Worksheet 2.3.2 Making work easier

1 Increasing leverage >

This machine here is an adaptation to a tap for someone who doesn’t have as much strength in their hands.

1. How does this make it easier to turn the tap?
2. What would happen if the lever was made even longer?
3. Can you think of other situations around the home where increasing the length of the lever would make life easier for someone with little strength in their hands?

2 Using a jack >>

This machine is a jack. It is being used to lift up a car so that the wheel can be changed. The mechanic works the lever up and down; as they do so the car rises up. It’s much easier than trying to lift the car up with bare hands!

1. The mechanic is pushing down on the handle with a force of 50 N and in one push moves the lever down 40 cm. Turn the distance into metres and calculate the work done on the jack.
2. The jack applies a force of 1600 N on the car, moving it 1 cm. Calculate the work done on the car.
3. Compare the force the mechanic applies to the jack with the force the jack applies to the car.
4. Compare the distance the handle moves with the distance the car moves.

3 Lifting a crate >>>

This is an attempt to set up a lever to help lift a heavy crate. The plan is to push down on the right-hand end of the lever to raise the crate up.

1. Why would this not be successful in making job easier?
2. What would you find if you tried using this?
3. How could the arrangement be improved?