Chapter 02
Motion in a Straight Line

Multiple Choice Questions

1. If an electron and a proton have the same initial position at the same initial time, and the same final position at the same final time, then which velocity would always be the same for both?
A. initial velocity
B. final velocity
C. average velocity
D. instantaneous velocity

Bauer - Chapter 02 #1
Section: 02.03
less difficult

2. The position of a nanoparticle as a function of time is $x(t) = t^2 - t - 6$, where x is measured in meters, t is measured in seconds and $t > 0$. When is the speed of the nanoparticle zero?
A. when $t = 0.5$ s
B. when $t = 2$ s
C. when $t = 3$ s
D. The speed of the nanoparticle is never zero.

Bauer - Chapter 02 #2
Section: 02.03
less difficult

3. The position of a nanoparticle as a function of time is $x(t) = t^2 - t - 6$, where x is measured in meters, t is measured in seconds and $t > 0$. What is the minimum value of the nanoparticle's position?
A. 6.00 m
B. -6.00 m
C. 6.25 m
D. -6.25 m
E. The nanoparticle does not have a minimum value for its position for t>0.
F. None of the above are correct.

Bauer - Chapter 02 #2
Section: 02.03
less difficult

4. The graph of the position of a DNA molecule (on the vertical axis) vs. time (on the horizontal axis) is a straight line that does *not* go through the origin and does *not* have a slope of zero. Which statement is true?
A. Its position is always zero.
B. Its velocity is always zero.
C. Its speed is always zero.
D. Its acceleration is always zero.

Bauer - Chapter 02 #3
Section: 02.04
less difficult

5. The graph of the position of a DNA molecule (on the vertical axis) vs. time (on the horizontal axis) is a straight line that does *not* go through the origin and does *not* have a slope of zero. Which statement is true?
A. Its speed is always zero.
B. Its velocity is constant.
C. Its position is always zero.
D. Its acceleration is not zero.

Bauer - Chapter 02 #3
Section: 02.04
less difficult

6. The graph of the velocity of a rocket (on the vertical axis) vs. time (on the horizontal axis) is a straight line that does *not* go through the origin and does *not* have a slope of zero. Which statement is true?
A. Its position is always zero.
B. Its speed is always zero.
C. Its acceleration is not zero.
D. Its velocity is constant.

Bauer - Chapter 02 #3
Section: 02.04
less difficult

7. The acceleration of a race car as a function of time is $a(t) = kt$, where a is measured in meters per second squared, t is measured in seconds and k is a constant. If its velocity at $t = 0$ is 2 m/s, and it is 26 m/s at $t = 2$ s, what is the value of the constant, k?

A. 12 m/s^3
B. 12 m/s^2
C. 24 m/s^3
D. 24 m/s^2
E. 13 m/s^3
F. 13 m/s^2

Bauer - Chapter 02 #4
Section: 02.06
more difficult

8. A ball is thrown straight up into the air, it reaches the top of its path and then falls back down to its initial position. During its flight, when is it accelerating in the downward direction? Ignore air resistance.

A. always
B. when it's moving up
C. never
D. when it's moving down

Bauer - Chapter 02 #5
Section: 02.08
less difficult

9. A ball is thrown straight up into the air, it reaches the top of its path and then falls back down to its initial position. During its flight, when is its speed greater than zero? Ignore air resistance.

A. only when it's moving up
B. when it's moving up and when it's moving down
C. never
D. only when it's moving down
E. always

Bauer - Chapter 02 #5
Section: 02.08
less difficult

10. The driver of a car travels 150 miles to reach his destination. If he travels 60.0 mi/h for 100.0 miles and 55.0 mi/h for the remaining 50.0 miles, how long does it take for him to reach his destination?

A. 1.58 hours
B. 2.45 hours
C. 2.58 hours
D. 3.67 hours

Bauer - Chapter 02 #6
Section: 02.03
less difficult

11. The driver of a car travels 150 miles to reach his destination. If he travels 60.0 mi/h for 100 miles and 55.0 mi/h for the remaining 50.0 miles, what was his average velocity for the trip?
A. 57.8 mi/h
B. 58.2 mi/h
C. 58.7 mi/h
D. 59.0 mi/h

Bauer - Chapter 02 #7
Section: 02.03
more difficult

12. Two girls stand at the edge of a cliff. One girl throws a stone upwards with a velocity of 10.0 m/s and the other throws her stone downwards at 10.0 m/s. If they threw them from the same height at the same time, which stone will have the greatest speed when it hits the ground?
A. The stone that was thrown upward
B. The stone that was thrown downward
C. They will have the same speed.

