Motion with Constant Acceleration. Worksheet 1

FORMULAE:

$$ \overbar{v}= \frac{\rightharpoonaccent{v}+ \vec{v}\_{o}}{2} \rightharpoonaccent{d}=Δ\rightharpoonaccent{x}=\vec{v}\_{avg}t$$

$$\vec{a}= \frac{Δ\vec{v}}{Δt}= \frac{ \rightharpoonaccent{v}- \vec{v}\_{o}}{t- t\_{o}} Δ\vec{v}= \vec{a}Δt$$

 SOLVE THE FOLLOWING ON A SEPARATE SHEET OF PAPER

 \*list the givens

 \*write the appropriate formula

 \*substitute the values *with units*

 \*calculate the final answer *with units*

 \*round final answer to the appropriate number of significant figures

1. A car accelerates from 12m/s east to 22m/s east in 4.0s.
2. What is the average velocity?
3. What is the displacement?
4. What is the acceleration?
5. A truck accelerates from -3.0m/s to -15m/s in 6.0s.
6. What is the average velocity?
7. What is the displacement?
8. What is the acceleration?
9. A motorcycle accelerates from rest to 24m/s north in 2.4s.
10. What is the average velocity?
11. What is the displacement?
12. What is the acceleration?
13. A van accelerates from -18m/s to -4.0m/s in 2.0s.
14. What is the average velocity?
15. What is the displacement?
16. What is the acceleration?
17. A tractor accelerates from 4.0m/s to rest in 0.80s.
18. What is the average velocity?
19. What is the displacement?
20. What is the acceleration?
21. A Zamboni accelerates from -1.0m/s to -3.0m/s in 3.0s.

a. What is the average velocity?

b. What is the displacement

c. What is the acceleration?

1. A hockey player accelerates from 9.0m/s south to 6.0m/s north in 4.0s.
2. What is the average velocity?
3. What is the displacement?
4. What is the acceleration?
5. A ball rolling up a ramp accelerates from 3.0m/s up the ramp to 3.0m/s back down the ramp in 1.2s.
6. What is the average velocity?
7. What is the displacement?
8. What is the acceleration?
9. A bullet accelerates from rest to 1400m/s in 0.004s. What is the displacement of the bullet in that time?
10. a. How much time is required for a truck to skid to a stop from 30m/s west if the acceleration

has a magnitude of 6.0m/s2?

b. How far does the truck travel? In what direction?

1. A dog accelerates from -4.0m/s to -8.0m/s in 0.50s. What is her displacement?
2. A pot-bellied pig accelerates from 3.0m/s south to 5.0m/s north in 4.0s. What is his acceleration?
3. It takes a race car 2.2s to accelerate from 4.0m/s to 50.0m/s. Find the acceleration.
4. How much time will it take a sail boat to reach 8.0m/s from rest if its acceleration is 0.754m/s2?
5. A ball is thrown straight upward at 14m/s. How much time is required for it to reach its highest point?
6. A ball is thrown straight up. Its velocity 4.0s later is 13m/s downward. What was the initial velocity?