AP Physics 1 Summer Assignment 2019 Mrs. DeMaio demaiod@middkletownk12.org

Welcome to AP Physics 1 for the 2019-2020 school year. AP Physics 1 is an algebra based, introductory college-level physics course. Students, you will cultivate your understanding of physics through inquiry based investigations as you explore these topics: kinematics, dynamics, circular motion, gravitation, energy, momentum, single harmonic motion, waves, rotational motion, electrical charge and force, and circuits.

Join my Google Classroom with my code: h37xror

1. Watch Math Review Videos and 1D Motion Videos.

2. Read through slides of 1D Kinematics Presentation. (Answer key for presentation multiple choice follows presentation.)

3. Work through Multiple Choice and Chapter Problems below.

---The answers to each question on the homework packets are at the end of each document.
---Your work will not be collected for a grade.
---You will have the first two blocks of the new school year to ask any questions on the homework packets.
---You will be tested on this material during the third block.

Chapter Problems

Motion at Constant Speed

1. A sportsman can develop a maximum speed of 12 m/s when he is swimming in a pool. Calculate the time interval that is required to travel a distance of 25 m.

2. A polar bear walks a distance of 160 meters in 60 seconds. What was its speed?

3. A train travels 120 seconds at a speed of 50 m/s. How far did it go?

4. How long will it take a runner to travel a distance of 1000 m at a speed of 12 m/s?

5. A car travels a distance of 1600 km in 24 hours. What was its speed?

6. A sailboat travels a distance of 600 m in 40 seconds. What speed is it going?

7. What distance will a car traveling at a speed of 50 km/hr cover in 0.25 hr?

8. How long will it take a ball to roll 10 meters along the floor at a speed of 0.5 m/s?

Non-Uniform Motion and Average Speed

9. An airplane travels 2800 km at a speed of 700 km/h, decreases its speed to 500 km/h for the next 1500 km and travels the last 1000 km at a speed of 400 km/h. Find the average speed of the plane for the trip.

10. An airplane travels 2100 km at a speed of 500 km/h, encounters a head wind that decreases its speed to 400 km/h for the next three hours and then travels the last 400 km to complete the trip at an average speed, for the entire trip of 440 km/h. What was the speed of the plane for the last part of the trip?

11. A runner runs the first 400m of a race in 80s, the second 400m in 70s and the final 800m in 130s. What was her average speed for this run?

12. A train travels from Boston to New York. It travels at a speed of 180 km/h for two hours, speeds up to 200 km/h for the next four hours and then slows down to 120 km/h for the next six hours. What is the average speed of the train for this trip?

13. A train travels 120 km at a speed of 60 km/h, makes a stop for 0.5 h, and then travels the next 180 km at a speed of 90 km/h. What is the average speed of the train for this trip?

14. A train travels a total distance of 600km in eight hours. It travels the first 120 km at a speed of 60 km/h, travels the next 180 km in two hours and then completes the trip at an unknown speed. What was the average speed of the train for the last leg of the trip? What is the average speed of the train for the entire trip?

Position, Displacement and Velocity

15. An object moves from the position +34 m to the position -15 m in 15 s. What is its total displacement? What is its average velocity?

16. A balloon drifts 30 m toward the east in 10 s; then the wind suddenly changes and the balloon flies 50 m toward the west in the next 5 s.

a. What distance did it travel during the first 10 s?
b. What distance did it travel during the next 5 s?
c. What total distance did it travel?

d. What was its average speed during the first 10 s?
e. What was its average speed during the next 5 s?
f. What was its average speed for the entire trip?
g. What was its displacement during the first 10 s?
h. What was its displacement during the next 5 s?
i. What was its total displacement?

j. What was its average velocity during the first 10 s?
k. What was its average velocity during the next 5 s?
l. What was its average velocity for the entire trip?

17. An object moves from the position -12 m to the position +17 m in 9 s. What is its total displacement? What is its average velocity?

18. An object starts at a point +25 m goes 40 m toward +X direction in 5 s then suddenly changes its direction to the opposite and covers 50 m in 10 seconds.

a. Where is the object after the first 5 s?
b. Where is the object after the next 10 s?
c. What total distance did it travel?

d. What was its average speed during the first 5 s?
e. What was its average speed during the next 10 s?
f. What was its average speed for the entire trip?

g. What was its displacement during the first 5 s?
h. What was its displacement during the next 10 s?
i. What was its total displacement?

j. What was its average velocity during the first 5 s?
k. What was its average velocity during the next 10 s?
l. What was its average velocity for the entire trip?

Problem Solving with Kinematics Equation 1

19. A car's speedometer reads 20 m/s after accelerating, from a standing start, for 25s. What was the magnitude of its acceleration?

20. A train departs from its station at a constant acceleration of 5 m/s^2. What is the speed of the train at the end of 20s?

21. An object accelerates to a velocity of 230 m/s over a time of 2.5 s. The acceleration it experienced was 42 m/s^2. What was its initial velocity?

22. If an object accelerates from rest, what will its velocity be after 12.3 s if it has a constant acceleration of 4.6 m/s^2?

23. An object increases its velocity from 22 m/s to 36 m/s in 5 s. What is the acceleration of the object?

24. A bicyclist is traveling at a speed of 5 m/s when it suddenly accelerates, at a constant rate of 0.6 m/s^2, for a time of 10s. What is the speed of the bicycle at the end of that 10s?

25. An object, initially traveling at a velocity of 52 m/s, experiences an acceleration of -9.8 m/s^2. How much time will it take it to come to rest?

26. An object accelerates at a rate of -3.2 m/s to a velocity of 5 m/s over a time of 10 s. What was its initial velocity?

Problem Solving with g= 9.8 m/s^2

27. What is the velocity of a dropped object after it has fallen for 12 s?

28. A ball is thrown straight down with a velocity of 12 m/s; what will be its velocity 2.0 s after being released?

29. A ball is thrown straight up with a velocity of 12 m/s; what will be its velocity 2.0 s after being released?

30. An arrow is launched straight up from the ground with an initial velocity of 23.4 m/s. How long until it reaches its highest point?

31. A ball is thrown straight up from the ground with an unknown velocity. It returns to the ground after 4.0 s. With what velocity did it leave the ground?