Bauer - Chapter 02 #8
Section: 02.07
less difficult

13. The velocity of a car is given as $v = (at^2 + bt + c)$ m/s where $a = 2.0$ m/s^3, $b = 4.0$ m/s^2, and $c = 2.0$ m/s. What is its acceleration at $t = 4.0$ s?
A. 15 m/s^2
B. 18 m/s^2
C. 20 m/s^2
D. 32 m/s^2

Bauer - Chapter 02 #9
Section: 02.04
less difficult

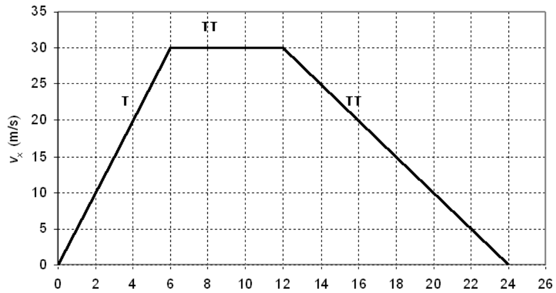
14. An Olympic runner starts from rest and accelerates at 2.00 m/s^2. Assume constant acceleration for the entire time. How far does he travel in 10.0 s?
A. 100 m
B. 500 m
C. 1000 m
D. 2000 m

Bauer - Chapter 02 #10
Section: 02.07
less difficult

15. A car travels north at 30 m/s for 10 minutes. It then travels south at 40 m/s for 20 minutes. The total distance the car has traveled and its displacement are, respectively,
A. 66 km and 30 km.
B. 30 km and 66 km.
C. 51 km and 9 km.
D. 9 km and 51 km.
E. 51 km and 30 km.

Bauer - Chapter 02 #11
Section: 02.06
less difficult

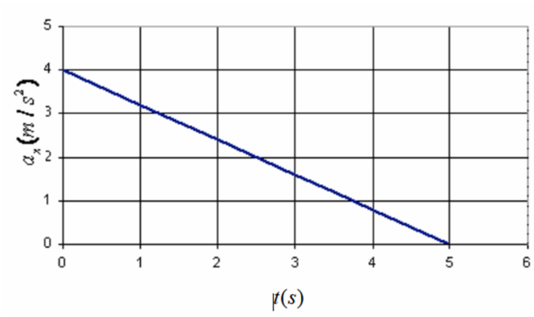
16. A fellow student found in the performance data of his new car the velocity-versus-time graph shown in the figure. The average acceleration of his car from second 0 to second 24 is



A. 5 m/s^2.
B. 2.5 m/s^2.
C. 0 m/s^2.
D. -2.5 m/s^2.
E. -5 m/s^2.

Bauer - Chapter 02 #12
Section: 02.04
less difficult

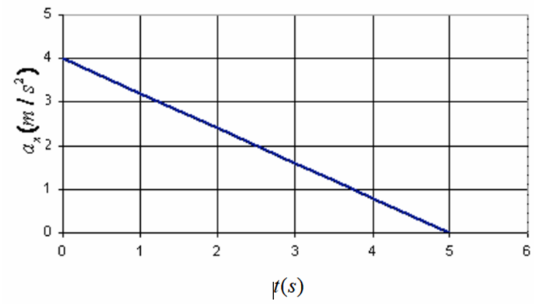
17. A car moving along the x direction has acceleration, a_x that varies with time as shown in the figure. At the moment, $t = 0$ s, the car is located at $x = 12$ m and has a velocity of 6 m/s in the positive x direction. What is the velocity of the car at $t = 4.0$ s?



A. 16 m/s
B. 15.6 m/s
C. 14.4 m/s
D. 0 m/s
E. -12.7 m/s

Bauer - Chapter 02 #13
Section: 02.06
more difficult

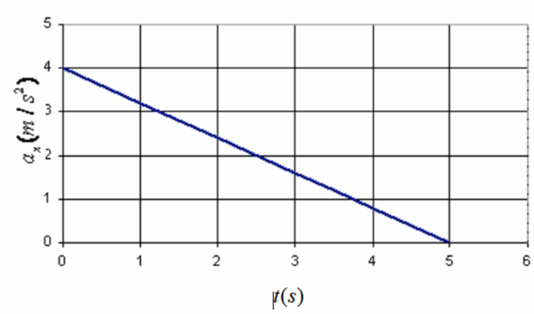
18. A car moving along the x direction has acceleration, a_x that varies with time as shown in the figure. At the moment, $t = 0$ s, the car is located at $x = 12$ m and has a velocity of 6 m/s in the positive x direction. What is the position of the car at $t = 4.0$ s?



A. 76.5 m
B. 15.6 m
<u>C.</u> 59.5 m
D. 21.6 m
E. -3.2 m

Bauer - Chapter 02 #13
Section: 02.06
most difficult

19. A car moving along the x direction has acceleration, a_x that varies with time as shown in the figure. At the moment, t = 0 s, the car is located at x = 12 m and has a velocity of 6 m/s in the positive x direction. What is the displacement of the car between t = 1.0 s and t = 2.0 s?



A. -0.8 m
B. 5.6 m
C. 11.1 m
D. 2.8 m
E. 9.5 m

Bauer - Chapter 02 #13
Section: 02.06
most difficult

20. A bullet is fired through a board, 8.00 cm thick, with its line of motion perpendicular to the face of the board. If it enters with a speed of 300 m/s and emerges with a speed of 100 m/s, the bullet's acceleration as it passes through the board is
A. -200,000 m/s^2.
B. -300,000 m/s^2.
C. -400,000 m/s^2.
D. -500,000 m/s^2.
E. -600,000 m/s^2.

