

Describing Motion Graphically

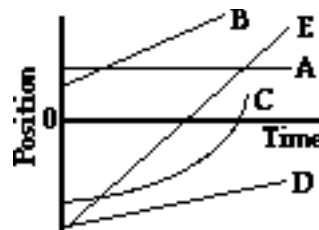
Study Lessons 3 and 4 of the 1-D Kinematics chapter at The Physics Classroom:

<http://www.physicsclassroom.com/Class/1DKin/1DKinTOC.html>

MOP Connection: Kinematic Graphing: sublevels 1-11 (emphasis on sublevels 9-11)

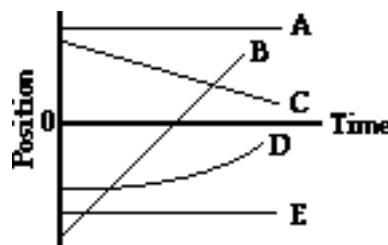
1. The slope of the line on a position vs. time graph reveals information about an object's velocity. The magnitude (numerical value) of the slope is equal to the object's speed and the direction of the slope (upward/+ or downward/-) is the same as the direction of the velocity vector. Apply this understanding to answer the following questions.

- a. A horizontal line means _____.
- b. A straight diagonal line means _____.
- c. A curved line means _____.
- d. A gradually sloped line means _____.
- e. A steeply sloped line means _____.



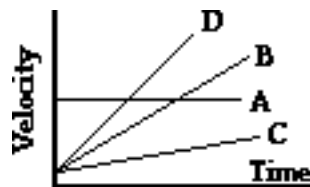
2. The motion of several objects is depicted on the position vs. time graph. Answer the following questions. Each question may have less than one, one, or more than one answer.

- _____ a. Which object(s) is(are) at rest?
- _____ b. Which object(s) is(are) accelerating?
- _____ c. Which object(s) is(are) not moving?
- _____ d. Which object(s) change(s) its direction?
- _____ e. Which object is traveling fastest?
- _____ f. Which moving object is traveling slowest?
- _____ g. Which object(s) is(are) moving in the same direction as object B?



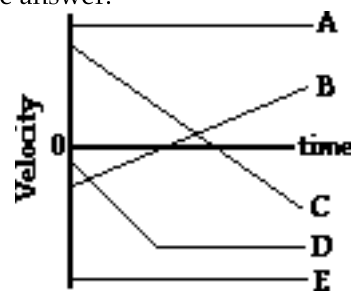
3. The slope of the line on a velocity vs. time graph reveals information about an object's acceleration. Furthermore, the area under the line is equal to the object's displacement. Apply this understanding to answer the following questions.

- a. A horizontal line means _____.
- b. A straight diagonal line means _____.
- c. A gradually sloped line means _____.
- d. A steeply sloped line means _____.



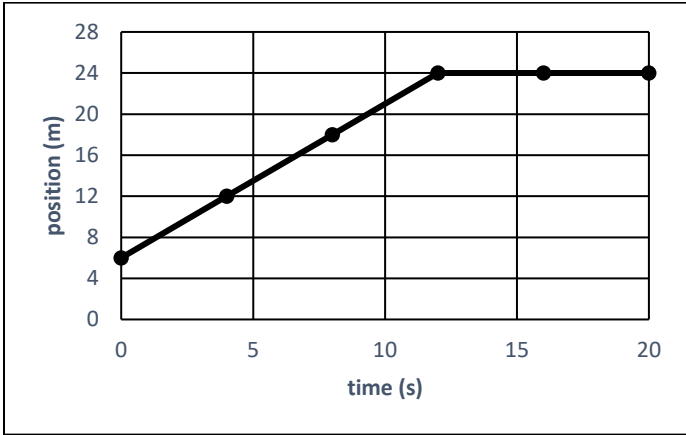
4. The motion of several objects is depicted by a velocity vs. time graph. Answer the following questions. Each question may have less than one, one, or more than one answer.

