Assignment:\_\_\_

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hour:\_\_\_\_

**Acceleration and Momentum (with Vocabulary)**

**Left-Over Vocabulary**

1. Velocity:
2. Acceleration:
3. Friction:
4. Centripetal Force:
5. Gravity:
6. Weight:
7. Momentum:

**Acceleration Formula:**

**Acceleration Practice: MUST SHOW WORK FOR CREDIT**

1. If Si Robertson from Duck Dynasty is gearing up his tractor to race Phil and he accelerates from a standstill to 45 m/s in 10 seconds. What was his acceleration?
2. If Si went over a hill on his tractor during the race and accelerated from 45 m/s then 10 seconds later was going 90 m/s when he reached the bottom of the hill, what was his acceleration?
3. At the end of the tractor race Phil went from 30 m/s to a stop in 10 seconds, what was his deceleration?
4. If Miguel Cabrera was trying to throw a baseball to Prince Fielder and it accelerates at a rate of 3.2 m/s^2, how long will it take to reach a speed of 2 m/s? (Hint: the ball was at rest to start in his mitt, so you are solving for time)?
5. If Taylor Swift’s newest ex-boyfriend is running away from her so she doesn’t write a song about him and his initial velocity is 5 m/s and is accelerating at a rate of 10 m/s^2, what is his velocity after 10 seconds?
6. Ms. Pilarz’s dog Cooper loves to play fetch. Ms. Pilarz always makes him sit and stay before she throws the ball. If he goes from 0 mph while sitting to 2.5 mph when retriving the ball in 5 seconds, what is his rate of acceleration?

**Momentum Formula:**

**Momentum Practice: MUST SHOW WORK FOR CREDIT**

1. Two runners were racing down the track. Jason was able to run 100 meters in 52 seconds and Nick was able to run 100 meters in 72 seconds. Jason weights 60 kg and Nick weighs 50 kg. What was the speed of each runner AND who had more momentum?
2. If Prince Fielder hits a 0.25kg baseball at a velocity of 50 m/s, what was its momentum?
3. If Michonne from the Walking Dead wants to run over a Zombie and has a momentum of 10,000 kg\*m/s and is traveling at 20 m/s on her horse, what is the mass of her and the horse combined?
4. Ms. Pilarz just got some new rims for her cool ride out in the parking lot. The rims were quite heavy so they added mass to the car bringing it to 500 kg. If she travels south down the highway home at a rate of 25 m/s, what is the momentum of the car?
5. Cooper, Ms. Pilarz’s dog who weighs 8 kg, is chasing the dog next door who is a Great Dane weighing in at 78 kg to retrieve a squeaky ball. Cooper can run with a velocity of 20 m/s and the Great Dane can run at a velocity of 50 m/s, who has more momentum (prove your answer by showing your work with equations for both dogs)?