EXAM 2 REVIEW

Things to commit to memory:

- Chapter 4
  - Newton's Laws
  - W=mg or F_w=mg
  - Mass vs Weight
  - Incline plane diagram
  - Apparent Weight Formula/ Elevator Equation: N=mg+ma
- Chapter 5
  - Static Friction vs Kinetic Friction
  - When Hooke's Law is applicable?
- Chapter 6
  - 2πradians=1 revolution
  - What is constant in Uniform Circular Motion?
  - Which way does F_c point?
  - What is a F_c?
  - What provides the F_c on an unbanked curve?
  - What provides the F_c on a banked curve?
  - Equation for ideally banked curves: tanø= v^2/rg
  - What is the period or T?

Resources to check out if you need help with the content:

- Orgo chem tutor
- Chad's Prep
- AK Lectures

Disclaimer: I picked out questions that will emphasize important concepts. This by no means will cover everything for Exam 2 and it shouldn't be your only study material.

Other things to Study:

1. Study set questions
2. Ppt questions
3. Classwork problems
4. PAL
5. Book problems

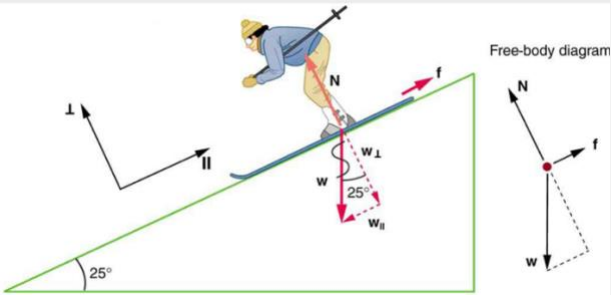
A 63.0-kg sprinter starts a race with a net external force of 264.6 N, what is his acceleration?

If the sprinter from the previous problem accelerates at that rate for 20 m, and then maintains that velocity for the remainder of the 100-m dash, what will be his time for the race?

A powerful motorcycle can produce an acceleration of 3.50 m/s^2 while traveling at 90.0 km/h. At that speed the forces resisting motion, including friction and air resistance, total 400 N. (Air resistance is analogous to air friction. It always opposes the motion of an object.) What is the magnitude of the force the motorcycle exerts backward on the ground to produce its acceleration if the mass of the motorcycle with rider is 245 kg?

What force does a trampoline have to apply to a 45.0-kg gymnast to accelerate her straight up at 7.50 m/s^2?

A skier with a mass of 62 kg is sliding down a snowy slope. Find the coefficient of kinetic friction for the skier if friction is known to be 45.0 N.



(a) Calculate the acceleration of a skier heading down a 10.0º slope, assuming the coefficient of friction for waxed wood on wet snow (0.1). (b) Find the angle of the slope down which this skier could coast at a constant velocity.

Microwave ovens rotate at a rate of about 6 rev/min. What is this in revolutions per second? What is the angular velocity in radians per second?

A baseball pitcher brings his arm forward during a pitch, rotating the forearm about the elbow. If the velocity of the ball in the pitcher's hand is 35.0 m/s and the ball is 0.300 m from the elbow joint, what is the angular velocity of the forearm?

A fairground ride spins its occupants inside a flying saucer-shaped container. If the horizontal circular path the riders follow has an 8.00 m radius, at how many revolutions per minute will the riders be subjected to a centripetal acceleration whose magnitude is 1.50 times that due to gravity?

Calculate the centripetal force on the end of a 100 m (radius) wind turbine blade that is rotating at 0.5 rev/s. Assume the mass is 4 kg.

What is the ideal speed to take a 100 m radius curve banked at a 20.0° angle?

Determine the speed of the Hubble Space Telescope orbiting at a height of 598 km above the earth's surface. (Radius of the earth RE = 6.38×10^6 m, Mass of the earth ME = 5.98×10^{24} kg)