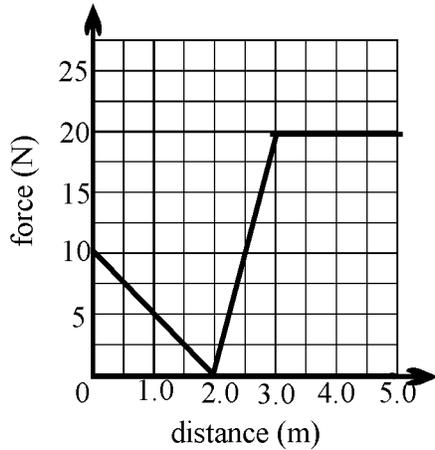


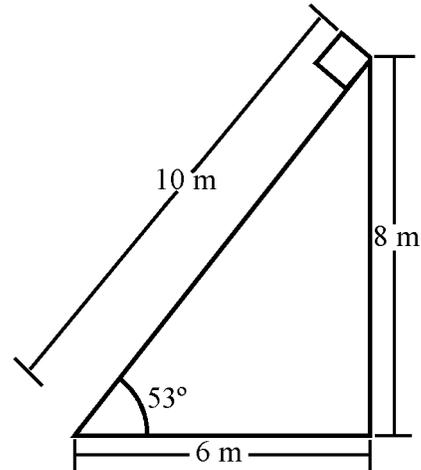
1. Base your answer to the following question on the force vs. distance graph below, which is for an object being pushed along a straight line, starting at rest.



After the object has moved a distance of 2.0 m, how much work has been done on it?

- 1) 5 J
- 2) 10 J
- 3) 15 J
- 4) 20 J
- 5) 25 J

Base your answers to questions 2 and 3 on the picture below, which represents a plane 10 m in length with a coefficient of kinetic friction of 0.2, inclined at an angle of 53° . A block of weight 30 N is placed at the top of the plane and allowed to slide down.



2. The work done on the block by the gravitational force during its 10 meter slide down the plane is most nearly

- 1) 60 J
- 2) 180 J
- 3) 260 J
- 4) 300 J
- 5) 390 J

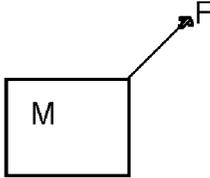
3. The work done on the block by friction during its 10 m slide down the plane is most nearly

- 1) 10 J
- 2) 12.0 J
- 3) 18 J
- 4) 24 J
- 5) 36 J

4. Which of the following is not a vector quantity?

- 1) Torque
- 2) Velocity
- 3) Work
- 4) Momentum
- 5) Force

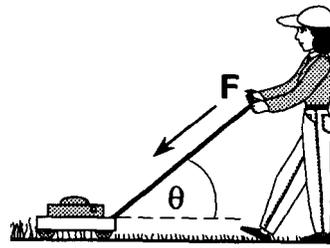
5.



A block of mass M is pulled by a constant force F at an angle of 30° relative to the ground for a distance of L meters. What is the net work done?

- 1) $MLF\cos 30$
 - 2) $LF\cos 30$
 - 3) $L\cos 30$
 - 4) $\frac{F\cos 30}{ML}$
 - 5) $\frac{ML\cos 30}{F}$
6. A ball of mass 16 kg on the end of a string is spun at a constant speed of 2.0 m/s in a horizontal circle with a radius of 1 m . What is the work done by the centripetal force during one complete revolution?
- 1) 0 J
 - 2) 16 J
 - 3) 32 J
 - 4) 8 J
 - 5) 4 J

7.



A woman pushes a lawnmower with a force of F at an angle θ to the ground. If $F = 20\text{ N}$ and $\theta = 30^\circ$, what is the net work done in moving the lawnmower 5 m ?

- 1) 25 J
 - 2) 50 J
 - 3) 86.67 J
 - 4) 14.4 J
 - 5) 35 J
8. A vertical force of 500 N acts on a 12 kg mass over a horizontal displacement of 2 m . The work done by the force is
- 1) 0 J
 - 2) 24 J
 - 3) 1000 J
 - 4) 6000 J
 - 5) 12000 J
9. An object with a mass of 2 kg is attached to the end of a 3 m long string and is whirled horizontally in a circle with a constant speed of 5 m/s . When the object has traveled half a revolution, how much work has been done by the centripetal force?
- 1) 0 J
 - 2) 50p J
 - 3) 100p J
 - 4) 150p J
 - 5) 300p J

10. A person lifts a box with a mass of 2.0 kg from the ground to a shelf 0.5 m high. The work that gravity does on the box is equal to

- 1) -10 J
- 2) -5 J
- 3) 0 J
- 4) 5 J
- 5) 10 J

11. If L, M and T denote the dimensions of length, mass, and time, respectively, what are the dimensions of energy?

- 1) M/T^2
- 2) ML/T^2
- 3) ML^2/T^2
- 4) M/L^2
- 5) T^2/M

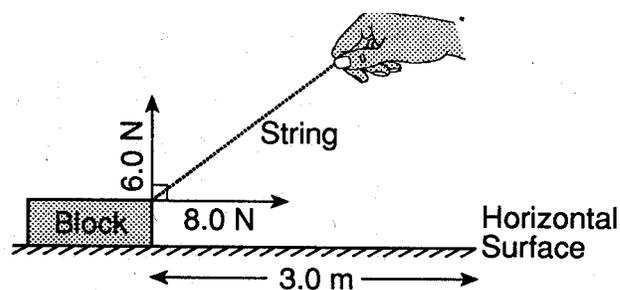
12. How much work is done as a box of weight W is vertically lifted with an acceleration g , to a height h ?

- 1) Wh
- 2) Whg^2
- 3) $\frac{Wh}{g}$
- 4) $\frac{2Wh}{g}$
- 5) $2Wh$

13. A horizontal force of 40 N is used to push a block along a horizontal surface at a constant speed of 2 meters per second. How much work is done on the block in 6 seconds?

- 1) 80 J
- 2) 120 J
- 3) 180 J
- 4) 240 J
- 5) 480 J

14. 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?

- 1) 6 J
- 2) 18 J
- 3) 24 J
- 4) 30 J
- 5) 42 J

15. In order to demonstrate some concepts of physics, a physics teacher pushes against a wall with a force of 300 N for 5 s. As you can imagine, the wall remains stationary. How much work does the teacher do on the wall in this time period?

- 1) 0 J
- 2) 0.017 J
- 3) 60 J
- 4) 750 J
- 5) 1500 J

Answer Key
[New Exam]

1. 2

2. 3

3. 5

4. 3

5. 2

6. 1

7. 3

8. 1

9. 1

10. 1

11. 3

12. 1

13. 5

14. 3

15. 1

Name _____

Class _____

Date _____

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

13. _____

14. _____

15. _____