- _____ a. Which object(s) is(are) at rest?
- _____ b. Which object(s) is(are) accelerating?
- _____ c. Which object(s) is(are) not moving?
- _____ d. Which object(s) change(s) its direction?
- _____ e. Which accelerating object has the smallest acceleration?
- _____ f. Which object has the greatest acceleration?
- _____ g. Which object(s) is(are) moving in the same direction as object E?

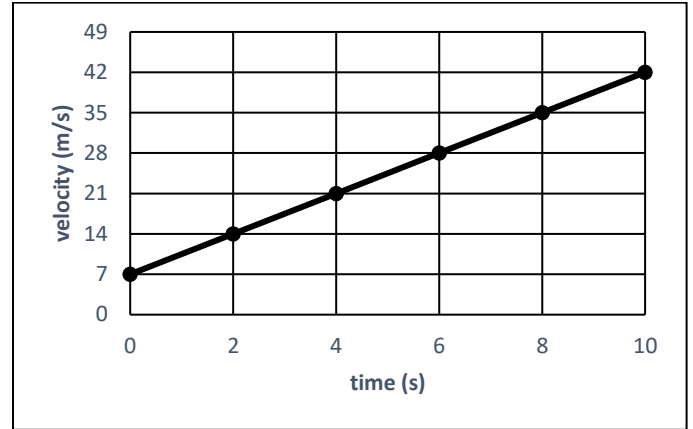


Graphing Calculations (II)
Honors Physics

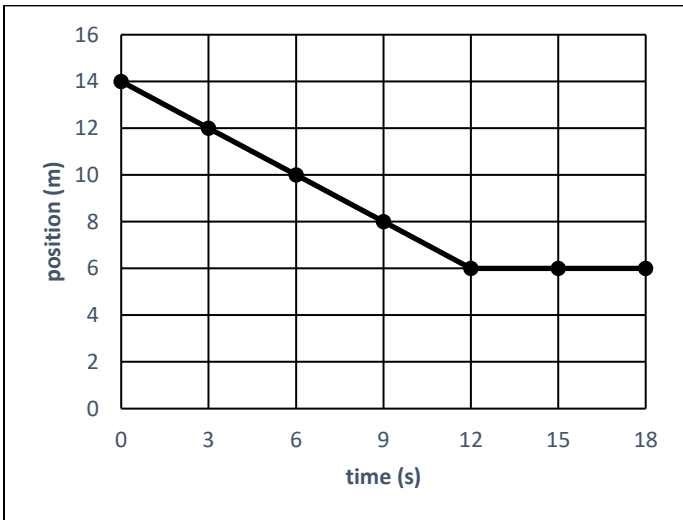
Name _____



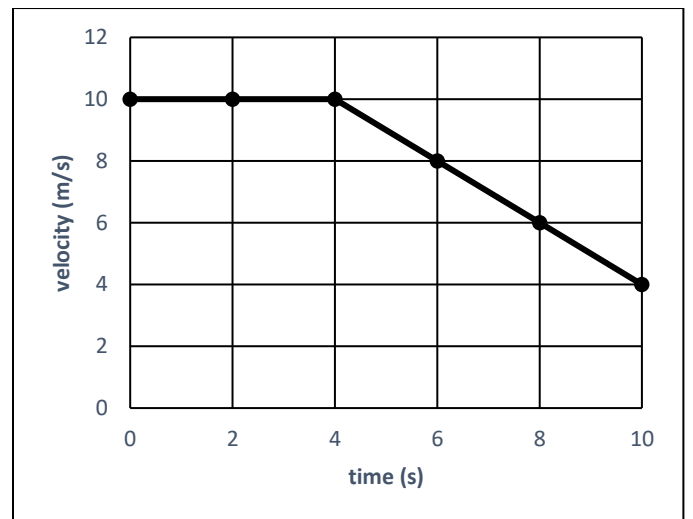
1. What is the velocity of the object between 0s and 12s?



