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Work from a constant force mastering physics

The work is done by a constant force, proportional to the force that takes time to displacement the object. Key Takeaways key points important to understanding the quintessence of understanding the system in terms of their energy, which is essential for higher-level physics. The work is equivalent to a system kinetic energy change. The distance is not the same as displacement. If the box is moved forward 3 meters, then 4 meters to the left, the total displacement is 5 meters, not 7 meters. No work is done if the object does not move. When the force acts on objects in the distance, it is said to have worked on the object. The work done on an object is to change the kinetic energy that the object experiences. The work was introduced in 1826 by French mathematician Gaspard-Gustave Coriolis, a weight lifted over height, which depends on the use of an early steam engine to lift a bucket of water from a flooded mine. The SI unit of working as a newton-meter or joule (J) unit, one way to verify whether an expression is correct is to analyze dimensions. We have claimed that the task is to change the kinetic energy of an object and also equal the force as far as distance. These two units should agree. Kinetic energy - and all forms of energy - have units of Joule (J) similarly, the force has a unit of Newton (N) and the distance is in meters (meters) if both commands are equivalent to each other. [Latex]\Text{N} \cdot \text{m} = \text{kg} \frac{frac{text{m}}{text{s}2} \cdot \text{m} = \text{J}[/latex] Displacement is often compared to distance, we are asked to calculate the work done by force on the object. As we have shown, this is proportional to the force and distance that the object is replaced, not moving. We will check two examples of boxes that have been moved to show this. The following example is an example of a problem: (1.a) Consider the constant force of two Newton (F =2 N) acting in a three-kilogram mass box (M = 3 kg), calculate the work done in the box, if the box is replaced 5 meters (1.b), since the box is replaced 5 meters and the force is 2 N we multiply two volumes together. The mass of the object determines the acceleration speed under force and makes the time it takes to move the object from point to point b, regardless of how long the object will have the same removal and thus the same task done on it. (2.a) Considering the same box (M = 3 kg) was pushed with a constant force of four Newton (F = 4 N), it started at rest and was pushed for five meters. = 5 meters) Assuming the frictionless surface calculates the speed of the box at 5 meters (2.b), now we understand that the work is proportional to the dynamics of kinetic energy from this, we can calculate the final speed. What do we know? We know that the blocks start at rest, so the initial kinetic energy must be zero. From now on, we extract and solve the problem for the last speed [latex]\text{Fd} = \Delta \text{KE} = \text{KE}\f} - 0 = \frac{1}{2} \text{m} \text{v}_text{f} ^2 \\text{v}_text{f} = \sq{2 \frac{{{\text{Fd}\text {m}}} = \sqrt{2 \frac{4\text{N} \cdot 5\text{m}}{{2 \text{kg}}} = \sqrt{10} \text{m}/text{s[/latex]. Force does not need to be done and rarely acts on objects parallel to the direction of movement. Infer es point of one-dimensional motion adjustment for our three-dimensional world. Key Takeaways key points work on objects according to the direction of movement, given equal to the force time at the cosine displacement of the angle. Does not work in the direction of movement if the force is perpendicular. Considering the parallel force with the direction of movement, we omit the cosine phase because it is equal to 1, which does not change the expression. Product Point Keywords: Product Scalar's Functionality: Measuring the energy spent on moving objects. Until now, we have assumed that any force exerted on the object was parallel to the direction of movement. We have considered our movement to be one-dimensional, only acting along the x-or-y axis to detect and understand that natural entrepreneurs in our three-dimensional world, we will discuss working in two dimensions to build our instincts first. Force does not need to be done and rarely acts on objects parallel to the direction of movement. In the past, we received W=F d:, so the task done on the object is the force acting on the multiplication object with displacement. But this isn't the whole story. This expression has a presumed cosine, which we do not consider for forces parallel to the direction of movement. Why would we do that? We do this because the two are equal to each other. If the angle of force along the direction of the movement is zero, so that the force parallels the direction of movement, then the cosine distance is equal