

## **2D Power**

Power:

A key Point: the 'F' in formulae

Work Done 'F' = Total resultant force

Power 'F' = a single force (from a motor for example)

1. A truck is being pulled up a slope at a constant speed of  $8\text{ms}^{-1}$  by a force of magnitude 2000N acting parallel to the direction of motion of the truck. Calculate the power developed in kilowatts.
  
2. A car of mass 1250kg is travelling along a horizontal road. The car's engine is working at 24kW. The resistance to motion is constant and has magnitude 600N. Calculate:
  - a) The acceleration of the car when it is travelling at  $6\text{ms}^{-1}$
  
  
  
  
  
  
  
  
  
  
  - b) The maximum speed of the car

3. A car of mass  $1100\text{kg}$  is travelling at a constant speed of  $15\text{ms}^{-1}$  along a straight road which is inclined at  $7^\circ$  to the horizontal. The engine is working at a rate of  $24\text{kW}$ .
- a) Calculate the magnitude of the non-gravitational resistances to motion

The rate of working of the engine is now increased to  $28\text{kW}$ . Assuming the resistances to motion are unchanged:

- b) Calculate the initial acceleration of the car