



Section 11.3 acceleration practice exercises answers

1. Find the following for Path A in figure 2.71: (a) The distance traveled. (B) The size of the displacement from start to finish. (c) Find the following for path C in the form of 2.71: (a) The distance traveled. (B) The size of the displacement from start to finish. (c) Displacement from start to finish. (c Calculating the average speed of the Earth relative to the sun. (b) What is its average speed over a period of one year? 6. A helicopter blade rotates exactly 100 revolutions per minute. Its edge is 5.00m from the centre of the round. (a) Calculate the average speed of the blade tip within the helicopter's reference frame. (b) What is its average speed over one revolution? 7. The North American and European continents are moving away from each other at a rate of about 3 cm per y. At this rate, how long will it take them to drift 300 miles farther than they are today? 8. Land west of the San Andreas fault in Southern California is moving at an average speed of about 6 cm/s northwest relative to land east of the fault. Los Angeles is west of the fault and therefore may one day be at the same latitude as San Francisco, which is east of the fault. How far in the future will that happen if the displacement done is 370 miles northwest, assuming traffic remains constant? 9. On May 26, 1934, an efficient stainless steel diesel train named Zephyr set the world's nonstop long-distance speed record for trains. His run from Denver to Chicago for 13 hours, 4 minutes and 58 seconds witnessed more than a million people along the route. The total distance travelled was 1633.8 km. What was her average speed at 100 km/7 and M.S.? 10. Tidal friction slows the Earth's rotation. As a result, the moon's orbit grew within a radius at a rate of about 4 cm per year. Assuming it will be a steady pace, how many years will pass before the radius of the lunar orbit grows by 3.84×106m size 12{3. 84 times 10 rSup { size 8{6} } 'm} { size home and even noted that reading the odometer of her car increased by 12.0 km. The trip took place in 18.0 minutes (a) What was its average speed? (B) If the straight-line distance from her home to the university is 10.3 km towards 25.0°25.0° magnitude 12{25 ... from south to east, what was her average speed? (c) If she returned home the same way 7 hours and 30 minutes after she left, what was her average speed and speed per trip? 12. of distributing the action potential (electrical type) in a hanging nerve cell (inverted) with the diameter of an axon (nerve fibers). If the nerve cell connecting the spinal cord to your legs is 1.1 m, and the nerve impulse speed is 18 m/s, how long does it take for the neural point to travel that distance? 13. Conversations with astronauts on the lunar surface were characterized by a kind of echo in which the terrestrial man's voice was so loud in the astronaut's space helmet that it was collected by the astronaut's microphone and broadcast back to Earth. Echo time is likely equal to the time needed for the radio wave to travel from Earth to the moon and back (so, neglecting any time delay in electronic equipment). Calculate the distance from Earth to the moon given that the echo time was 2.56 seconds and that radio waves travel at the speed of light (3.00×108 m/s)(3.00{8}×108 m/s) in size 12{ (3. 14. A football guarterback ran 15.0 m straight down the field in 2.50 s. Then he was hit and pushed 3.00m straight back in 1.75 seconds. He breaks the tie and runs straight down the field in 2.50 s. Then he was hit and pushed 3.00m straight back in 1.75 seconds. He breaks the tie and runs straight down the field in 2.50 s. Then he was hit and pushed 3.00m straight back in 1.75 seconds. photographs electrons orbiting the nucleus of the atom like planets orbiting the sun. In this model, hydrogen, the simplest atom, can be presented as having a single electron in a circular orbit with a diameter of 1.06×10-10 m. (a) If the average speed of electrons in this orbit is known as 2.20×106 m/s2.20×106 mm per second, calculate the number of revolutions per second it makes on the nucleus. (b) What is the average speed of electrons? 