

Energetic Events

Name: _____ Block: _____ Date: _____

Let $g = 9.80 \text{ m/s}^2$. Solve these questions using concepts of Work and Energy. Show your initial equations so that it's clear what approach you took.

1. A bird is flying with a speed of 18.0 m/s over water when it accidentally drops a 2.00 kg fish. If the altitude of the bird is 5.40 m and drag is disregarded, what is the speed of the fish when it hits the water?

Ans:

2. A 755 N diver drops from a board 10.0 m above the water's surface. Find the diver's speed 5.00 m above the water's surface. Then find the diver's speed just before striking the water.

Ans:

Ans:

3. If the diver in item 2 leaves the board with an initial upward speed of 3.00 m/s , find the diver's speed when striking the water.

Ans:

4. A pendulum bob is released from some initial height such that the speed of the bob at the bottom of the swing is 1.9 m/s . What is the initial height of the bob?

Ans:

5. How long does it take a 19 kW steam engine to do $6.8 \times 10^7 \text{ J}$ of work?

Ans:

6. A $1.50 \times 10^3 \text{ kg}$ car accelerates uniformly from rest to 10.0 m/s in 3.00 s . What is the work done on the car in this time interval? What is the power delivered by the engine in this time interval?

Ans:

Ans:

Energetic Events

7. A 50.0 kg diver steps off a diving board and drops straight down into the water. The water provides a drag force of 1500 N to the diver. If the diver comes to rest 5.0 m below the water's surface, what is the *total* distance between the diving board and the diver's stopping point underwater?

Ans:

8. A 0.60 kg rubber ball has a speed of 2.0 m/s at point A and kinetic energy of 7.5 J at point B. Determine the ball's kinetic energy at A, the ball's speed at B, and the work done on the ball as it moves from A to B.

Ans:

Ans:

Ans:

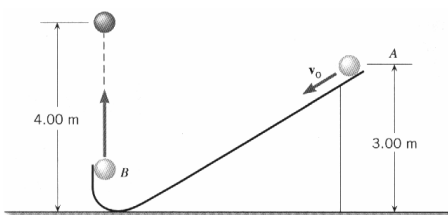
9. A 70.0 kg base runner begins her slide into second base while moving at a speed of 4.0 m/s. The coefficient of friction between her clothes and Earth is 0.70. She slides so that her speed is zero just as she reaches the base. How far does she slide?

Ans:

10. The speed of a hockey puck decreases from 45.00 to 44.67 m/s in coasting 16 m across the ice. Find the coefficient of kinetic friction between the puck and the ice.

Ans:

11. A particle, starting from point A in the drawing, is projected down the curved runway. Upon leaving the runway at point B, the particle is traveling straight upward and reaches a height of 4.00 m above the floor before falling back down. Ignoring friction and air resistance, find the speed of the particle at point A.



Ans: