1) A net force of 5.0 newtons moves a 2.0-kilogram object a distance of 3.0 meters in 3.0 seconds. How much work is done on the object?

A) 10. J B) 1.0 J C) 15 J D) 30. J

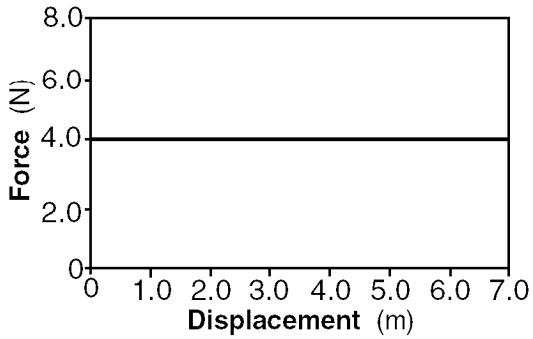
2) A constant force of 2.0 newtons is used to push a 3.0-kilogram mass 4.0 meters across the floor. How much work is done on the mass?

A) 12 J B) 8.0 J C) 24 J D) 6.0 J

3) A constant force of 20. newtons applied to a box causes it to move at a constant speed of 4.0 meters per second. How much work is done in the box in 6.0 seconds?

A) 240 joules B) 480 joules C) 80. joules D) 120 joules

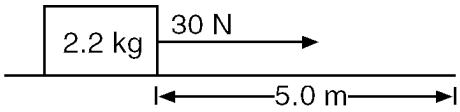
4) The graph below shows the force exerted on a block as a function of the block's displacement in the direction of the force.



How much work did the force do in displacing the block 5.0 meters?

A) 20. J B) 0.80 J C) 0 J D) 4.0 J

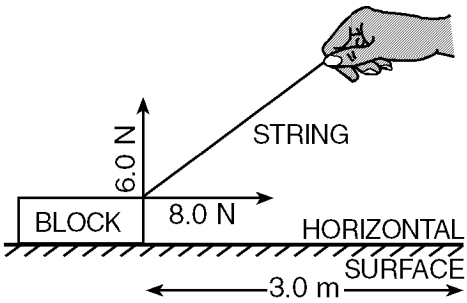
5) A 2.2-kilogram mass is pulled by a 30.-newton force through a distance of 5.0 meters as shown in the diagram below.



What amount of work is done?

A) 11 J B) 66 J C) 330 J D) 150 J

6) A student pulls a block 3.0 meters along a horizontal surface at constant velocity. The diagram below shows the components of the force exerted on the block by the student.



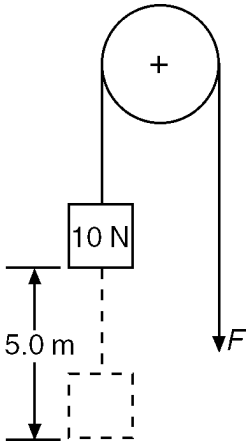
How much work is done against friction?

A) 24 J B) 18 J C) 42 J D) 30. J

7) A force of 3 newtons moves a 10-kilogram mass horizontally a distance of 3 meters at constant velocity. The work done against friction is

A) 3 joules B) 6 joules C) 9 joules D) 30 joules

8) In the diagram below, 55 joules of work is needed to raise a 10.-newton weight 5.0 meters at a constant speed.



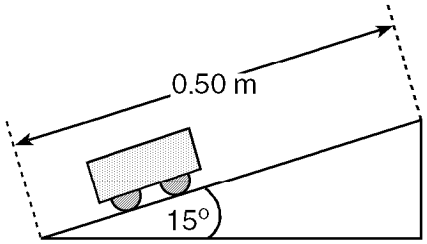
How much work is done to overcome friction as the weight is raised?

A) 5.5 J B) 11 J C) 50. J D) 5 J

9) A force of 100. newtons is used to push a trunk to the top of an incline 3.0 meters long. Then a force of 50. newtons is used to push the trunk for 10. meters along a horizontal platform. What is the total work done on the trunk?

A) 3.0×10^2 joules B) 9.0×10^2 joules C) 5.0×10^2 joules D) 8.0×10^2 joules

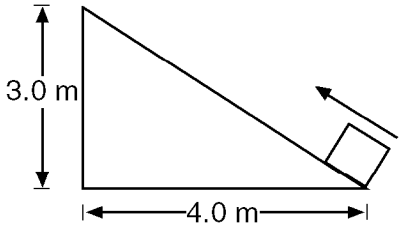
10) As shown in the diagram below, pulling a 9.8-newton cart a distance of 0.50 meter along a plane inclined at 15° requires 1.3 joules of work.