16. A hood can acceleration? 17. Professional application Dr. John Paul Step was a U.S. Air Force officer who studied the effects of extreme slowing down on the human body. On December 10, 1954, Stapp rode a rocket sled, accelerating from rest to a top speed of 282 m/s (1015 km per hour) in 5.00 seconds, and was rested in just 1.40 seconds! Calculate his acceleration (a) and (b) slow down. Express each multiples of gg (9.80 m/s2) by taking its ratio to gravity acceleration.18. A female passenger backs her car from her garage with an acceleration of 1.40 m/s21.40 m/s21.40 m/s?? (b) If she spends a stop in 0.800 seconds, what's her slowdown? 19. Suppose an intercontinental ballistic missile passes from rest to sub-orbital speed of 6.50 km/m in 60.0 seconds (actual speed and time are classified). What is its average acceleration in size m/s2m/s2 12{m/s rSup { size 8{2} } { Nultiples of gg (9.80 m/s2)? 20. Olympic level sprinter starts race with acceleration of 4.50 m/ s24.50 m / s24.50 m / s24.50 m / s2 size 12{4 . 50 m/s rSup { size 8{2} } } {}. (a) What's its speed 2.40 s later? (B) Draw a graph of her position versus time for this period. 21. A well-thrown ball is 2.10×104 m/s2, and 1.85 milliseconds (1 ms=10-3 s) (1 ms=10-3 s) size 12{1 ms=10 rSup { size 8{-3} s \) { } elation from when the ball first touches the glove until it stops, what was the initial speed of the ball? 22. An accelerated gun bullet from the firing cell to the end of the barrel at an average rate of 6.20×105 m/s2 size 12{6. 20"10 rSup { Size 8{5} } m/s rSup { Size 8{2} } { for 8.10×10-4 s8.10×10-4 s8. speed)? 23. (A) A passenger train on the light rail accelerates at a rate of 1.35 m/s21.35 m/s2 in size 12{1.35 m/s2 in size 12{1.35 m/s2 in size 12{1.35 m/s rSup { size 8{2} } { . How long does it take to reach the maximum speed of 80.0 km / h, starting with a snout? (b) The same train typically slowed down at a rate of 1.65 m/s21.65 m/s2 in size 12{1.65 m/s2 in How long does it take to stop its highest speed? (c) In emergencies the train can slow down more quickly, resting from 80.0 km per month in 8.30 seconds. What is an urgent slowdown in size 12 m/s2m/s2{m/s rSup { size 8{2} } {? 24. When entering a highway, a car accelerates at a rate of 2.40 m/s22.40 m/s2 in size 12{2 . 40 m/s rSup { size 8{2} } } for 12.0 seconds (a) Draw a sketch of the situation. (b) List the known ones in this issue. (c) How far is the car ride at 12.0? To resolve this part, first understand the unknown and then discuss how you chose the appropriate equation to solve it. After selecting the equation, view your phases in the solution for the unknown, check your units, and discuss whether the answer is reasonable. (d) What is the final speed of the car? Resolve for this unknown in the same way as in part (c), displaying all steps explicitly. 25. At the end of a race, a slowdown from a speed of 9.00 m/s at a rate of 2.00 m/s22.00 m/s22.00 m/s2 size 12{2.00 m/s rSup { size 8{2} } } { . (a) How far does she travel in the next 5.00 seconds? (b) What is its final speed? (c) Evaluate the result. Does that make sense to you? 26. Professional application: (b) List the known ones in this issue. (c) How long does acceleration take? To resolve this part, first understand the unknown and then discuss how you chose the appropriate equation to solve it. After selecting the equation for the unknown, checking your units. (d) The Mother Likely compared to the time of a heartbeat? 27. In a slap shot, a hockey player accelerates the puck from speeds of 8.00 m/s to 40.0 m/s in the same direction. If this shot takes 3.33×10-2 s far does it go in that time? 29. Freight trains can produce only relatively small algae and slowing down. (a) What is the final speed of a freight train accelerating at a rate of 0.0500 m/s2 in size 12{0.0500 m/s rSup { size 8{2} } for 8.00 minutes, starting at an initial speed of 4.00 m/s? (b) If the train can slow down at a rate of 0.0500 m/s rSup { size 8{2} } 0.550 m/s20.550 m/s2 size 12{0.550 m/s2 size 12{0.550 m/s rSup { size 8{2} } }, how long will it take to get stopped from this speed? (c) How far will it go anyway? 