**Assignment Work and Energy**

1. Matt pushes at an angle of 35˚ to the vertical on a shopping cart full of physics related memorabilia with 56.78 N of force, moving it a distance of 25.00 m horizontally.
2. Find the work that Matt does on the cart.
3. If there is a frictional resistance of 17 N on the cart wheels with the floor what negative work is done against Matt’s motion?
4. What is the overall work done on the cart?
5. If Matt does this overall work in a time of 36.7 s what is his power rating? How many horsepower is this equivalent too?
6. Josh lifts his spare anvil of mass 89 kg from the floor to a height of 1.3 m onto a bench. How much gravitational energy does this create for the anvil?
7. Kayla has always wanted to try cliff diving. So she runs off a cliff with a speed of 4 m/s and dives into the water 10.5 m below. Kayla has a mass of 55 kg.
8. What gravitational energy will Kayla have at the top of the cliff?
9. What kinetic energy will Kayla have at the top of the cliff?
10. What total energy does Kayla have during the trip?
11. Joe pulls on Nick with 267 N of force pulling him 5 m. What work does Joe do on Nick? If Nick resists with a force of 200 N what negative work does Nick do back on Joe? What is the overall work done?
12. Maddie takes a duck of 1.4 kg cradled in her arms (who wouldn’t want to hug a duck) for a walk of length 50.0 m (horizontally). How much work has Maddie done on the duck? Explain.
13. Jackson slides down a 5.78 m fireman’s pole that has no frictional resistance with his hands. If Jackson has a mass of 65 kg, find
14. The total energy Jackson has at the top of the pole if he starts from rest.
15. The total energy Jackson has at the bottom of the pole.
16. The speed Jackson has at the bottom of the pole just before he hits the ground.