Problem Solving with Kinematics Equation 2

32. An object is moving with an initial velocity of 23 m/s. It is then subject to a constant acceleration of 3.5 m/s^2 for 12 s. How far will it have traveled during the time of its acceleration?

33. An object is moving with a constant velocity of 278 m/s. How long will it take it to travel 7500 m?

34. An object travels at a constant velocity of 15 m/s for 5.0 seconds. How far does it move during that time?

35. How long will it take a person walking at 2.1 m/s to travel 13 m?

36. You are at a rest stop 250 miles north of New York City. You then travel north at a constant velocity of 65 miles per hour for 2.0 hours. Describe your location relative to New York City.

37. An object is at rest when it undergoes a constant acceleration of 13 m/s^2 for 5.0 seconds. How far will it have traveled during this time?

38. An object is dropped from the top of a building and strikes the ground 2.0s later. How tall is the building?

Problem Solving with Kinematics Equation 3

39. An object accelerates from rest to 85 m/s over a distance of 36 m. What acceleration did it experience?

40. An object experiences an acceleration of -6.8 m/s^2. As a result, it accelerates from 54 m/s to a complete stop. How much distance did it travel during that acceleration?

41. An object is dropped from a 32 m tall building. How fast will it be going when it strikes the ground?

42. An object is dropped from a building and strikes the ground with a speed of 31m/s. How tall is the building?

43. A hopper jumps straight up to a height of 1.3 m. With what velocity did it leave the floor?

44. A hopper jumps straight up to a height of 0.45 m. With what velocity will it return to the table?

Problem Solving with All Three Kinematics Equations

45. An object accelerates from rest to a velocity of 22 m/s over a distance of 35 m. What was its acceleration?

46. An object is dropped from a height of 100 m, how long is it in the air?

47. An object is moving with an initial velocity of 5.5 m/s. It is then subject to a constant acceleration of 2.5 m/s^2 for 11 s. How far will it have traveled during the time of its acceleration?

48. A pump can throw a stream of water up to 29.6 m. What is the initial speed of the stream when it leaves a hose nozzle?

49. A stone is dropped from the roof of a building. It took 5 s for the stone to reach the ground. What is the height of the building?

50. What is the landing velocity of an object that is thrown vertically down with a velocity of 5 m/s from a height of 25 m?

51. An object accelerates from rest with a constant acceleration of 7.5 m/s^2. How fast will it be traveling after it goes 12 m?

52. An object is traveling at a constant velocity of 11 m/s when it experiences a constant acceleration of 1.5 m/s^2 for a time of 14 s. What will its velocity be after that acceleration?

53. An object is thrown vertically up with a velocity of 35 m/s. What was the maximum height it reached?

54. A boy throws a ball vertically up and catches it after 3 s. What height did the ball reach?

55. An object is moving at a velocity of 5.8 m/s. It accelerates to a velocity of 25 m/s over a time of 3.3 s. What acceleration did it experience?

56. A car which is traveling at a velocity of 9.6 m/s undergoes an acceleration of 4.2 m/s^2 over a distance of 450 m. How fast is it going after that acceleration?

57. A marble is projected vertically up by a spring gun, and reaches the maximum height of 9.8 m. What is the initial speed of the marble? How long did it take the marble to reach maximum height?

58. An arrow is shot vertically up by a bow, and after 8 s returns to the ground level. What is the initial velocity of the arrow? How high did it go?

Creating Graphs

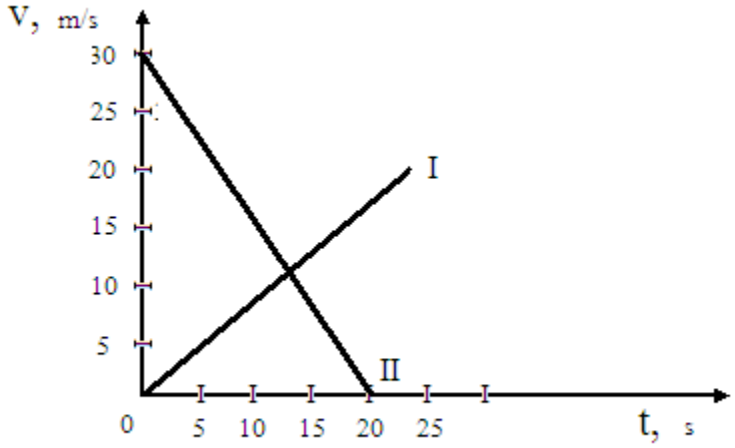
59. Starting at the position, x_0 = 5 m, you travel at a velocity of -10 m/s for 8 s.
a. Determine your position at the times of 0s; 1s; 2s; and 8s.
b. Draw the Position versus Time for your travel during this time.
c. Draw the Velocity versus Time graph for your trip.

60. Starting at the position, x_0 = -17 m, you travel at a velocity of 12 m/s for 6 s.
a. Determine your position at the times of 0s; 2s; 4s; and 6s.
b. Draw the Position versus Time for your travel during this time.
c. Draw the Velocity versus Time graph for your trip.

61. Starting at the position, x_0 = 10 m, you travel at a velocity of 4 m/s for 2 s.
a. Determine your position at the times of 0s; 0.5s; 1s; and 1.5s.
b. Draw the Position versus Time for your travel during this time.
c. Draw the Velocity versus Time graph for your trip.

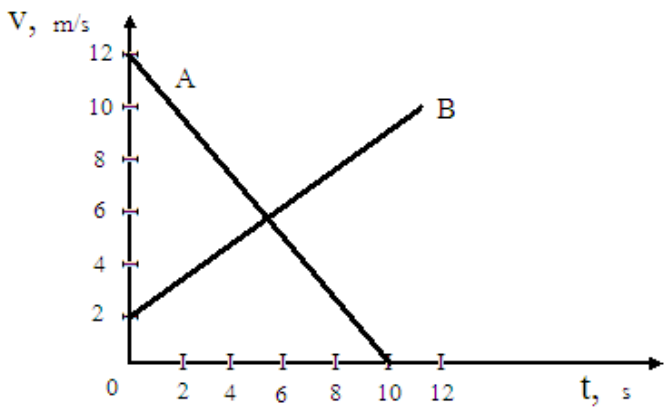
Analyzing Graphs

62. A graph of the velocity as a function of time for two cars is presented below.
a. What is the initial velocity of each car?
b. What is the acceleration of each car?
c. What is the traveled distance of the car I at the end of 25 s?
d. What is the traveled distance of the car II at the end of 20 s
e. Sketch graphs, on one set of axes, of each car's acceleration as a function of time.



