

Name: \_\_\_\_\_

Class Period: \_\_\_\_\_

**AP Physics: Kinematics  
Graphical Analysis Homework – Part I**

1. Match each position vs. time with its coordinating velocity vs. time graph:

1. \_\_\_\_\_

4. \_\_\_\_\_

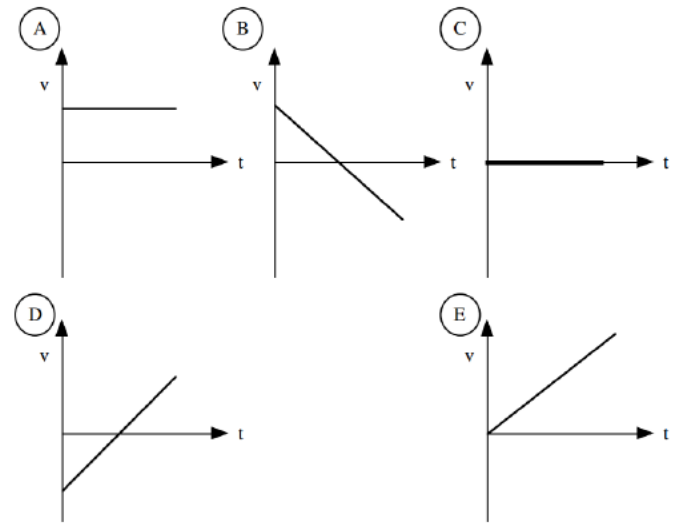
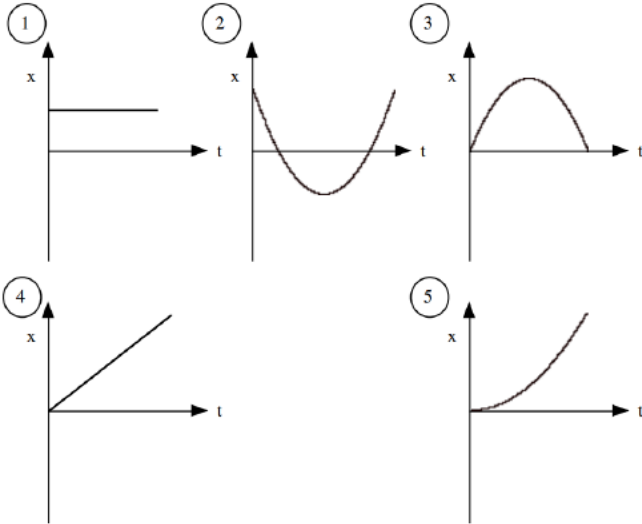
2. \_\_\_\_\_

5. \_\_\_\_\_

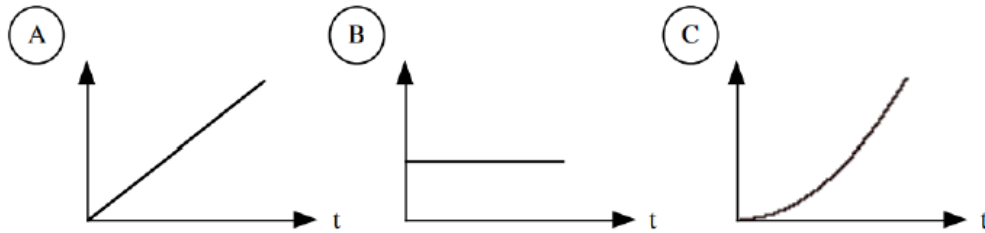
3. \_\_\_\_\_

Position vs. Time graphs

Velocity vs. Time graphs



2. Match each description with one of the graphs given below by writing the letter in the blank line. Each graph can be used to represent an  $x$  vs.  $t$ ,  $v$  vs.  $t$ , or an  $a$  vs.  $t$  graph. Each graph can also be used as many times as necessary. If there is no graph that meets the description, write N/A.



\_\_\_\_\_ 1. Velocity vs. time graph for an object whose acceleration is increasing.

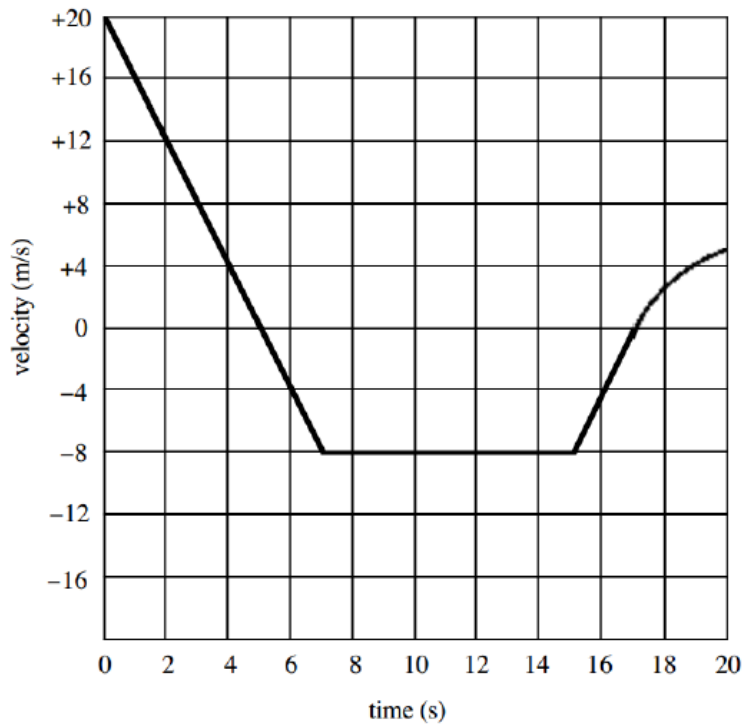
\_\_\_\_\_ 2. Position vs. time graph for an object that is not moving.

\_\_\_\_\_ 3. Velocity vs. time graph for a uniform positive acceleration.

\_\_\_\_\_ 4. Position vs. time graph for a uniform positive acceleration.

\_\_\_\_\_ 5. Position vs. time graph for a constant, non-zero velocity.

3. Use the velocity vs. time graph given below to answer the following questions.



- A. At what two times is the object at rest?
- B. At what times is the object not accelerating?
- C. What is the acceleration at  $t = 4$  s?
- D. What is the acceleration at  $t = 16$  s?
- E. What is the instantaneous speed at  $t = 10$  s?
- F. How far does the object travel from  $t = 2$  to  $t = 4$  s?
- G. What is the average acceleration of the object between  $t = 2$  s and  $t = 6$  s?