# PQ 10a

Questions

# Q1

- Together, two students exert a force of 825 N
- in pushing a car a distance of 35 m.
- How much work do the students do on the car?

- If the force was doubled, how much work would they do pushing the car the same distance?

# Q2

- A rock climber wears a 7.5-kg backpack while scaling a cliff. After 30.0 min, the climber is 8.2 m above the starting point.
- a. How much work does the climber do on the backpack?

- b. If the climber weighs 645 N, how much work does she do lifting herself and the backpack?

# Q2 continued

- What is the average power developed by the climber?

# Q3

- A sailor pulls a boat into a quayside applying a force of 255N with a rope for 30m. Due to tidal and wind effects the rope is at a 50 degree angle. How much work does he do?

# Q4

- Two people lift a heavy box a distance of 15 m. They use ropes, each of which makes an angle of 15° with the vertical. Each person exerts a force of 225 N. How much work do they do?

# Q5

- An airplane passenger carries a 215-N suitcase up the stairs, a displacement of 4.20 m vertically.
- How much work does the passenger do?

# Q6

- A rope is used to pull a metal box a distance of 15.0 m across the floor. The rope is held at an angle of 46.0° with the floor, and a force of 628 N is applied to the rope. How much work does the force on the rope do?

# Q7

- A bicycle rider pushes a bicycle that has a mass of 13 kg up a steep hill. The incline is 25° and the road is 275 m long, as shown.  The rider pushes the bike parallel to the road with a force of 25 N.
- How much work does the rider do on the bike?

# Q8

- You push a wheelbarrow a distance of 60.0 m at a constant speed for 25.0 s, by exerting a 145-N force horizontally.
- What power do you develop?

- If you move the wheelbarrow twice as fast, how much power is developed?

# Q9

- An electric motor develops 65 kW of power as it lifts a loaded elevator 17.5 m in 35 s. How much force does the motor exert?

# Q10

- A winch designed to be mounted on a truck, as shown , is advertised as being able to exert a 6.8"103-N force and to develop a power of 0.30 kW. How long would it take the truck and the winch to pull an object 15 m?