**Net Force**

Show the solutions (i.e. your work) to these on a separate sheet of paper.

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| 33.3 N | 1. What is the weight of a 3.40 kg mass? |
| 73.5 kg | 2. What mass has a weight of 720. N? |
| .112 m/s/s | 3. Bob must exert 240. N of force on a 980. Kg car to move it at a constant speed along the ground. (The frictional force is 240. N) What is the acceleration of the car if he exerts a force of 350. N? |
| +3.5 m/s/s  -4.8 m/s/s | 4. What is the acceleration of a 6.0 Kg object hanging on a string that is under a tension of 80. N? What if the tension is 30. N? (Make the direction up positive) |
| 125 N | 5. What force is needed to accelerate a 60.0 Kg cart and rider from rest to 4.20 m/s in 2.50 seconds when the friction force is 24.0 N? |
| 2.6 kg | 6. What is the mass of a box that moves at a constant velocity along a surface with a force of 15 N, (The friction is 15 N) and accelerates at +4.2 m/s/s when you exert +26 N? |
| 1000 kg | 7. If you exert a force of 60. N on a car, it moves at a constant velocity. (i.e. there is a frictional force of 60. N) What is its mass if when you exert 80. N on it, it accelerates from rest to 2.0 m/s in 100. seconds? |
| 900. N | 8. A 60.0 Kg rocket accelerates upward from rest reaching a height of 23.4 m in 3.00 seconds. What must be the thrust of the engine? |
| 77 N | 9. It takes 45 N to make a 10. kg cart move at a constant speed. What force does it take to make the cart accelerate at 3.2 m/s/s in the direction it is moving? |
| 80. N  18 N | 10. What tension would accelerate a 5.0 Kg object suspended on a string upwards at 6.2 m/s/s? Downwards? |
| 11.24 N | 11. A 45.00 gram rocket accelerates upward from 0 to 12.00 m/s in .05000 seconds. What must be the thrust of the engines? |
| 1.2 kg | 12. A rocket has engines that produce 60. N of thrust. What is its mass if it accelerates upward at 40. m/s/s? |
| -2.33 m/s/s  +281 N | 13. A dog is pulling forward on a 215 kg sled that slows from +6.20 m/s to rest in a distance of 8.25 m. What is the deceleration of the sled? If the force of friction slowing the sled is 782 N, what force is the dog exerting in the direction the sled moves? |
| -7.83 m/s/s  -32.0 kN | 14. A 18,380 kg airplane slows from 48.1 m/s to rest in 6.14 seconds. What was its acceleration? If the engines generated 112 kN (112,000 N) of reverse thrust, how much air friction was acting against the plane as it slowed down? (this would be average) |
| -21.6 m/s  +72.6 m/s/s  +9730 N | 15. A drop tower has a 118 kg experiment that free falls from rest for 2.20 seconds, and strikes an airbag that slows it to rest in a distance of 3.20 m. With what velocity does the experiment strike the airbag? What is the upward acceleration as the experiment stops? What is the upward force acting on the experiment to stop it? |