1) Which quantity and unit are correctly paired?

A) velocity — m/s^2 B) work — kg/m C) energy — $\frac{kg \bullet m^2}{s^2}$ D) momentum — $\frac{kg \bullet m}{s^2}$

2) Which variable expression is paired with a corresponding unit?

A) $\frac{mass \bullet distance}{time^3}$ and joule B) $\frac{mass \bullet distance}{time}$ and watt C) $\frac{mass \bullet distance^2}{time^2}$ and joule D) $\frac{mass \bullet distance^2}{time}$ and watt

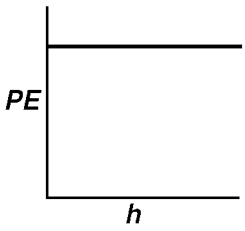
3) A 0.50-kilogram sphere at the top of an incline has a potential energy of 6.0 joules relative to the base of the incline. Rolling halfway down the incline will cause the sphere's potential energy to be

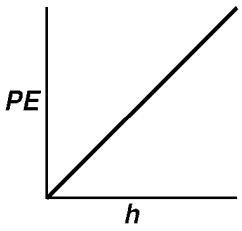
A) 3.0 joules B) 6.0 joules C) 12 joules D) 0 joules

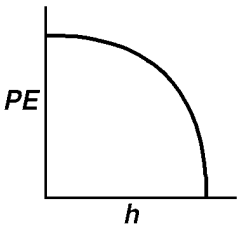
4) Which mass has the *greatest* potential energy with respect to the floor?

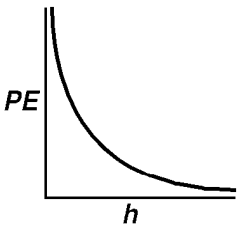
A) 6-kg mass 5 meters above the floor
B) 50-kg mass resting on the floor
C) 10-kg mass 2 meters above the floor
D) 2-kg mass 10 meters above the floor

5) Which graph *best* represents the relationship between potential energy (*PE*) and height above ground (*h*) for a freely falling object released from rest?

A) 

B) 

C) 

D) 

6) As an object falls freely in a vacuum, its total energy

A) decreases
B) increases
C) remains the same

7) As the speed of a bicycle moving along a level horizontal surface changes from 2 meters per second to 4 meters per second, the magnitude of the bicycle's gravitational potential energy

A) increases
B) remains the same
C) decreases

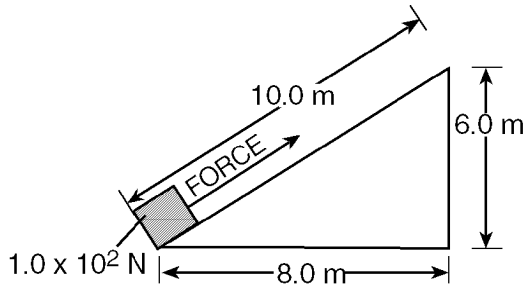
8) When a 5-kilogram mass is lifted from the ground to a height of 10 meters, the gravitational potential energy of the mass is increased by approximately

A) 50 J B) 0.5 J C) 2 J D) 500 J

9) A mass resting on a shelf 10.0 meters above the floor has a gravitational potential energy of 980. joules with respect to the floor. The mass is moved to a shelf 8.00 meters above the floor. What is the new gravitational potential energy?

A) 490. J B) 960. J C) 196 J D) 784 J

10) A box weighing 1.0×10^2 newtons is dragged to the top of an incline, as shown in the diagram below.



The gravitational potential energy of the box at the top of the incline is approximately

A) 1.0×10^2 J B) 8.0×10^2 J C) 6.0×10^2 J D) 1.0×10^3 J

11) If the velocity of an automobile is doubled, its kinetic energy

A) doubles
B) decreases to one-fourth
C) quadruples
D) decreases to one-half

12) If the speed of an object is doubled, its kinetic energy will be

A) quadrupled B) doubled C) quartered D) halved