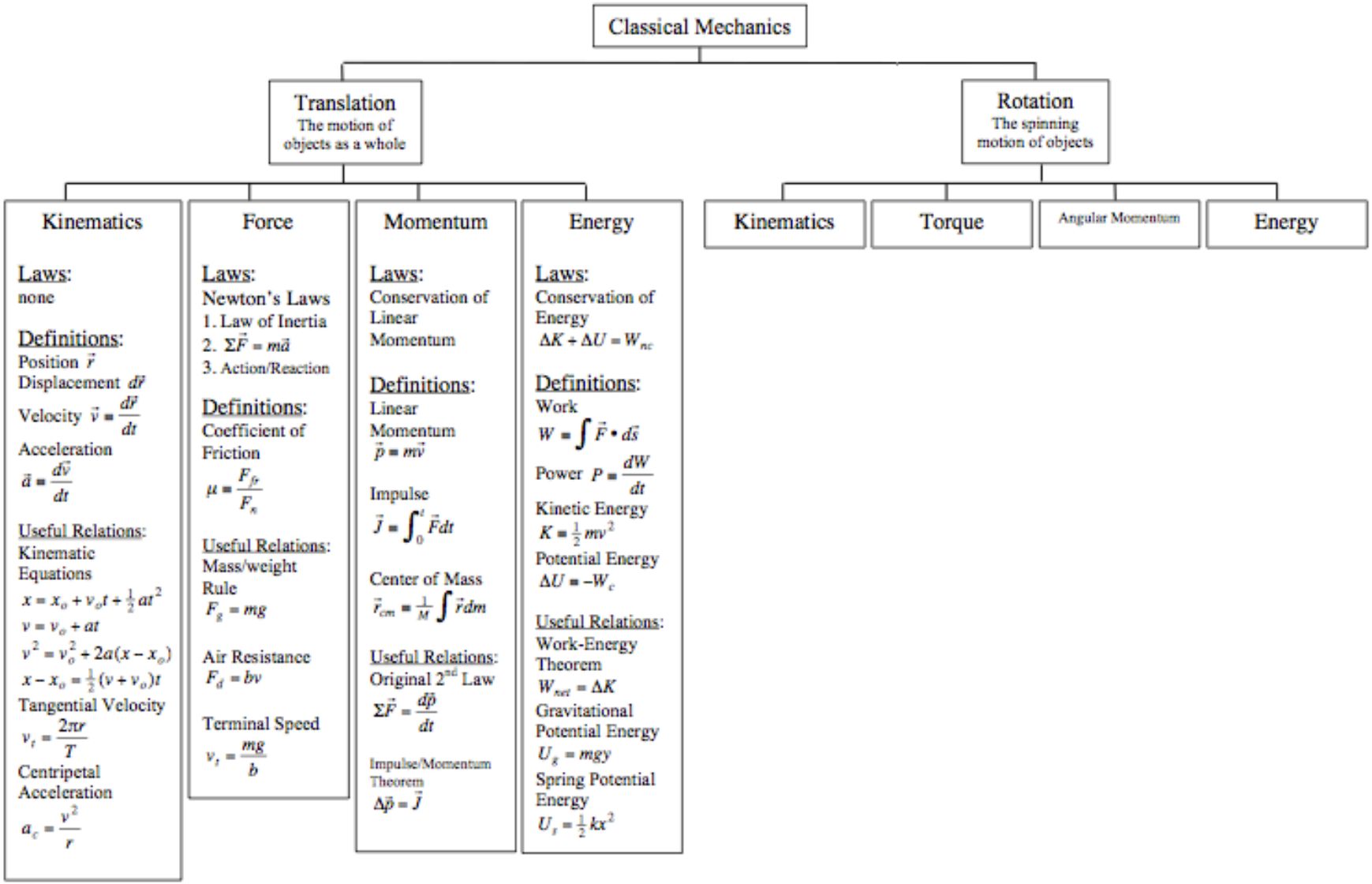
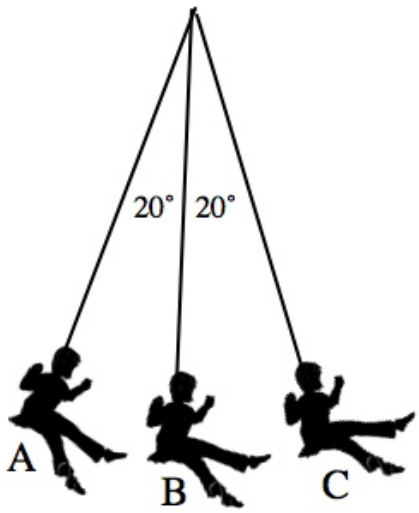
Bring A Problem To Class

Summary of the Course to Date



A 30.0kg child on a 2.00m long swing moves back and forth through a 40° angle (20° on each side of the vertical). Find the work done by the tension, the work done by gravity and the total work done on the child as she moves from (a)A to B, (b)B to C, and (c)A to C.



Do we want to solve this problem with

A. kinematics?
B. forces?
C. linear momentum?
D. energy?

Motion	Work by tension	Work by gravity	Total work
A to B			
B to C			
A to C			

Example 18.2: A tritium nucleus (^3H) at rest in a fusion reactor breaks up into a neutron traveling to the left at 75.0km/s, a second neutron that heads off at a 30.0° angle with a speed of 40.0km/s, and a proton. Find the velocity of the proton assuming the masses of the neutron and proton are equal.

Get out your "clickers."

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1. Draw the before and after pictures.
2. Choose coordinates.
3. Write out the initial momentum along the x-direction and the y-direction.
4. Write out the final momentum along the x-direction and the y-direction.

For each situation below draw the free body diagram.

1. A physics book skidding to the right along a tabletop.

2. A car rolling down an icy hill.

3. A ball held down on a spring by two threads.

4. A baseball in the air heading straight upward.

PS#24-4. A 5.00g bullet fired horizontally at a 1.00kg wooden block with a speed of 450m/s goes quickly and completely through the block. The block is attached to the ceiling with a long string and as a result of the collision, swings upward a vertical distance of 5.00mm. Find (a)the initial kinetic energy of the bullet, (b)the speed of the block just after the bullet leaves, (c)the speed of the bullet as it leaves the block, and (d)the final kinetic energy just after the collision. (e)Is this an elastic collision?

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