

Work, power and Energy

WORK AND POWER

ENERGY : It is the capacity to do work

DOING WORK : Transferring energy

WORK DONE: The amount of energy transferred

FORMULA : Work done = Force x distance travelled

POWER : It is the rate of doing work or the rate of energy transfer

Formula : Power = $\frac{\text{work done}}{\text{time taken}}$

MYP - Criteria A

Question 1

Name the energy transfers which occur when

- an electric bell rings,
- someone speaks into a microphone,
- a ball is thrown upwards,
- there is a picture on a television screen,
- a torch is on.

Question 2

Name the forms of energy represented by the letters A, B, C and D in the following statement.

In a coal-fired power station, the (A) energy of coal becomes (B) energy which changes water into steam. The steam drives a turbine which drives a generator. A generator transfers (C) energy into (D) energy

Question 3

A boy whose weight is 600 N runs up a flight of stairs 10 m high in 12 s. What is his average power?

Question 4

A hiker climbs a hill 300 m high. If she has a mass of 50 kg calculate the work she does in lifting her body to the top of the hill.

Question 5

When the energy input to a gas-fired power station is 1000 MJ, the electrical energy output is 300 MJ.

- Calculate the efficiency of the power station in changing the energy in gas into electrical energy.
- Explain what form does the 700 MJ of 'lost' energy take.
- Suggest the fate of the 'lost' energy