Conservation of Energy Questions from A5.2

24.7 m 27.6 N 11.3 m/s 7.10 m/s	1. a. A 0.145 kg baseball going 22.0 m/s straight up goes how high before stopping? b. A baseball pitcher speeds a 0.145 kg ball from rest to 38.0 m/s over a distance of 3.80 m. What must be the average force exerted on the ball? (Neglect friction or any change in elevation) c. A 1340 kg car is moving at some speed at an elevation of 5.50 m partway up a hill, and then coasts to a stop at an elevation of 12.0 m. How fast was it going at 5.50 m elevation? (Neglect friction) d. A 150. kg sled is going 3.40 m/s at the top of a 2.50 m tall hill. At the bottom it hits a patch of dirt that exerts a slowing force of 180. N for 4.20 m. How fast is the sled going after the dirt patch? (Neglect friction)
89.7 N 9.44 m 178 N 2.41 m	2. a. A 0.320 kg hammer is going 8.20 m/s. What force would stop it in 0.120 m? b. A 1530 kg car starts at rest and rolls down a hill. At the bottom it is going 13.6 m/s. How high was the hill? (Neglect friction) c. Mom gives 55.0 kg Tamara a push from rest on her massless sled for a distance of 7.20 m at the top of a 3.80 m tall hill. If she is going 11.0 m/s at the bottom of the hill, what force did Mom exert at the top to speed her up? (Neglect friction) d. A 410. kg rollercoaster car going 3.40 m/s hits an accelerator that exerts a force of 780. N to speed up the car over a distance of 14.0 m. The car then rolls up a hill where it is going 4.20 m/s. What is the height of the hill? (Neglect friction)
1.71 m/s 10.5 m 9.40 m/s 3.99 m	3. a. A 5.00 kg pendulum starts from rest 0.150 m above the lowest point. What is its speed when it reaches the lowest point? b. A 0.170 kg ball is sped up with a 5.00 N force straight up from rest a vertical distance of 3.50 m. To what height does it rise above its lowest point before stopping? (Neglect air friction) c. A 0.170 kg ball is sped up with a 5.00 N force straight up from rest a vertical distance of 3.50 m. What is the velocity of the ball when it is a height of 6.00 m above its lowest point? (Neglect friction) d. A 784 kg rollercoaster car is going 7.50 m/s at the top of a 2.15 m tall hill. At what height is it when it is going 4.50 m/s? (Neglect friction)
1.40 N 25.6 m 8.91 m/s 1.81 m	4. a. What force over 0.180 m exerted on a 0.345 kg air track glider speeds it from rest to 1.21 m/s? b. A 0.145 kg baseball is popped straight up, and goes 33.5 m in the air before coming back down. What was its initial velocity? (Neglect friction) c. A 1370 kg car going 14.7 m/s on a level road strikes a puddle that exerts a retarding force of 5200. N What is the velocity of the car when it has gone 18.0 m into the puddle? d. A 680. kg Rollercoaster car at rest on top of a 3.50 m tall hill is sped up by a force of 7780 N for a distance of 2.50 m. What is the height of the car when it is going 9.50 m/s? (Neglect friction)
9.29 m/s 0.219 m 0.592 m 5.07 m/s	5. a. A 65.0 kg sled starts from rest at the top of a 4.40 m tall hill. What is its speed at the bottom of the hill? (Neglect friction) b. Ferdinand exerts a force of 168 N for a distance of 18.5 m on the level speeding up a 1450 kg car initially at rest. The car then rolls up an incline. How much elevation will the car gain before it stops? (Neglect friction) c. Reginald exerts a force of 195 N for a distance of 35.0 m on the level speeding up a 985 kg car from rest. The car then rolls up an incline. What elevation has the car gained when it has a velocity of 1.50 m/s? (Neglect friction) d. A 450. kg roller coaster car initially at rest is launched from the top of a 2.30 m tall hill by a 4890 N force exerted over a distance of 3.80 m. What is the speed of the car when it is at the top of a 5.20 m tall hill? (Neglect friction)