

UNIT 5

WORK, POWER AND ENERGY.

Activities

1.- Complete the sentences with the words in the box. Listen and check. Then say if they are true or false.

newton	force	force	Work	kp
motion	same	displaced	displaced	

- a) One _____ is the work done by an object that, subjected to a _____ of 1 ____, is _____ 1 m in the same direction as the force.
- b) _____ is done when an object is _____ because a _____ acts on it, either partially or completely in the _____ direction as the _____.

2.-  Complete the following sentences with the correct word from the box. Listen and check.

heat	form	work	energy	J	matter
joules	decreases	transformation			

- a) A _____ of energy is really a change in energy.
- b) Energy can change from one piece of _____ to another and from one _____ to another.
- c) _____ is the capacity of matter to transfer _____ or to do work.
- d) As the matter transfers heat or does _____, its energy _____.
- e) We use a unit of the International System (SI) called a joule (____) to measure energy.
- f) Heat and work are both transfers of energy, so they are also measured in _____.

3.- In a building, a bucket of sand that weighs 196 N is lifted to a height of 50 m. Calculate the gravitational potential energy when it is at 50 m. Which is force applied in order to lift it?

4.-  Calculate the kinetic energy of a car that has a mass of 1 500 kg and that moves at a speed of 108 km/h. Listen and check.

5.-  A cyclist, together with his bike, has a weight of 686 N and is riding on a road at a speed of 36 km/h. Calculate the following. Listen and check.

- a) The mass of the cyclist and of the bike in kg.
- b) The speed the cyclist reaches in m/s.
- c) The kinetic energy of the cyclist and his bike.

6.- Ask and answer the following questions with a partner.

- a) If a man weighs 80 kp and climbs a 25 m high tower, what work is done?
- b) How high an object with a mass of 30 kg travel in order to acquire a gravitational potential energy of 15 000 J on Earth?
- c) A train carriage with a mass of 8 000 kg moves in a straight line at a constant speed of 5 m/s. What is its mechanical energy?

7.-  Put the words in order to make questions. Listen and check. Then ask and answer the questions with a partner.

- a) we lift a brick / If / above the ground / and we maintain it at rest, / to a certain height, / will it acquire / what kind of energy / ?
- b) If / what kind of energy / we then drop the brick, / half way down / will it have / ?
- c) when it reaches the ground / will the brick have / What kind of energy / ?
- d) on the ground / when it is finally at rest / What happens / to the brick's initial energy / ?

8.-  Listen and complete the text with the missing numbers. Then do the calculations below with a partner.

An object with a mass of _____ kg is dropped from a height of _____ m from a state of rest. When the object has covered _____ m it has a speed of _____ m/s. When it reaches the ground its speed is _____ m/s.

Calculate the mechanical energy when the object:

- a) is 100 m above the ground
- b) is 50 m above the ground
- c) reaches the ground.