An object I with a mass of 4 kg is lifted vertically 3 m from the ground level; another object II with a mass of 2 kg is lifted 6 m up. Which of the following statements is true? *
(2 نقطة)

Object I has greater potential energy since it is heavier.

Object II has greater potential energy since it is lifted to a higher position

Two objects have the same potential energy.

non of above.

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How many joules of energy are used by a 1.0 hp motor that runs for 1.0 hr? (1 hp = * 746 W)
(2 نقطة)

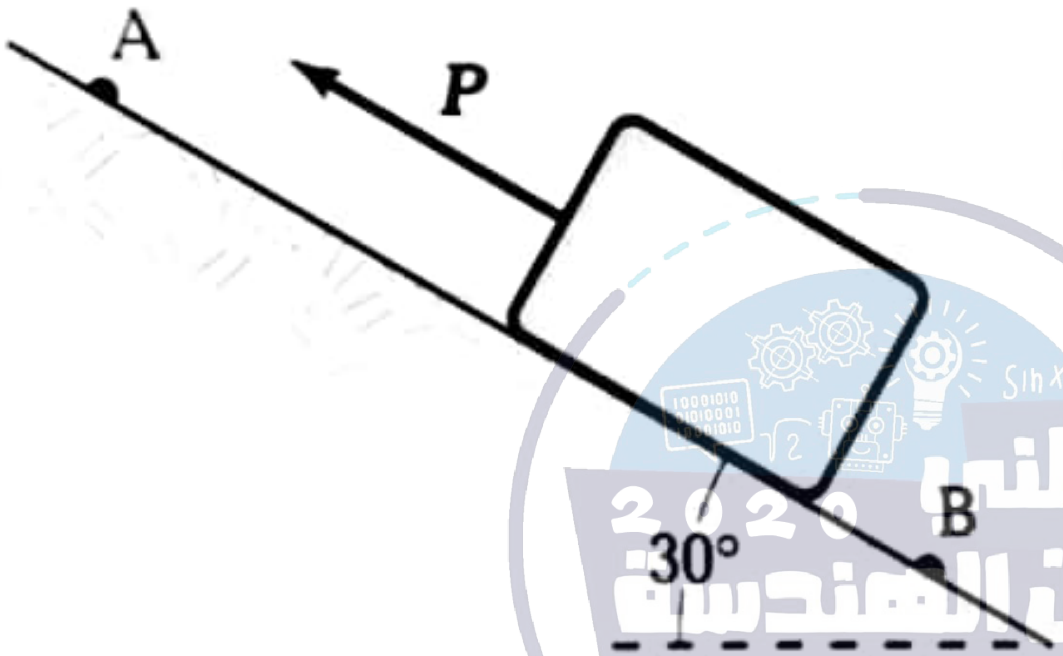
10.7×10^6

2.7×10^6

8.1×10^6

5.4×10^6

A 2.0-kg block slides down a frictionless incline from point A to point B. A force(magnitude P = 3.0 N) acts on the block between A and B, as shown. Points A and B are 2.0 m apart. If the kinetic energy of the block at A is 10 J, then the Kinetic energy (In J) of the block at B, is:



Select one:

- 17.6
- 26.6
- 23.6
- 20.6
- 11.6

A box of mass m = 5.0 kg is pulled by a girl on a horizontal floor a distance 13.0 m with constant velocity. If the coefficient of kinetic friction $\mu_k = 0.5$, the work don by the girl is

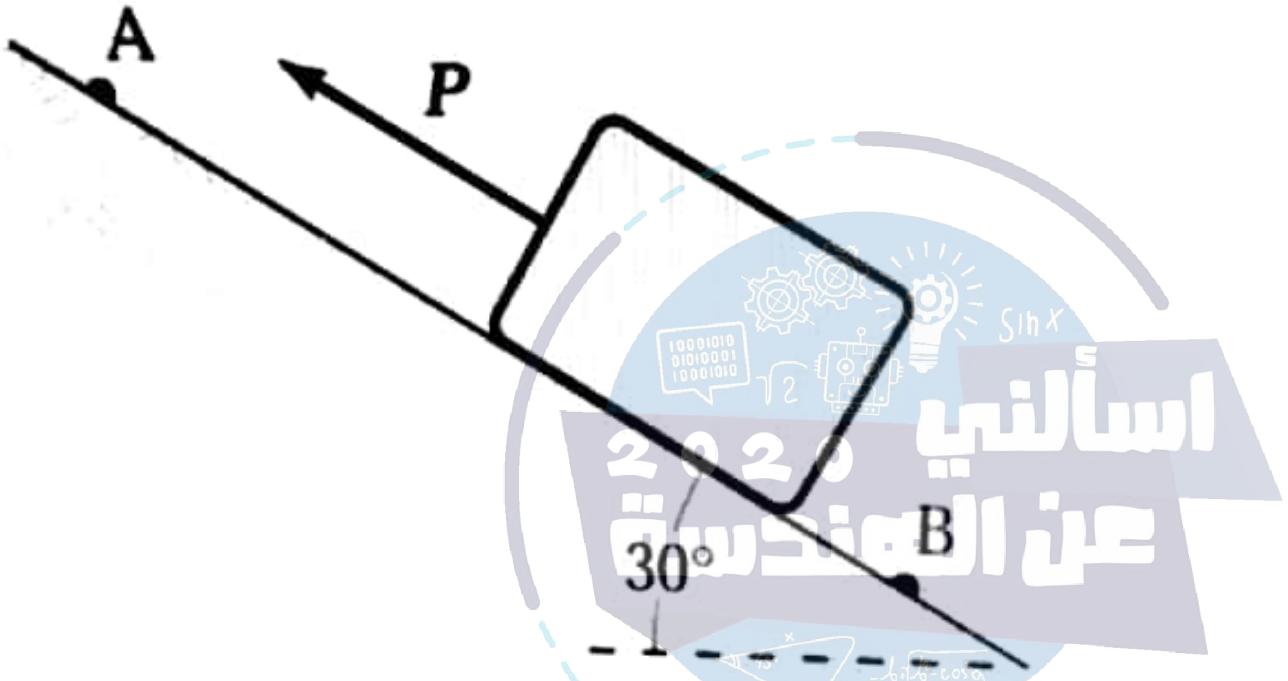
a) 117.6 J
b) 176.4 J
c) 274.4 J
d) 318.5 J
e) 24.5 J