to one and does not change the expression. While we increase the angle of force with less and less respect for the direction of movement, fewer and fewer tasks will be done in the direction we are considering, and more work will be done in another, perpendicular, the direction of movement. It's done in our original direction, but we're working in another direction! Angle: Remember that both the force and direction of the movement are vectors. When the angle is 90 degrees, the cosine distance is zero. When going in the same direction, they equal one. We've talked about how the work is an important part of the force and the x-related point product, but in fact the point product of force and distance is as small as two words at the cosine of the angle between the two F* dx = Fdcos (theta) clearly.[Latex]\int_ text{t}_2^{{{\text{t}_1}\text{F}\cdot\text{dx} = \int_{\text{t}2}^{{text{t} 1}text\{Fd cos\theta \text{dx} = \text{Fd}cos\theta[/latex] A Box Moreover, consider the box that is pushed in the direction x What happens in the following three scenarios? Moreover, the vertical view box will not move - it does not change in the y direction, since the force acts parallel to the direction of movement, the angle is equal to zero, and all our tasks are only the force at the time of displacement in x direction in the situation where two boxes are pushed at an angle of 45 degrees to the x direction; This means that{2} 71% of the force contributes to the operation in the direction x 29%, acting in a y direction in situations where three forces we know act at an angle of 60 degrees to the x direction; Once assessed, the 60-degree cosine is equal to 1/2, which means that the force acts equally in x and y direction! In other words, we are pushing the box in the direction y! Learning Physics SolutionsChapter 7 Tasks and Kinetic Energy Q.1CQ Is it possible to work with the remaining objects? Solution: No, we know that the work is said to be done only when the body moves. Distance in the direction of the force used In other words, if no external force is used or the body can not move in the direction of the active force that is done, it is said to be zero. Consider a block of m mass (kg) that moves the distance d(m) using force F (N) in the direction of movement, then the task of the task W = F · d = force distance if d = 0 [i.e. body is in rest] W = F 0 = 0 Therefore, it is not possible to work with resting objects. The International Space Station orbits Earth in a circular orbit roughly at a height of h = 375 km above the Earth's surface. In complete orbit, the work done by Earth on the space station is positive, negative or zero? Explain the solution: The work done by Earth on the space station is zero. This is because during the movement of the satellite, the force always acts perpendicular to the direction of movement. If the force does not have a non-zero component according to the direction of the movement, the task is zero. Q.2CQ, a friend, makes the message that only all the power done to an object can work. Is this message true or false? If it is true, let's identify why; Describe (b) the work done on bob by a positive or zero string? Explain the solution: (a) When the bob pendulum swings from the point I point to II along the circular arc, the displacement of is reduced. This is the direction of gravity. So the work done by gravity is positive when the bob pendulum swings from point on me to freeze II along the circular arc(b) when the bob pendulum swings from the point I point to II along the circular arc, the tension in the string is always perpendicular to the direction of movement. So the work is done by zero strings when the bob pendulum swings from point on me to freeze II along the circular arc. Chapter 7 Working and Kinetic Energy Q.3CQ Friends makes a message that the force set against the particle speed does not work on the particles. Is this message true or false? If it is colored, specify why; The task done W=(F cosu) d W is positive if F has a component in the direction of movement W is positive if the angle between force F and d displacement is -90< <90.chapter 7 work and kinetic energy Q.3P A, the bob pendulum swings from point II to the third point along the circular arc. In the figure (a) the work done on bob by gravity plus negative or zero? Describe (b) the work done on bob by a positive or zero string? Explain the solution: (a) When the bob pendulum swings from point II to point III along the circular arc, its displacement is up. This is the opposite of the direction of gravity. Therefore, the task done by gravity is negative, when the bob pendulum swings from Point II to Freeze III along the circular arc (b) when the bob pendulum swings from Point II to Point III along the circular arc, the tension in the string is always perpendicular to the direction of