N	ame
T 1	anne

Date _____

Period _____

$d = v_{average}t$ $d = v_{constant}t$ $d = v_it + \frac{1}{2}a$	$t^2 \qquad \Delta v = at \qquad \qquad V_f^2 = V_i^2 + 2 ad$
Draw a frame of reference. rearrange the equation for	the missing variable, show all math (10 pts each)
1. A shopping cart given an initial velocity of 3.0 m/s undergoes a constant acceleration of 2.0 m/s ² . What is the cart's displacement after 4.0s?	4. A tourist accidentally drops a camera from a 40.0 m high bridge. If $g = 9.81$ m/s ² and air resistance is disregarded, what is the speed of the camera as it hits the water?
2. A sports car accelerates at a constant rate from rest to	5. A baseball is released at rest from the top of the
a speed of 30 m/s in 8.00 s. What is the displacement of the sports car in this time interval?	Washington Monument. It hits the ground after falling for 6.00 s. What was the height from which the ball was dropped? (Disregard air resistance. $g = 9.81 \text{ m/s}^2$.)
3. A race car accelerates from 0 m/s to 30.0 m/s with a displacement of 45.0 m. What is the vehicle's acceleration?	6. A water balloon is launched with an initial velocity of 25 m/s, how fast will the balloon be going when it reaches a height of 10 meters above its launch height?

Linear Motion written

7. On the back of this paper (rounding gravity to -10m/s/s) draw the trajectory of a water balloon that has a hang time of 8 seconds. Label the velocity at each second (starting from zero) and label the maximum height. (show all math) 20 points