

Chapter 8 Momentum vs Kinetic Energy Worksheet -1-

1. Let a force of 1500 Newtons act through a distance of 200 meters on a 1500 kg car which starts from rest.

- a. What is the work done? \_\_\_\_\_
- b. What is the final velocity? \_\_\_\_\_
- c. What is the car's momentum? \_\_\_\_\_
- d. What is the car's change in momentum? \_\_\_\_\_
- e. What is the car's kinetic energy? \_\_\_\_\_
- f. What is the car's change in kinetic energy? \_\_\_\_\_

Now let the 1500 Newton force continue to act on the car, in the same direction, through an additional 200 meters. Calculate the quantities asked for after the car had gone 200 meters and place the answers in the second set of blanks.

What do you note about the change in kinetic energy and change in momentum when comparing the results of the first half vs the second half intervals. What reason can you give for the results?

2. A 100-gram bullet and a 1500-kg car, each strike a block of wood. The bullet has an initial speed of 300 m/sec; the car, 0.02 m/sec. Find:

- a. the initial momentum of the bullet \_\_\_\_\_
- b. the initial momentum of the car \_\_\_\_\_
- c. the kinetic energy of the bullet \_\_\_\_\_
- d. the kinetic energy of the car \_\_\_\_\_

What does the difference in kinetic energy represent or suggest what might happen to the block?