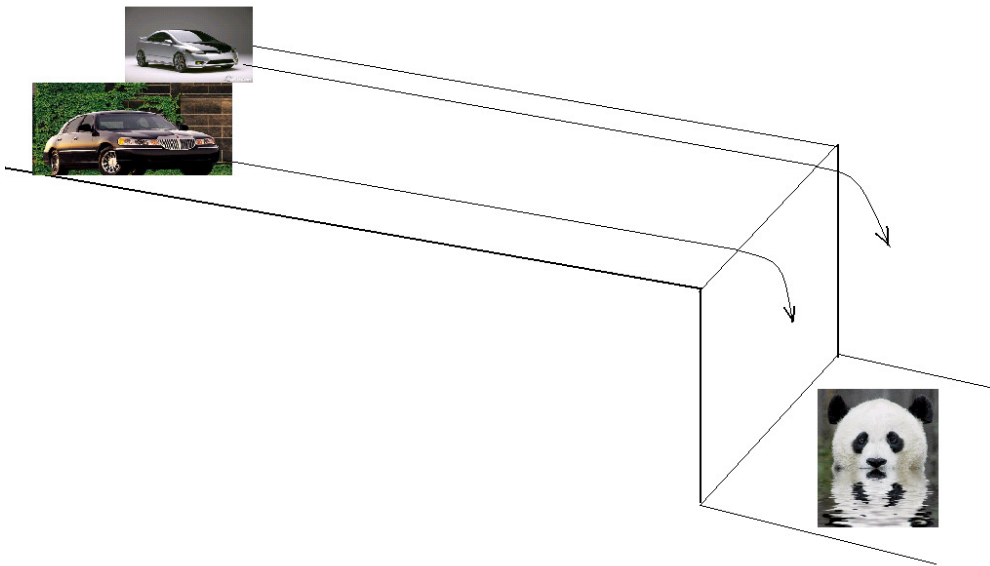


The following questions are very important conceptual questions to let you know how much you have learned. To test your knowledge, follow the procedure.

1. Print out this.
2. Read the questions carefully.
3. **Without looking at anything**, write your answers and explain conceptually (meaning without using math).
4. Now, explain your answers using math.

ENERGY AND MOMENTUM

A Honda Civic and a Lincoln Town Car are initially at rest on a horizontal parking lot at the edge of a steep cliff. For simplicity, we assume that the Town Car has twice as much mass as the Civic. Equal constant forces are applied to each car and they accelerate across equal distances (ignore the effects of friction). When they reach the far end of the lot, the force is suddenly removed, whereupon they sail through the air and crash to the ground below. Answer the following questions with correct explanations.



1. Which car has the greater acceleration?
2. Which car spends more time along the surface of the lot?
3. Which car has the larger impulse imparted to it by the applied force?
4. Which car has the greater momentum at the end of the cliff?
5. Which car has the greater work done on it by the applied force?
6. Which car exerts higher power?
7. Which car has the greater kinetic energy at the edge of the cliff?
8. Which car spends more time in the air from the edge of the cliff to the ground below?
9. Which car lands farther horizontally from the edge of the cliff onto the ground below?
10. Suppose the slower car crashes a horizontal distance of 10 m from the edge. Then, at what horizontal distance does the faster car hit?