

Name _____ Period _____ Date _____

IBPhysics Practice on Topic 2: Kinematics in One Dimension.

- In Physics, Mechanics is known as the study of
a. mechanisms b. how things move c. why things move d. motion e. machines
- The subdivision of Mechanics that is called Kinematics studies
a. mechanisms b. how things move c. why things move d. motion e. machines
- The subdivision of Mechanics that is called Dynamics studies
a. mechanisms b. how things move c. why things move d. motion e. machines
- The founder of Kinematics was
a. Newton b. Einstein c. Galileo d. Copernicus e. Kepler
- The founder of Dynamics was
a. Newton b. Einstein c. Galileo d. Copernicus e. Kepler
- Who derived the 5 Motion Equations by doing such things as rolling metal spheres down ramps, and dropping objects out of the Learning Tower?
a. Newton b. Einstein c. Galileo d. Copernicus e. Kepler
- Who derived the 3 Laws of Motion and ultimately determined that the cause of motion or lack of it was force?
a. Newton b. Einstein c. Galileo d. Copernicus e. Kepler
- The slope of a displacement versus time graph indicates the ___ of an object.
a. velocity b. acceleration c. distance d. change e. reference frame
- The slope of a velocity versus time graph indicates the ___ of an object.
a. velocity b. acceleration c. distance d. change e. reference frame
- An automobile moving along a straight track changes its velocity from 40.0 m/s to 80.0 m/s in a distance of 2.0×10^2 m. What is the acceleration of the vehicle during this time?
Show work to get credit.
a. 8.0 m/s^2 b. 9.6 m/s^2 c. 12 m/s^2 d. 6.9 m/s^2 e. 0.20 m/s^2
- In 2.0 s, a particle moving with constant acceleration along the x axis goes from $x = 10$ m to $x = 50$ m. The velocity at the end of this time interval is 10 m/s. What is the acceleration of the particle?
Show work to get credit.
a. $+15 \text{ m/s}^2$ b. $+20 \text{ m/s}^2$ c. -20 m/s^2 d. -10 m/s^2 e. -15 m/s^2
- A go-cart traveling along a straight road increases its speed from 30.0 m/s to 50.0 m/s in a distance of 180.0 m. If the acceleration is constant, how much time elapses while the cart moves this distance?
Show work to get credit.
a. 6.00 s b. 4.50 s c. 3.60 s d. 4.00 s e. 9.00 s

13. A stone is thrown from the top of a building with an initial velocity of 20.0 m/s straight downward. The stone strikes the ground in 2.0 s. About how high is the top of the building above the ground?

Show work to get credit.

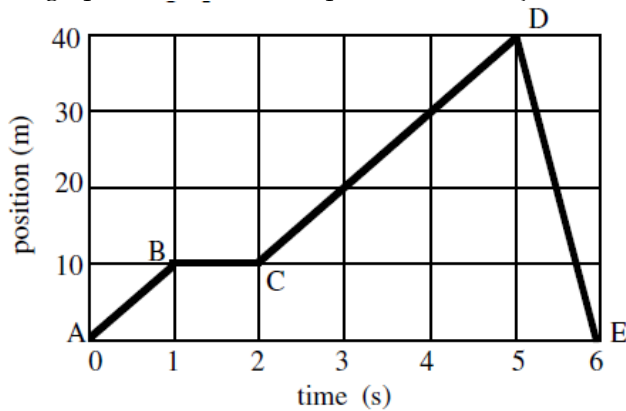
- a. 30 m b. 60 m c. 35 m d. 16 m e. 50 m

14. A ball thrown vertically upward from ground level is caught 3.0 s later by a person on a balcony at 14 m above the ground. Approximately, what was the initial speed of the ball?

Show work to get credit.

- a. 19 m/s b. 4.7 m/s c. 10 m/s d. 34 m/s e. 17 m/s

The graph below shows the position of an object as a function of time. Use it for #15 and #16.



15. What is the velocity of the object from $t = 5.0$ s to $t = 6.0$ s? **Show work to get credit.**

- a. 20 m/s b. -20 m/s c. 40 m/s d. -40 m/s e. 17 m/s

16. How far did the object move from $t = 1.0$ s to $t = 5.0$ s? **Show work to get credit.**

- a. 20 m b. 30 m c. 40 m d. -40 m e. 50 m

17. A motorist travels due North at 30 mi/h for 2 hours. She then reverses her direction and travels due South at 60 mi/h for 1 hour. What is the average velocity of the motorist for the entire trip?

Show work to get credit.

- a. zero mi/h b. 40 mi/h, South c. 45 mi/h, South d. 40 mi/h, North e. 45 mi/h, North