63. A graph of the velocity as a function of time for two objects A and B is presented below.

a. What is the initial velocity of each object?
b. What is the acceleration of each object?
c. What is the traveled distance of the object A at the end of 10 s?
d. What is the traveled distance of the object B at the end of 12 s?
e. Sketch clear graphs of the object's acceleration as a function of time.



1. 2.08 s
2. 2.67 m/s
3. 6000 m
4. 83.3 s
5. 66.7 km/h
6. 15 m/s
7. 12.5 km
8. 20 s
9. 558 km/h
10. 330 km/h
11. 5.7 m/s
12. 157 km/h
13. 67 km/h
14. 75 km/h (both)
15. -49 m, -3.27 m/s
16. a) 30 m
b) 50 m
c) 80 m
d) 3 m/s
e)10 m/s
f) 5.3 m/s
g) +30 m
h) -50 m
i) -20 m
j) +3 m/s
k)-10 m/s
l)-1.3 m/s
17. 29 m, 3.2 m/s
18. a) 65 m
b) 15 m
c) 90 m
d) 8 m/s
e) 5 m/s
f) 6 m/s
g) +40 m
h)-50 m
i)-10 m
j)+8 m/s
k) -5m/s
l)-0.67 m/s
19. 0.8 m/s^2
20. 100 m/s
21. 125 m/s
22. 56.58 m/s
23. 2.8 m/s^2
24. 11 m/s
25. 5.3 s
26. 37 m/s
27. -117.6 m/s
28. -31.6 m/s
29. -7.6 m/s
30. 2.4 s
31. 19.6 m/s
32. 528 m
33. 27.0 s
34. 75 m
35. 6.2 s
36. 380 mi north
37. 162.5 m
38. 19.6 m
39. 100.3 m/s^2
40. 214 m
41. -25 m/s
42. 49 m
43. 5.05 m/s
44. 2.97 m/s
45. 6.91 m/s^2
46. 4.52 s
47. 211.75 m
48. 24.1 m/s
49. 122.5 m
50. -22.7 m/s
51. 13.42 m/s
52. 32 m/s
53. 62.5 m
54. 11.025 m
55. 5.82 m/s^2
56. 62.2 m/s
57. 13.86m/s, 1.41s
58. 39.2 m/s, 78.4m
59. 5 m, -5 m, -15 m, -75 m
60. -17 m, 7 m, 31 m, 55 m
61. 10 m, 12 m, 14 m, 16 m
62. v_I= 0 m/s
v_{II} = 30 m/s
a_I= 0.8 m/s
a_{II} = -1.5 m/s
d_I= 250 m
d_{II} = 300 m
63. v_A= 12 m/s
v_B = 2 m/s
a_A= -1.2 m/s
a_B = 0.67 m/s
d_A= 60 m
d_B = 72 m

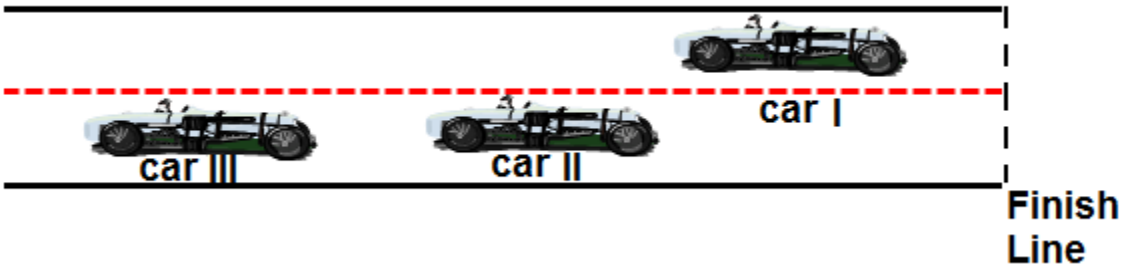
Multiple Choice Questions

1. An object moves at a constant speed of 6 m/s. This means that the object:
   A. Increases its speed by 6 m/s every second
   B. Decreases its speed by 6 m/s every second
   C. Doesn't move
   D. Has a positive acceleration
   E. Moves 6 meters every second

2. A toy car moves 8 m in 4 s at the constant velocity. What is the car's velocity?
   A. 1 m/s B. 2 m/s C. 3 m/s D. 4 m/s E. 5 m/s

3. A train moves at a constant velocity of 50 km/h. How far will it move in 0.5 h?
   A. 10 km B. 20 km C. 25 km D. 45 km E. 50 km

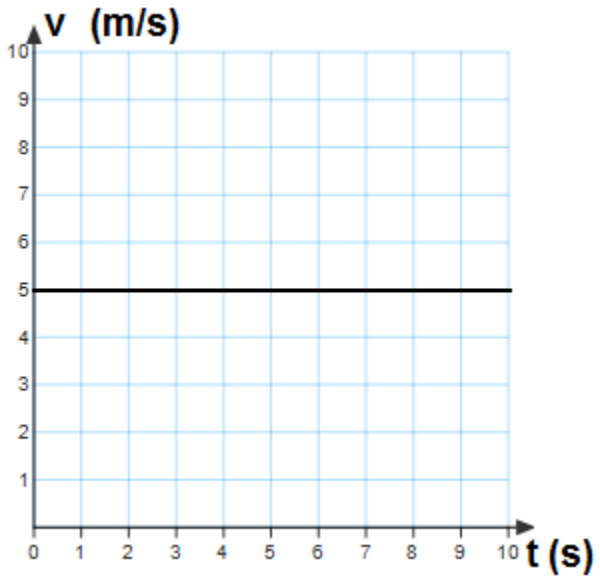
4. A boat can move at a constant velocity of 8 km/h in still water. How long will it take for the boat to move 24 km?
   A. 2 h B. 3 h C. 4 h D. 6 h E. 8 h