movement. So the task is done by zero strings when the bob pendulum swings from Point II to Freeze III along the circular arc. Chapter 7 Work and Kinetic Energy Q.4CQ Net work made in some objects to zero What would you say about its speed? Solution: The task is equal to the kinetic energy change, so if the net job done on the object is zero, the kinetic energy change is also zero. Therefore, the speed of the object will remain the same. Q.4P A farmhand pushes 26 kg 3.9m hay bales across the barn floor If she exerts 88 N horizontally on hay, how much do she work? Solution: Chapter 7 Working kinetic energy Q.5CQ to get out of bed in the morning, do you need to work? Explain the solution: yes, we need to work with gravity to get out of bed in the morning, because constant gravity acts onto our body when we sleep in bed. To get up, we need to use more force, so we're working on gravity. Q.5P Children in tree houses lift small dogs in baskets 4.70 meters up to their homes. If it takes 201 J to work, what is the gross mass of dogs and baskets? Solution: Chapter 7 Working and Kinetic Energy Q.6CQ gives an example of friction in negative functioning. Solution: Friction runs negative whenever they act in an anti-movement direction. For example, friction will work negatively when you press the box across the floor or when you press the brake button while driving. Q.6P early October you go to the pumpkin patch to choose your Halloween pumpkin. You lift a 3.2 kg pumpkin to a height of 1.2 inches, then carry 50.0 meters (on the ground level) to the checkout point(a) calculate the work you do on the pumpkin as you lift it off the ground. (b) How much do you work on a pumpkin while you carry it off the field? Solution: Chapter 7 Functional and Kinetic Energy Q.7CQ provides examples of positive working friction. Solution: Friction usually resists relative movement, but if the body moves in the direction of force used for ◊ = 0º, the task is positive. On the ground, the friction between his shoes and the ground works positively whenever he starts walking as ◊ = 0º chapter 7 jobs and kinetic energy Q.7P The kinetic friction coefficient between the suitcase and the ground is 0.272 If the suitcase has a mass of 71.5 kg can be pushed across the floor as far as 642 J work? Does the net force served on the ship work? Solution explained: Because the speed of the ship is constant, there will be no change in the kinetic energy of the vessel, so the kinetic energy change = 0 joule ———- (1). Work done = Changes in kinetic energy ———- (2) From the equation (1) and (2) the job done = 0, ———- (3) work = net displacement ———- (4) because the ship is moving at a constant speed, then from the equation (3) and (4) net strength = 0 Newton, so the net force does not work any on the ship. (b) You pick up 3.4 kg of paint from the ground and lift it to a height of 1.8 meters (a) how much you work on can paint? (c) How much do you work during this time? How much work do you work while you're reducing your work? Solution: The mass of can m = 3.4 kg Chapter 7 work and kinetic energy Q.9CQ A package placed on the floor of the elevator, increased at a constant speed. Why does the kinetic energy of the package increase? Solution: Chapter 7 Works and Kinetic Energy Q.9P Rope tow parallel to the water, pulling the water skier directly behind the boat at a fixed speed for 65 meters before the skier falls. The tension in the rope is 120 N. (a) the job done on skiers by rope plus minus or zero? Explain (b) calculate the work done by rope on the skier. Solution: Chapter 7 Tasks and Kinetic Energy Q.10CQ Objects move at a constant speed. Why or why not? Solution: Chapter 7 Work and Kinetic Power Q.10P in the situation described in the previous problem (a) is the work done on the ship by rope plus, minus or zero? Explained (b) Calculate the work done by rope on the ship. Correct to conclude that engine 1 produces twice the power of engine 2? Here it is said that engine 1 makes twice the workload as engine 2, but they So it is not accurate to conclude that engine 1 produces twice as much power as it is produced by engine 2.Chapter 7, work and kinetic power Q.11P. If the child pulls with 16 N force for 10.0 meters and the handle of the wagon tilts at an angle 25° above the horizontal, how much do the child run on the wagon? Solution: Chapter 7 Working kinetic energy Q.12CQ Engine 1 produces twice the engine power. 