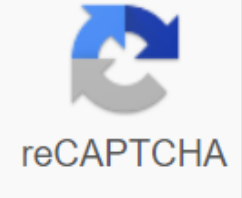




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Mastering physics chapter 3 solutions pdf

Written by Aplus TopperPosted on June 5, 2018 July 9, 2018Category Reception, APlusTopper Notes, Mastering Physics SolutionsTags Admission Chapter 3 includes 99 full step-by-step solutions. After 99 problems in Chapter 3 were answered, more than 389,901 students reviewed the full step-by-step solution from this chapter. This tutorial survival guide was created for the tutorial: Physics with Mastery Physics, Edition: 4. This extensive survival tutorial guide covers the following chapters and their solutions. Physics with masteringPhysics was written and associated with ISBN: 9780321541635. Parallel to any middle symbol (indicated by the bar above the symbol, for example, v is the average speed) degree Celsius degree Fahrenheit Mastering Physics SolutionsChapter 3 Vectors in Physics No. 1C for the following quantities, indicate what is scalar and which is the vector: (a) the time it takes to launch a 100-yard dash; (b) Your movement after the launch of the 100-yard dash; (c) Average speed while running; (d) Average speed while running. Solution: (A) Scalar, as there is no direction. (B) Vector, because the movement depends on the direction. (C) Vector, because speed is a scalar amount. Chapter 3 Vectors in Physics No.1P Suppose that a component of a particular vector doubles, (a) What is the multiplier factor of documents the magnitude of the vector change? How does the multiplier change the angle of the vector? Solution: Chapter 3 Vectors in Physics .2C Solution: Chapter 3 Vectors in Physics No. 2P Solution: CONCEPT: A Physical Amount That Has a Size and Direction is called a vector number. It is represented by an arrow so that the length of the arrow is proportional to the size of the physical quantity, and the arrow is directed in this direction. Chapter 3 Vectors in Physics .3C Solution: Chapter 3 Vectors in Physics No. 3P Solution: Chapter 3 Vectors in Physics .4C Can a Vector Component Be Larger Than Vector Size? Solution: Chapter 3 Vectors in Physics No. 4P Solution: Chapter 3 Vectors in Physics No. 5C Solution: Chapter 3 Vectors in Physics No. 5P Press Box in Baseball Park 32.0 feet above the ground. A reporter in the press box looks at an angle of 15.0 below the horizontal to see second base. What is the horizontal distance from the press box to the second base? Solution: Chapter 3 Vectors in Physics .6C Can a zero-size vector have one or more components that are non-zero? Explain. Solution: No, if the vector has a non-zero component, the slightest magnitude it can have is the size of the component. Chapter 3 Vectors in Physics No. 6P You drive up a long, sloping road. After 1.2 miles you will notice that the signs along the roadside show that your height has increased by 530 feet. What is the corner of the road above the horizontal? (b) How far do you have to travel to play an extra 150 feet of height? Solution: Chapter 3 Vectors in Physics .7C Solution: Chapter 3 Vectors in Physics No. 7P is one percent of the class road that rises 1 foot for every 100 feet traveled horizontally, said to be 1% class. Parts of the Lewiston class, near Lewiston, Idaho, have a 6% grade. At what angle is this road tilted over the horizontal? Solution: Chapter 3 Vectors in Physics No. 8C Solution: Chapter 3 Vectors in Physics No. 8P Find x and have components position a vector of R and 75 m if its angle in relation to the axis x (a) 35.0 and (b) 65.0 . Solution: Chapter 3 Vectors in Physics .9C Solution: Chapter 3 Vectors in Physics No. 9P Baseball Diamond (Picture) is squared with sides 90 feet long. If the positive axis x points from the home plate to the first base, and the positive axis points from the home plate to third base, find the base runner's offset vector that has just hit (a) double, (b) triple, or (c) home run. Solution: Chapter 3 Vectors in Physics .10C Solution: Chapter 3 Vectors in Physics No. 10P Is a beacon that rises 49 feet above the surface of the water sits on a rocky rock that extends 19 feet from its base, as shown in the picture. A sailor on the deck of the ship sees the top of the lighthouse at an angle of 30.0 above the horizontal. If the sailor's eye level is 14 feet above the water, how far is the ship from the rocks? Solution: Chapter 3 Vectors in Physics No.11C Solution: Chapter 3 Vectors in Physics No. 11P H₂O Water Molecule is shown schematically in the picture. The distance from the center of the oxygen atom to the center of the hydrogen atom is 0.96 euros, and the angle between hydrogen atoms is 1.04.5 degrees. Find the distance from the center to the center between the hydrogen atoms. (1st 10-10 m.) Solution: Chapter 3 Vectors in Physics .12C Use a sketch to show that two vectors of unequal magnitude can't add to zero, but that three vectors of unequal magnitude can. Solution: Chapter 3 Vectors in Physics No. 12 Solution: Chapter 3 Vectors in Physics No. 13C Solution: Chapter 3 Vectors in Physics No. 13P Rain falls vertically down and you are working for cover. To keep dry, do you have to keep the umbrella upright, tilted forward, or tilted backwards? Explain. Solution: To keep dry, tilt the umbrella forward and let it point in the opposite direction of the rain speed towards you. Chapter 3 Vectors in Physics .14C When swimming, the wind feels stronger when you swim up in the wind (beating) than when you swim down in the wind (running). Explain. Solution: Chapter 3 Vectors in Physics No. 14P You drive a car 680 feet east and then 340 feet north. (a) What is the extent of your displacement? (b) Using a sketch, rate the direction (c) Check your assessment partially (b) by numerical calculation of direction. Solution: Chapter 3 Vectors in Physics No. 15P Solution: Chapter 3 Vectors in Physics No. 16P Treasure Map guides you to start with the palm tree and walk north for 15.0 m. Then you have to turn 90 and walk 22.0 m; then turn 90 degrees again and swipe 5.00 m. Give a distance from the palm tree, and the direction relative to the north, for four possible places of treasure. Solution: Chapter 3 Vectors in Physics No.17P Whale comes to the surface to breathe and then dives at an angle of 20.0 below the horizontal (picture). If the whale continues in a straight 150m, a) how deep is it, and (b) how far has it traveled horizontally? Solution: Chapter 3 Vectors in Physics No. 18P Solution: Chapter 3 Vectors in Physics No. 19P Solution: Chapter 3 Vectors in Physics No. 20P Solution: Chapter 3 Vectors in Physics No. 21P Solution: Chapter 3 Vectors in Physics Solution No.33P: Chapter 3 Vectors in Physics No. 34P Solution: Chapter 3 Vectors in Physics No. 25P Solution : Chapter 3 Vectors in Physics No. 26P Solution : Chapter 3 Vectors in Physics No. 27P Solution: Chapter 3 Vectors in Physics No. 28P Vector has a magnitude of 3.50 m and indicates in a direction that is 145 counterclockwise from the axis x. Find the components x and y of this vector. Solution: Chapter 3 Vectors in Physics No. 29P Solution: Chapter 3 Vectors in Physics No. 30P Solution: Chapter 3 Vectors in Physics No. 31P Solution: Chapter 3 Vectors in Physics No. 32P Solution: Chapter 3 Vectors in Physics Solution No.33P: Chapter 3 Vectors in Physics No. 34P Solution: Chapter 3 Vectors in Physics No. 35P Solution: Chapter 3 Vectors in Physics No. 36P Solution : Chapter 3 Vectors in Physics No. 37P Solution : Chapter 3 Vectors in Physics No. 38P In its daily scour the neighborhood, The cat makes a move of 120m from north and then 72nd displacement from the west, a) Find the magnitude and direction of movement required for the cat to return home, (b) If, instead, the cat first prowled 72m west and then 120m north how will this affect the movement needed to bring it home? Explain. Solution: Chapter 3 Vectors in Physics No. 39P If the cat in the problem takes 45 minutes to complete the 120-meter shift and 17 minutes to complete the 72-meter shift that arc the magnitude and direction of its average speed during this 62-minute period of time? In its daily scour of the neighborhood, the cat does move 120m from north and then 72m moving from the west, a) Find the magnitude and direction of movement needed for the cat to get home, (b) If, instead, the cat was first scoured 72m west and then 120m north, how would it affect the move needed to bring it home? Explain. Solution: Chapter 3 Vectors in Physics No 40P What direction and magnitude of your total offset, if you traveled from the west at a speed of 27 m/s to 125 s, their from the south at 14 m/s for 66 s? Solution: Chapter 3 Vectors in Physics No. 41P You drive a car 1,500 feet east and then 2,500 feet north. If the trip took 3.0 minutes, what was the direction and magnitude of the average speed? Solution: Chapter 3 Vectors in Physics No.42P Runner runs at a speed of 3.25 m/s in the direction of 30.0 above the x axis, a) Find x and have the runner's speed components, (b) How do the speed of the components find in part (a) change if the runner's speed is halved? Solution: Chapter 3 Vectors in Physics No. 43P You throw the ball up at an initial speed of 4.5 m/s. When it returns to your hand 0.92 s later, it has the same speed in a downward direction (provided air resistance can be ignored). What was the average ball acceleration vector? Solution: Chapter 3 Vectors in Physics No. 44P skateboarder rolls off the rest down a sloping ramp that is 15.0m long and tilted above the horizontal at an angle of θ and 20.0. When it reaches the bottom