5. A snapshot of three racing cars is shown on the diagram. All three cars start the race at the same time, at the same place and move along a straight track. As they approach the finish line, which car has the lowest average speed?
   A. Car I
   B. Car II
   C. Car III
   D. All three cars have the same average speed
   E. More information is required

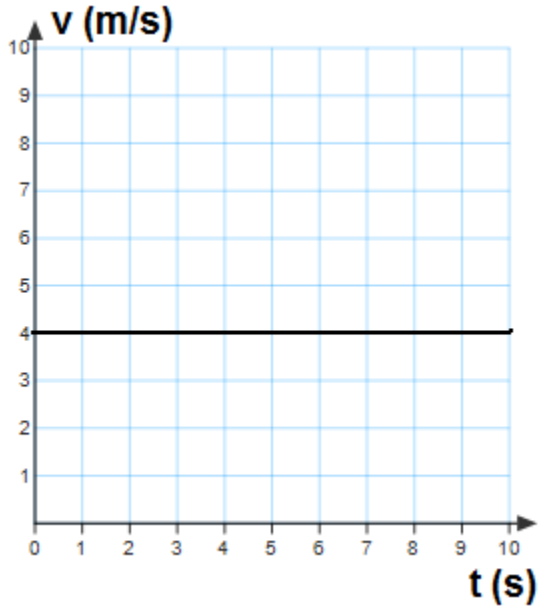
6. A bicyclist moves at a constant speed of 4 m/s. How long it will take for the bicyclist to move 36 m?
   A. 3 s B. 6 s B. 12 s D. 9 s E. 18 s

The graph represents the relationship between velocity and time for an object moving in a straight line. Use this graph to answer questions 7 and 8.



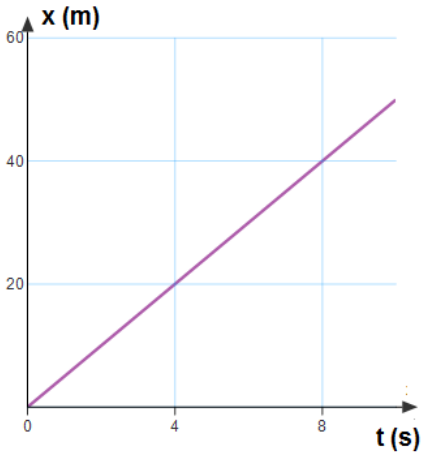
7. Which of the following statements is true?
   A. The object speeds up
   B. The object slows down
   C. The object moves with a constant velocity
   D. The object stays at rest
   E. The object is in free fall

8. What is the velocity of the object at 5 s?
   A. 1 m/s B. 2 m/s C. 3 m/s D. 4 m/s E. 5 m/s



9. The graph represents the relationship between velocity and time for an object moving in a straight line. What is the traveled distance of the object at 9 s?
   A. 10 m B. 24 m C. 36 m D. 48 m E. 56 m

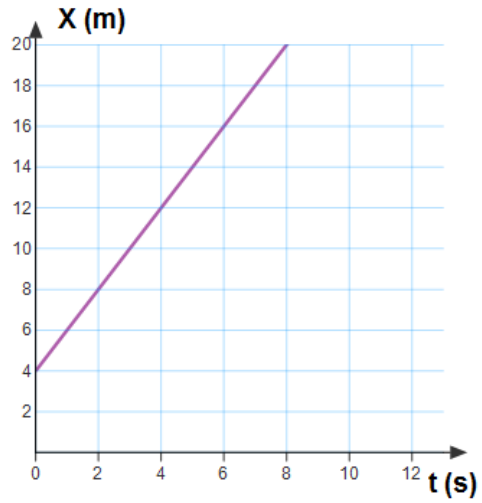
The following graph represents the position as a function of time for a moving object. Use this graph to answer questions 10 and 11.



10. Which of the following is true?
    A. The object increases its velocity
    B. The object decreases its velocity
    C. The object's velocity stays unchanged
    D. The object stays at rest
    E. More information is required

11. What is the velocity of the object?
    A. 4 m/s B. 20 m/s C. 8 m/s D. 40 m/s E. 5 m/s

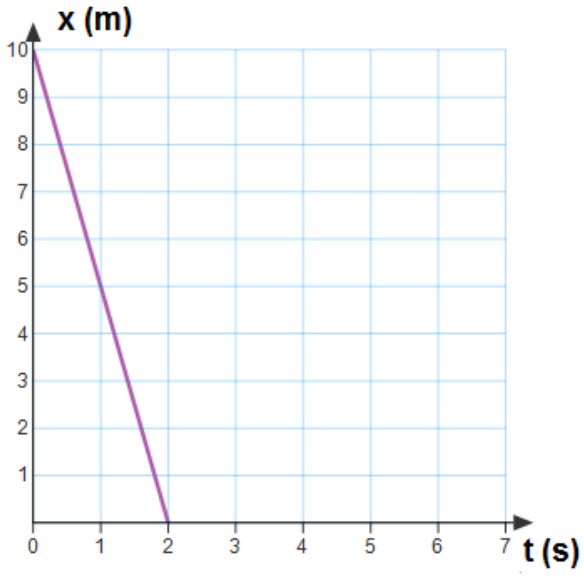
The following graph represents the position as a function of time of a moving object. Use this graph to answer questions 12 and 13.



12. What is the initial position of the object?
    A. 2 m B. 4 m C. 6 m D. 8 m E. 10 m

13. What is the velocity of the object?
    A. 2 m/s B. 2.5 m/s C. 4 m/s D. 8 m/s E. 10 m/s

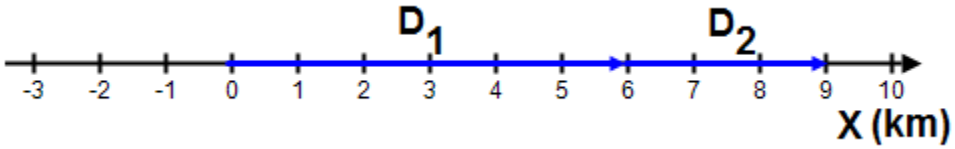
The following graph represents the position as a function of time of a moving object. Use this graph for questions 14 and 15.



