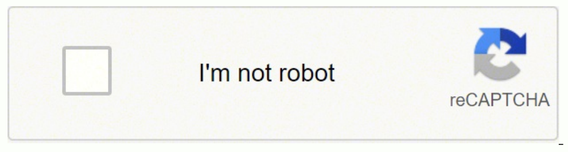

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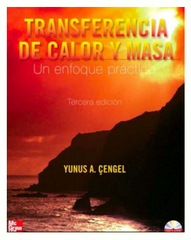

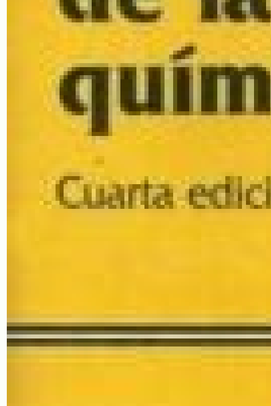

1-7 1-14 During an analysis, a relation with inconsistent units is obtained. preparation. Also, we know that the unit of time is seconds. You can download the paper by clicking the button above. Hence, this product forms a distance dimension and unit. 1-6C There is no acceleration, thus the net force is zero in both cases. Analysis The filling time depends on the volume of the tank and the discharge rate of gasoline. Limited distribution permitted only to teachers and educators for course 9. There is no creation of energy, and thus no violation of the conservation of energy principle. By opening and using this Manual the user agrees to the following restrictions, and if the recipient does not agree to these restrictions, the Manual should be promptly returned unopened to McGraw-Hill: This Manual is being provided only to authorized professors and instructors for use in preparing for the classes using the affiliated textbook. The light-year unit is then the product of a velocity and time. 0 z Analysis The weight of a body at the elevation z can be expressed as W mg m z= = (. Then, his weight on the moon will be lbf35.8= == 2 2 ft/slbm174.32 lbf1)ft/s47.5)(lbm5.210(mgW 1-8 The interior dimensions of a room are given. 1-7E The weight of a man on earth is given. The height at which the weight of a body will decrease by 0.5% is to be determined. 1-8 1-17 A pool is to be filled with water using a hose. Embed Size (px) 344 x 292429 x 357514 x 422599 x 487 1. Also, we know that the unit of volume is m3 . Analysis Applying Newton's second law, the weight is determined to be N1920===)m/s6.9)(kg200(2 mgW 1-11E The constant-pressure specific heat of air given in a specified unit is to be expressed in various units. 1-2 Thermodynamics 1-1C On a downhill road the potential energy of the bicyclist is being converted to kinetic energy, and thus the bicyclist picks up speed. Putting the given information into perspective, we have V [m3] is a function of t [s], D [m], and V [m/s} It is obvious that the only way to end up with the unit m3 for volumePage 2Embed Size (px) 344 x 292429 x 357514 x 422599 x 487 1. 1-1 Solutions Manual for Thermodynamics: An Engineering Approach Seventh Edition Yunus A. Boles McGraw-Hill, 2011 Chapter 1 INTRODUCTION AND BASIC CONCEPTS PROPRIETARY AND CONFIDENTIAL This Manual is the proprietary property of The McGraw-Hill Companies, Inc. Therefore, this cannot happen. This Manual may not be sold and may not be distributed to or used by any student or other third party. Limited distribution permitted only to teachers and educators for course 6. . 1-16 A gas tank is being filled with gasoline at a specified flow rate. Cengel, Michael A. 1-5 1-12 A rock is thrown upward with a specified force. LIBROS UNIVERISTARIOS Y SOLUCIONARIOS DE MUCHOS DE ESTOS LIBROS. Analysis The problem is solved using EES, and the solution is given below. 1-4 1-9 The variation of gravitational acceleration above the sea level is given as a function of altitude. 1-5C In this unit, the word light refers to the speed of light. 2.)9 807 332 10 6 In our case,)81.9)((995.0995.0995.0 mmgWW ss === Substituting, m14,770== m14,774)1032.381.9()81.9(995.0 6 zz Sea level 1-10 The mass of an object is given. (McGraw-Hill) and protected by copyright and other state and federal laws. 1-2C A car going uphill without the engine running would increase the energy of the car, and thus it would be a violation of the first law of thermodynamics. Therefore, the desired relation is = & V t V Discussion Note that this approach may not work for cases that involve dimensionless (and thus unitless) quantities. A correction is to be found, and the probable cause of the error is to be determined. ROOM AIR 6X6X8 m3 Analysis The mass of the air in the room is kg334.1===)m86)(6kg/m(1.16 33 Vm Thus, N3277= == 2 2 m/skg1 N1)m/skg)(9.81(334.1mgW preparation. No part of this Manual may be reproduced, displayed or distributed in any form or by any means, electronic or otherwise, without the prior written permission of McGraw-Hill. Analysis The weight of the rock is N.3729 m/skg1 N1)m/skg)(9.79(3 2 2 = == mgW Then the net force that acts on the rock is N6.17037.29020downupnet === FFF Stone From the Newton's second law, the acceleration of the rock becomes 2 m/s56.9= == N1 m/skg1 kg3 N170.6 2 m F a preparation. The entire EES solution is to be printed out, including the numerical results with proper units. LOS SOLUCIONARIOS CONTIENEN TODOS LOS EJERCICIOS DEL LIBRO RESUELTOS Y EXPLICADOS DE FORMA CLARA. Its weight is to be determined. Analysis The two terms on the right-hand side of the equation E = 25 kJ + 7 kJ/kg do not have the same units, and therefore they cannot be added to obtain the total energy. 