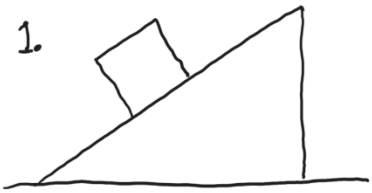
Physics 200
Unit 3 Practice Test

Name: _____

Diagrams:



1 A box is on an incline. The force of friction is not strong enough to hold it in place. Fill in the missing details.

Description	Magnitude	Units	Direction
Box Mass	5.000	kg	NA
Angle of incline	70.000	degrees	Above rightward
Coefficient of kinetic friction	0.600	NA	NA
Box Weight			
Perpendicular Weight component			
Parallel Weight component			
Normal force			
Friction			
Net force acting on box			
Box Acceleration			

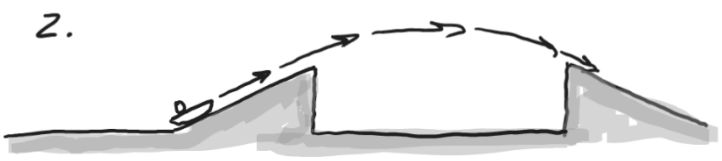
4 A sliding box is being pulled by a rope. The rope extends from the mass at an upward angle, relative to horizontal. The box slides horizontally. Fill in the missing details.

Description	Magnitude	Units	Direction
Box Mass	8.000	kg	NA
Angle of rope	75.000	degrees	Above leftward
Coefficient of Kinetic Friction	0.400	NA	NA
Force applied by rope	75.000	N	same as rope
Box Weight			
Y component of Tension			
X component of Tension			
Normal Force of surface against box			
Friction			
Net Force			
Box Acceleration			

Diagrams:

3.

2.



3	A Mass is hanging by a rope from the ceiling of a train car. The rope makes a constant angle with horizontal. Fill in the missing details.			
	Description	**Magnitude**	**Units**	**Direction**
	Mass (kg)	6.000	kg	NA
	Angle between rope and horizontal ceiling (degrees)	65.000	degrees	Below rightward
	Weight of hanging mass (N)			
	Vertical component of Tension (N)			
	Tension in rope (N)			
	Horizontal Component of Tension (N)			
	Acceleration of mass (N)			

2	A team of students accelerates a sled to a given speed and releases it just before it begins to travel up a ramp of ice. The sled leaves the top of the ramp, flies through the air without drag, and lands on a slope at the same height from which it was launched. Fill in the missing details.			
	Description	**Magnitude**	**Units**	**Direction**
	Sled mass	80.000	kg	**NA**
	Horizontal flight distance -- range	11.000	m	Rightward
	Ramp length	3.000	m	Uphill
	Ramp angle	20.000	degrees	Above rightward
	Velocity at the bottom of the ramp	14.000	m/s	Rightward
	Velocity at the top of the ramp			
	Sled weight			
	Perpendicular component of sled weight when on ramp			
	Parallel component of sled weight when on ramp			
	Normal force acting on sled			
	Acceleration of sled when on ramp			
	Net force acting on sled while on ramp			
	Friction acting on sled while on ramp			
	Coefficient of friction of sled on ice			
	Ramp Height (m)			