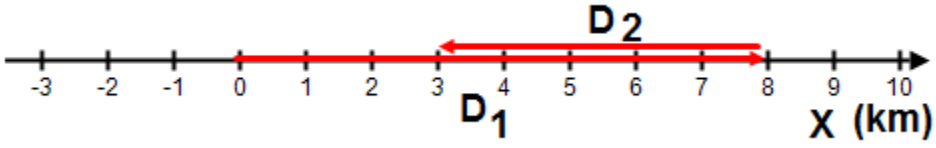
14. What is the initial position of the object?
A. 2 m B. 4 m C. 6 m D. 8 m E. 10 m

15. What is the velocity of the object?
A. 5 m/s B. -5 m/s C. 10 m/s D. -10 m/s E. 0 m/s

16. Which of the following is a vector quantity?
A. Speed B. Time C. Traveled distance D. Velocity E. Area



17. Starting from the origin, a person walks 6 km east during first day, and 3 km east the next day. What is the net displacement of the person from the initial point in two days?
A. 6 km, west B. 3 km, east C. 10 km, east D. 5 km, west E. 9 km, east

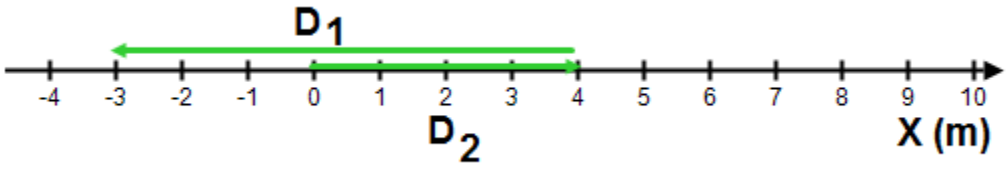


The diagram above illustrates a person who, starting from the origin, walks 8 km east during first day, and 5 km west the next day. Use it to answer questions 18 and 19.

18. What is the net displacement of the person from the initial point in two days?
A. 6 km, east B. 3 km, east C. 10 km, west D. 5 km, west E. 9 km, east

19. What is the traveled distance of the person from the initial point in two days?

A. 13 km B. 3 km C. 10 km D. 5 km E. 9 km



The diagram above illustrates a car that, starting from the origin, travels 4 km east and then 7 km west. Use it to answer questions 20 and 21.

20. What is the net displacement of the car from the initial point?

A. 3 km, west B. 3 km, east C. 4 km, east D. 7 km, west E. 7 km east

21. Starting from the origin, a car travels 4 km east and then 7 km west. What is the traveled distance of the car from the initial point?

A. 3 km B. 3 km C. 4 km D. 7 km E. 11 km

22. An object moves with a constant acceleration of 5 m/s^2. Which of the following statements is true?

A. The object's velocity stays the same

B. The object moves 5 m each second

C. The object's acceleration increases by 5 m/s^2 each second

D. The object's acceleration decreases by 5 m/s^2 each second

E. the object's velocity increases by 5 m/s each second

23. A truck travels east with an increasing velocity. Which of the following is the correct direction of the car's acceleration?

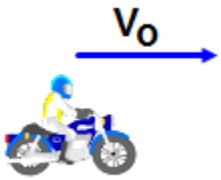
A.

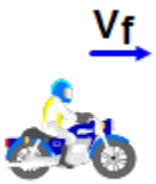
B. 

C. 

D. 

E. 





24. A motorbike travels east and begins to slow down before a traffic light. Which of the following is the correct direction of the motorbike's acceleration?

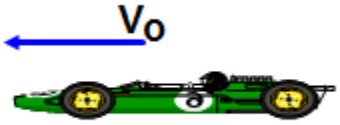
A. 

B. 

C. 

D.

E. 



25. A race car moving west begins to slow down after crossing a finish line. Which of the following is the correct direction of the car's acceleration?

A. 

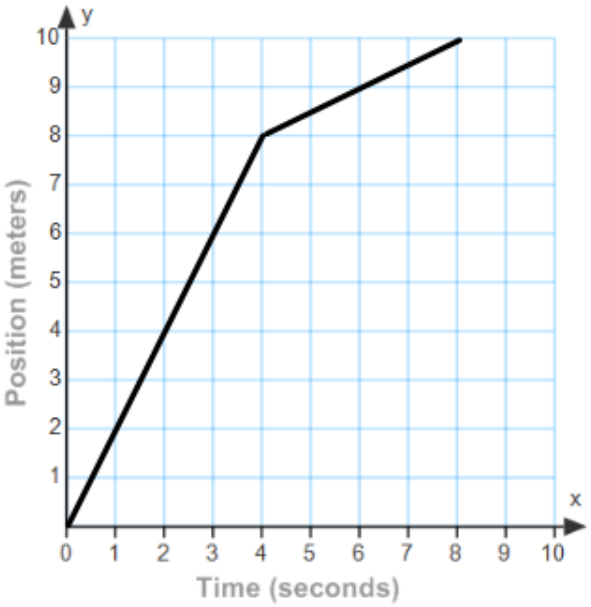
B. 

C. 

D.

E. 

The position vs. time graph of a moving object is shown to the right. Use this graph to answer questions 26 through 30.



26. What is the average speed from 0 s to 4 s?
    A. 0.5 m/s B. 1 m/s C. 2 m/s
    D. 3 m/s E. 4 m/s

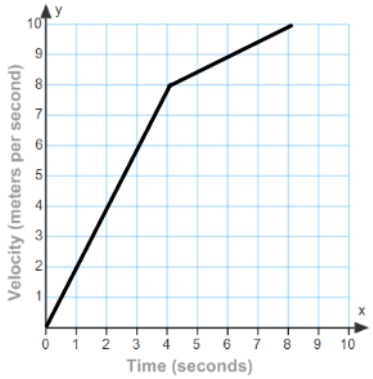
27. What is the average speed from 4 s to 8 s?
    A. 0.5 m/s B. 1 m/s C. 2 m/s D. 3 m/s E. 4 m/s