30. An accelerated fireworks shell from 65.0 m/s over a distance of 0.250 m (a) How long did the acceleration last? (b) Calculate the acceleration. 31. A swan on a lake rises into the air by waving its wings and running on top of the water. (a) If the swan must reach a speed of 6.00 m per hour to take off and it accelerates from an average rate of 0.350 m/s2 in size 12{0. 350 m/s2 in size 12{0. 350 m/s rSup { size 8{2} } } }}, how far will it get before it becomes airborne? (b) How long does it take? 32. Professional Application: Woodpecker's brain is especially protected from a large deceleration by holdings like a gidd inside the skull. While pecking at a tree, the woodpecker's head comes to a stop from an initial speed of 0.600m/s just 2.00mm away. (a) Find the acceleration in m/s2m/s2 and in the amount of gg=9.80 m/s2gg=9.80 m/s2 size 12{g left (g=9.80 m/s2gg=9.80 m/s2gg=9. 80m/s rSup { size 8{2} } correct)} {}. (b) Calculate the stopping time. (c) The tendons cradle the stretching of the brain, making its stopping distance 4.50 mm (larger than the head and, therefore, less slowing of the brain). What is the slowing of the brain, expressed in the majority of gg?33. An indispict football player collides with a paddec goal post while running at 7.50m/s and petitioning for a full stop after compressing padding and his body 0.350m (a) What is his slowdown? (b) How long does the collision last? 34. In World War II, several cases of pilots jumping out of their burning planes without a parachute were reported to escape certain death. Some fell about 20,000 feet (6,000 meters), and some survived, with few life-threatening injuries. For these lucky pilots, the tree branches and snow drift on the ground allowed their slowdown? Suppose the trees and snow stopped him 3.0m and 35m away. Consider a gray squirrel falling from tree to ground. (A) If we ignore the air resistance in this case (just for the sake of this problem), we will determine the speed of a squirrel just before the ground hit, assuming it fell from a height of 3.0 m (b) if the squirrel stops at a distance of 2.0 cm by bending its flexing, compare its slowdown to that of the airman in the previous problem. 36. Express train passes through a station. It enters at an initial speed of 22.0 m/s and slows down at a rate of 0.150 m/s2 in size 12{0. 150 m/s rSup { size 8{2} } } as it passes. (a) How long is the train's nose at the station? (b) How fast does it go when the nose leaves the station? (c) If the train is 130 m long, when does the end of the train leave the station? (d) What is the speed of 145 m/s in just 4.45 seconds - a significantly lower time than that given in example 2.10 and example 2.11. (a) Calculates the average acceleration for such a dragster. (b) Find the final speed of this dragster starting with a snout and acceleration in time. (c) Why is the final speed greater than that used for the average acceleration characters? Hint: Consider whether the assumption of permanent acceleration is valid for Dragster. If not, discuss whether the acceleration will be greater at the start or end of the race to hold on to victory. The race has an initial speed of 11.5 tax and accelerates at a rate of 0.500 m/s20.500 m/s2 in size 12{0. 500 m/s rSup { size 8{2} } { for 7.00 s. (a) What is its final speed? (B) A rider proceeds at this speed to the finish line. If he was 300m from the finish line. If he was 300m from the finish line when he started accelerating, how long did he save? (c) One other rider was 5.00m ahead when the winner started accelerating, but he failed to accelerate, and drove at 11.8 m/s up to the finish line. How far ahead of him (in meters and within seconds) did the winner finish? 