

- b. Is the μ determined above considered the static or dynamic μ ?
5. If a spring with a characteristic “k” of 10 Newtons per meter, is stretched a distance of 0.25 meters, what is the resulting restoring force of that spring ?
6. If two objects are moved apart by a factor of “2.5”:
- a. Does the gravitational force between those two objects increase or decrease ?
- b. By how much ?
7. Under what conditions (*identify a minimum of two*) can a person with a mass of 80 Kilograms have the same momentum of a Mack truck of mass 10,000 Kilograms ?
8. If a person with a mass of 100 kilograms “belly-flops” into a pool after a time in flight of 1.0 second, and comes to a stop within 1.0 second, what was the average

force applied to that person by the water during the deceleration time in the water?
(Hint: Use the "Impulse" Relationship.)

9. If a Force is exerted on an object in a direction perpendicular to the movement of the object, what is the value of the Work done by that Force ?

10. If a Force is exerted on an object in a direction parallel to the direction one wishes to move that object, but the object doesn't move, what is the value of the Work done by that Force ?

11. What is the Potential Energy of a 1 Kilogram object relative to a position (*e.g. a floor*) 100 Meters below it ?

12. If all the Potential Energy of the object of Question 11 above, is converted to Kinetic Energy during a fall from the 100 meter height, what is the maximum velocity achieved by the object during the fall ?

13. a. If you utilize a simple pulley based machine which has a characteristic of multiplying the Input Force by a factor of "10", what is the mechanical advantage of this machine ?

- b. How much further does the pulley operator have to move the input cable relative to a desired movement of the output cable ?
14. If your input lever is 10 meters long and you are able to apply a perpendicular force of 250 Newtons to it, how much weight can you move if your output lever is 1 meter long ?
15. If an input Voltage of 12 Volts is applied to a (*two resistive element*) series circuit, and 2.5 Volts is dropped across the first resistor, how much Voltage will necessarily be dropped across the second resistor ?
16. If a circuit node consists of three possible current directions (*branches*), and the current into the node has been determined to be 25 Amps, and the current out of the node (*via one of the remaining branches*) is 7.5 Amps, what is the magnitude and direction of the current in the remaining branch ?
17. A hair dryer is rated at 1200 Watts. What current does the hair dryer draw if the source Voltage is 120 Volts AC?

18. What is the Turns Ratio of a 4160 Volt (*Primary*) to 120 Volt (*Secondary*) residential pad mounted transformer ?

19. If the frequency of a pendulum's motion is one cycle per second, what is the frequency of the pendulum in Hertz ?

20. If the net force on an object is zero, can the object be moving ?