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Worksheet: Work and Energy

1. Write an expression for the work done when a force is acting on an object in the direction of its displacement.
2. The potential energy of a freely falling object decreases progressively. Does this violate the law of conservation of energy? Why?
3. Certain force acting on a 20 kg mass changes its velocity from 5 m/s to 2 m/s. Calculate the work done by the force.
4. A lamp consumes 1000 J of electrical energy in 10 s. What is its power?
5. A mass of 10 kg is at a point A on a table. It is moved to a point B. If the line joining A and B is horizontal, what is the work done on the object by the gravitational force? Explain your answer.
6. An object is thrown at an angle to the ground. It moves in a curved path and falls back to the ground. The starting and ending points are at the same height. What is the work done by gravity on the object?
7. A battery lights a bulb. Describe the energy changes involved in the process
8. When do we say that work is done?
9. Define 1 watt of power.
10. What is power?
11. A force of 7 N acts on an object. The displacement of the object is 8 m in the direction of the force. What is the work done by the force?
12. What are the various energy transformations that occur when you are riding a bicycle?
13. Define 1 J of work.
14. The kinetic energy of an object of mass m moving with a velocity of 5 m/s is 25 J. What will be its kinetic energy when its velocity is doubled? What will be its kinetic energy when its velocity is increased three times?
15. A pair of bullocks exerts a force of 140 N on a plough. The field being ploughed is 15 m long. How much work is done in ploughing the length of the field?
16. What is the kinetic energy of an object?
17. Write an expression for the kinetic energy of an object.