

EXAM-1

PHYS 201 (Spring 2008), 02/15/08

Name:

Lab-Sect. no.:

Signature:

Duration: 50 minutes

Show all your work for full/partial credit!

Include the correct units in your final answers for full credit!

Unless otherwise stated, quote your results in SI units!

1.) *Multiple Choice*

(25 pts.)

For each statement below, circle the correct answer (TRUE or FALSE, no reasoning required).

- (a) Adding physical quantities is only meaningful if those quantities carry the same units.
TRUE FALSE
- (b) In a 2-dimensional, multi-step trip, the magnitude of the net displacement can be larger than the total distance traveled.
TRUE FALSE
- (c) In projectile motion, the vertical component of the velocity is zero at the highest point of the trajectory.
TRUE FALSE
- (d) Inertia and Gravity are the same concept because both are quantified in terms of mass.
TRUE FALSE
- (e) If an object slides down an inclined plane at constant velocity, the net force on that object is zero.
TRUE FALSE

No.	Points
1	
2	
3	
4	
5	
Sum	

2.) *Vector Addition and Kinematics*

(20 pts.)

On a hiking trip, a person first walks for $2.3mi$ in a direction of 65° North of East, and then for $4.0mi$ in a direction of 25° South of West.

- (a) Calculate the magnitude (in mi) and direction (relative to due West) of the net displacement for the entire trip. Start by drawing a vector diagram.
- (b) If the hike took 2 hours and thirty minutes, calculate the average speed and the average velocity for the entire trip (both in mi/h).

3.) *Projectile Motion*

(20 pts.)

A child is throwing a tennis ball with initial speed of 19m/s toward a tall building which is a horizontal distance of 35m away. The ball hits the vertical building wall after 2.8s .

- (a) Find the launch angle of the ball (relative to the horizontal).
- (b) How high above the launch point does the ball hit the building?

4.) *1-D Kinematics with Friction*

(20 pts.)

A block of wood is sliding on a horizontal ice surface with an initial speed of 6.9m/s . The block is slowed down by a kinetic friction force and comes to rest after a displacement of 12m .

- (a) What is the acceleration of the block?
- (b) Calculate the kinetic friction coefficient between the block and the ice.

5.) *Newton's 2. Law in an Elevator*

(15 pts.)

An elevator cabin has a scales implemented into its floor. A person of mass 84kg steps onto the scales. The elevator door closes, and the elevator starts to move vertically. If the reading on the scales is showing 710N , what is the magnitude and direction of the elevator's acceleration?