PHYS 210 - General Physics I

- Base Groups
- Newton's Laws of Motion
- Rotation and forces
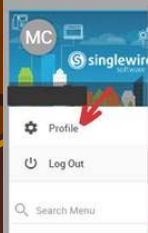
Pope and tablecloth

FORCES

Please Note:

- Physics Study Tables moving from Wednesday to Thursday evening (7:30 pm in SCIC 114) for this week (only!)

- SPS – Orionid meteor shower watch tonight at 10 pm at MU Observatory (by tennis courts and skating rink)
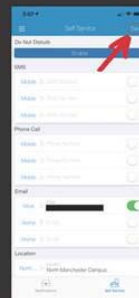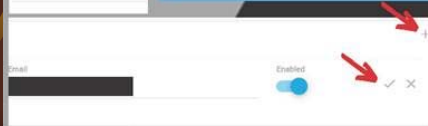
Also, from the Director of University Safety:

Base Groups!

- BGDG: If you could have a superpower, what would it be and why?
- BGWS
- RQ

Newton's Laws of Motion

Know these by heart!

1. If $\vec{F}_{NET} = 0$, then $\vec{v} = \text{constant}$
   - Mass is a measure of inertia
2. $\vec{F}_{NET} = m\vec{a}$
   - SI unit of force is the Newton [N]
   - The net force is parallel to the acceleration!
3. $\vec{F}_{12} = -\vec{F}_{21}$

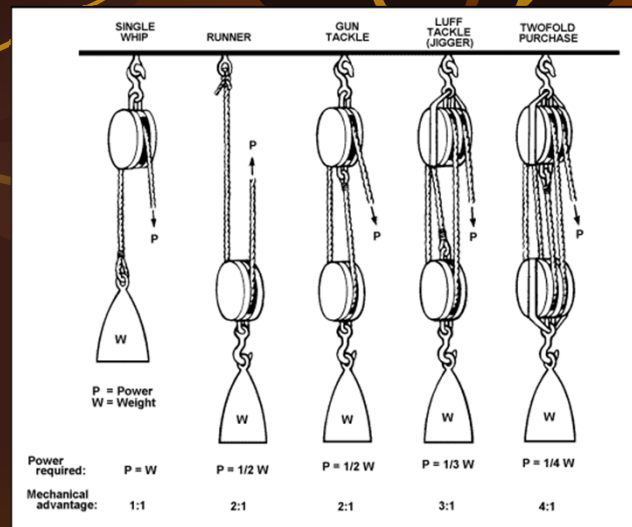# Example: P7.39

- The 10.2 kg block in the figure is held in place my a force applied to a rope passing over two massless, frictionless pulleys. Find the tensions T_1 through T_5 and the magnitude of the force F.

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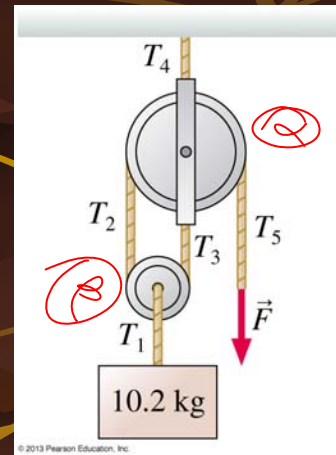
- Ideal Mechanical Advantage:

$$IMA = \frac{F_{output}}{F_{input}}$$

- Pulleys input force on free end of rope; output force is the load

4

EXAMPLE: Two blocks, m_A & m_B, are connected over a frictionless, massless pulley. The mass of block A is *10 kg* and the coefficient of kinetic friction between block A and the incline is *0.20*. The angle of inclination is *30°*. Block A slides down the incline at a constant acceleration of magnitude $a = 1.3\ m/s^2$. Find the mass of block B.

KNOWNS:
‣ Massless pulley
‣ m_A = 10 kg
‣ θ = 30°
‣ μ_k = 0.20
‣ Block A slides down @ const <u>acceleration</u>, $a = 1.3\ m/s^2$.
‣ Find m_B

Frictionless, massless pulley
A
B
θ
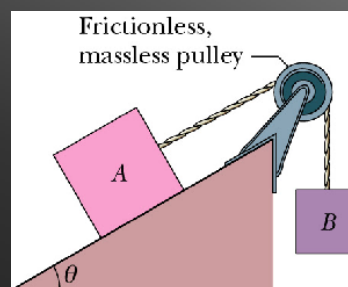
Science Seminar today!

Chemistry Rocks! Celebrating National Chemistry Week.