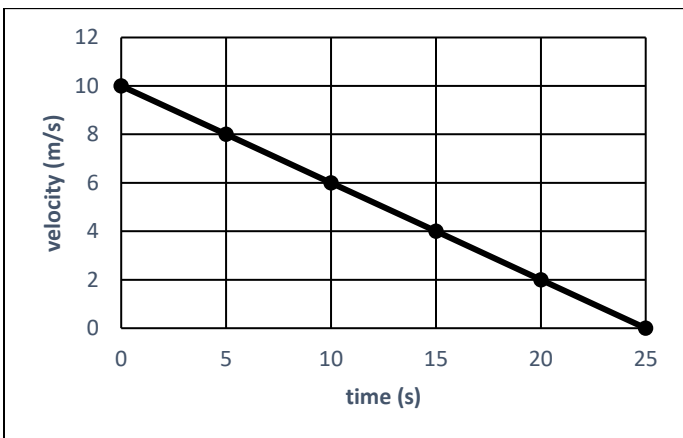
4. What is the displacement traveled by this object from 0s to 10s?



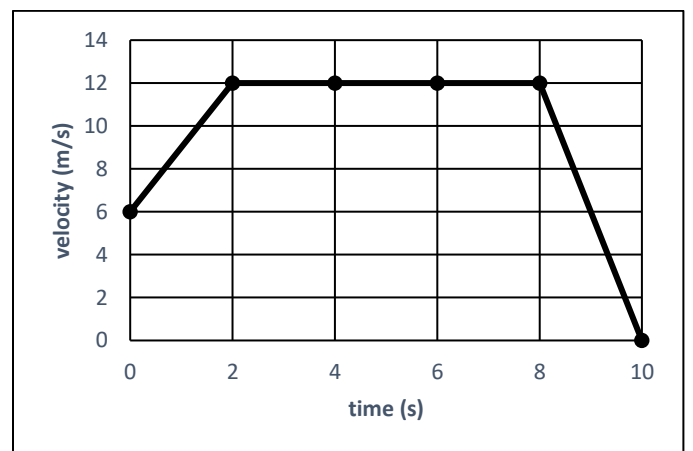
2. What is the velocity of the object at t=6s?