A small box of mass m and moving in the positive x-direction with a speed v makes an elastic one-dimensional collision with a box that has four times its mass, and rebounds with a speed 5v in the opposite direction. The initial velocity of the larger box is:

Select one:

- (7/2) v
- (-11/4) v
- 14 v
- 11 v
- (-7/2) v

A 2.0-kg block slides down a frictionless incline from point A to point B. A force(magnitud 6.0 N) acts on the block between A and B, as shown. Points A and B are 2.0 m apart. If the kinetic energy of the block at A is 10 J, then the Kinetic energy (In J) of the block at B, is:



Select one

- 11.6
- 20.6
- 17.6
- 23.6
- 28.6

The car of an elevator has a mass of 3.0×10^3 kg and moves 210 m up the shaft in 21 s at a constant speed. The average power of the engine force is

a) 2.68×10^5 W,
b) 2.94×10^5 W,
c) 2.68×10^5 W,
d) 2.68×10^5 W,
e) 6.17×10^6 W.

A 2.0-kg particle has a speed given by (t^2) m/s, t being in s. The rate (in W) at which the resultant force is doing work on this particle at t = 1.0 s is:

(A) 1.0
(B) 2.0
(C) 3.0
(D) 4.0
(E) 5.0

*Take g= 9.8 m/s²

In a given frictionless displacement of a particle, its kinetic energy increases by (35 J) while its potential energy decreases by (10 J). Determine the work (in J) of the non-conservative forces acting on the particle during this displacement? *
(2 نقطة)

+15

+25

−25

−15

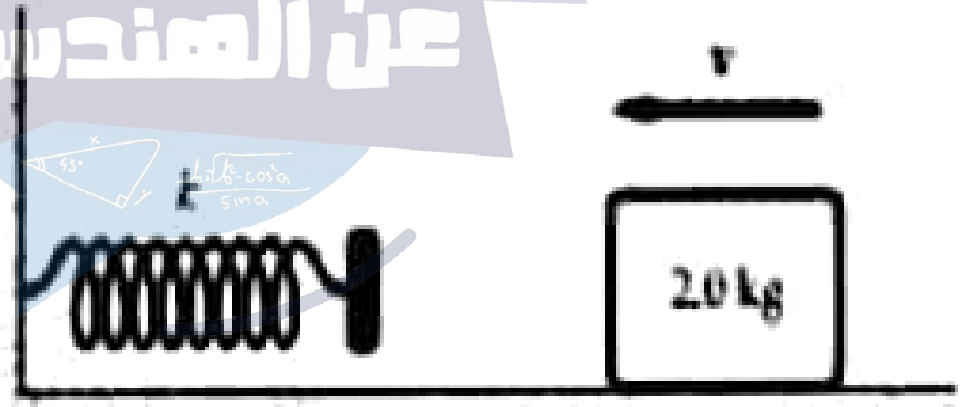
A box with a mass m and moving with a speed of 6.00 m/s makes a completely inelastic collision with another stationary box that has a mass 3m. The final kinetic energy of the wreckage is 40% of the total initial kinetic energy. The final speed (in m/s) of the wreckage is:

Select one:

- 1.2
- 30
- 0.3
- 0.9
- 0.5

A 2.0-kg block slides on a rough horizontal surface, as shown in the figure below. The speed of the block is 2.0 m/s before it touches the spring(k = 400 N/m), and 1.0 m/s when it has compressed the spring 0.10m. Determine the work done (in J) by friction on the block during this distance:

(A) -3.0
(B) +3.0
(C) -1.0
(D) -2.0
(E) -4.0



*Take g= 9.8 m/s²

A block of mass m = 1.6 kg initially moving to the right with a speed of 4 m/s on a frictionless, horizontal track collides with a spring attached to a second block of mass m = 2.1 kg initially moving to the left with a speed of 2.5 m/s. the spring constant is 600N/m. the velocity v_{1f} of block one after the collision is:

Select one:

- $3.12\,\hat{\imath}\,m/s$
- $-1.74\,\hat{\imath}\,m/s$
- $-3.38\,\hat{\imath}\,m/s$
- $5.12\,\hat{\imath}\,m/s$

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The force an ideal spring exerts on an object is given by Fx = -kx, where x measures the displacement of the object from its equilibrium (x = 0) position. If k = 80 N/m, how much work is done(in J) by this force as the object moves from x = * ?-0.40 m to x = 0
(2 نقطة)

5.6

6.4

7.2

4.8

The net work done by a conservative force on an object around any closed path is: *
(2 نقطة)

zero.

positive.

unknown it depends on the situation.

negative.