1st Six Weeks Test Review

Name _____
Pre-AP Physics Period ____

Basic Information:

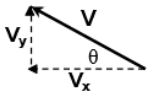
Complete the following:

- **The slope on a Position vs. Time graph indicates _____.**
- **The slope on a Velocity vs. Time graph indicates _____.**
- **The area between the plot of velocity (on a Velocity vs. Time graph) and the horizontal axis indicates _____.**
- **The symbol for the acceleration due to gravity is ____ and has a value of _____ near earth.**
- **In the absence of air resistance, all objects fall with constant _____.**
- **A vector is a quantity that requires both _____ and _____ to fully describe it.**

Equations: Complete the table, writing the equation for each quantity in the appropriate box:

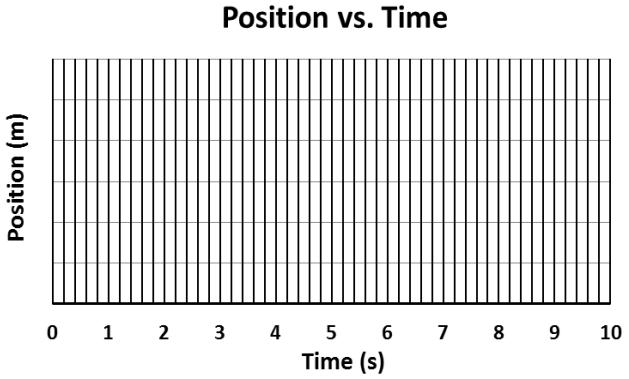
Displacement	Average Speed	Average Velocity	Average Acceleration

Given vector V, shown below, write out the equations to solve for each of the following (in terms of the variables shown):

Vector V	Horizontal Component (Vx)	Vertical Component (Vy)	Direction (θ)
			

Application:

Complete the following on the Position vs. Time graph to the right:



- Put a scale on the vertical axis
- From 0 – 2 sec, plot motion that indicates constant positive velocity.
- From 2 – 4 sec, plot motion that indicates slowing down in the positive direction
- From 4 – 6 sec, plot motion that indicates the object is at rest
- From 6 – 8 sec, plot motion that indicates speeding up in the negative direction
- From 8 – 10 sec, plot motion that indicates slowing down in the negative direction.
- Calculate the average velocity of the object from 2 – 4 seconds:

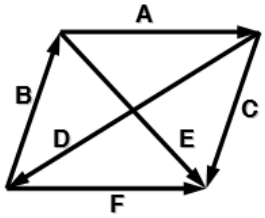
- Calculate the instantaneous velocity at 1 second:

- Calculate the displacement that occurs from 6 – 8 seconds:

- Calculate the total distance that the object traveled in 10 seconds:

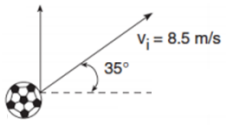
Vectors: Show work where calculations are necessary.

Vectors A through F are located along the sides and diagonals of a parallelogram. Answer the following:

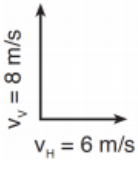


(a) **A + B = ???**
(b) **A – B = ???**
(c) **C + F = ???**
(d) **A + D + F = ???**
(e) **A - C = ???**

A soccer ball is kicked with an initial velocity of 35 degrees. Calculate the components of its initial velocity.



The components of the velocity of a ball are given to the right. What is the resultant vector? Make sure to provide magnitude and direction:



Kinematic Equations: Solve the following problems using the kinematic equations (SHOW ALL WORK):

A jet-powered car called The Spirit of America required 9600 meters to stop from its highest speed. If the car decelerated at a rate of -2.0 m/s^2, what was the initial speed of the car?

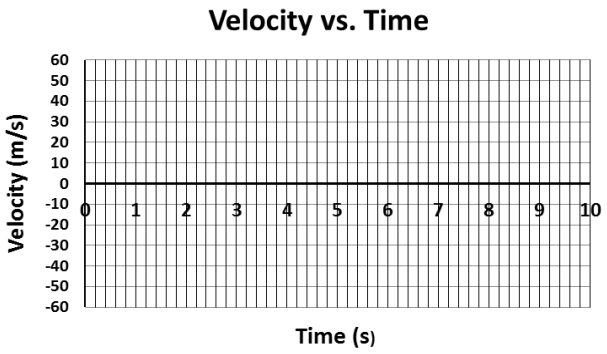
Write your own problem using the data provided, and then solve for time:

Δx	v_i	v_f	a	t
28 m	40 m/s	0 m/s		

A ball is launched straight up into the air with a velocity of 50 m/s. Assuming the acceleration due to gravity is 10 m/s^2, down (to make our numbers easier), complete the table of data for the velocity of the ball as it varies with time, and then plot the data on the graph below:

Velocity (m/s)	50										
Time (s)	0	1	2	3	4	5	6	7	8	9	10

- What is the average acceleration from 2 – 8 seconds?
- What is the instantaneous acceleration at 5 seconds?
- What is the displacement of the ball at 5 seconds?
- What is the total displacement of the ball during 10 sec?



Using the Velocity vs. Time graph, complete the table below, then use the data to construct a position vs. time graph, and an acceleration vs. time graph. SHOW ALL WORK for your area and slope calculations

Time(s)	Δx (m)	x (m)
0		0
1		
2		
3		
4		
5		
6