

Physics 1210
Homework 7 Written-out Problems

1.

In a foolish attempt to prove to you that the holes in swiss cheese are bullet holes. One of your friends sets a block of cheese on your back patio and shoots it. The $m_b = 4$ gram bullet leaves their gun at 400 m/s and passes entirely through the block and emerges from the other side at 120 m/s. The $m_c = 0.9$ kg block of cheese, which was initially at rest, slid 0.45 m.

- A. Find the speed of the block just after the bullet passes through.
- B. How much Kinetic Energy does the block have just after the bullet passes through?
- C. How much Kinetic Energy does the bullet lose?
- D. Find the coefficient of kinetic friction between the cheese and patio.

2.

A stunt performer, $m_s = 70$ kg, leaps from a height of 3 m onto a large spring-supported platform, $m_p = 500$ kg. The supporting spring has a spring-constant of $k = 1400$ N/m and is already compressed some distance, x , due to the weight of the platform. What additional distance, y , does the platform drop when the spring is maximally compressed after the performer and platform collide?