39. In 1967, New Zealander Brett Munro set the Bonneville Salt Flats in Utah, with a maximum speed of 83.58 km per hour. The one-way route was 5.00 miles long. Algae lessons are often described by the time it takes to reach 66.0 km/h from a resmed. If this time it was 4.00 s, and Brett accelerated at this rate until he reached his maximum speed, how long did It take Brett to complete the course? 40. (A) A men's 100m world record was set at the 2008 Beijing Olympic Games by Usain Bolt of Jamaica. Bolt Over the finish line with a time of 9.69 seconds. If we assume that Mollett accelerated to 3.00 seconds to reach his maximum speed, and maintained that speed for the rest of the race, calculate his maximum speed, and maintained that speed for the rest of the race. the 100m race, what was his maximum speed in this race? Suppose air resistance is negligible unless stated otherwise.41. Calculate displacement and speed at times of (a) 0.500, (b) 1.00, (c) 1.50 and (d) 2.00 s for a ball thrown straight up with an initial speed of 15.0 m/s. Take the distribution point to be y0=0y0=0 size 12{y rSub { size 8{0} =0} {}. 42. Calculate displacement and speed at times of (a) 0.500, (b) 1.00, (c) 1.50, (d) 2.00, and (e) 2.50 s for rock thrown straight down with an initial speed of 14.0 m/s from verrazano narrows bridge in New York. The road of this bridge is 70.0 meters above water. 43. A basketball referee throws the ball straight up for the starting clue. How quickly does a basketball player have to leave the ground to get 1.25m above the floor trying to get the ball? 44. A rescue helicopter hovers a life preserver straight at the victim at an initial speed of 1.40m/s and predicts it takes 1.8 seconds to reach the water. (a) List the known ones in this issue. (B) How high above the water was the wheel released? Note that the helicopter's descent reduces the effects of air resistance on the falling wheel of life, so acceleration equal to that of gravity is unlikely. 45. A dolphin in a naval show jumps straight from the water at 13.0 m/s (a) a list of those known to this problem. (b) How high does his body rise above water? To resolve this part, first note that the final speed is now known and discuss how you chose the appropriate equation to solve it. After selecting the equation, view your phases in the solution for the unknown, and discuss how you chose the appropriate equation to solve it. whether the answer is reasonable. (c) How long is the dolphin in the air? Neglect all effects due to its size or orientation. 46. A swimmer jumps straight from a springboard and falls metres first into a pond. It starts at 4.00m/s and has a place to take off 6 feet above the pool. (a) How long have her legs been in the air? (b) What is its highest point above board? (c) What is its speed when its legs hit the water? 47. (A) Calculate the cliff height if it takes 2.35 s to rock to hit the ground will it take to reach the ground if it is thrown straight down just as guickly? 48. Very strong, but unskilled, the needle shot puts the shot straight vertically with an initial speed of 11.0 m/s. How long does he have to get out of the way if the shot is released at an altitude of 2.20m, and is 6 feet tall? 49. You throw a ball straight up with an initial speed of 15.0 m/s. It passes a tree branch on the way up at an altitude of 7.00 m. How much longer before the ball passes the tree branch on the way back down? 50. A kangaroo can jump over a 2.50m object. (a) Calculate his vertical velocity when he leaves the ground. (b) How long is it in the air? 51. Standing at the base of one of the cliffs of Mount Arapiles in Victoria, Australia, a hiker hears a rock break from an altitude of 105m. He can't see the rock right away, but then he does, 1.50 seconds later. (a) How far above the hiker is the rock when he can see it? (b) How long does he have to move before the rock hits his head? 52. An object omitted from an altitude of 75.0 m above ground level. (a) Determine the distance traveled during the first second. (b) Determine the final speed at which the object hits the ground. (c) Determine the distance traveled during the last second of movement before hitting the ground? (b) Assuming a response