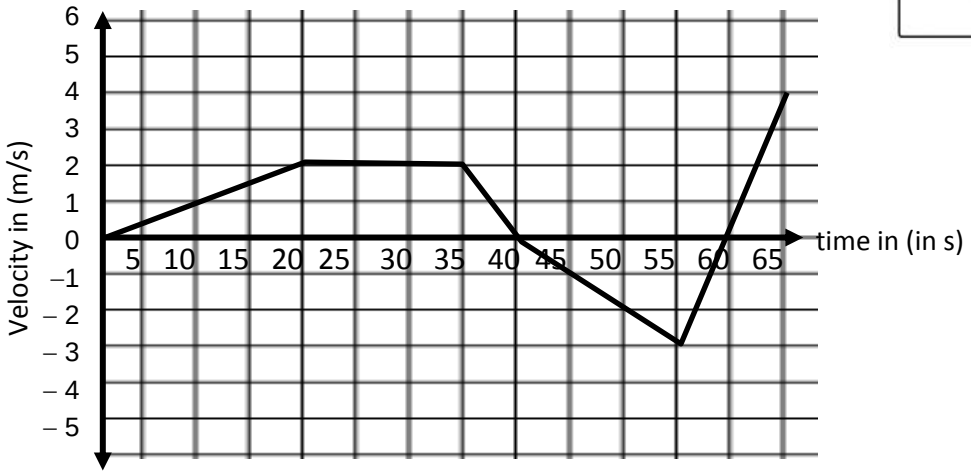
AP PHYSICS C CALCULUS OF PHYSICS	Name: _____ Date: _____
Points Grab Ω Part 2	**Weight 2.5**

DIRECTIONS: Solve each of the following problems and select the letter of the answer that correctly answers each question and put it in the blank provided. The letters of the answers represent directions (F= FRONT, R= RIGHT, L= LEFT, D = DIAGONAL, W = WILDCARD) you and your teammate will be able to move on a makeshift game board we will make on the floor of the room. You will be getting bonus points by moving towards and passing over bonus points scattered on the game board. But be warned: other teams will be doing the same and can eat you too!

For Problems 1 – 2. The following graph represents the velocity vs. time travelled by a novice driver trying to parallel park while cars are waiting behind him.

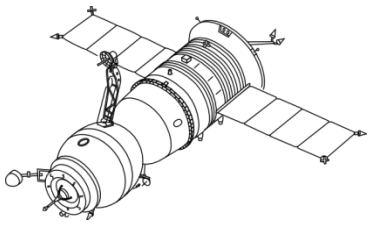


1. _____ How much distance (in m) did the car move in 1 min?

F. 32.5 m R. 25 m L. 19.5 m D. 15.25 m W. 13 m

2. _____ What is the acceleration (in m/s^2) of the car at t = 10 seconds?

F. 0.1 m/s^2 R. 0.2 m/s^2 L. 1.0 m/s^2 D. 1.2 m/s^2 W. 0 m/s^2



For Problems 3 – 9. The velocity of an orbiting telecommunications satellite changes according to the formula $v(t) = 400t^2 - 800t$ where *v* is in m/s and *t* is in *s*.

3. _____ *How fast* (in m/s) was the satellite travelling after 15 seconds?
F. 40,500 m/s R. 52,750 m/s L. 64,250 m/s D. 78,000 m/s W. 89,500 m/s

4. _____ *At what time t* (in *s*) after *0* seconds did the satellite have a velocity of 0 m/s?
F. 2 s R. 3 s L. 3.5 s D. 4 s W. 4.5 s

5. _____ *Which of the following formulas* could represent the distance travelled by the satellite?

F. x(t) = $800t - 800$
R. x(t) = $400\frac{t^3}{3} - 400t^2$
L. x(t) = $200\frac{t^3}{3} - 800t^2$
D. x(t) = $400\frac{t^3}{3} - 600t^2$
W. x(t) = $800\frac{t^3}{3} - 200t^2$

6. _____ *How far* (in m) did the satellite travel from 2 to 6 seconds?
F. 10,256.65 m
R. 11,756.42 m
L. 12,902.52 m
D. 13,754.10 m
W. 14,933.33 m

7. _____ *What was the acceleration* (in m/s^2) of the satellite at time *t*?
F. a(t) = $800t - 800$
R. a(t) = $600t - 200$
L. a(t) = $600t - 400$
D. a(t) = $400t - 600$
W. a(t) = $800t - 400$

8. _____ *What was the acceleration* (in m/s^2) of the satellite after 5 seconds?
F. 6200 m/s^2 R. 4500 m/s^2 L. 3200 m/s^2 D. 2400 m/s^2 W. 1600 m/s^2

9. _____ *After how many seconds* did the satellite have an acceleration (in m/s^2) of 8000 m/s^2?
F. 5 s R. 6.25 s L. 7.5 s D. 9 s W. 11 s

For Problems 10 – 12. A VERY frustrated AP physics student runs out of the classroom on the last day of classes, with an acceleration (in m/s^2) of $a(t) = 6t^2$.

10. _____ *How fast* (in m/s) was the student going after 5 seconds?

F. 250 m/s R. 200 m/s L. 175 m/s D. 150 m/s W. 125 m/s

11. _____ *After how many seconds* was the student moving at 16 m/s?

F. 4 s R. 3 s L. 2 s D. 1 s W. 0.5 s

12. _____ *How much distance* (in m) did the student cover after 4 seconds?

F. 50 m R. 66 m L. 80 m D. 100 m W. 128 m