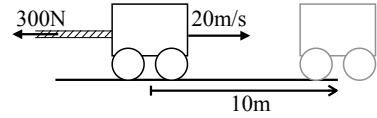


Physics 2130
Sample Exam 2

Name: _____

4 questions, 24 points

1. A 1000 kg cart is moving to the right at 20 m/s, initially. A 300 N force is applied to the left to try to slow it down. The cart travels for 10 m. Friction does no work on the cart.



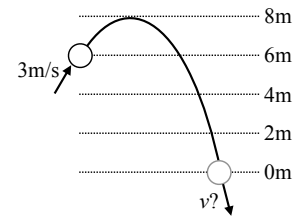
- 3 (a) _____ What is the work done by the rope on the cart?
A) 0 J B) +3,000 J C) -3,000 J
D) +6,000 J E) -6,000 J

- 3 (b) _____ The work done by the floor on the cart is
A) positive B) zero C) negative

- 3 (c) The cart's initial kinetic energy is 200,000 J. What is its final kinetic energy?

4

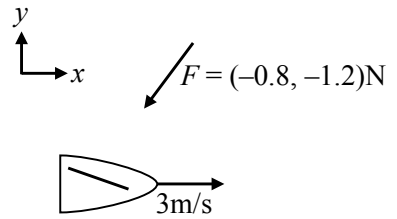
2. A 2 kg ball flies upward into the air at 3 m/s, as shown. Find the speed v of the ball at the end of its flight.



$v =$ _____

Final Energy E_f	Initial Energy E_i	Work

3. A 4 kg toy sailboat starts off moving at 3 m/s in the $+x$ direction. Wind blows on the sailboat for 8 seconds, imparting a force of $\vec{F} = (-0.8, -1.2)$ N on the boat.



3

- (a) _____ What is the initial momentum \vec{p}_i of the sailboat?
A) (3, 0) Ns **B)** (12, 0) Ns **C)** (-0.8, -1.2) Ns
D) (0, 12) Ns **E)** (0, 3) Ns

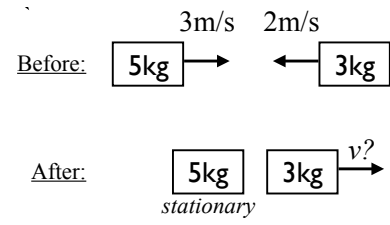
3

- (b) _____ What is the final momentum of the sailboat?
A) (3.0, 0) Ns **B)** (5.6, -9.6) Ns **C)** (-6.4, -9.6) Ns
D) (11.2, -1.2) Ns **E)** (12.0, 0) Ns **F)** (18.4, 9.6) Ns

3

4. Two blocks collide as shown. After the collision, the 5 kg block is stationary.

(a) What is the velocity of the 3 kg block after the collision?



2

(b) _____ This collision is
A) elastic B) inelastic C) maximally (or perfectly) inelastic