Name _____ Date _____ Period _____

Conservation of Energy Worksheet

Show all Work!

1. A 1000 Kg car is resting at the top of a 43 m hill. How much energy does the car currently have? What kind is it?

2. How fast is the car from #1 moving at the bottom of the hill if friction is neglected?

3. If you needed to bring the car from #1 back up to the top of the hill, how much work would it require?

4. How fast is the car from #1 moving when it gets half of the way down? How much potential energy does the car have at this point? How much kinetic energy does the car have?

5. An 80 Kg snowboarder is riding a half-pipe that is 15 m deep. If she begins at rest, how fast will she be traveling if there is no friction when she is at the bottom of the pipe?

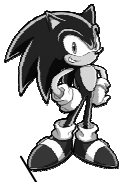
6. From problem #5, how high up the other side will she be when she comes to rest?

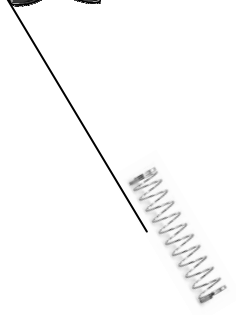
7. An airplane is flying at a speed of 45 m/s when it drops a 40 Kg food package to the Polar exploration team. If the plane drops the package from an altitude of 500 m and air resistance can be neglected, how fast is the package moving when it hits the ground?

8. A 35 Kg child is on a 10 Kg tire swing that is attached to a tree branch by a rope that is 8 m long. If the rope makes a 30^{o} angle at the highest point of the swing, what is the maximum speed of the swing?

9. A 4.5 g marble is pressed against a spring (k=45 N/m) compressing it 5.5 cm from the relaxed length. What is the velocity of the marble after being released?

10. Sonic is sliding down a frictionless 15 m tall hill. He starts at the top with a velocity of 10 m/s. At the bottom of the hill he hits a spring and compresses it 0.89 m. What is the maximum velocity of Sonic and what is the spring constant of the spring?





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