5. What is the displacement traveled by this object from 0s to 10s?



3. What is the acceleration of the object at t=15s?

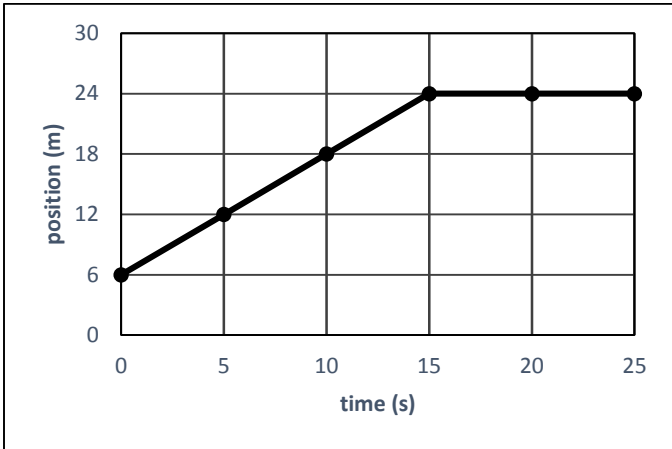


6. What is the acceleration of the object at 1s?

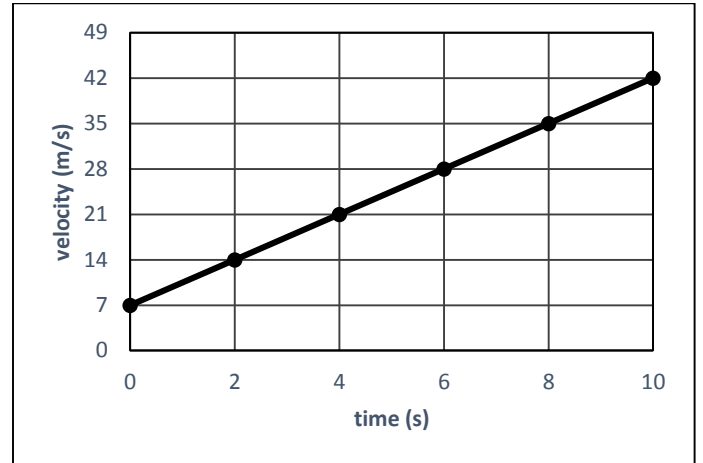
Graphing Calculations
Honors Physics

Name _____

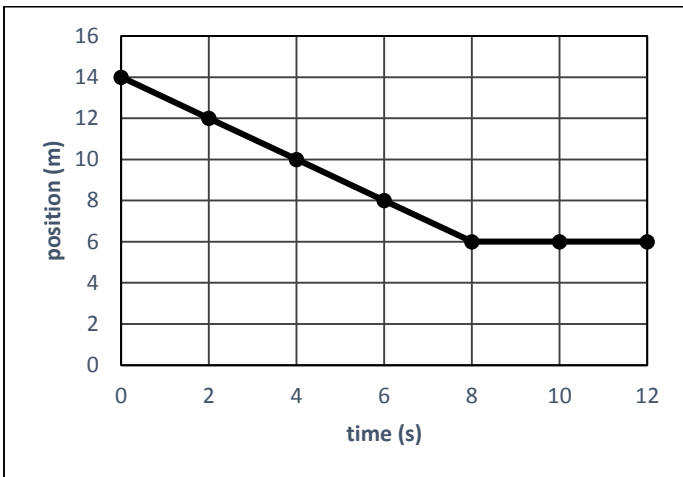
(Show your calculations: Equation, substitution, and answer with units.)



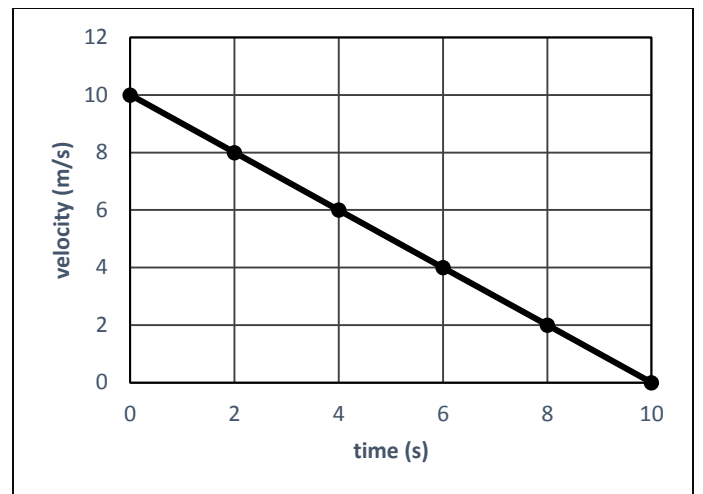
1. What is the instantaneous velocity of the object between 5s and 15s?



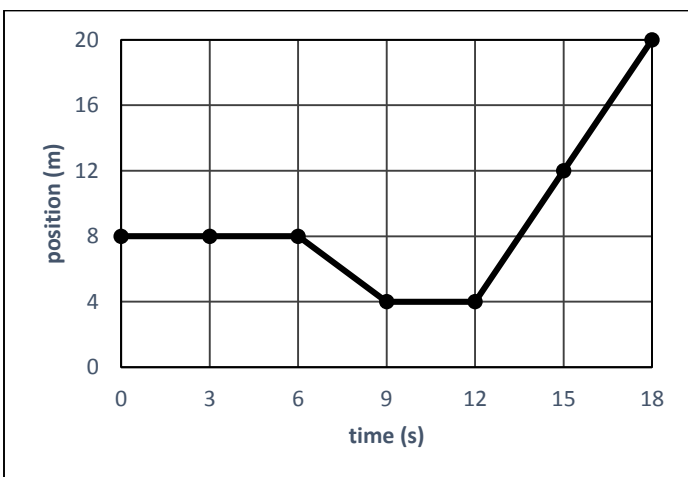
4. What is the acceleration of the object between 0s and 10s?