28. What is the object's position at 6 s?
    A. 2 m B. 1 m C. 3 m
    D. 7 m E. 9 m

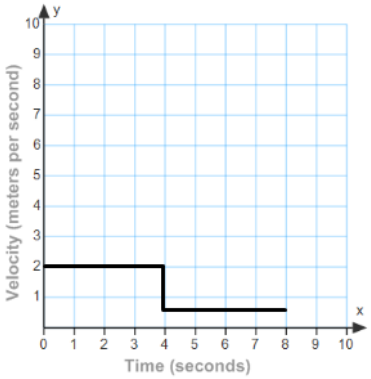
29. What is the average acceleration from 4 s to 8 s?
    A. 0 m/s^2 B. 1 m/s^2 C. 2 m/s^2 D. 3 m/s^2 E. 4 m/s^2

30. Which of the following is the velocity vs. time graph?

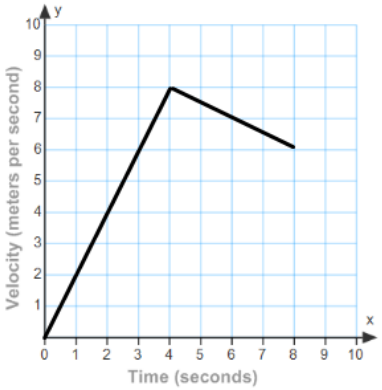
A.



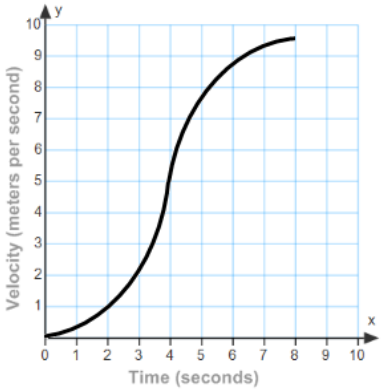
B.



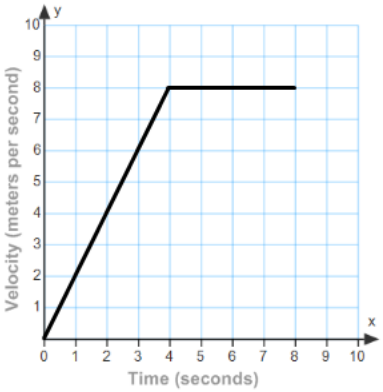
C.



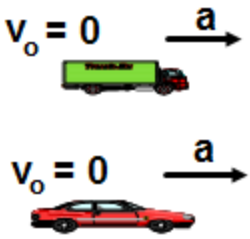
D.



E.

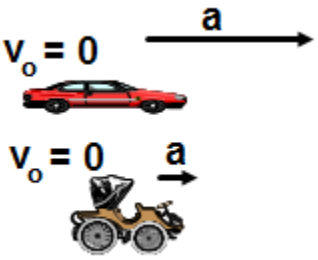


31. A car and a delivery truck both start from rest and accelerate at the same rate. However, the car accelerates for twice the amount of time as the truck. What is the final speed of the car compared to the truck?
    A. Half as much
    B. The same
    C. Twice as much
    D. Four times as much
    E. One quarter as much



32. A car and a delivery truck both start from rest and accelerate at the same rate. However, the car accelerates for twice the amount of time as the truck. What is the traveled distance of the car compared to the truck?
    A. Half as much
    B. The same
    C. Twice as much
    D. Four times as much
    E. One quarter as much

33. A modern car can develop an acceleration four times greater than an antique car like “Lanchester 1800”. If they accelerate over the same distance, what would be the velocity of the modern car compared to the antique car?
    A. Half as much
    B. The same
    C. Twice as much
    D. Four times as much
    E. One quarter as much



34. An object is released from rest and falls in the absence of air resistance. Which of the following is true about its motion?
    A. Its acceleration is zero
    B. Its acceleration is constant
    C. Its velocity is constant
    D. Its acceleration is increasing
    E. Its velocity is decreasing

A ball is thrown straight up from point A, reaches a maximum height at point B, and then falls back to point C, as illustrated by the picture to the right. Use this for questions 35, 36, and 37.

35. Which of the following is true about the direction the ball's velocity and acceleration between A and B?

A. 

B. 

C. 

D. 

E. v = 0 a = 0

36. Which of the following is true about the direction the ball's velocity and acceleration between B and C?

A. 

B. 

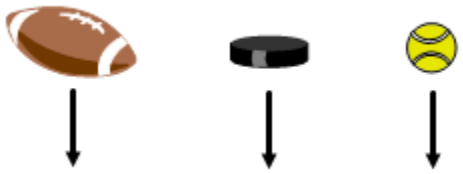
C. 

D. 

E. v = 0 a = 0

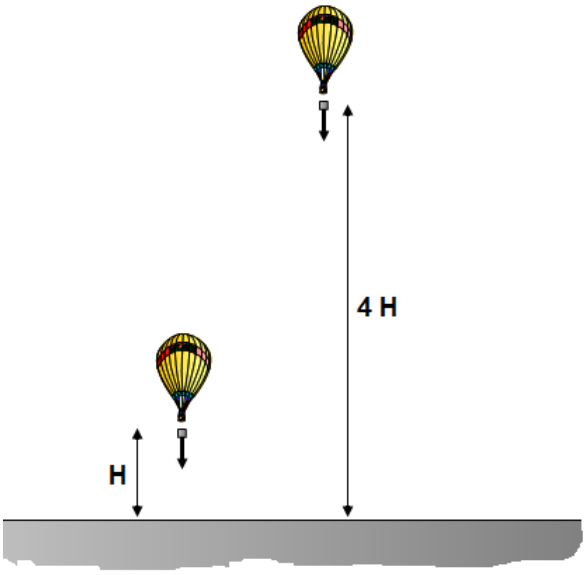
37. Which of the following is true about the ball's velocity and acceleration the highest point B?
    A. Its velocity and acceleration are both zero
    B. Its velocity is up and non-zero constant and acceleration is zero
    C. Its velocity is down and non-zero constant and acceleration is zero
    D. Its velocity is zero and acceleration is up and non-zero constant
    E. Its velocity is zero and acceleration is down and non-zero constant

38. A football, a hockey puck, and a tennis ball all fall down in the absence of air resistance. Which of the following is true about their acceleration?