Bauer - Chapter 02 #14
Section: 02.06
less difficult

21. A stone is thrown downward with an initial velocity of 5.00 m/s. The acceleration of the stone is constant and has the value of the free fall acceleration, 9.81 m/s^2. The speed of the stone after 0.750 s is

A. 12.4 m/s.
B. 14.9 m/s.
C. 22.7 m/s.
D. 32.3 m/s.
E. 0 m/s.

Bauer - Chapter 02 #15
Section: 02.08
less difficult

22. One of the following statements is false. Which one is it?

A. The size of the displacement and the distance travelled can be the same.
B. The size of the displacement and the distance travelled can be different from each other.
C. If a car only travels in a straight line without turning, the size of the displacement and the distance travelled are the same.
D. The size of the displacement can be greater than the distance traveled.
E. The size of the displacement is always less than or equal to the distance traveled.

Bauer - Chapter 02 #16
Section: 02.02
less difficult

23. A particle moves in the one direction, stops, and then heads back in the opposite direction. The position of a particle (in meters) as a function of time is given by $x(t)= -3.65\ t^2 + 4.52\ t + 7.91$. The position of the particle where it stops is
A. 0 m.
B. 9.31 m.
C. 11.7 m.
D. -11.7 m.
E. -9.31 m.

Bauer - Chapter 02 #17
Section: 02.03
more difficult

24. A car takes 60.0 minutes to travel 100 km. During this one-hour trip, the car stops for 5 minutes to get gas. The speed limit on the road that the car traveled on is 100 km/hr. Which of the following statements is true?
A. The car never exceeded the speed limit during this trip.
B. The car must have exceeded the speed limit at some point during this trip.
C. There is not enough information to determine whether the car exceeded the speed limit during this trip.
D. The car's speed was 100 km/hr during the whole trip.

Bauer - Chapter 02 #18
Section: 02.03
less difficult

25. A 747 commercial jet liner moves down a runway at a constant acceleration, starting from rest and reaching the take-off speed of 285 km/hr after travelling 3400 m down the runway. The acceleration of the jet on the runway is

A. 0.0233 m/s^2.
B. 0.00248 m/s^2.
C. 9.81 m/s^2.
D. 1.84 m/s^2.
E. 0.922 m/s^2.

Bauer - Chapter 02 #19
Section: 02.07
less difficult

26. A golf ball is dropped from a height of 1.0 m onto a concrete floor. The velocity of the ball immediately before hitting the floor is 4.43 m/s downward. The ball contacts the floor for 0.940 ms (check out R. Cross, Am. J. Phys., Vol. 67, No. 3, March 1999) and leaves the floor traveling upward at 3.96 m/s. The average acceleration of the golf ball while it is in contact with the floor is

A. 9.81 m/s^2.
B. 8.93×10^3 m/s^2.
C. 500 m/s^2.
D. 4.71×10^3 m/s^2.
E. 4.21×10^3 m/s^2.

Bauer - Chapter 02 #20
Section: 02.04
less difficult

27. If the position of an object (in meters) is given by the relation $x = 15.0\cos(2.50t)$, how fast the object moving at a time of 4.00 s?
A. 6.51 m/s
B. 20.4 m/s
C. 31.6 m/s
D. 37.5 m/s
E. 150 m/s

Bauer - Chapter 02 #21
Section: 02.03
less difficult

28. A 1050 kg car is traveling at a speed of 25 m/s when the driver sees that there is a tree across the road. If the car has a constant deceleration of -5.0 m/s^2 and the driver has a reaction time of 0.30 s, how far does the car travel before it comes to a stop?
A. 7.5 m
B. 8.0 m
C. 63 m
D. 70 m

Bauer - Chapter 02 #22
Section: 02.07
more difficult

29. A person fires a warning shot out of handgun. If the bullet leaves the gun with an initial speed of 305 m/s and travels straight upward, how much time does the person firing the gun have to move out of the way before the bullet hits the ground? (Ignore the effects of air resistance.)
A. 15.6 s
B. 31.1 s
C. 62.2 s
D. None are correct.

Bauer - Chapter 02 #23
Section: 02.08
less difficult

30. In the classic book by Jules Verne, Phileas Fogg travels around the world in 80 days. Leaving London, heading east, and arriving back in London 80 days later from the west. If the radius of the Earth is 6.38 x 10^6 m (for this problem, treat London as being on the equator), find the average speed of Mr. Fogg.
A. zero
B. 0.92 m/s
C. 5.8 m/s
D. More information is needed.

Bauer - Chapter 02 #24
Section: 02.03
less difficult

31. In the classic book by Jules Verne, Phileas Fogg travels around the world in 80 days. Leaving London, heading east, and arriving back in London 80 days later from the west. If the radius of the Earth is 6.38×10^6 m (for this problem, treat London as being on the equator), find the average velocity of Mr. Fogg.