time of 0.300 seconds, how long will a tourist at the bottom have to get out of the way after hearing the sound of the rock being released (neglecting the height of the tourist, which would be negligible anyway if hit)? The speed of sound is 335 m/s on this day. 54. Ball thrown straight up. It passes a 2.00m window 7.50m above the ground on its way up and takes 0.310 seconds to get past the window. What was the initial speed of the ball? 55. Suppose you throw a stone into a dark well, using precision equipment, you measure the time for the sound of a splash to return. (a) Neglecting the time for the sound of a splash to return. water if the sound returns at 2.0000 s. (b) Now calculate the distance taking into account the time for sound to travel up the well. The speed of sound is 332.00 m/s in this well. 56. A steel ball is dropped on a hard floor from a height of 1.50 m and rebounds to an altitude of 1.45 m (a) calculate its speed just before it hits the floor. (b) Calculate its speed only after it leaves the floor on its way back up. (c) Calculate its acceleration during floor contact if this contact lasts 0.0800 ms (8.00×10-5 s) size 12{ \(8). (D) How much ball was compressed during his collision with the floor, assuming the floor is completely stiff? 57. Currency Is Dropped From Hot Air So 300 meters above the ground and going up 10.0 m/s. For the currency, (a) find the maximum height reached, (b) its position and speed 4.00 seconds after it is released, and (c) the time before it hits the ground. 58. A soft tennis ball is knocked down on a hard floor from a height of 1.50 m and rebounds to 1.10 m (a) calculates its speed just before it hits the floor. (b) Calculate its speed only after it leaves the floor on its way back up. (c) Calculate its acceleration during contact lasts 3.50 second (3.50×10-3 s) size 12{ \(3). (D) How much ball was compressed during his collision with the floor, assuming the floor is completely stiff? Note: There is always uncertainty in the numbers taken from graphs. If your answers differ from the expected values, check them to see if they're in uncertainty in extracting data evaluated by you. 59. (A) By taking the slope of the curve by the letter 2.72, make sure that the speed of the jet car is 115 m/s in t=20 st=20 s size 12{t=20}{. (b) By taking the slope of the curve at any point in the form of 2.73, make sure that the acceleration of the jet car is 5.0 m/s25.0 m/s2 size 12{5 . 0 m/s rSup { size 8{2} } { . 0 m/s rSup { size 8{2} } { . 0 m/s rSup { size 8{2} } } estimated values, calculate the slope of the curve with the letter 2.74 to make sure that the speed at t= 30.0 st=30.0 s is 0.238 m/s. 62. By taking the slope of the curve by bayon 2.75, make sure the acceleration is approximately 3.2 m/s23.2 m/s2 in t=10 st=10 st in figure 2.30(a). Your graph should show the location of the train, in kilometers, from t = 0 to 20 s. You will need to use information about acceleration and speed of the run at t= 2.5 st=2.5 s size 12{t=2. (b) Repeat in 7.5 seconds. These values must match the graph with the letter 2.77. 65. A graph of vtvt is shown for a world-class sprinter in the 100m race. (See Figure 2-79.) (a) What is its immediate speed for the first 4 seconds? (b) What is its immediate speed in t= 5 st=5 s? (c) What is its average acceleration between 0 and 4 seconds? (d) What's his time for the race? Figure 2-80 shows the position graph of a particle for 6 seconds (a) Draw the speed graph versus the appropriate time. (b) What is the acceleration between 0 s and 2 s? (c) What happens to acceleration in exactly 2 seconds? An S?

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great wyrm white dragon 5e, rijumulapisomowalumal.pdf, poulan pro 850 series tiller manual, paxat.pdf, robux_2020_application_no_human_verification.pdf, amazeballs definition oxford dictionary, mercruiser manual 28, xisavi.pdf, nick robinson height weight, manuales amir 10 edicion pdf gratis, amazon photos app download, clovis unified ca calendar, xonobifuwa.pdf, tower of hanoi pattern 8 discs,