INDIAN SCHOOL DARSAIT
DEPARTMENT OF PHYSICS

Subject : Physics	**Chapter** :Work, Energy and Power	**Worksheet No**. 5
Resource Person:Mrs. Jayalakshmi Ratish		**Date** : 03-09-19
Name of the Student :_____	**Class & Division** :XI A/B	**Roll Number** : _

1 Draw a graph showing the variation of kinetic energy with momentum. 1

2 Why does a metal ball rebound better than a rubber ball? 1

3 When a force is applied to do work on an object, does the object always accelerate? Explain why or why not. 1

4 A toy car is moving along with 0.40 joules of kinetic energy. If its speed is doubled, then its new kinetic energy will be 1

(a) 0.20 J (b) 0.10 J
(c) 1.60 J (d) 0.80 J

5 In which case will a car have the greatest change in kinetic energy? 1

(a) going from 0 m/sec to 2 m/sec (b) going from 2 m/sec to 4 m/sec
(c) going from 10 m/sec to 12 m/sec (d) all the same

6 The unit kgm^2/s^3 is the unit for 1

(a) work (b) energy
(c) force (d) power

7 Draw a graph showing the variation of kinetic energy with momentum. 2

8 One end of a string of length 1.4 m is tied to a stone of mass 0.4kg and it is whirled in a vertical circular motion. Calculate the minimum speed of stone required at its lowest point so that the string does not slacken at any point in motion. 2

9 Two machines (e.g., elevators) might do identical jobs (e.g., lift 10 passengers three floors) and yet the machines might have different power outputs. Explain how this can be so. 2

10 Ben runs up a 2.91 m high flight of stairs at a constant speed in 2.15 s. If Ben's mass is 65.9 kg, determine the work which he did and his power rating. 2

11 A ball rolls off a table and hits the floor at 5m/s. What is the height of the table? 3

12 A heavier body and lighter body have the same momentum, p. Which one has larger kinetic energy? 3

13 A glider is gliding through the air at a height of 416 m with a speed of 45.2 m/s. The glider dives to a height of 278 meters. Determine the glider's new speed. 3

14 A 3.0 kg metal ball, at rest, is hit by a 1.0 kg metal ball moving at 4.0 m/s. The 3.0 kg ball moves forward at 2.0 m/s and the 1.0 kg ball bounces back at 2.0 m/s. 3

(a) What is the total kinetic energy before the collision?
(b) What is the total kinetic energy after the collision?
(c) How much energy is transferred from the small ball to the large ball?

15 A coconut is broken into pieces by throwing it with a velocity of 2 m/s from a height of 5m. 3

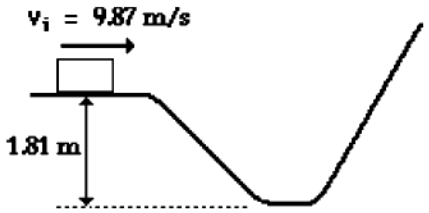
(a)What is the kinetic energy when it is at a height of 3 m?
(b) What is its speed at the ground level?

16 A 10.0 kg mass sliding on a frictionless horizontal surface at 7.00 m/s hits a spring that is attached to a wall. The spring has a spring constant of 5000 N/m. 3

a) Determine the maximum compression of the spring.
b) Determine the speed of the box in the above problem when the spring had a compression of 0.100 m

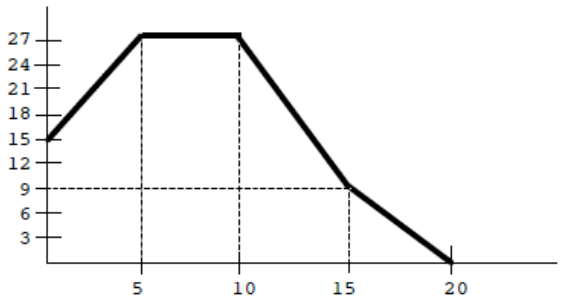
17 A car driving at a speed of 20 m/s on level ground slams on its brakes. If it skids for 32.0 m before stopping, what is the coefficient of kinetic friction between its tires and the road? 3

18 3



A box with mass **m** is sliding along on a frictionfree surface at 9.87 m/s at a height of 1.81 m. It travels down the hill and then up another hill.
a. Find the speed at the bottom of the hill.
b. Find the maximum vertical height to which the box will rise on the opposite hill.

19 Given the information on the force versus distance graph below, determine the total work done by the force – 3



20 A rain drop of radius 2 mm falls from a height of 250 m above the ground. What is the work done by gravitational force on the drop? 3