

Quiz_1_2009 (902862)

Question

1 2 3 4 5 6 7 8 9 10 11 12 13

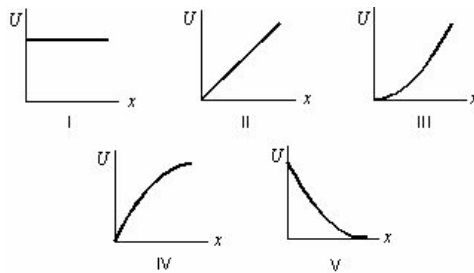
1. [Question Details](#)[1158062]

A block slides across a rough horizontal table top. The work done by friction changes:

- ☐ only the kinetic energy
- ☐ only the internal energy
- ☐ only the kinetic and potential energies
- ☐ only the potential energy
- ☐ only the kinetic and internal energies

2. [Question Details](#)[1158060]

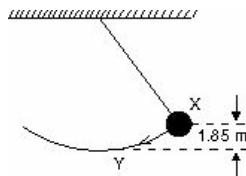
Which of the five graphs correctly shows the potential energy of a spring as a function of its elongation x ?



- ☐ II
- ☐ IV
- ☐ III
- ☐ I
- ☐ V

3. [Question Details](#)[1158059]

A simple pendulum consists of a 2.0 kg mass attached to a string. It is released from rest at X as shown. Its speed at the lowest point Y is:



- ☐ 3.6 m/s
- ☐ $\sqrt{3.6} \text{ m/s}$

- ☐ 36 m/s
☐ 0.90 m/s
☐ 6.0 m/s

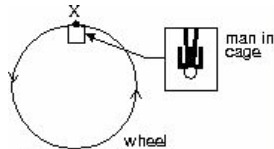
4. [Question Details](#)[1158055]

A man pulls a sled along a rough horizontal surface by applying a constant force F at an angle θ above the horizontal. In pulling the sled a horizontal distance d , the work done by the man is:

- ☐ Fd
☐ $Fd/\cos \theta$
☐ $Fd/\sin \theta$
☐ $Fd \cos \theta$
☐ $Fd \sin \theta$

5. [Question Details](#)[1158049]

A giant wheel, 40 m in diameter, is fitted with a cage and platform on which a man can stand. The wheel rotates at such a speed that when the cage is at X (as shown) the force exerted by the man on the platform is equal to his weight. The speed of the man (in m/s) is:



- ☐ 14
☐ 120
☐ 80
☐ 28
☐ 20

6. [Question Details](#)[1158046]

A man weighing 700 N is in an elevator that is accelerating upward at 4 m/s^2 . The force exerted on him by the elevator floor is:

- ☐ 290 N
☐ 700 N
☐ 990 N
☐ 71 N
☐ 410 N

7. [Question Details](#)[1158045]

A 25 kg chair is pushed across a frictionless horizontal floor with a force of 200 N, directed 20° below the horizontal. The magnitude of the normal force of the floor on the chair is:

- ☐ 25 N
☐ 250 N
☐ 310 N
☐ 68 N

☐ 180 N

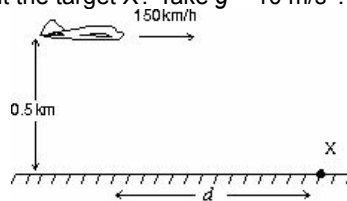
8. [Question Details](#)[1158042]

An object is shot from the back of a truck moving at 30 mph on a straight horizontal road. The launcher is aimed upward, perpendicular to the bed of the truck. The object falls:

- ☐ on the truck
☐ behind the truck
☐ depends on the initial speed of the object
☐ depends on the value of g
☐ in front of the truck

9. [Question Details](#)[1158041]

The airplane shown is in level flight at an altitude of 0.50 km and a speed of 150 km/h. At what distance d should it release a heavy bomb to hit the target X? Take $g = 10 \text{ m/s}^2$.



- ☐ 150 m
☐ 417 m
☐ 15,000 m
☐ 295 m
☐ 2550 m

10. [Question Details](#)[1158039]

Which of the following is NOT an example of accelerated motion?

- ☐ A swinging pendulum
☐ Earth's motion about sun
☐ Circular motion at constant speed
☐ Horizontal component of projectile motion
☐ Vertical component of projectile motion

11. [Question Details](#)[1158034]

Use the definition of scalar product, $\mathbf{a} \cdot \mathbf{b} = ab \cos \theta$, and the fact that $\mathbf{a} \cdot \mathbf{b} = a_x b_x + a_y b_y + a_z b_z$ to calculate the angle between the two vectors given by $\mathbf{a} = 1.0 \mathbf{i} + 5.0 \mathbf{j} + 3.0 \mathbf{k}$ and $\mathbf{b} = 5.0 \mathbf{i} + 3.0 \mathbf{j} + 6.0 \mathbf{k}$.

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12. [Question Details](#)[1158033]

An object is thrown vertically upward with a certain initial velocity in a world where the acceleration due to gravity is 19.6 m/s^2 . The height to which it rises is ____ that to which the object would rise if thrown upward with the same initial velocity on the

Earth. Neglect friction.

- ☐ half
- ☐ four times
- ☒ $\sqrt{2}$ times
- ☐ twice
- ☐ cannot be calculated from the given data

13. [Question Details](#)[1158032]

At a stop light, a truck traveling at 15 m/s passes a car as it starts from rest. The truck travels at constant velocity and the car accelerates at 3 m/s^2 . How many seconds will it take for the car to catch up to the truck?

- ☐ 15
- ☐ 10
- ☐ 20
- ☐ 25
- ☐ 5

Assignment Details