Name:_____

Date:_____

Mr. Croom's Physics

More Kinematics 1

Solve the following problems

1. The earth-moon distance is $3.84*10^8$ m. If it takes 3 days to get to the moon, what is the average velocity in m/s? How about miles/hour?

2. In the game of baseball, some very good pitchers have managed to pitch a ball at 100 mph. If the pitcher's mound is 60.5 ft from home plate, how long does it take the ball to get there? If the pitcher now throws a change-up at 60 mph, how long will this take to get to home plate? What is the difference in velocities? Can you see why "changing speeds" is so important to a good pitcher? Based on your data, if the catcher catches each of the above pitches in 0.25s, what is the acceleration of the ball?

3. Two cars are racing down the street. The first car, a shiny new red thunderbird, accelerated from rest to a max speed of 45 m/s in 13 seconds. The second, an old black Jeep, accelerated from rest to a maximum speed of 40 m/s in 10 seconds. The distance of the race is 7000 meters. What is the acceleration of the thunderbird? What is the acceleration of the Jeep? If the thunderbird's average velocity during the race was 36.36 m/s, and the Jeep's was 34.78 m/s, who won the race and by how many seconds?

4. A ball is thrown vertically upward with an initial velocity of 52 m/s. Calculate the position and the velocity at the end of 2, 4, 6, and 8 seconds.

5. A stone is thrown upwards with an initial velocity of 12 mph. Find its maximum height. How long did this take?

6. A rock is thrown vertically downward from a building 40 m high with an initial velocity of 15 m/s. What is the rock's velocity as it strikes the ground? How long does it take for the rock to hit the ground?

7. A baseball batter fouls a ball vertically upward. The ball is caught right behind home plate at the same height that it was hit. How long was the baseball in flight if it rose a distance of 20 m? What was the initial velocity of the baseball?