Name:_____   Date:_____
Mr. Croom's Physics   Chapter 2: One Dimensional Motion

3rd Kinematic

Solve the following problems.

Example: $d = 50$, $v_o = ?$, $a=3$, $v_f=20$

$$v_f^2 = v_o^2 + 2*a*d \quad \rightarrow \quad 20^2 = v_o^2 + 2*3*50 \quad \rightarrow \quad 400 = v_o^2 + 300 \quad \rightarrow \quad 100 = v_o^2 \quad \rightarrow \quad 10 = v_o$$

1. $d = 75$, $v_o = 5$, $a=3$, $v_f=?$

3. $d = 800$, $v_o = ?$, $a=4$, $v_f=12$

2. $d = 100$, $v_o = 4$, $a=?$, $v_f= -2$

4. $d = ?$, $v_o = -4$, $a= 2$, $v_f= 6$

Solve the following problems.

5. What is the final velocity of a car traveling 3m/s that under goes an acceleration of 5 m/s^2 for 80 meters?

6. What is the displacement of a ball thrown upward at 20m/s with an acceleration of -9.8 m/s^2 if the final velocity is 10m/s^2? How about 5m/s^2? How about 0m/s^2? What about -5 m/s^2? What about -10m/s^2? Finally what about -20 m/s^2? What is this data showing you?

7. A train car breaks loose from a train traveling 15 m/s. If the train car slows to a stop over 1.3 km how much acceleration is friction applying to the train to bring it to rest?

8. What is the initial velocity of a person that is accelerating at 0.3 m/s^2 for 20m and ends up moving at 4m/s?

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<u>Extra Credit:</u> Explain why the following problem is impossible to get a correct answer:

A train is traveling at 4 m/s east when the conductor places the train in reverse to slow it down and back it up. The final velocity of the train is 5 m/s west after going through a constant acceleration. During this time the train displaces itself 100 meters east. What is the acceleration?