A. zero
B. 0.92 m/s
C. 5.8 m/s
D. More information is needed.

Bauer - Chapter 02 #25
Section: 02.03
less difficult

32. A student throws a ball straight up at 22 m/s, releasing the ball 1.5 m above the ground. What is the maximum height of the ball above the ground?

A. 24.7 m
B. 3.0 m
C. 15.3 m
D. 26.2 m
E. 27.7 m

Bauer - Chapter 02 #26
Section: 02.08
less difficult

33. A ball is dropped from rest from a height *h* above the ground. Another ball is thrown vertically upwards from the ground at the instant the first ball is released. Determine the initial speed of the second ball if the two balls are to meet at a height *h*/2 above the ground.
A. h/g
B. $\sqrt{gh}$
C. $\sqrt{gh/2}$
D. g/h
E. $\sqrt{2gh}$

Bauer - Chapter 02 #27
Section: 02.08
more difficult

34. How much runway does a 150,000-kg cargo plane need if it uniformly reaches its minimum takeoff speed of 135 m/s in 12 seconds?
A. 1020 m
B. 810 m
C. 405 m
D. 1620 m
E. More information is needed.

Bauer - Chapter 02 #28
Section: 02.07
less difficult

35. A rock is dropped off of a building, reaching a constant speed of 37 m/s after 4 s. What is the rock's acceleration after 5 seconds?
A. 9.8 m/s^2
B. 12.3 m/s^2
C. 0 m/s^2
D. 9.3 m/s^2
E. 4.4 m/s^2

Bauer - Chapter 02 #29
Section: 02.04
less difficult

36. A heavy ball is dropped into a lake from a height of 30.0 m above the water. It hits the water with a certain velocity and continues to sink to the bottom of the lake at this same constant velocity. It reaches the bottom of the lake 10.0 s after it was dropped. How deep is the lake?
A. 182.5 m
B. 87.4 m
C. 29.6 m
D. 143.1 m
E. 209.7 m

Bauer - Chapter 02 #30
Section: 02.08
more difficult

37. At time, $t = 0$ s, car A is at rest at the origin of the coordinate system and car B is moving due East at a constant velocity of 20 m/s. When car B is 50 m west of car A, car A starts to move at a constant acceleration of 2 m/s^2 due East. How far from the origin has car A moved when car B overtakes car A?

A. 20.0 m
B. 8.58 m
C. 14.3 m
D. 2.0 m
E. 4.36 m

Bauer - Chapter 02 #31
Section: 02.07
more difficult

38. At time, $t = 0$ s, car A is at rest at the origin of the coordinate system and car B is moving due East at a constant velocity of 20 m/s. When car B is 50 m west of car A, car A starts to move at a constant acceleration of 2 m/s^2 due East. A certain time later car B overtakes car A. How far from the origin has car A moved when car A eventually catches up with car B and once again moves farther East of car B?

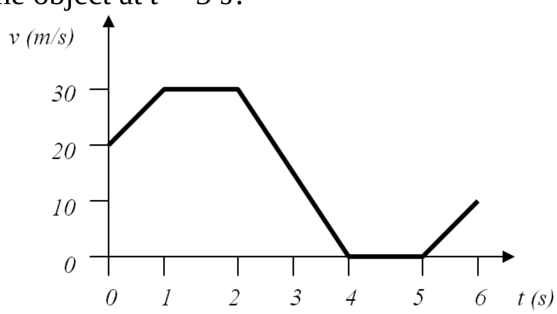
A. 87.2 m
B. 218 m
C. 291 m
D. 108 m
E. 56.3 m

Bauer - Chapter 02 #32
Section: 02.07
more difficult

39. Two trains, one travelling at 20 m/s and the other at 40 m/s, are headed toward one another along a straight level track. When they are 950 m apart, each engineer sees the other's train and applies the brakes. Assuming both trains have equal magnitude accelerations after the brakes are applied, determine the minimum magnitude of this acceleration in order to avoid a collision.
A. 1.62 m/s^2
B. 0.87 m/s^2
C. 3.45 m/s^2
D. 1.05 m/s^2
E. 2.15 m/s^2

Bauer - Chapter 02 #33
Section: 02.07
more difficult

40. The figure shows the time dependent velocity of an object. Assuming that the object starts from rest at the origin of the coordinate system, what is the magnitude of the displacement of the object at $t = 5\ s$?



A. 75 m
B. 55 m
C. 60 m
D. 40 m
E. 85 m

Bauer - Chapter 02 #34
Section: 02.06
less difficult

41. The distance between Sarnia and London Ontario, Canada is about 100 km. You cover first 50 km at 40 km/h. In order for you to travel with an average speed of 50 km/h for the entire trip, the speed to cover the second 50 km would be
A. 50 km/h.
B. 67 km/h.
C. 78 km/h.
D. 100 km/h.

Bauer - Chapter 02 #35
Section: 02.03
more difficult

42. An object with constant acceleration has velocity of 12 m/s when its position is x = 8 m. At another position x = 16 m, its velocity is 20 m/s. Its acceleration is
A. 1 m/s^2.
B. 5 m/s^2.
C. 7 m/s^2.
D. 16 m/s^2.