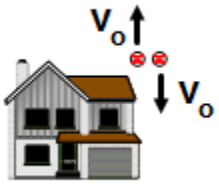
A. The acceleration of the football is greater than the other two
B. The acceleration of the hockey puck is greater than the other two
C. The acceleration of the tennis ball is greater than the other two
D. They all fall down with the same constant acceleration
E. More information is required

39. A package is dropped from an air balloon two times. In the first trial the distance between the balloon and the surface is H and in the second trial 4H. Compare the time it takes for the package to reach the surface in the second trial to that in the first trial?



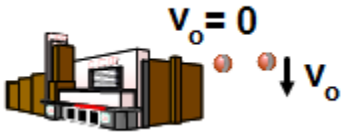
A. The time in the second trial is four times greater
B. The time in the second trial is two times greater
C. The time the same in both trials because it doesn't depend on height
D. The time in the second trial is four times less
E. The time in the second trial is two times less

40. Two baseballs are thrown from the roof of a house with the same initial speed, one is thrown up, and the other is down. Compare the speeds of the baseballs just before they hit the ground.



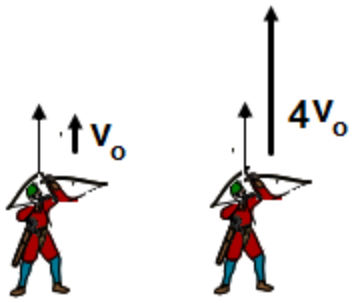
A. The one thrown up moves faster because the initial velocity is up
B. The one thrown down moves faster because the initial velocity is down
C. They both move with the same speed
D. The one thrown up moves faster because it has greater acceleration
E. The one thrown down moves faster because it has greater acceleration

41. A tennis ball is dropped from the top of a tall building. A second tennis ball is thrown down from the same building. Make a statement about the acceleration of each tennis ball.

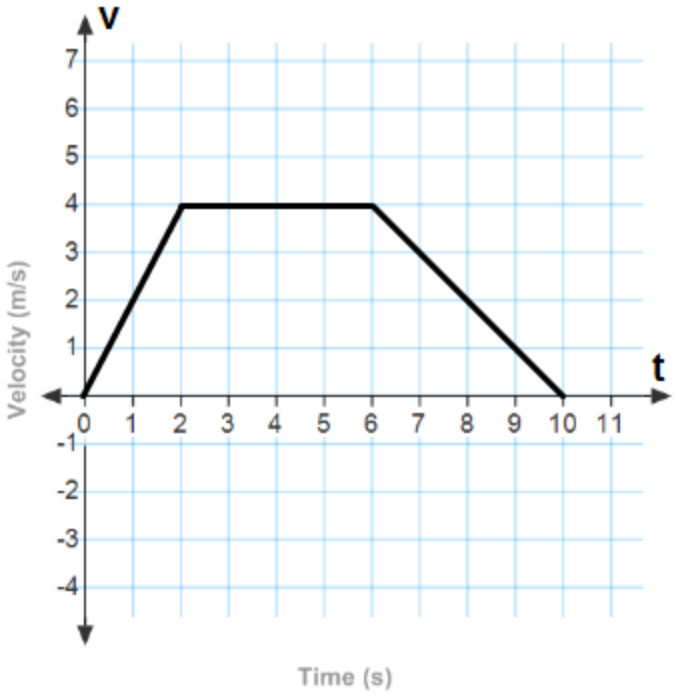


A. The first ball falls with a greater acceleration
B. The second ball falls with a greater acceleration
C. They both fall with the same acceleration because they stated from the same height
D. The both fall with the same acceleration because they are in a free fall
E. More information is required

42. An archer practicing with an arrow bow shoots an arrow straight up two times. The first time the initial speed is v_0 and second time he increases the initial sped to $4v_0$. How would you compare the maximum height in the second trial to that in the first trial?
    A. Two times greater
    B. Four times greater
    C. Eight times greater
    D. Sixteen times greater
    E. The same



The velocity as a function of time of a moving object is presented by the graph to the right. Use this graph for questions 43 through 48.



43. What is the acceleration of the object between 0 s and 2 s?
    A. 0 m/s^2 B. 1 m/s^2 C. 2 m/s^2
    D. 3 m/s^2 E. 4m/s^2

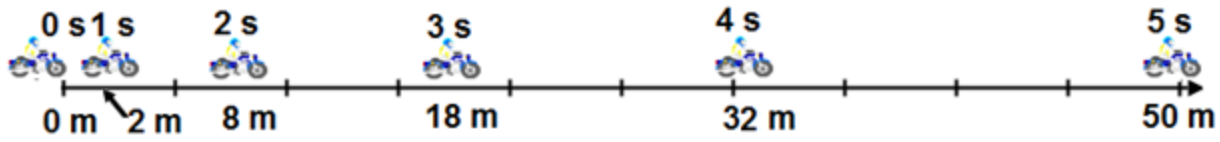
44. What is the acceleration of the object between 2 s and 6 s?
    A. 0 m/s^2 B. 1 m/s^2 C. 2 m/s^2
    D. 3 m/s^2 E. 4m/s^2

45. What is the magnitude of acceleration of the object between 6 s and 10 s?
    A. 0 m/s^2 B. 1 m/s^2 C. 2 m/s^2 D. 3 m/s^2 E. 4m/s^2

46. How far from the origin does the object move in first 2 s?
    A. 4 m B. 16 m C. 20 m D. 28 m E. 36 m

47. How far from the origin does the object move in first 6 s?
    A. 4 m B. 16 m C. 20 m D. 28 m E. 36 m

48. How far from the origin does the object move in first 10 s?
    A. 4 m B. 16 m C. 20 m D. 28 m E. 36 m



The diagram above presents the position and elapsed time of a motorbike that starts from rest and accelerates at a constant rate. Use it to answer questions 49 and 50.

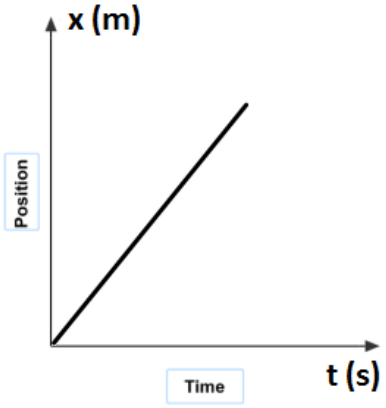
49. What is the average velocity of the motorbike during first 5 s?