If the cart were raised 0.50 meter vertically instead of being pulled along the inclined plane, the amount of work done would be

A) the same
B) less
C) greater

11) A 20-newton block is at rest at the bottom of a frictionless incline as shown in the diagram below.

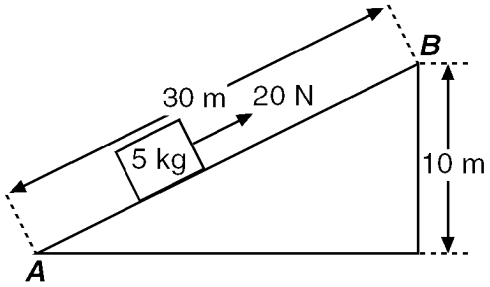


How much work must be done against gravity to move the block to the top of the incline?

A) 80 J
B) 60 J
C) 10 J
D) 100 J

Question 12 refers to the following:

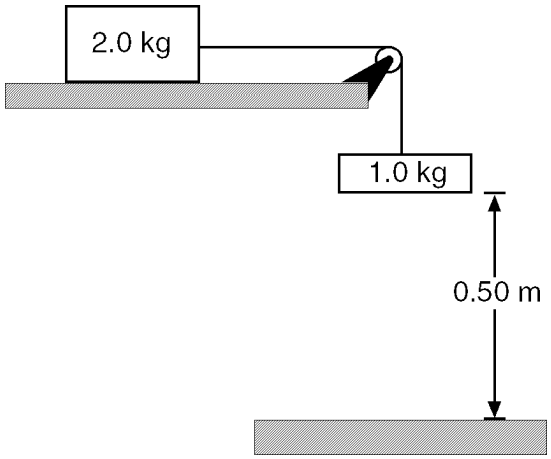
The diagram below represents a 20-newton force pulling an object up a hill at a constant rate of 2 meters per second.



12) The work done by the force in pulling the object from *A* to *B* is

A) 50 J
B) 600 J
C) 500 J
D) 100 J

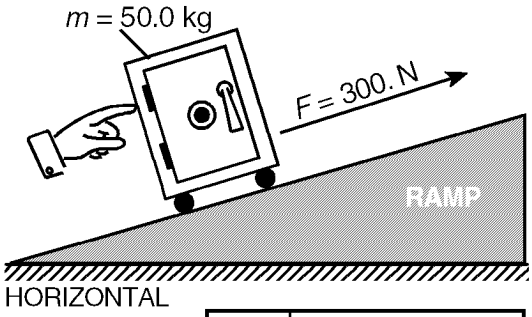
13) A 1.0-kilogram mass falls a distance of 0.50 meter causing a 2.0-kilogram mass to slide the same distance along a table top, as represented in the diagram below.



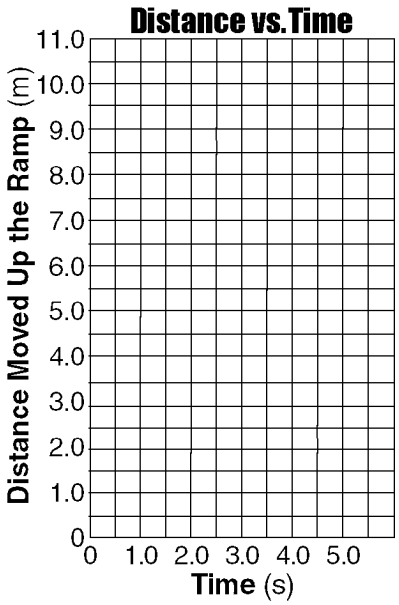
How much work is done by the falling mass?

A) 4.9 J B) 9.8 J C) 1.5 J D) 14.7 J

14) The diagram below shows a worker moving a 50.0-kilogram safe up a ramp by applying a constant force of 300. newtons parallel to the ramp. The data table shows the position of the safe as a function of time.



Time (s)	Distance Moved up the Ramp (m)
0.0	0.0
1.0	2.2
2.0	4.6
3.0	6.6
4.0	8.6
5.0	11.0



(a) Using the information in the data table, construct a line graph. Plot the data points and draw the best-fit line.

(b) Using one or more complete sentences, explain the physical significance of the, slope of the graph.

(c) Calculate the work done by the worker in the first 3.0 seconds. [*Show all calculations, including the equation and substitution with units*.]