Bauer - Chapter 02 #36
Section: 02.07
less difficult

43. A firecracker is fired straight up with a speed of 100 m/s. Neglecting air resistance, the maximum height it will attain is
A. 510 m.
B. 325 m.
C. 280 m.
D. 129 m.

Bauer - Chapter 02 #37
Section: 02.08
less difficult

44. An elevator is moving up with 8 m/s when a bolt came loose from the bottom. The bolt reaches the bottom of the shaft in 4 seconds. The velocity of the bolt at the bottom is
A. 39 m/s.
B. 21 m/s.
C. -31.2 m/s.
D. -47.2 m/s.

Bauer - Chapter 02 #38
Section: 02.08
less difficult

45. A rocket, speeding along toward Alpha Centauri, has an acceleration $a(t) = At^2$. Assume that the rocket began at rest at the Earth ($x = 0$) at $t = 0$. Assuming it simply travels in a straight line from Earth to Alpha Centauri (and beyond), what is the ratio of the speed of the rocket when it has covered half the distance to the star to its speed when it has travelled half the time necessary to reach Alpha Centauri?
A. $\sqrt[3]{2}$
B. $\sqrt[3]{8}$
C. $\sqrt[4]{2}$
D. $\sqrt[4]{8}$

Bauer - Chapter 02 #39
Section: 02.06
most difficult

46. A rocket, speeding along toward Alpha Centauri, has an acceleration $a(t) = At^2$. Assume that the rocket began at rest at the Earth ($x = 0$) at $t = 0$. Assuming it simply travels in a straight line from Earth to Alpha Centauri (and beyond), what is the ratio of the speed of the rocket when it has passed the star to the speed when it has travelled half the time necessary to reach Alpha Centauri?
A. 2
B. 4
C. 8
D. 16
E. 32

Bauer - Chapter 02 #40
Section: 02.06
more difficult

47. A rocket, speeding along toward Alpha Centauri, has an acceleration $a(t) = At^2$. Assume that the rocket began at rest at the Earth ($x = 0$) at $t = 0$. Assuming it simply travels in a straight line from Earth to Alpha Centauri (and beyond), what fraction of the trip to Alpha Centauri has the rocket travelled when it has travelled half the time necessary to reach the star?
A. 1/2
B. 1/4
C. 1/8
D. 1/16
E. 1/32

Bauer - Chapter 02 #41
Section: 02.06
more difficult

48. A helicopter lifts off at a constant acceleration of 2.3 m/s^2 upward. What is the height of the helicopter 2.5 s after liftoff?
A. 6.6 m
B. 7.2 m
C. 13 m
D. 14 m

Bauer - Chapter 02 #42
Section: 02.07
less difficult

49. A helicopter lifts off at a constant acceleration of 2.3 m/s^2 upward. When after liftoff is the speed of the above helicopter 10.0 m/s?
A. 2.8 s
B. 2.9 s
C. 4.0 s
D. 4.3 s

Bauer - Chapter 02 #43
Section: 02.07
less difficult

50. A football player is standing on the 10 yard line. He runs forward to the 40 yard line and then runs backwards to the 30 yard line. What is the distance that he has traveled and what is his displacement?
A. distance = 20 yards, displacement = 20 yards forward
B. distance = 20 yards, displacement = 30 yards forward
C. distance = 30 yards, displacement = 30 yards forward
D. distance = 40 yards, displacement = 20 yards forward
E. distance = 40 yards, displacement = 40 yards forward

Bauer - Chapter 02 #44
Section: 02.02
less difficult

51. A car starts from rest and travels east for 50 km, stops and travels west for 30 km to finish the trip. What is the distance traveled (start to finish) of the car during this trip?
A. 80 km
B. 80 km east
C. 20 km east
D. 20 km
E. the correct distance traveled is not listed

Bauer - Chapter 02 #44
Section: 02.02
less difficult

52. A car starts from rest and travels east for 50 km, stops and travels west for 30 km to finish the trip. What is the displacement (start to finish) of the car during this trip?
A. 80 km
B. 80 km east
C. 30 km east
D. 30 km
E. the correct displacement is not listed

Bauer - Chapter 02 #44
Section: 02.02
less difficult

53. A car starts from rest and travels east for 50 km, stops and travels west for 30 km to finish the trip. What is the displacement (start to finish) of the car during this trip?
A. 80 km
B. 80 km east
C. 20 km east
D. 20 km
E. the correct displacement is not listed

Bauer - Chapter 02 #44
Section: 02.02
less difficult

54. The position of a particle as a function of time along the x-axis is given by $x = ((5\text{ m}) + (12\text{ m/s})\,t - (4\text{ m/s}^2)\,t^2)$. What is the speed of the particle when its position is x = 14 m?
A. 0 m/s
B. 5 m/s
C. 12 m/s
D. 24 m/s
E. 60 m/s

Bauer - Chapter 02 #45
Section: 02.03
more difficult

55. Starting from rest, a car accelerates at a rate of +4 m/s^2 for 3 seconds. The car then travels at a constant speed for 5 seconds. What is the displacement of the car after moving for a total of 8 seconds?
A. 32 m
B. 36 m
C. 72 m
D. 78 m
E. 128 m

