

Midterm Practical Review Part 1
1/21/2011
Lab Physics-Dr. Malik

A. CONVERT THE FOLLOWING

1. 675.2m to ____ km
2. 238.9km to ____ m
3. 2.4×10^3 m to ____ km
4. 6.2×10^{-6} km to ____ m
5. 5.27×10^8 g to ____ kg
6. 6274kg to ____ g

B. HOW MANY SIG FIGS ARE THERE IN THE FOLLOWING NUMBERS:

1. 200 _____
2. 26.3 _____
3. .010 _____
4. 26.00 _____
5. 6.23×10^6 _____
6. $.01 \times 10^3$ _____
7. 200×10^6 _____

C. SOLVE

1. 627 years to _____ seconds
2. 42.6km/hr to _____ m/s
3. $V=20$ m/s
Angle= 25 degrees

Find "X" component _____

Find "Y" Component _____

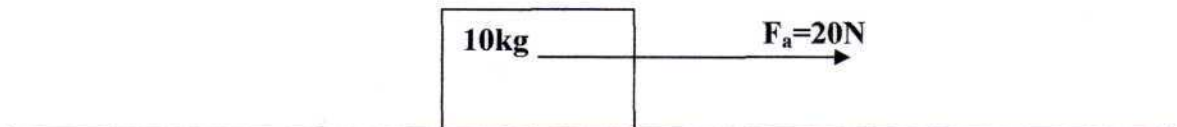
4. A car travels 8.2km in 20s due South. What is the velocity of the car?

5. A car accelerates from 100km/s to 500,000m/s in 1.2 minutes. What is the acceleration of the car?

6. How long does it take a car with a velocity of 200m/s to travel 10km? (Answer in hours)

7. How long does it take a rock to fall from a bridge 100m high and strike the ground? (Assume no air resistance)

D. A 20 N force is applied to a 10kg box to the right and is horizontal to a surface that has a coefficient of friction (μ) = 0.20 Calculate the values listed below?



W =

F_n =

F_f =

F_{net} =

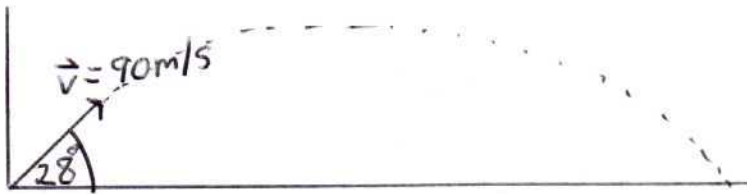
A =

E. A ball rolls horizontally off a table that is 10m high with a velocity of 5.5m/s.

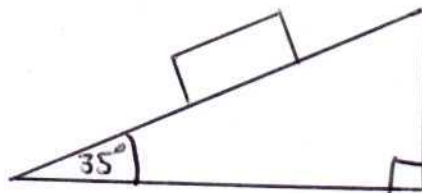
1) How long does it take the ball to hit the ground?

2) What is the horizontal distance to the point of impact?

F. A cannon ball is launched at an angle of 28 degrees to the horizontal with a velocity of 90m/s. Solve for the total time of flight, max height, range, and speed of impact?



G. A block with a mass of 2.2kg is placed on a ramp that forms a 35 degree angle with the horizontal. The $\mu = 0.61$



1) Is the block moving?

2) If so, what is the acceleration of the block?

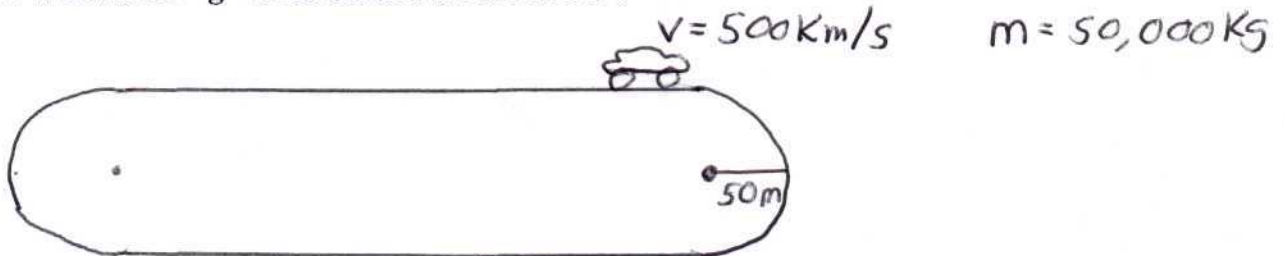
3) If it slides for 5 seconds, what is the final velocity of the block?

4) How far did the block slide?

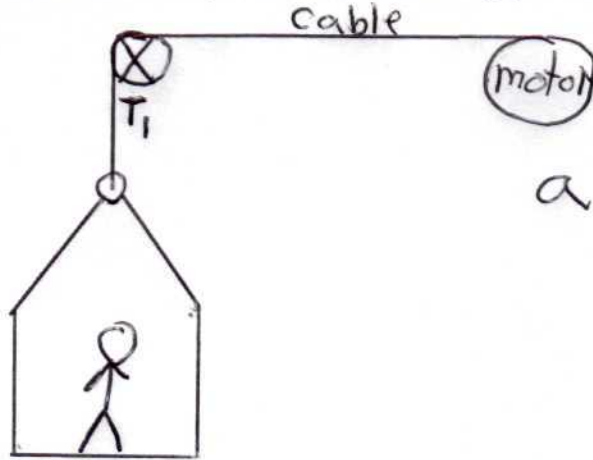
H. What is the gravitational force exerted on the earth by a 2kg ball located on its surface? What would the gravitational force be if the radius doubles?

I. A car with a mass of 50,000kg moves around a circular track with a constant speed of 200km/hr. The track has a radius of 300m. How long does it take the car to complete one lap? What is the centripetal acceleration of the car? What is the centripetal force on the car?

J. A 50,000kg car travelling at a constant speed of 500km/s enters the curve of a track as indicated below. What is the centripetal force exerted on the car inside the curve? What is the "g" force exerted on the driver?



K. A person with a mass of 300kg is inside a cart with a mass of 10,000kg that is suspended by a cable. What is the tension (T) in the cable? If a hoist pulls the cable upward at an acceleration of 10m/s, what is the tension (T) in the cable?



$$m_{\text{person}} = 300\text{kg}$$

$$m_{\text{cart}} = 10,000\text{kg}$$

$$a = 10\text{m/s}$$