

Question

1 2 3 4 5 6 7 8

1. Question Details

SerCP9 5.P.062.soln. [1588675]

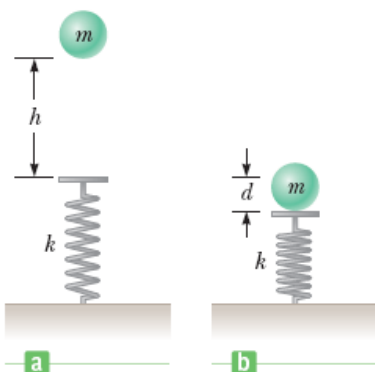
An outfielder throws a 0.150-kg baseball at a speed of 42.0 m/s and an initial angle of 30.0°. What is the kinetic energy of the ball at the highest point of its motion?

 J

2. Question Details

SerCP9 5.P.066. [1625453]

A ball of mass $m = 1.95$ kg is released from rest at a height $h = 58.0$ cm above a light vertical spring of force constant k as in Figure [a] shown below. The ball strikes the top of the spring and compresses it a distance $d = 8.50$ cm as in Figure [b] shown below. Neglecting any energy losses during the collision, find the following.



(a) Find the speed of the ball just as it touches the spring.

 m/s

(b) Find the force constant of the spring.

 N/m

3. Question Details

SerCP9 5.P.068. [1589031]

A block of mass 12.0 kg slides from rest down a frictionless 36.0° incline and is stopped by a strong spring with $k = 4.00 \times 10^4$ N/m. The block slides 3.00 m from the point of release to the point where it comes to rest against the spring. When the block comes to rest, how far has the spring been compressed?

 m

4. Question Details

SerCP9 6.P.012. [1588656]

A tennis player receives a shot with the ball (0.0600 kg) traveling horizontally at 60.0 m/s and returns the shot with the ball traveling horizontally at 40.0 m/s in the opposite direction.

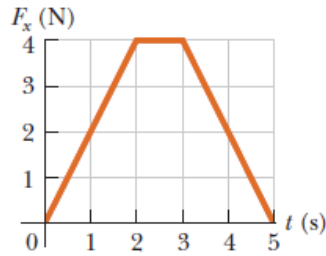
(a) What is the impulse delivered to the ball by the racket?

 N · s Direction ▾

(b) What work does the racket do on the ball?

 J

A force of magnitude F_x acting in the x -direction on a 1.70 -kg particle varies in time as shown in the figure below.



(a) Find the impulse of the force.

kg · m/s

(b) Find the final velocity of the particle if it is initially at rest.

m/s

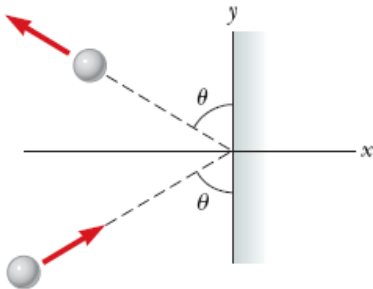
(c) Find the final velocity of the particle if it is initially moving along the x -axis with a velocity of -2.60 m/s.

m/s

A 3.32 -kg steel ball strikes a massive wall at 10.0 m/s at an angle of $\theta = 60.0^\circ$ with the plane of the wall. It bounces off the wall with the same speed and angle (see the figure below). If the ball is in contact with the wall for 0.226 s, what is the average force exerted by the wall on the ball? (Take to the right as the $+x$ -direction and up as the $+y$ -direction.)

magnitude N

direction $^\circ$ counterclockwise from the $+x$ -axis



A rifle with a weight of 30 N fires a 4.0 -g bullet with a speed of 220 m/s.

(a) Find the recoil speed of the rifle.

m/s

(b) If a 675 -N man holds the rifle firmly against his shoulder, find the recoil speed of the man and rifle.

m/s

An archer shoots an arrow toward a 300 -g target that is sliding in her direction at a speed of 2.10 m/s on a smooth, slippery surface. The 22.5 -g arrow is shot with a speed of 40.5 m/s and passes through the target, which is stopped by the impact. What is the speed of the arrow after passing through the target?

m/s

Name (AID): **HW #5 - Due Wed. Oct. 15, 2014**

Submissions Allowed: **5**

Category: **Homework**

Code:

Locked: **No**

Author: **Segre, Phil** (psegre@physics.emory.edu)

Last Saved:

Permission: **Protected**

Randomization: **Person**

Which graded: **Last**

Feedback Settings

Before due date

Question Score

Assignment Score

Publish Essay Scores

Question Part Score

Mark

Add Practice Button

Help/Hints

Response

Save Work

After due date

Question Score

Assignment Score

Publish Essay Scores

Key

Question Part Score

Solution

Mark

Add Practice Button

Help/Hints

Response