Bauer - Chapter 02 #46
Section: 02.06
less difficult

56. A car is traveling with a speed of 24 m/s. What is the magnitude of the acceleration necessary to stop the car in a distance of 60 m?
A. 0.4 m/s^2
B. 2.5 m/s^2
C. 4.8 m/s^2
D. 6.1 m/s^2
E. 9.6 m/s^2

Bauer - Chapter 02 #47
Section: 02.07
less difficult

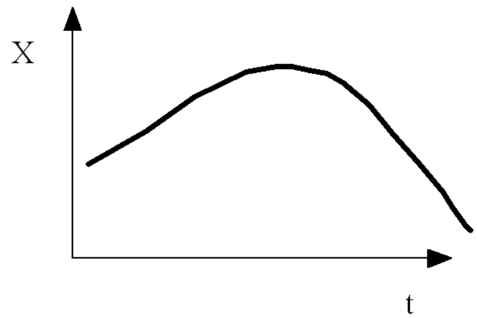
57. A runner of mass 61.3 kg starts from rest and accelerates with a constant acceleration of 1.07 m/s^2 until she reaches a velocity of 8.1 m/s. She then continues running with this constant velocity. How far has she run (in meters) after 49.1 seconds?
A. 195.88
B. 229.18
C. 268.14
D. 313.72
E. 367.05
F. 429.45
G. 502.46
H. 587.87

Bauer - Chapter 02 #48
Section: 02.07
less difficult

58. What is your average speed in m/s when you go from -2 m to 10 m in 3.2 s and then from 10 m to -12 m in 5.4 seconds?
A. -2.7
B. 29.4
C. 11.2
D. 3.95
E. 0.34

Bauer - Chapter 02 #49
Section: 02.03
less difficult

59. The graph is of position versus time. Which statement best describes it?



A. The velocity is always positive.
B. The acceleration is constant.
C. The velocity is first negative and then positive.
D. The acceleration is zero or negative.
E. The velocity is never zero.

Bauer - Chapter 02 #50
Section: 02.04
less difficult

60. A car can accelerate from zero to 164 m/s in 469 meters. How long (in seconds) does it take to do this?
A. 5.7
B. 2.3
C. 1.2
D. 13.2
E. 112

Bauer - Chapter 02 #51
Section: 02.07
more difficult

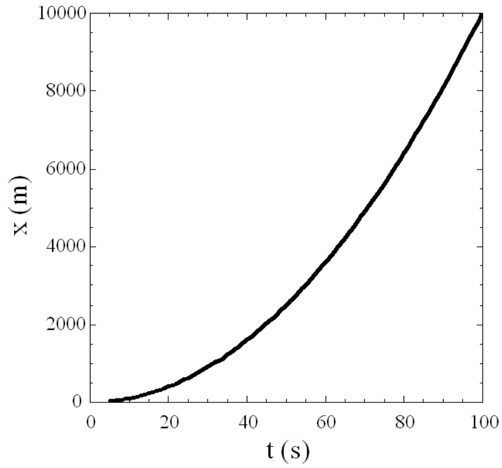
61. A ball is thrown directly down from the top of a building with a speed of 12 m/s, and it lands on the ground with a velocity 3 times the initial velocity. How high is the building (in meters)?
A. 12
B. 59
C. 234
D. 4320
E. 8760

Bauer - Chapter 02 #52
Section: 02.08
less difficult

62. What is your average speed in m/s when you start from the origin and go along the x-axis at v = 10 m/s for 2 s, stops for 5 s, and then travels at v = -4 m/s for 3 s?
A. -2.7
B. 3.2
C. 4.0
D. 1.0
E. 0.80

Bauer - Chapter 02 #53
Section: 02.03
less difficult

63. The graph shown is of position versus time. Which statement best describes it?



A. *v* reaches a maximum of about 200 m/s.
B. *a* is always negative.
C. *a* is both positive and negative.
D. *v* decreases with time.
E. The velocity is never zero.

Bauer - Chapter 02 #54
Section: 02.04
more difficult

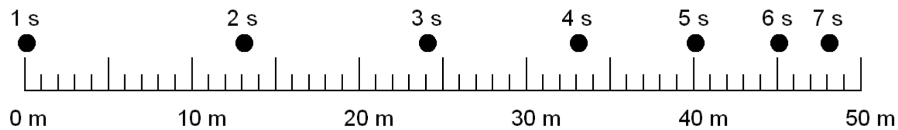
64. A runner starts from rest and runs a distance of 100 m in 10.0 s. What is his average acceleration in m/s^2?
A. 9.81
B. 1.40
C. 2.00
D. 98.6
E. 3.50

Bauer - Chapter 02 #55
Section: 02.04
less difficult

65. A rocket accelerates uniformly from 1000 to 4000 m/s over a distance of 5 km. How long did it take in seconds?
A. 0.15
B. 2
C. 15
D. 156
E. 983

Bauer - Chapter 02 #56
Section: 02.07
less difficult

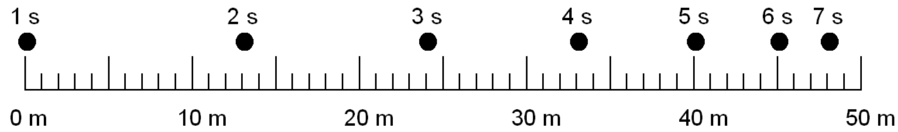
66. The figure shows the position of a car (black circles) at one second intervals. What is the velocity at the time t = 4 s?