A. 0 m/s B. 5 m/s C. 10 m/s D. 15 m/s E. 20 m/s

50. What is the acceleration of the motorbike?

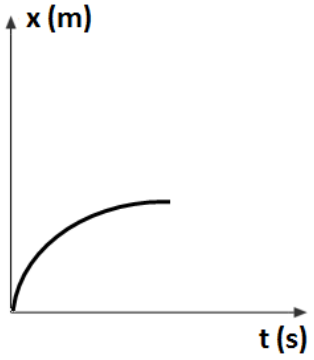
A. 0 m/s^2 B. 2 m/s^2 C. 4 m/s^2 D. 6 m/s^2 E. 8 m/s^2

Multiple Choice Questions with Multi-Correct Answers

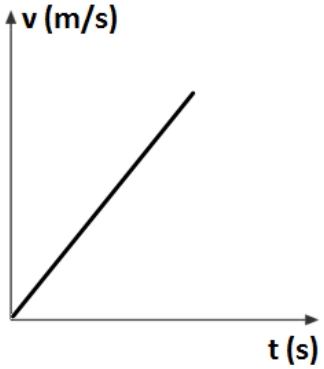


51. The position as a function of time of an object moving along x – axis is presented by the graph above. Which of the following statements is true?
    (A) The velocity of the object is zero.
    (B) The acceleration of the object is zero.
    (C) At time t = 0 the object is at the origin.
    (D) The acceleration of the object is a positive constant.

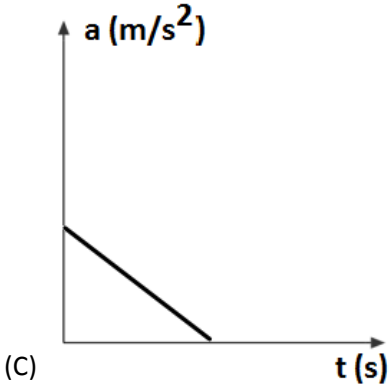
52. An object accelerates from rest at a constant rate. Which of the following graphs could be used to describe the motion of the object?



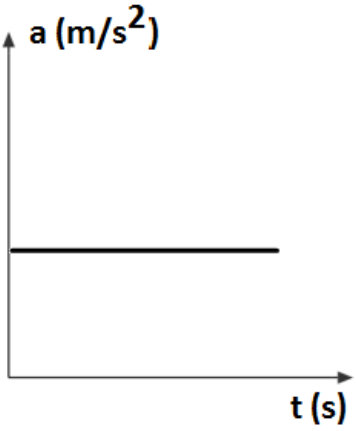
(A)



(B)

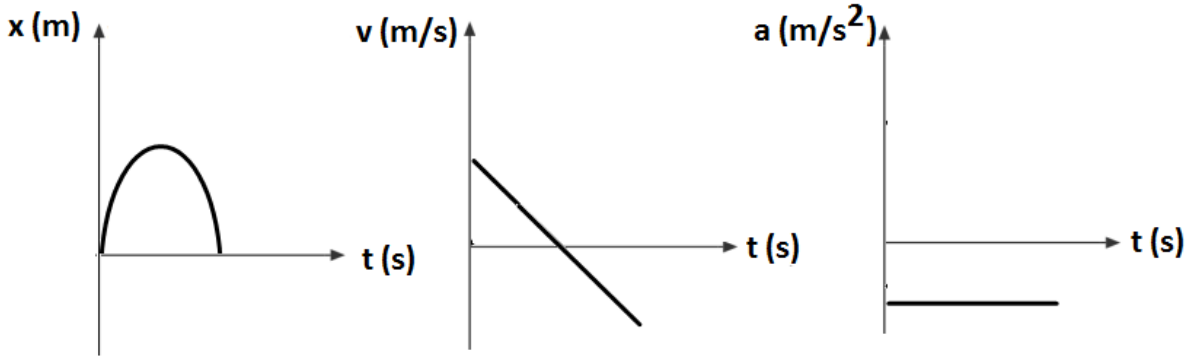


(C)

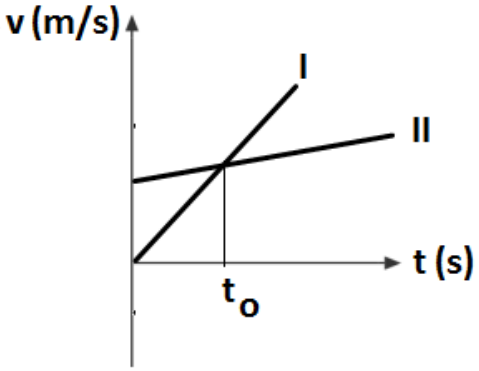


(D)

53. A tennis ball is thrown straight up and caught at the same height. Which of the following can describe the motion of the ball when it reaches the apex?
    (A) The velocity of the ball is zero.
    (B) The acceleration of the ball is zero.
    (C) The acceleration of the ball is 9.8 m/s^2 down
    (D) The acceleration of the ball is 9.8 m/s^2 up.



54. The position, velocity and acceleration as a function of time of a moving object are presented by the graph. Which of the following could be used to describe this type of motion?
    (A) The object accelerates from rest at a constant rate.
    (B) The object slows down at a constant acceleration.
    (C) The object is thrown straight up.
    (D) The object slides up and down the frictionless inclined plane.



55. The velocity as a function of time of two moving objects is presented by the graph above. If the objects start at the same location, which of the following is true?
    (A) At time t_0 object I is behind object II
    (B) At time t_0 object II is behind object I
    (C) Object I has a greater acceleration than object II
    (D) Object II has a greater acceleration that object I

Answers

1. E
2. B
3. C
4. B
5. C
6. D
7. C
8. E
9. C
10. C
11. E
12. B
13. A
14. E
15. B
16. D
17. E
18. B
19. A
20. A
21. E
22. E
23. A
24. D
25. A
26. C
27. A
28. E
29. A
30. B
31. C
32. D
33. C
34. B
35. B
36. D
37. E
38. D
39. B
40. C
41. D
42. D
43. C
44. A
45. B
46. A
47. C
48. D
49. C
50. C

Multiple Choice Questions with Multi-Correct Answers

Answer Key

51. B,C
52. B,D
53. A,C
54. C,D
55. A,C