Grade 11 advanced
Chapter 5 (kinetic energy, work, and power)
Review Part 1

Chose the correct answer for each of the following question:

1- What is the speed of an object having 1200 J kinetic energy, and 14 kg mass?

A. 10.2 m/s
B. 11.8 m/s
C. 12.6 m/s
D. 13.1 m/s

2- Two objects have the same kinetic energy, but the speed of object 1 is half of object 2 speed, if object 1 mass is 12 kg, what is the mass of object 2?

A. 8.0 kg
B. 5.0 kg
C. 3.0 kg
D. 2.0 kg

3- A car moving with speed of v and has a mass of m, if the driver raised the car's speed three times, how does the kinetic energy change?

A. It will increase by a factor of 3
B. It will reduce by a factor of 1/3
C. It will increase by a factor of 9
D. It will reduce by a factor of 1/9

4- An object has a mass of m and speed of v, how does the kinetic energy of the object change if the mass of the object is doubled, and its speed is halved?

A. It will increase by a factor of 4
B. It will reduce by a factor of 1/2
C. It will increase by a factor of 2
D. It will reduce by a factor of 1/4

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5- An object has a mass of 120 kg, if the kinetic energy of the object on the x axis K_x= 350 J, and on y axis K_y=460 J, what is the speed of the object?

A. 3.7 m/s
B. 5.2 m/s
C. 7.1 m/s
D. 8.4 m/s

6- An object has a mass of 120 kg, and speed of($\vec{v}$ =3$\hat{x}$+4$\hat{y}$-$\hat{z}$), what is the kinetic energy of the object?

A. 1560 J
B. 2140 J
C. 2850 J
D. 3680 J

7- Which of the following is a correct unit of energy?

A. $Kg.m/s^2$
B. $Kg.m^2/s$
C. $Kg.m^2/s^2$
D. $kg^2.m/s^2$

8- Which of the following is the energy transferred to or from the object as the result of the action of a force?

A. Kinetic energy.
B. Work.
C. Power.
D. Impulse.

9- A box is pushed up an inclined plane that is 4.0 m long. It requires 3200 J of work to get the box to the top of the plane, what is the net force on the box? (Note: the incline makes an angle of 30° over the horizontal)

A. 920 N
B. 800 N
C. 730 N
D. 640 N

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10- How much work is done when a 75-kg person climbs a flight of stairs 10 m high at constant speed?

A. 7350 J
B. 5340 J
C. 4170 J
D. 3324 J

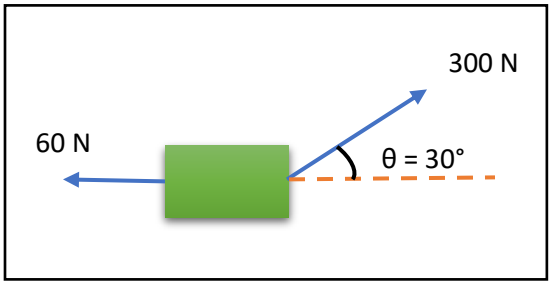
11- A refrigerator rests on the floor. How much work is required to move it at constant speed for 4.0 m along the floor against a friction force of 180 N?

A. 350 J
B. 460 J
C. 720 J
D. 810 J

12- You carry a box of 10 Kg mass to the top of building of 35 m height, what is the work done by the gravitational force on the box?

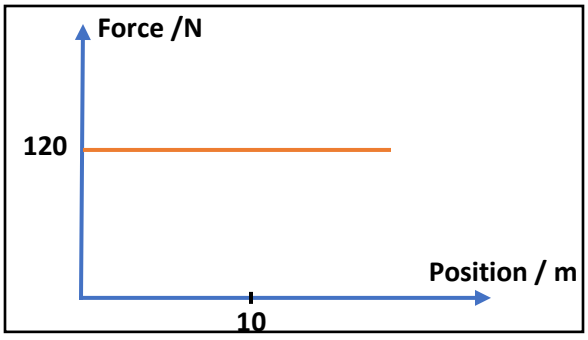
A. -3400 J
B. +3400 J
C. -6500 J
D. +6500 J

13- Find the net work done on the object shown in the figure if it moves 60 m to the right.



A. 5.6×10^4 J
B. 3.8×10^4 J
C. 2.6×10^4 J
D. 1.2×10^4 J

14- From the graph, what is the work done on the object after it moves 10 m?



A. 600 J
B. 800 J
C. 1200 J
D. 1400 J

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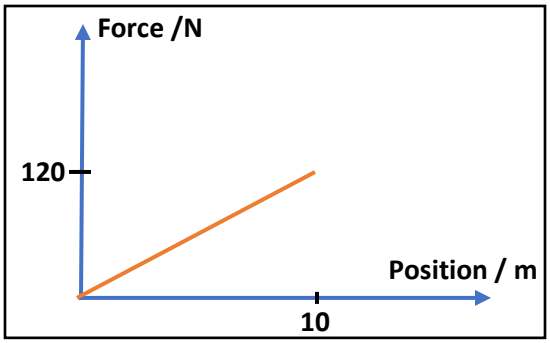
15- From the graph, what is the work done on the object after it moves 10 m?



A. 600 J
B. 800 J
C. 1200 J
D. 1300 J

16- A constant force, $\vec{F}$ = (5, –4, 2) N, acts on an object of mass 18.0 kg, causing a displacement of that object by $\vec{r}$ = (4, 3, –2) m. What is the total work done by this force?

A. 4 J
B. 12 J
C. 24 J
D. 36 J

17- A mother pulls her daughter, whose mass is 20. kg and who is sitting on a swing with ropes of length 3.5 m, backward until the ropes make an angle of 35° with respect to the vertical. She then releases her daughter from rest. What is the speed of the daughter when the ropes make an angle of 15° with respect to the vertical?

A. 5.6 m/s
B. 4.1 m/s
C. 3.2 m/s
D. 2.2 m/s

18- An object of 10 kg mass, slides down from the top of frictionless incline that has 15 m length and makes an angle of 30° above the horizontal, how much work is done by gravitational force to reach the bottom of the incline?

A. 860 J
B. 736 J
C. 644 J
D. 521 J

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19- A man pushes a box has 40 kg mass with constant speed from the bottom of frictionless incline that has 10 m height, how work is required to move the box to the top of the incline?

A. 1200 J
B. 2500 J
C. 3900 J
D. 4100 J

20- A particle of mass m is subjected to a force acting in the x-direction. F_x = (0.50 X+ 3.0) N. Find the work done by the force as the particle moves from x = 0 to x = 4.0 m

A. 16 J
B. 24 J
C. 32 J
D. 48 J

21- An object with 120 kg mass accelerated from 3.5 m/s speed to 12 m/s, how much work is done on that object to reach the speed 12 m/s?

A. 9300 J
B. 8400 J
C. 7900 J
D. 6500 J

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