

# Physics Chapter Seven

## Two Dimensional Motion

Chpt 7 rev 2

1. What acceleration does a 145 N force give a 12 kg box up a  $24^\circ$  ramp if  $\mu$  is 0.14?
2. A cliff diver runs off a 45 m high cliff with a horizontal velocity of 7.8 m/s. How far from the base of the cliff does the diver land?
3. A 1.2 kg ball is kicked at 25 m/s at an angle of  $31^\circ$  from the horizontal. A) How long is it in the air? B) How high does it go? C) How far does it go?
4. A 44g rock is swung in a 1.3 m (that's the radius) horizontal circular path at 130 rpm's (David's rock)  
a) What is the rocks velocity? B) What is the rocks acceleration? C) What force is necessary to produce this?
5. A 1250 kg car rounds a 35 m radius off ramp (that's a  $360^\circ$  circle) in 5.00 s. a) What is the cars velocity?...b) it's acceleration?...c) the force necessary to do this?
6. What is the acceleration of a 33 kg box on a  $33^\circ$  ramp if  $\mu$  is 0.11? b) What force would it take to accelerate the same box UP the ramp at  $1.1 \text{ m/s}^2$ ?
- 7) *Convert the following:* ( $r = 0.250 \text{ m}$  for each of the following problems!)
  - a)  $550 \text{ rpm's} = \underline{\hspace{2cm}} \text{ m/s}$
  - b)  $67.0 \text{ km/hr} = \underline{\hspace{2cm}} \text{ rpm's}$
  - c)  $55.0 \text{ mph} = \underline{\hspace{2cm}} \text{ m/s}$
  - c)  $34.5 \text{ mph} = \underline{\hspace{2cm}} \text{ rpm's}$