PHYSICS CLUB

MEETING 2/22/2017

General Information

IMPORTANT DATES:

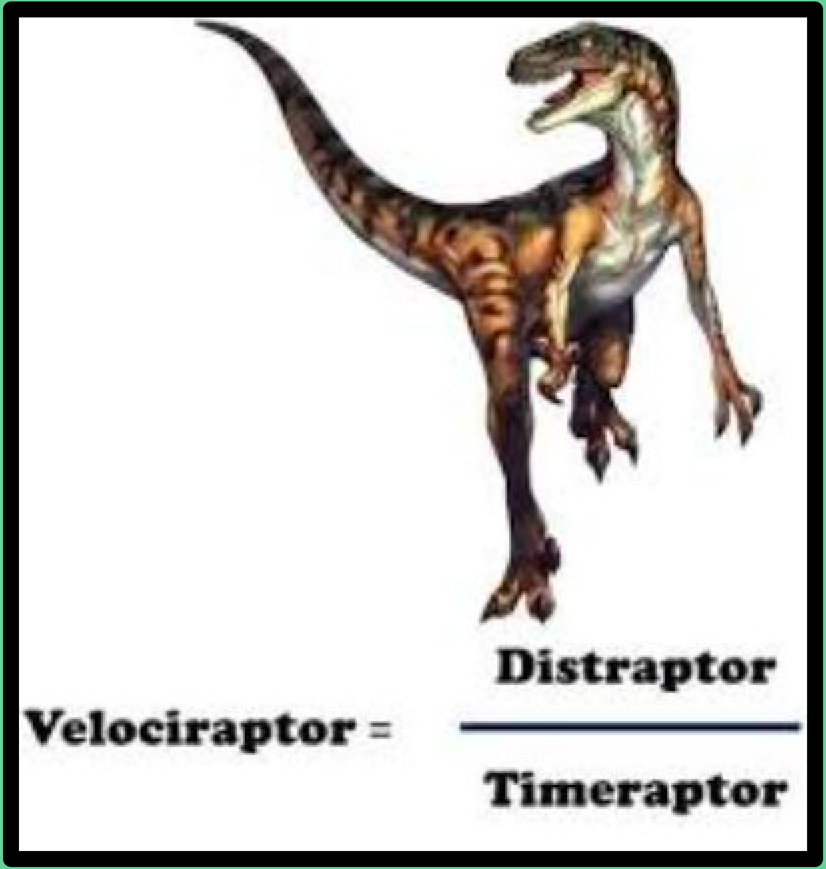
F = ma results ➔ This friday

Science UIL ➔ March 4th, Westwood HS

USAPhO Testing ➔ March

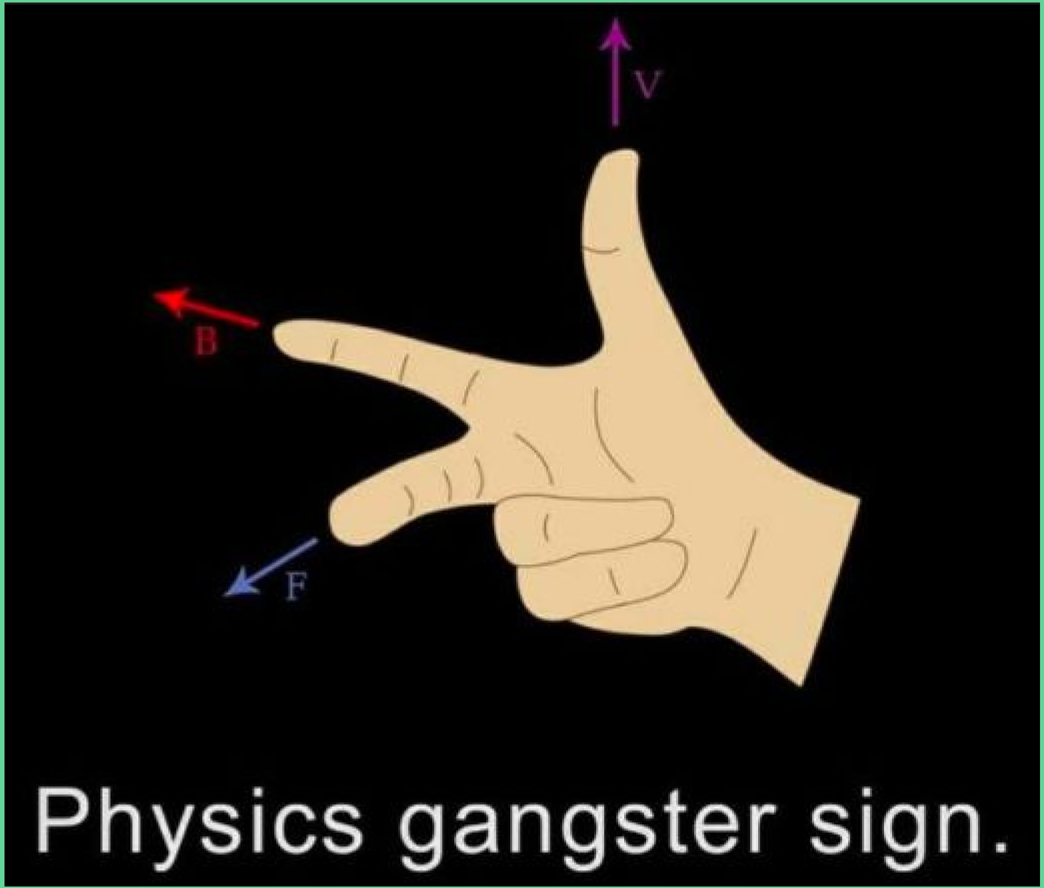
US Physics Team training ➔ May/June

International Physics Olympiad ➔ July


Distraptor
Velociraptor =
Timeraptor

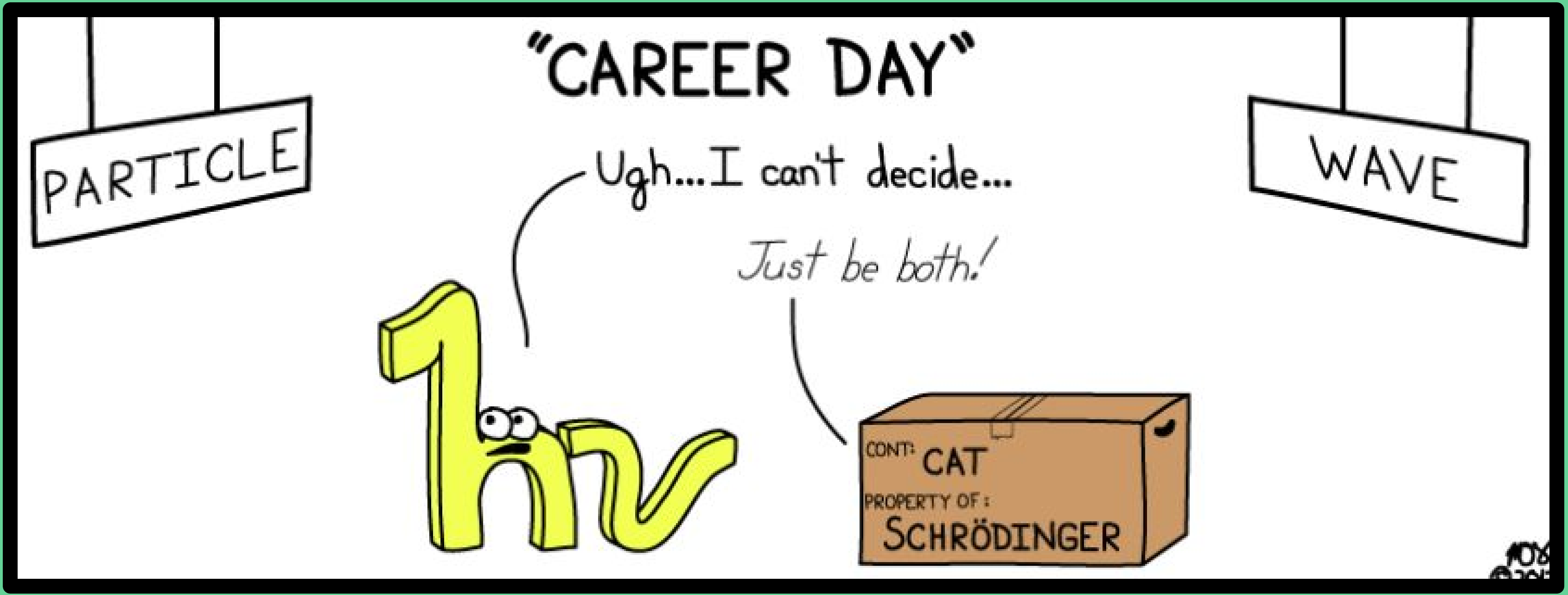
IPHO 1983 Problem 1

A particle moves along the positive axis Ox (one-dimensional situation) under a force having a projection Fx, as represented, as function of x , in the figure 1.1. In the origin of the Ox axis is placed a perfectly reflecting wall. A friction force, with a constant modulus Ff = 1,00N , acts everywhere on the particle. The particle starts from the point x = 1,00m having the kinetic energy E = 10.0 . a. Find the length of the path of the particle until its' final stop.


V
B
F
Physics gangster sign.

IPhO 1975 Problem 1

A rod revolves with a constant angular velocity ω around a vertical axis A. The rod includes a fixed angle of α with the axis. A body of mass m can glide along the rod. The coefficient of friction is $\mu = \tan\beta$. The angle β is called „friction angle“. a) Determine the angles α under which the body remains at rest and under which the body is in motion if the rod is not rotating (i.e. $\omega = 0$). b) The rod rotates with constant angular velocity $\omega > 0$. The angle α does not change during rotation. Find the condition for the body to remain at rest relative to the rod.


"CAREER DAY"
PARTICLE
WAVE
Ugh...I can't decide...
Just be both!
CONT: CAT
PROPERTY OF:
SCHRÖDINGER

The Ball’s Great Escape

A small ball moves at a constant velocity v along a horizontal surface and at point A falls into a vertical well of depth H and radius r. The velocity v. of the ball forms an angle a with the diameter of the well drawn through point A (Fig. 1, top view). Determine the relation between v, H, r,and a for which the ball can "get out" of the well after elastic impacts with the walls. Friction losses should be neglected.