FRICTION NOTES

WHAT IS FRICTION?

What are the types of friction?

What causes it?

Always depends on _____

Which type of friction is strongest?

How do we measure friction?

What is the coefficient of friction?

$F_f = \mu F_N$

What is the normal force?

TO ANSWER:
A skier slides down a slope. What force causes him to go down?

What force opposes him?

What changes in environmental conditions might cause a change in the frictional force?

FRICTION PROBLEMS

1) $D = \dfrac{(Vi+Vf)}{2} * T$

2) $Vavg = \dfrac{(Vi+Vf)}{2}$

3) $Vf = Vi + A*T$

4) $D = Vi*T + \frac{1}{2}*A*T^2$

5) $Vf^2 = Vi^2 + 2*A*D$

Newton's Laws

$Fnet = m * A$ $F1 = F2$

$Weight = m * g$ $F_f = \mu\, F_N = \mu\, W = \mu\, mg\,).\ \mu = F_f/ F_N$

1) What net external force is required to give a 25 kg suitcase an acceleration of 2.2 m/s^2 to the right? Draw a free body diagram. **If it is wood on wood (μ = .2 what is the force of the push?**

2) What acceleration will you give to a 24.3 kg box if you push it with a force of 85.5 N? **If it is aluminum on steel so (μ = .47 what is the acceleration?)**
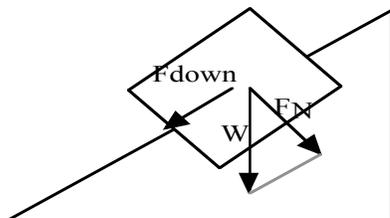
3) A 1850 kg car is moving to the right at a constant velocity of 1.44 m/s. What is the net force on the cart? **If it is rubber on concrete so (μ = .8 what is the force?)**

4) A man is pushing a 200 Newton box with a force of 50 Newtons along the floor. A dog is pushing against him with a force of 4 N . What is the acceleration of the box? Draw a free body diagram for the box. **If it is glass on glass so (μ = .4 what is the acceleration?)**

9) A 1200 kg boat moves through the water with two forces acting on it. One is a 2100 N forward push by the motor, and the other is a 1800 N resistive **friction** force of the water. **What is the coefficient of friction?**

** Honors:
13) A block with a mass of 50 kg is sliding down a ramp, **that is wood on wood,** that is at an angle of 60 degrees. What is the component of the force causing it to slide? **What is the force of of friction?** What is its acceleration? Draw a picture and force diagram.

Fdown = W sin ø
Fnormal = W cos ø