2. Is it correct to conclude that engine 1 works as much as twice as much as engine 2? Q.12P crate, packing 51 kg, is pulled at a constant speed, crossing rough terrain with a rope at an angle of 43.5° above the horizontal. If the tension in the rope is 115 N, what work does the work on the crate to move it 8.0 meters? Solution: Chapter 7 Work and Kinetic Power Q.13P to clean the janitor floor push the liner handle with a 50.0 N. (a) force if the liner handle is at an angle of 55° above the horizontal, how much must be used to push the liner 0.50 m? Explain solution: Chapter 7 Working kinetic energy Q.14P Small aircraft towing gliders at constant speed and altitude. If the plane made 2.00 × 105 J of work to tow the glider 145 meters, and the tension in the towing rope is 2560 N, what is the angle between the tug rope and the horizontal? Solution: Chapter 7 Functional and Kinetic Energy Q.15P Solution: Chapter 7 Work and Kinetic Energy Q.16P Solution: Chapter 7 Work and Kinetic Energy Q.17P Water Ski often sits to one side of the middle line of the ship as shown in the figure. In this case, the ski boat will travel at 15 m/s and the tension in the rope is 75 N if the boat runs 3500 J on the skier in 50.0 meters, the angle between the tug rope and the middle line of the boat? Solution: Chapter 7 Tasks and Kinetic Energy Q.18P Pitcher throws the ball at 90 miles/h and the catcher stops it in her glove, (a) the job done on the ball by a pitcher plus minus or zero? Describe (b) the work done on the ball by a positive or zero catcher? Explain the solution: a) The pitcher works positively on the ball because the direction of force is in the direction of the ball's displacement. b) Catch the negative work on the ball by using force in the opposite direction to the ball's movement, in order to stop the ball of Chapter 7 Work and Kinetic Energy Q.19P need to be used for a runner 73kg to accelerate from the rest to 7.7 m/h. Solution: Chapter 7 Working and Kinetic Energy Skylab's Reentry when Skylab reentered the Earth's atmosphere on July 11, 1979. One of the biggest parts is the lead film safety deposit box. I770 kg and it landed at a speed of about 120 m/s, what is the kinetic energy of the film vault when it lands? Solution: What is Chapter 7 Working kinetics and kinetic energy Q.21P 9.50g ammo, with a speed of 1.30 km/s (c) kinetic energy in Joule? Solution: Chapter 7 Work and Kinetic Energy Q.22P W0 speeding from 0 to 50 km/h (a) The work must accelerate from 50 km/h to 150 km/h equal to 2W0, 3W0, 8W0 or 91w0? Select the best description from the following options: I. The final speed is three times the speed produced by the W0 III. Up to 150 km / h Twice the speed increase from 0 to 50 km /h. Solution: Chapter 7, Running kinetics and kinetic energy Q.23P Jogger A has mass m and v speed, Runner B has m/2 mass and speed 3v, jogger C has a mass of 3m and speed v / 2, and runner D has a mass of 4 m and speed v / 2 ranked runners to increase kinetic energy. Solution: >Chapter 7 Work and Kinetic Energy Q.24P A 0.14 kg pinecone falls 16 meters to the ground, where it lands at a speed of 13 m/s (a) with the speed at which the pinecone will land without air resistance? Explain the solution: Chapter 7 works and kinetic energy Q.25P in the previous problem, (a) how it works on pinecone by air resistance? Solution: A minus sign indicates that the force acts in an upward direction. Q.26P at t = 1.0 s object 0.40 kg is reduced with a speed of 6.0 m / s at t = 2.0 s, there is kinetic energy 25 J. (a) the kinetic energy of the object t = 1.0 s? (b) What is the speed of the object t = 2.0 seconds (c) the work done with the object between t = 1.0 s and t = 2.0 s? Solution: Chapter 7, Task and Kinetic Energy Q.27P After hitting a long fly ball that crosses the head of the right field and lands on the field, the dough decides to pass second base and try third base. 62.0kg player starts sliding 3.40 meters from the base at a speed of 4.35 m / s if the player comes to rest at third base (a) the work done with the player by friction? What is the kinetic friction coefficient between the player and the ground? Solution: Chapter 7 Working kinetic energy Q.28P A 1100 kg coastal car on horizontal road at 19 m/s speed after crossing. Sand stretch of road length 32 meters, speed reduced to 12 m/s (a) is a net job done on a car plus minus or zero? Explain (b) find the size of the average net force on the car in the sand section. Solution: Chapter 7 works and kinetic energy Q.29P (a) In the previous problem, the speed of the car drops to 7.0 m/s as it crosses the sand section of the road 32 meters long. Explain (b) Calculate the speed change in this case Solution: Chapter 7 works and kinetic power Q.30P A bicyclist 65 kg, rides his 8.8 kg bike at a speed of 14 m/s (a) how much work must be done by braking to bring the bike and the rider to a stop? (b) How far does the bike travel if it takes 4.0 seconds to rest? (c) What is the size of the brake force? Solution: Chapter 7 Working kinetic energy Q.31P blocks m mass and speed v collision with compressed spring △x What is the compression of spring if the constant force of spring increases by a factor of four? Solution: Chapter 7 Working kinetic energy Q.32P spring with × 3.5 in 