A. -12 m/s
B. -8 m/s
C. 0
D. 8 m/s
E. 12 m/s

Bauer - Chapter 02 #57
Section: 02.05
more difficult

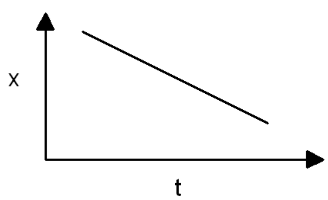
67. The figure shows the position of a car (black circles) at one second intervals. What is the acceleration at the time t = 4 s?



A. -2 m/s^2
B. -1 m/s^2
C. 0
D. 1 m/s^2
E. 2 m/s^2

Bauer - Chapter 02 #58
Section: 02.05
more difficult

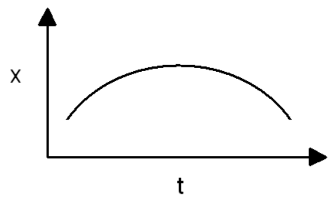
68. In this graph of distance vs. time, which of the following is true (chose one)?



A. The speed is negative.
B. The velocity is negative.
C. The velocity is positive.
D. The acceleration is negative.
E. The acceleration is positive.

Bauer - Chapter 02 #59
Section: 02.04
less difficult

69. In this graph of distance vs. time, which of the following is true (chose one)?



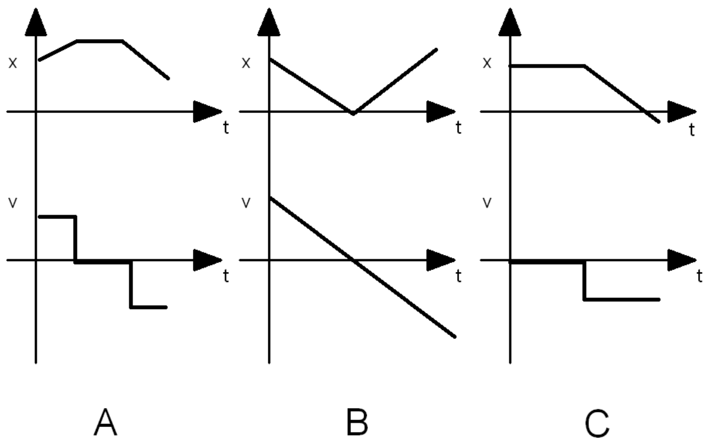
A. The velocity is constant.
B. The acceleration is sometimes negative and sometimes positive.
C. The acceleration is always zero.
D. The acceleration is always positive.
E. The acceleration is always negative.

Bauer - Chapter 02 #60
Section: 02.04
less difficult

70. An object starts from the origin and goes along the x-axis to x = 10 m in 2 s, stops for 5.5 s, and then travels at v = -4 m/s for 2.5 s? What is the average speed and velocity in m/s?
A. speed = 2, velocity = 2
B. speed = 2, velocity = 0
C. speed = 2, velocity = -2
D. speed = 0, velocity = 0
E. speed = 4, velocity = 0

Bauer - Chapter 02 #61
Section: 02.03
more difficult

71. The graphs shown are of x vs. t and v vs. t for three cases A, B, and C. Which of them could be correct?



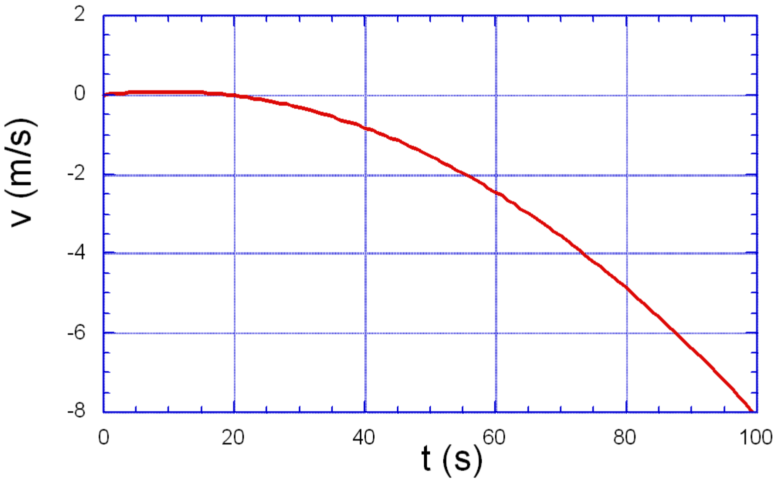
A. A is correct.
B. B is correct.
C. C is correct.
D. A and B are correct.
E. A and C are correct.
F. B and C are correct.
G. A, B, and C are correct.
H. None are correct.