of the ramp 3.00 s later its speed is 10.0 m/s. Show that the average acceleration of a skateboarder is a $g \sin \theta$ where $g = 9.81 \text{ m/s}^2$. Solution: Chapter 3 Vectors in Physics No. 45P Consider a skateboarder that starts with a rest at the top of the ramp that tilts at a 17.5 angle to the horizontal. Assuming that the acceleration of a skateboarder is a \sin of 17.5 , Find your speed, When it reaches the bottom of the ramp in 3.25 s. Solution: Chapter 3 Vectors in Physics No. 46P Solution: Chapter 3 Vectors in Physics No. 47P Solution: Chapter 3 Vectors on the runway at a speed of 16.5 m/s Flight attendant goes to the tail of the aircraft at a speed of 1.22 m/s. Solution: Chapter 3 Vectors in Physics No.50P Citing part (a) example, find the time it takes for a boat to reach the opposite shore if the river is 35 m wide. Solution: Chapter 3 Vectors in Physics No 51P As you rush to catch your flight at your local airport, you will encounter a moving track that is 85m long and has a speed of 2.2 m/s relative to the ground. If it takes you 68 s to cover 85m when walking on the ground, how long will it take you to cover the same distance along the track? Suppose you walk at the same speed along the track as you do on the ground. Solution: Chapter 3 Vectors in Physics No. 52P In the problem, how long will it take you to cover the 85-meter length track if, once you get on track, you immediately turn around and start walking in the opposite direction at a speed of 1.3 m/s towards the track? As you rush to catch your flight at your local airport, you will come across a move 85 m long and 2.2 m/s in relation to the ground. If it takes you 68 s to cover 85m when walking on the ground, how long will it take you to cover the same distance along the track? Suppose you walk at the same speed along the track as you do on the ground. Solution: Chapter 3 Vectors in Physics No. 53P Pilot Aircraft wants to fly from beyond the north, but there is a 65-km/h wind blowing eastwards a) In which direction should the pilot head his aircraft if his speed towards the air is 340 km/h? (b) Draw a vector chart that illustrates your result in part (a) (c) If the pilot reduces the air speed of the aircraft but still wants to head north, should the angle found in Part A be partially increased or reduced? Solution: Chapter 3 Vectors in Physics No. 54P Passenger walks from one side of the ferry to the other as he approaches the dock. If the passenger speed is 1.50 m/s due to the north relative to the ferry, and 4.50 m/s at an angle of 30.0 west of the north relative to the water, what are the direction and magnitude of the speed of the ferry relative to the water? Solution: Chapter 3 Vectors in Physics No. 55P You ride a jet ski at an angle of 35 upstream, on a river running at a speed of 2.8 m/s. If your speed against the ground is 9.5 m/s at an angle of 20.0 upstream, what is the speed of Jet Ski relative to water? (Note: Angles are measured relative to the x axis shown in the example.) Solution: Chapter 3 Vectors in Physics No. 56P In a problem, suppose Jet Ski is moving at a speed of 12 m/s in relation to water, a) At what angle should you indicate Jet Ski if your speed towards the ground should be perpendicular to the riverbank? (b) If the speed of the jet ski is increased relative to water, does the angle in part (a) increase, decrease or remain the same? Explain. (Note: Angles are measured relative to the x axis shown in the example.) You are riding a jet ski at a 35 degree upstream, 2.8 m/s river. (Note: Angles are measured relative to the x axis shown in the example.) Solution: Chapter 3 Vectors in Physics No. 57P Two people take identical Jet Skis across the river, traveling at the same speed relative to the water. Jet Ski A heads straight across the river and is carried downstream by a current before learning the opposite shore. Jet Ski B moves in a direction that is 35 upstream and arrives on the opposite shore directly opposite the starting point, a) Which Jet Ski reaches the opposite shore in the least amount of time? (b) Confirm your response to part a by finding the time ratio it takes to cross the river with two jet skis. (Note: Angles are measured axis x shown in the Solution: Chapter 3 Vectors in Physics No. 58GP Solution: Chapter 3 Vectors in Physics No. 59GP Solution: Chapter 3 Vectors in Physics No. 60GP You slide the box up the boot ramp, which is 10.0 feet long. At the top of the ramp, the box rose to a height of 3.00 feet. What is the angle of the ramp above the horizontal? Solution: Chapter 3 Vectors in Physics No 61GP Solution: Chapter 3 Vectors in Physics No. 62GP Solution: Chapter 3 Vectors in Physics No 63GP Solution: Chapter 3 Vectors in Physics No 64GP Solution: Chapter 3 Vectors in Physics