104 N/m starting at a balanced length (a) How much do you need to work to stretch spring 0.050 m? (b) How much work do you need to compress 0.050 meters? Solution: Chapter 7 Work and Kinetic Energy Q.33P A Block 1.2 kg is held with a spring of constant force 1.0 × 104 N/m compressed distance 0.15 m. How fast will the moving block after launch and spring push it away? Solution: Chapter 7, working and kinetic energy Q.34P begins to slide at a speed of 2.2 m/s, blocks 1.8 kg, collides with a spring and compresses 0.31 meters before coming to rest. Solution: Chapter 7 Functional and Kinetic Energy Q.35P Solution: Chapter 7 Working and Kinetic Energy Q.36P Solution: Chapter 7 Work and Kinetic Energy Q.37P CE Block M Mass and Speed v Collision with Spring Compression Distance △x What is the compression of spring if the mass of the block is halved and the speed will double? Solution: Chapter 7 Work and Kinetic Energy Q.38P to compress spring 1 by 0.20 m, take 150 J of work. Which spring is solid? Solution: 38ps work done to compress spring 1 x = 0.2 m is W = 150 J, we know chapter 7 work and kinetic energy Q.39P It takes 180 J of work to compress the spring 0.15 m (g) the force constant of this spring? Check your answers with calculations. Solution: Chapter 7 Functional and Kinetic Energy Q.40P Solution: Chapter 7 Work and Kinetic Energy Q.41P Blog will act on The force varies (2.0 × 104 N/m) x for 0 ≤ x ≤ 0.21 m, then remains constant at 4200 N for a larger x. Working force on the block to move (a) from x = 0 to x = 0.30 m or (b) from x = 0.10 m to x = 0.40 m? Solution: Chapter 7 Running kinetic energy Q.42P CE Force F1 made 5 J of work in 10 seconds, force F2 to do 3 J of work in 5 seconds, force F3 to do 6 J of work in 18 seconds, and force F4 to do 25 J of work in 125 seconds. Indicates the relationship as appropriate. Solution: Chapter 7 Work and Kinetic Energy Q.43P climbed the Empire State Building, a new record for running the stairs of the Empire State Building on February 3, 2003, all 86 flights, with a total of 1576 steps, running in 9 minutes 33 seconds. Give your answers in both watts and horsepower. Solution: Chapter 7 Works and Kineol Q.44P Energy, How many joules in kilowatt hours? Solution: Chapter 7 Tasks and Kinetic Energy Q.45P calculates the thrust of 1.4 g of flight as it walks at the end of the window at 2.3cm/hr. Solution: Chapter 7 Works and Kinetic Energy Q.46P Ice Cubes are placed in a microwave oven, assuming the oven provides 105 watts of energy to the ice cube and takes 32,200 J to melt. How long does it take for the ice to melt? Solution: Chapter 7 Working kinetic energy Q.47P You lift a bucket of water from the bottom of a deep well. If your driving power is 108 W and the mass of the tank and the water in the tank is 5.00 kg with the speed at which you can lift the tank? Ignore the weight of the rope. Solution: Chapter 7 works and kinetic energy Q.48P to keep the ship leaking from sinking, it is necessary to pump 12.0 pounds of water a second from below the deck up to a height of 2.00 meters and sides. What is the minimum horse electric motor that can be used to help a boat? Solution: Chapter 7, Working kinetic energy Q.49P Kayaking with 50.0 W thrust to maintain a constant speed of 1.50 m/s (b) Calculate the resistance exerted by water on the kayak, (b) if the kayak doubles its thrust and the water resistance remains the same by what factors have changed the speed of the kayak? Solution: Chapter 7, Functional and Kinetic Power Q.50P Human Powered Aircraft is powered by humans as a pilot to pedal as well as on a bike and produces about 0.30 horsepower Gossamer Albatross flew across the British Channel on June 12, 1979, in 2 hours, 49 minutes (a) how much energy pilots use during flights? Pilots must be consumed to refuel. [Note: Nutritional calories, 1 Cal, are: Up to 1,000 calories (1,000 cal) as defined in physics In addition, the conversion factors between calories and Joule are as follows: 1 cal = 1000 cal = 1 kcal = 4186 J.] Solution: Chapter 7 Work and Kinetic Energy Q.51P Pu Watch is powered by 4.35 kg (a) if the weight comes down to 0.760 meters in 3.25 days. (b) to increase the energy sent to the watch, should it take time to reduce or decrease? Explain solution: Chapter 7 Works and Kinetic Power Q.52P The power you produce approximately the energy you produce to run up the stairs, give your answer in horsepower. Solution: Chapter 7 Functional and Kinetic Energy Q.54GP Solution: > Chapter 7 Tasks and Kinetic Energy Q.55GP Child riding on a skateboard at 2 m/s speed after force acting with the child, her speed is 3 m/s work done by positive, negative or zero force? Description Solution: Chapter 7 Working kinetic power Q.56GP predicting /describing the car being accelerated with the constant force F distance needed to accelerate the car from