**Physics 11 Dynamics and Newton’s Law Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Assignment (due on or before test day): Mark:\_\_\_\_\_\_\_\_\_/**

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|  | a. At what rate will a 7.5 kg block accelerate if a 24 N force is applied to it, and the frictional force opposing it is 5.3 N?  b. How fast will it be moving after 10 seconds if it starts from rest?  Accel) \_\_\_\_\_\_\_\_\_\_\_\_\_  Velocity)\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | The force of gravity on a satellite is 2440 N on the earth's surface. The satellite is a transported three-earth radius *from the surface of the earth*. What is the force of gravity on it now?  Fg =\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | The force of gravity on a wooden crate is 720 N. It can be pushed along a certain floor at steady speed if a horizontal force of 267 N is applied to it.  a) How much horizontal force will be needed to move a stack of two identical crates at the same steady speed?  F =\_\_\_\_\_\_\_\_\_\_\_\_\_  b) What force will be needed if the two crates are not stacked but tied to one another side by side?  F=\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | a) A spring has a rest length of 1.30m. When a 20kg mass is hung on it, it stretches to 3.60m. What is its  spring constant?  Ans)\_\_\_\_\_\_\_\_\_\_\_\_\_  b) A spring has rest length 0.500m and k = 32N/m. If it is attached to a 30kg block resting on a surface  where µs = 0.62, how long will the spring have to be in order to make the block move?  Ans)\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | A dog whose mass is 12 kg rides in an elevator whose upward acceleration is 1.5 m/s2. What force does it exert on the floor? Include a FBD for the situation.  Ans)\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | A light string as shown connects two masses on a table. A force of 12 N is exerted on the 5.0 kg mass to the right. The coefficient of friction between the blocks and the table is 0.10.  a) Draw and label all relevant forces on the diagram.  b) Find the acceleration of the system.  c) Find the tension in the string.    Accel) \_\_\_\_\_\_\_\_\_\_\_\_  Tension)\_\_\_\_\_\_\_\_\_\_\_\_ |
|  | A 20 kg block (A) rests on a table with coefficient of friction μ=0.3; a cord attached to the block extends horizontally to a pulley at the edge of the table. A 10 kg mass (B) hangs at the end of the cord.  a) Clearly draw and label the force vectors acting (FBD) on each object.  b) Calculate the acceleration of the block.  c) Calculate the tension in the cord.  Way:Users:waylon:Desktop:Screen Shot 2016-12-07 at 11.35.15 PM.png  Accel) \_\_\_\_\_\_\_\_\_\_\_\_  Tension)\_\_\_\_\_\_\_\_\_\_\_\_ |