**The “we need to practice more” handout.**

1. What are Newton’s 3 laws of motion, in order?

1 -

2 –

3 –

1. What is velocity?
2. What are the units for velocity?
3. What is acceleration?
4. What are the units for acceleration?
5. What is weight?
6. What are the units for weight?
7. Does weight or mass change if we move to another planet?
8. What is our equation for weight?
9. What is a force?
10. What are our units for force?
11. What units make up a Newton?
12. (Honors only) What is momentum?
13. (Honors only) What are the units for momentum?
14. What is density?
15. What are the units for density?

Just like every time you do this. You draw your equation. Then you plug in your values. Then you solve. Then you smile and move on to the next one.

1. If Snuffy the Snuffleupagus has a mass of 140kg on Earth, what would its weight be on Jupiter knowing that Jupiter has 3.5 times the gravity of earth?
2. An airplane pilot must reduce his speed from 45m/s to a stopped position in 1.5 seconds over 25 meters. Find the acceleration of the airplane.
3. I can throw a baseball 38m/s. If it takes that baseball 3 seconds to travel from right field to 3rd base, how long of a distance would this throw end up being?
4. The density of plastic is .03g/cm3. What is the mass of a big wheel tricycle that is made entirely of plastic and has a volume of 500cm3?
5. I get mad that Clemson lost again and throw my remote across the room. If the remote has a mass .2kg and accelerates at 8.2m/s2, what is the force I am applying to the remote?
6. What is the mass of an object on Mars (1/3 of the gravity) if it has a mass of 85kg on Earth?
7. I have a baseball (mass of 7.5kg) and a basketball (22kg). If I hit each object with a force of 80N, what would be the acceleration of each? Which would accelerate faster?

Baseball Math Basketball Math Faster Acceleration?

1. A 3000N force acts on a 150kg bear, knocking it over. What is the acceleration acting on the bear?
2. A soccer ball is accidentally kicked into a lake. If the soccer ball has a volume of 125cm3 and a mass of 80g, what is the density of the soccer ball? Would that soccer ball float or sink?

**HONORS ONLY**

1. During the World’s Strongest Man competition, Lars lifts a refrigerator. The unbalanced force lifting the fridge is 2150N. This force causes the fridge to move from rest to an upward speed of 0.10m/s in 3.0s. What is the mass of the fridge?
2. What is the mass of a penguin that is sliding on his belly at 12.3m/s with a momentum of 178 kg\*m/s?
3. A cheetah is stalking his prey, quietly, silently, and decides to make his move. Starting from rest, he accelerates for 4.2 s to hit a final speed of 31m/s. If the cheetah is applying 240N of force to run, what is the weight of the cheetah on earth?
4. If I have a 1.58kg pool ball that is traveling at 1.8m/s and hits into a stationary empty can of soda that has a mass of .23 kg, what is the magnitude of the velocity that the soda can will be pushed back with? Assume both objects are occurring on a single plane, that we are ignoring friction forces, and that there is a perfect conservation of momentum.