

Unit 2 : Dynamics Summary

Key Topics

Types of Forces found in nature

Free Body Diagrams

Newton's Laws

Law of Universal Gravity

Friction

Word Problems

Newton's Laws

Example : Two people pull with 150 N and 130 N in opposite directions on a 50 kg sled on frictionless ice. What is the sled's acceleration?

Newton's Laws and Kinematics

Example : A 25 kg sled that is originally moving northwards at 15 m/s is acted on by a net force (F_{net}) of 113N [South]. How far will the sled travel before it stops?

Universal Gravity

Example : Calculate the force of gravity on a 2000kg satellite that is in an orbit 30,000km above the surface of the earth (the radius of the earth is 6.38×10^6 m, and the mass is 5.97×10^{24} kg).

Friction

Example : A 1,500 kg car is moving along a road when it starts to coast to a stop. If the coefficient of kinetic friction between the tire and the road is 1.02, what will the acceleration of the car be? How long will it take to stop if its initial velocity is 18 m/s?

Other stuff to know ☺...

Acceleration due to gravity = _____.

Convert from cm to m and km to m _____.

Difference between mass and weight _____.

Convert from g to kg _____.

Review Newton's Laws Quiz (on-line)

Practice Problems

Textbook: page 114 #13, 14b, 20, 21, 23, 24, 25, 26, 27a,