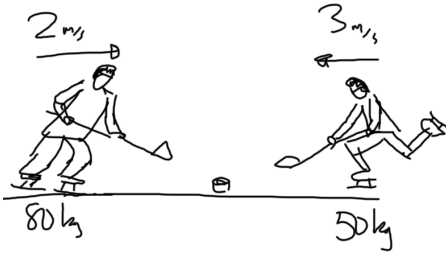


SHOW WORK

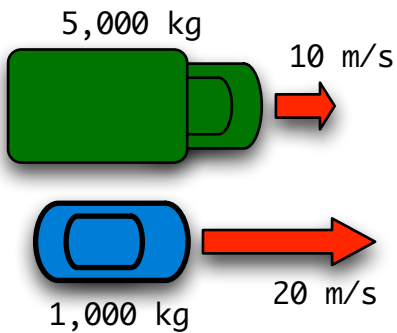
IDEALLY = Ignore drag, friction and anything else that might convert energy to heat.

$$KE = \frac{mv^2}{2}$$

(Only the velocity gets squared)



1. Calculate the Kinetic Energy of each player.
 - a) Which one has more?
 - b) Which player could hurt you more?



2. Calculate the Kinetic Energy of each vehicle.
 - a) Which one has more?
 - b) Which one is harder to stop if the brakes fail?

3. The Chelyabinsk meteor that hit back on Feb 15, 2013 was about 9,000,000 kg and it was moving at about 18,000 m/s.

- a) How much Kinetic Energy did it have?
- b) When it hit the atmosphere, what kind of energy did it turn into?
- c) Why do we worry about meteors like this one?

4. If I do 400 J of work throwing a 2 kg brick - what velocity did I give it?

5. An object with 250 J of Grav PE falls all the way to the ground, gaining 5 m/s of velocity. What is its mass?

6. [TRICKY!] In 2011, Dwight Howard jumped 1 meter above his normal reach. His mass is 127 kg. What was his jump velocity? (Hint: calculate his Grav PE first.)

7. [TRICKY!] Let's say a car is doing 10 m/s and locks up the brakes and skids 10 meters. How far do you think the same car would skid if it were doing 20 m/s? What about 30 m/s? (Hint: Velocity is squared in the KE formula.)