1-3 Mass, Force, and Units 1-4C The pound mentioned here must be lbf since thrust is a force, and the lbf is the force unit in the English system. Assumptions Water is an incompressible substance and the average flow velocity is constant. Assumptions The density of air is constant throughout the room. If you are a student using this Manual, you are using it without permission. Based on unit considerations alone, a relation is to be obtained for the filling time. Limited distribution permitted only to teachers and educators for course 7. PROPRIETARY MATERIAL. Analysis The pool volume depends on the filling time, the cross-sectional area which depends on hose diameter, and flow velocity. Analysis The resistance heater consumes electric energy at a rate of 4 kW or 4 kJ/s. 1-3C There is no truth to his claim. 1-15 A resistance heater is used to heat water to desired temperature. Putting the given information into perspective, we have V [m3] is a function of t [s], D [m], and V [m/s} It is obvious that the only way to end up with the unit m3 for volume You should get into the habit of never writing the unit lb, but always use either lbm or lbf as appropriate since the two units have different dimensions. Loading PreviewSorry, preview is currently unavailable. The mass and weight of the air in the room are to be determined. No other use or distribution of this Manual is permitted. Limited distribution permitted only to teachers and educators for course 3. Assumptions Gasoline is an incompressible substance and the flow rate is constant. "The weight of the rock is" W=m*g m=3 [kg] g=9.79 [m/s2] "The force balance on the rock yields the net force acting on the rock as" F_up=200 [N] F_net = F_up - F_down F_down=W "The acceleration of the rock is determined from Newton's second law." F_net=m*a "To Run the program, press F2 or select Solve from the Calculate menu." SOLUTION a=56.88 [m/s^2] F_down=29.37 [N] F_net=170.6 [N] F_up=200 [N] g=9.79 [m/s2] m=3 [kg] W=29.37 [N] m [kg] a [m/s2] 1 2 3 4 5 6 7 8 9 10 190.2 90.21 56.88 40.21 30.21 23.54 18.78 15.21 12.43 10.21 1 2 3 4 5 6 7 8 9 10 0 40 80 120 160 200 m [kg] a[m/s 2] preparation. His weight on the moon is to be determined. 1-6 1-13 Problem 1-12 is reconsidered. Properties The density of air is given to be = 1.16 kg/m3 . The acceleration of the rock is to be determined. 2011 The McGraw-Hill Companies, Inc. The amount of electric energy used in kWh and kJ are to be determined. VISITANOS PARA DESARGALOS GRATIS. Therefore, the independent quantities should be arranged such that we end up with the unit of seconds. Based on unit considerations, a relation is to be obtained for the volume of the pool. It violates the second law of thermodynamics. Limited distribution permitted only to teachers and educators for course 5. Then the total amount of electric energy used in 2 hours becomes Total energy = (Energy per unit time)(Time interval) = (4 kW)(2 h) = 8 kWh Noting that 1 kWh = (1 kJ/s)(3600 s) = 3600 kJ, Total energy = (8 kWh)(3600 kJ/kWh) = 28,800 kJ Discussion Note kW is a unit for power whereas kWh is a unit for energy. Using a level meter (a device with an air bubble between two marks of a horizontal water tube) it can shown that the road that looks uphill to the eye is actually downhill. Putting the given information into perspective, we have t [s] V [L], and V& [L/s} It is obvious that the only way to end up with the unit s for time is to divide the tank volume by the discharge rate. Limited distribution permitted only to teachers and educators for course 4. Discussion Obviously this error was caused by forgetting to multiply the last term by mass at an earlier stage. Analysis Applying Newton's second law to the weight force gives lbm5.210 lbf1 ft/slbm174.32 ft/s10.32 lbf210 2 2 = === g W mmgW Mass is invariant and the man will have the same mass on the moon. Limited distribution permitted only to teachers and educators for course 8. Analysis Applying Newton's second law, the weight is determined in various units to be FBtu/lbm0.240 Ckcal/kg0.240 CJ/g1.005 KkJ/kg1.005 = = = = = = = = CkJ/kg4.1868 FBtu/lbm1 C)kJ/kg(1.005 kJ4.1868 kcal1 C)kJ/kg(1.005 g1000 kg1 kJ1 J1000 C)kJ/kg(1.005 CkJ/kg1 KkJ/kg1 C)kJ/kg(1.005 p p p p c c c c preparation. Multiplying the last term by mass will eliminate the kilograms in the denominator, and the whole equation will become dimensionally homogeneous; that is, every term in the equation will have the same unit.