the rest to speed v △x (a) requires the distance to accelerate the car from v speed to speed 2v equals △x, 2△x, 3△x or 4△x (b). Select the best description from the following options: I. The speed increase is the same in each case III. The operation is the mandatory time and the operation depends on the squared speed. If the car speed 2 is v, the car speed 1 equals v/4, v/2, 2v or 4v? explain how to fix: Chapter 7 works and kinetic energy Q.58GP Bio muscle cell muscle cells can be accounted for as nanomotors that use ATP's chemical energy to produce mechanical work. Measurements show that active proteins within muscle cells (such as myosin and actin) can produce approximately 7.5 pN strength and a displacement of 8.0 runs. Solution: Chapter 7 Tasks and Kinetic Energy Q.59GP When You Bite an Apple, you make about 19 J's of work, estimate (a) the force and (b) energy generated by your jaw muscles during the bite. Solution: Chapter 7 Tasks and Kinetic Energy Q.60GP A Mountain bar has a mass of 0.045 kg and a calorie score of 210 Cal. The human-driven plane is a pilot that will tread as well as on a bike and produce a lasting energy of about 0.30 horsepower, Gossamer Albatross flew across the British Channel on June 12, 1979, in 2 hours and 49 minutes (a) how much power pilots use during flights? Pilots must be consumed to refuel. [Note: 1 cal nutritional calorie is equivalent to 1,000 calories (1,000 cal) as defined in physics. Solution: Chapter 7 Works and Kinetic Power Q.61GP Small Motor Sprint Lifting Heavy Brick Lifter 836 N to 10.7 m height in 23.2 s assuming that the brick is raised at a constant speed, what is the minimum power that the motor must produce? Solution: Chapter 7 Tasks and Kinetic Energy Q.62GP You pushed a box of 67 kg across space, the kinetic friction coefficient is μk = 0.55. (a) How much power does it require to push a box at a speed of 0.50 m/s? (b) How much work do you work if you press the box for 35 seconds? Solution: Chapter 7 Functional kinetic energy Q.63GP heart beat yields the average energy of the human heart is 1.33 watts (a) how much energy the heart produces in a day? Assess the height that a person can achieve on a series of stairs using nothing more than the daily energy produced by the heart. Solution: Chapter 7 Works and Kinetic Energy Q.64GP Atmos Watch Atmos Clock (so-called permanent motion clock) is named for the fact that it runs out of atmospheric pressure changes, which drive bellows with a mixture of gas and ethyl chloride fluids. Therefore, they must be very effective. In fact, a single 60.0-W bulb can power 240 million Atmos watches simultaneously. Solution: Chapter 7 Working kinetic power Q.65GP W0 must accelerate the car from the rest to v0 speed, how much must i use it to accelerate the car (a) from the rest to v0/2 speed and (b) from v0/2 to v0? Solution: Chapter 7 Working kinetic energy Q.66GP W0 work is needed to stretch the spring 2 cm from the balance position (a) how much work to use to stretch the spring 1 cm from the balance? (b) Assuming that the spring is already stretched 2 cm from the balance, how much more work to be used to stretch out to 3 cm from the balance? Solution: Chapter 7 Works and Kinetic Energy Q.67GP After Tornado Finds 0.55g Straw Buried 2.3 cm in Tree Trunk If the average force exerted on a straw by a tree is: N What is the speed of straw when it hits a tree? Solution: Chapter 7 Work and Kinetic Energy Q.68GP You Threw Straight Gloves Up to Celebrate Victory The default kinetic energy is K and up to maximum h kinetic energy of the glove is when at h/2 height? If tensile is still done, it is still done, if the increased mass results in bigger friction and the increase in the tensile force of the work increases. Apple's Q.71GP A 0.19 kg fall from a branch of 3.5 meters above ground (a) energy sent to Apple by increased gravity, de Crease, or remain the same at the time the apple falls to the ground? Explain the search for energy sent by gravity to Apple when apple is (b) 2.5 meters and (c) 1.5 meters above ground Solution: Chapter 7 work and kinetic energy Q.72GP juggling ball of m mass is thrown up straight from h starting height with the initial speed v0 gravity made on the ball (a) when reaching the maximum h peak height and (b) when reaching ground level? Solution: Chapter 7 Functional and Kinetic Energy Q.73GP Solution: Chapter 7 Working kinetic Energy Q.74GP Solution: Chapter 7 Work and Kinetic Energy Q.75GP Motor ski boat produces 36,600 W power to maintain a constant speed of 14.0 m/s in pulling a skier with the same constant speed, the motor must produce 37,800 W power in the pull rope? Solution: Chapter 7 Functional and Kinetic Energy Q.76GP Energy Cookies to Make Your Cookie Set Mix Half Bag Of Chocolate Chips into A Bowl Of Cookie Dough Using 21-N Force On A Stirring Spoon (a) What energy