Bauer - Chapter 02 #62
Section: 02.03
more difficult

72. A car starts with a speed of 50 m/s and goes a distance of 1000 m in 10.0 s. What is its average acceleration?
A. 10 m/s^2
B. 1.40 m/s^2
C. 2.00 m/s^2
D. 98.6 m/s^2
E. 3.50 m/s^2

Bauer - Chapter 02 #63
Section: 02.07
more difficult

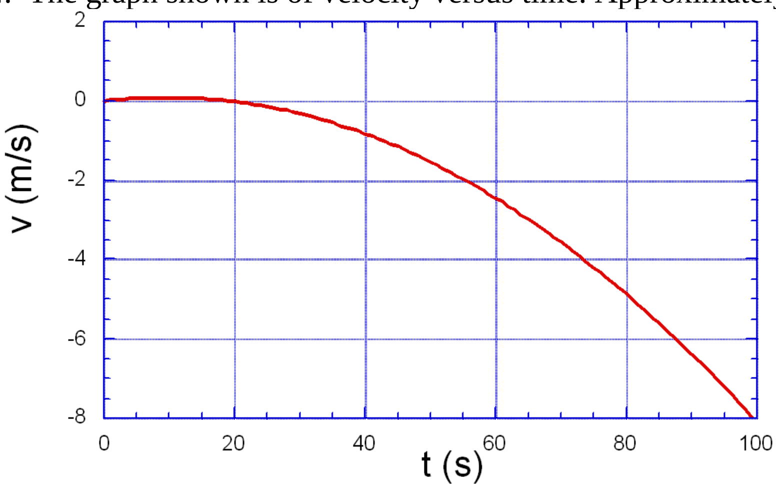
73. The graph shown is of velocity versus time. Which statement best describes the acceleration?



A. The acceleration is never zero.
B. The acceleration is maximum near t = 10 s.
C. The acceleration is minimum near t = 10.
D. The acceleration is minimum near t = 100 at about -0.15 m/s^2.
E. The average value of the acceleration is about 0.08 m/s^2.

Bauer - Chapter 02 #64
Section: 02.04
more difficult

74. The graph shown is of velocity versus time. Approximately when is the acceleration zero?



A. Near t = 50 s.
B. Near t = 10 s.
C. Near t = 20 s.
D. The acceleration is never zero.
E. Near t= 100 s.

Bauer - Chapter 02 #64
Section: 02.04
less difficult

75. A plane lands at 50.0 m/s, and its brakes are capable of slowing it down at 10.0 m/s^2. How far does it go (in m) between touching down and stopping?
A. 9.81
B. 50.
C. 125.
D. 500.
E. 250.

Bauer - Chapter 02 #65
Section: 02.07
less difficult

76. A stone is dropped from a height of 20.0 m. How long does it take for it to hit the ground?
A. 1.00 s
B. 2.02 s
C. 1.43 s
D. 0.50 s
E. 2.37 s

Bauer - Chapter 02 #66
Section: 02.08
less difficult

77. If you drop an object from the top of a high building, how long does it take for the object to reach a speed of 100 km/h?
A. 0.124 s
B. 2.83 s
C. 5.11 s
D. 9.81 s
E. 12.3 s

Bauer - Chapter 02 #67
Section: 02.08
less difficult

78. A police officer spots a speeding car traveling at 20 m/s (approximately 44 mph) as it passes. The officer immediately starts to drive, accelerating from rest at a rate of 5 m/s^2. How far will the officer have to drive before catching up to the speeding car?
A. 100 m
B. 80 m
C. 500 m
D. 16 m
E. 160 m

Bauer - Chapter 02 #68
Section: 02.07
more difficult

79. A fish takes 14 minutes to swim 1 mile up a river. At this point a dam breaks and causes a current of 36 miles per hour to push him 0.6 miles downstream in 1 minute. What is the fish's average velocity for this entire trip?
A. 0.0004 mph
B. 0.017 mph
C. 1.6 mph
D. 2.4 mph
E. 35 mph

Bauer - Chapter 02 #69
Section: 02.03
less difficult

80. A ball is thrown with velocity of 10m/s upwards. If the ball is caught 1 m above its initial position, what is the speed of the ball when it is caught?
A. 5.3 m/s
B. 6.8 m/s
C. 9.0 m/s
D. 10 m/s
E. 22 m/s

Bauer - Chapter 02 #70
Section: 02.08
more difficult

81. A drag racer reaches 150 km/hr in a 2-km race. Assuming constant acceleration, what was the elapsed time for the km (in minutes)?
A. 1.4 min
B. 1.6 min
C. 1.8 min
D. 2.0 min
E. 2.2 min

Bauer - Chapter 02 #71
Section: 02.07
less difficult

82. A rock is thrown straight up with a velocity of 9.81 m/s. Its acceleration at the top of the flight is
A. 0.
B. -9.81 m/s^2.
C. +9.81 m/s^2.
D. 19.62 m/s^2.

Bauer - Chapter 02 #72
Section: 02.07
less difficult