

Question

1 2 3 4 5 6 7 8 9

1. Question Details

SerCP9 5.P.006. [1588643]

A horizontal force of 150 N is used to push a 43.5-kg packing crate a distance of 6.85 m on a rough horizontal surface. If the crate moves at constant speed, find each of the following.

(a) the work done by the 150-N force

 J

(b) the coefficient of kinetic friction between the crate and the surface

2. Question Details

SerCP9 5.P.012. [1588504]

A worker pushing a 35.0-kg wooden crate at a constant speed for 14.0 m along a wood floor does 370 J of work applying a constant horizontal force of magnitude F_0 on the crate.

(a) Determine the value of F_0 .

 N

(b) If the worker now applies a force greater than F_0 , describe the subsequent motion of the crate.

(c) Describe what would happen to the crate if the applied force is less than F_0 .

3. Question Details

SerCP9 5.P.016. [1588803]

A 0.30-kg particle has a speed of 5.0 m/s at point A and kinetic energy of 7.5 J at point B.

(a) What is its kinetic energy at A?

 J

(b) What is its speed at point B?

 m/s

(c) What is the total work done on the particle as it moves from A to B?

 J

When a 2.60-kg object is hung vertically on a certain light spring described by Hooke's law, the spring stretches 2.29 cm.

(a) What is the force constant of the spring?

N/m

(b) If the 2.60-kg object is removed, how far will the spring stretch if a 1.30-kg block is hung on it?

cm

(c) How much work must an external agent do to stretch the same spring 7.80 cm from its unstretched position?

J

A projectile of mass m is fired horizontally with an initial speed of v_0 from a height of h above a flat, desert surface.

Neglecting air friction, at the instant before the projectile hits the ground, find the following in terms of m , v_0 , h , and g .

(a) the work W done by the force of gravity on the projectile

$W =$

(b) the change in kinetic energy ΔKE of the projectile since it was fired

$\Delta KE =$

(c) the final kinetic energy KE_f of the projectile

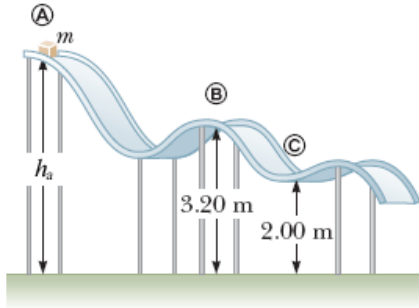
$KE_f =$

(d) Are any of the answers changed if the initial angle is changed?

Yes

No

A block of mass $m = 4.80$ kg is released from rest from point **A** and slides on the frictionless track shown in the figure below. (Assume $h_a = 7.40$ m.)



(a) Determine the block's speed at points **B** and **C**.

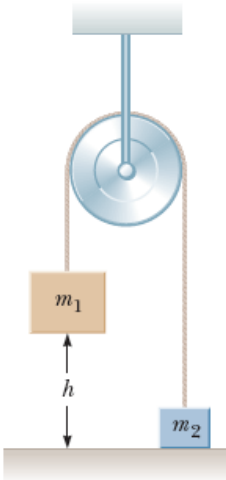
point **B** m/s

point **C** m/s

(b) Determine the net work done by the gravitational force on the block as it moves from point **A** to point **C**.

J

Two blocks are connected by a light string that passes over a frictionless pulley as in the figure below. The system is released from rest while m_2 is on the floor and m_1 is a distance h above the floor.



(a) Assuming $m_1 > m_2$, find an expression for the speed of m_1 just as it reaches the floor. (Use any variable or symbol stated above along with the following as necessary: g .)

$v_f =$

(b) Taking $m_1 = 6.1$ kg, $m_2 = 3.5$ kg, and $h = 3.1$ m, evaluate your answer to part (a).

m/s

(c) Find the speed of each block when m_1 has fallen a distance of 1.7 m.

m/s

8. Question Details

SerCP9 5.P.044. [1589204]

A 19.0-kg child on a 1.00-m-long swing is released from rest when the ropes of the swing make an angle of 33.0° with the vertical.

(a) Neglecting friction, find the child's speed at the lowest position.

m/s

(b) If the actual speed of the child at the lowest position is 1.60 m/s, what is the mechanical energy lost due to friction?

J

9. Question Details

SerCP9 5.P.058. [1588476]

A 628-kg elevator starts from rest and moves upward for 2.80 s with constant acceleration until it reaches its cruising speed, 1.64 m/s.

(a) What is the average power of the elevator motor during this period?

W

(b) How does this amount of power compare with its power during an upright trip with constant speed?

W

Assignment Details

Name (AID): HW#4 - Due Mon. Oct. 6, 2014

Submissions Allowed: 5

Category: Homework

Code:

Locked: No

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