is needed to move the spoon at a speed of 0.23 m/s? (b) How much work do you work if you stir the mixture for 1.5 minutes? Solution: Chapter 7 Working kinetic energy Q.77GP A pitcher accelerates 0.14 kg hardball from the rest to 42.5 m/s in 0.060 seconds (a) how much pitcher works on the ball? (c) Assuming the ball reaches 42.5 m/s in less than 0.060 seconds, the energy produced by the pitcher in this case is more than less or the same as the energy found in the part. (b) is it? Explain the solution: Chapter 7 Working kinetic power Q.78GP Catapult Launcher Catapult Launcher A catapult on the aircraft carrier accelerates the jet from the rest to 72 m/ s, the work done by the catapult during launch is 7.6 × 107 J. (a) What is the mass of the jet? Q.79GP human brain power consumes about 22 W under normal conditions, although it may require more energy during the exam, (a) one Snickers bar (see note the following problem), the brain energy functions normally? (c) How long does it take to lift a milk container through a distance of 1.0 meters at this rate? A human-driven plane driven by humans is a pilot who will pedal as well as on a bike and produces lasting energy of about 0.30 horsepower, Gossamer Albatross flew across the British Channel on June 12, 1979, in 2 hours and 49 minutes (a) how much power pilots used during the flight? Pilots must be consumed to refuel. [Note: 1 cal nutritional calorie is equivalent to 1,000 calories (1,000 cal) as defined in physics. Solution: Chapter 7 Working kinetic power Q.80GP A 1300 kg car provides constant 49 horsepower to the driving wheel. We assume that the car is traveling on a certain level of road, and all fractional forces may be ignored, (a) what is the acceleration of this car when the speed is 14 m/s/ s? Explained (c) Calculate the acceleration of the car at a speed of 28 m/s: Chapter 7, working kinetics and kinetics Q.81GP Solution: Chapter 7, Working kinetics and kinetic power Q.82GP powered pigeon A in the air resistance flight experience received by approximate f=bv2, where v is the flying speed and b is (a constant) unit of constant b? (b) What is the pigeon's biggest possible speed if the maximum output power is P? (c) By which factor increases the most likely speed if the maximum power doubles? Solution: Chapter 7 Work and Kinetics Q.83GP Solutions: Chapter 7 Work and Kinees Power Q.84GP Solutions: Chapter 7 Work and Energy Kinees Q.85GP Solutions: Chapter 7 Works and Kine energy Q.86PP Microraptor Gui: Dinosaur Biplane Evolution of Aviation is a matter of intense interest in paleontology, some people subscribe to the hypothesis Cursor (or ground up), which begins with a flight of wild animals on the ground after the life and jumping prey. Others prefer the arboreal hypothesis (or tree down), in which wild animals living like modern flying squirrels develop a flight as an extension of gliding from tree to tree. Recently discovered fossils from the Cretaceous era in China support the hypothesis of arboreal and add new elements- it shows that feathers both the wings and lower legs and feet. This dinosaur, microraptor gui, glides like two planes, as shown in the photo. The searcher again created a detailed computer simulation of the Microraptor, and with its help has been given a power plot relative to the speed presented in the figure. But also high for low speed, which dinosaurs almost hovered over. Requires at least 8.1 W for a flight at 10 m/s, the horizontal line below shows about 9.8-W of microraptor power, indicating the small range speed at which a flight is possible. The horizontal line above shows a wide range of flying speeds that can be used if the Microraptor can produce 20 watts of power. In other words, the constant for P/v refers to the equation 7-13, we see that P/v = Fv/v = F, so line 1 and 2 correspond to the line of constant force. Solution: From the given figures, it is clear that the range of flying speed for power output 9.8W is 7.7m/s to 15m/s, so option B is correct. Chapter 7 Work and Kinetics Q.87PP Microraptor gui: Biplane Dinosaurs, the evolution of aviation is a matter of intense interest in paleontology, some of which subscribe to the cursor hypothesis (or ground up), in which the flight begins with wild animals living on the ground running and jumping after prey. Others prefer the arboreal hypothesis (or tree down), in which wild animals living like modern flying squirrels develop a flight as an extension of gliding from tree to tree. Recently discovered fossils from the Cretaceous era in China support the hypothesis of arboreal and add new elements - it shows that feathers on both the wings and lower legs and feet allowed this dinosaur, the Microraptor gui to glide like a biplane plane, as shown in the figure, the searcher again created a detailed computer simulation of the Microraptor, and