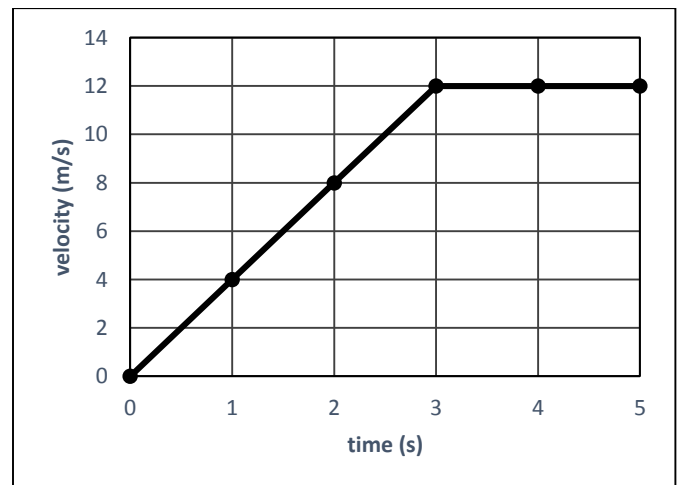
2. What is the instantaneous velocity of the object at t=4s?



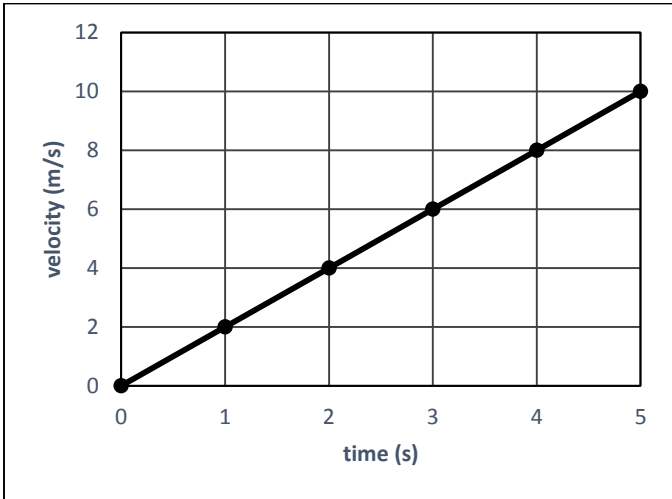
5. What is the acceleration of the object at t=4s?



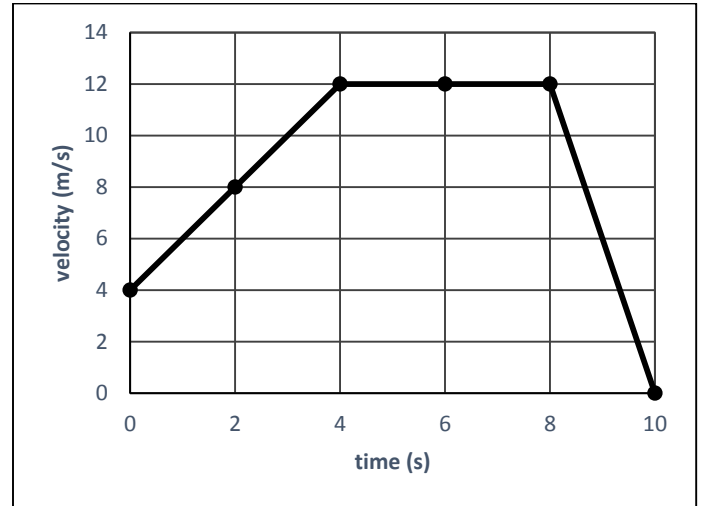
3. What is the instantaneous velocity of the object at t=15s?



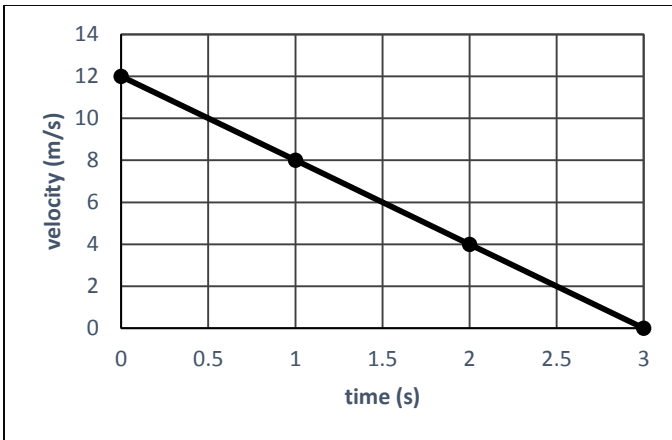
6. What is the acceleration of the object at t=4s?



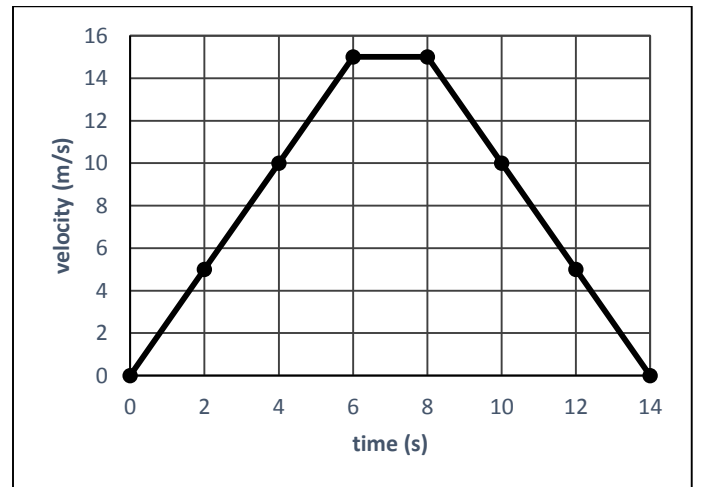
7. What is the displacement traveled by the object between 0s and 5s?



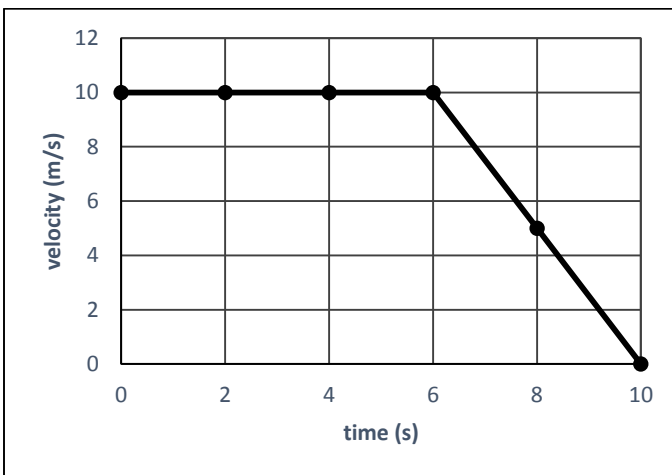
10. What is the acceleration of the object at $t=9s$?



8. What is the displacement traveled by the object between 0s and 3s?



11. What is the displacement traveled by the object from 0s to 14s?



9. What is the displacement traveled by the object between 0s and 10s?