

Q1

A broken-down car is being pushed to a garage.

- Work out the driver's power output if he takes 1 hour and 45 minutes to push his car 2 km with a force of 900 N.
- Work out the total power output if the driver has to stop for a 30 minute kip halfway there.
- The driver's maximum power output is 500 W. How long would it take him to push the car to the garage at maximum output?
- If the driver decides to take the uphill route, it would take a force of 1700 N to cover 1400 m in 3 hours. Work out his power output, to the nearest whole number.
- What percentage of his maximum power output is this?

Q2

The weightlifter's still lifting weights. The pulley he's working with lifts the load 50 cm each time.

- The weightlifter spends 3 minutes doing 60 lifts of 45 kg. Work out his power output.
- Work out the weightlifter's total power output if he does 3 sets of 10 lifts with 70 kg in 5 minutes.
- Over the next 10 minutes, he does 50 lifts of 40 kg, 3 sets of 10 lifts with 75 kg and 2 sets of 15 lifts with 60 kg. Work out his total power output to the nearest whole number.
- The weightlifter's maximum power output is 100 W. At maximum power, how many times can he lift 80 kg in 4 minutes?

Q3

A team of 8 rowers are training on the Thames.

- The rowers warm up by rowing with a combined force of 1600 N. They row for 5 minutes and cover a distance of 700 m. Work out the power output of the rowing team.
- At racing speed, the team row with a combined force of 4000 N. They cover a distance of 3 km in 11 minutes. What is the average power output of the individual rowers?
- During the cool-down session, the rowers apply a force of 100 N each. The team covers a distance of 400 m in 5 minutes. Work out the power output of the whole team.
- The most powerful rower on the team is capable of an output of 3000 W, using a force of 4000 N. How long would it take the team to row 3 km, if all the rowers were as good as this?