with its help gained the power plot compared to the speed presented in this figure. But also high for low speed, which dinosaurs almost hovered over. Requires at least 8.1 W for a flight at 10 m/s, the horizontal line below shows about 9.8-W of microraptor power, indicating the small range speed at which a flight is possible. The horizontal line above shows a wide range of flying speeds that will be available if the Microraptor can produce 20 watts of power. That is, the constant for P/v represents the equation 7-13. Solution: According to the figures, it is clear that the estimated flight speed range is possible if the gui microraptor can produce 20W power, namely 2.5m/s to 25m/s. The output power is more than 20w. Chapter 7 Work and Kinex Energy Q.88PP Microraptor gui: Biplane Dinosaurs, the evolution of aviation is a matter of intense interest in paleontology, some of which subscribe to the cursor hypothesis (or ground up), in which the flight begins with wild animals living on the ground running and jumping after prey. Others prefer the arboreal hypothesis (or tree down), in which wild animals living like modern flying squirrels develop a flight as an extension of gliding from tree to tree. Recently discovered fossils from the Cretaceous era in China support the hypothesis of arboreal and add new elements - it shows that feathers on both the wings and lower legs and feet allowed this dinosaur, the Microraptor gui to glide like a biplane plane, as shown in the figure, the searcher again created a detailed computer simulation of the Microraptor, and with its help gained the power plot compared to the speed presented in this figure. But also high for low speed, which dinosaurs almost hovered over. Requires at least 8.1 W for a flight at 10 m/s, the horizontal line below shows about 9.8-W of microraptor power, indicating the small range speed at which a flight is possible. The horizontal line above shows a wide range of flying speeds that can be used if the Microraptor can produce 20 watts of power. In other words, the constant for P/v refers to the equation 7-13, we see that P/v = Fv/v = F, so line 1 and 2 correspond to the line of constant force. Solution: Chapter 7 Tasks and Kinetic Energy Q.89PP Microraptor gui: Biplane Dinosaurs, the evolution of aviation is a matter of intense interest in some paleontology, subscribe to the cursor hypothesis (or ground up), in which the flight begins with wild animals living on the ground, running and jumping after prey. Others prefer the arboreal hypothesis (or down tree), in which pets inhabit trees like modern flying squirrels. The flight is an extension of gliding from tree to tree. Recently discovered fossils from the Cretaceous era in China support the hypothesis of arboreal and add new elements - it shows that feathers on both the wings and lower legs and feet allowed this dinosaur, the Microraptor gui to glide like a biplane plane, as shown in the figure, the searcher again created a detailed computer simulation of the Microraptor, and with its help gained the power plot compared to the speed presented in this figure. But also high for low speed, which dinosaurs almost hovered over. Requires at least 8.1 W for a flight at 10 m/s, the horizontal line below shows about 9.8-W of microraptor power, indicating the small range speed at which a flight is possible. The horizontal line above shows a wide range of flying speeds that can be used if the Microraptor can produce 20 watts of power. In other words, the constant for P/v refers to the equation 7-13, we see that P/v = Fv/v = F, so line 1 and 2 correspond to the line of constant force. Solution: Chapter 7 Tasks and Kinetic Energy Q.90IP means Figure, assuming the block has a mass of 1.4 kg and a starting speed of 0.62 m/s (a) any constant force that the spring must have if the maximum compression is 2.4 cm (b). If the spring has a constant force found in part (a), find the maximum compression if the mass of the block doubles and the starting speed is halved. Solution: Chapter 7 Tasks and Kinetic Energy Q.91IP refers to the figures in the situation shown in the figure (d) spring with a constant force of 750 N/m compressed with 4.1 cm (h) if the speed of the block in the figure (f) is 0.88 m/s, what is its mass? If the mass of the block doubles, the final speed is greater than less than or equal to 0.44 m/s? (b) Solution: Chapter 7 function and kinetic power Q.92IP refers to the example, assuming the car has a mass of 1,400 kg and delivers 48 horsepower to the wheel(a) how long does it take to increase the speed from 15 m/s to 25 m/s? (b) Will the time be increased from 5.0 m/s to 15 m/s, greater than less than or equal to the time found in part (a)? (c) The required timing to accelerate from 5.0 m/s to 15 m/s Solution: Exit:

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