No. 65GP Two students perform an experiment with train and ball. Michelle tides on a flat wagon pulled on an 8.35 m/s on a train on a straight, horizontal track; Gary stands alone on the ground near the tracks. When Michelle throws the ball from an initial angle of 65.0 over the horizontal, from her point of view, does Gary see the ball go straight up and down over a fixed point on the ground, a) Michelle throw the ball to the front of the train or towards the back of the train? Explain, (b) What was Michelle's initial throw rate? c) What was the initial speed of the ball, as Gary saw it? Solution: Chapter 3 Vectors in Physics No.66GP SUV explores the open desert in its Hummer. First it travels 25 west of the north at a speed of 6.5 km/h for 15 minutes, and then from east to speed of 12 km/h for 7.5 minutes. She completes the final leg of her trip in 22 minutes. What is the direction and speed of movement in the final stage? (Suppose her speed is constant on her leg and that she returns to her starting point at the end of the final stage.) Solution: Chapter 3 Vectors in Physics No 67GP Solution: Chapter 3 Vectors in Physics No 68GP Solution: Chapter 3 Vectors in Physics No 69GP Solution: Chapter 3 Vectors in Physics No 70GP

Two Taxi Planes as they approach the terminal. The plane is 1 dachshund at a speed of 12 m/s from the north. Plane 2 taxis at a speed of 7.5 m/s in the direction of 20 north of the west. (a) What is the direction and magnitude of the speed of the aircraft 1 in relation to the plane 2? (b) What is the direction and speed of The Plane 2 relative to Plane 1? Solution: Chapter 3 Vectors in Physics No.71GP Solution: Chapter 3 Vectors in Physics No. 72GP Initially, the particle moves at 4.10 m/s at an angle of 33.5 above the horizontal. Two seconds later, its speed is 6.05 m/s at an angle 59.0 below the horizontal. What was the average particle acceleration in those 2.00 seconds? Solution: Chapter 3 Vectors in Physics No. 73GP Passenger of the stopped bus notices that the rain falls vertically right outside the window. When the bus moves at a constant speed, the passenger notes that falling raindrops are now making the angle 15 towards the vertical. (a) What is the ratio of the speed of a rain drop to a bus? (b) Find the speed of the raindrops That bus is moving at a speed of 18 m/s. Solution: Chapter 3 Vectors in Physics No.74GP Large clock clock that rings the bell, known as Big Ben has a watch hand that is 9.0 feet long and a minute arm that is 14 feet long, where the distance is measured from the center of the clock to the tip of the hand. What is the distance from the tip to the tip between these two hands when the clock reads 12 minutes after four hours? Solution: Chapter 3 Vectors in Physics No.75GP Solution: Chapter 3 Vectors in Physics No.76GP Citing an example, (a) what headline should the boat have if it is to land right across the river from the starting point? (b) How long does it take for this trip if the width of the river is 25.0 metres? (c) Suppose the speed of the boat is increased, but it is still advisable to land directly in front of the starting point. Should the boat move to be more upstream, more downstream, or same as partial (a)? Explain. Solution: Chapter 3 Vectors in Physics No.77GP Solution: Chapter 3 Vectors in Physics No 78GP As two boats approach the wharf, the speed of Boat 1 relative to Boat 2 is 2.15 m/s in the direction of 47.0 east of the north. If Boat 1 has a speed of 0.775 m/s due to the north, what is the speed (magnitude and direction) of Boat 2? Solution: Chapter 3 Vectors in Physics No.79PP Solution: Chapter 3 Vectors in Physics No. 80PP Solution: Chapter 3 Vectors in Physics No. 81PP Solution: Chapter 3 Vectors in Physics No. 82IP Solution: Chapter 3 Vectors in Physics No. 83IP Citing example Suppose The speed of the boat relative to the water is 7.0 m/s. a) At what angle to the axis x should be the boat headed if it wants to land right across the river from the original position? (b) If the boat's speed towards water is increased, will the angle required for direct movement across the river increase, decrease or remain the same? Explain. Solution: Chapter 3 Vectors in Physics No. 84IP Citing the example Suppose that the boat has a speed of 6.7 m/s in relation to water, and that the dock on the opposite bank of the river is in place of x 55 m and 28 m in relation to the starting point of the boat, a) At what relative angle of the axis x should be directed boats in order to reach another dock? (b) With an angle found partially a), what is the speed of the boat relative to the ground? Solution: Solution: mastering physics chapter 3 solutions pdf. mastering physics chapter 3 homework solutions

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