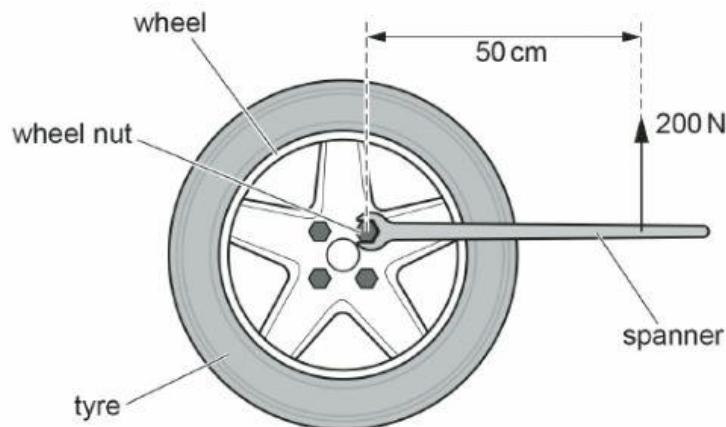


1 A car driver needs to remove one of the wheels on his car. He puts a spanner on a wheel nut.



The driver releases a second wheel nut in a shorter time than the first wheel nut. The driver uses the same amount of energy in releasing both wheel nuts.

less than

the same as

greater than

Complete the sentences using the phrases in the box. Each phrase may be used once, more than once or not at all.

The work done in releasing the second wheel nut is ..... the work done in releasing the first wheel nut.

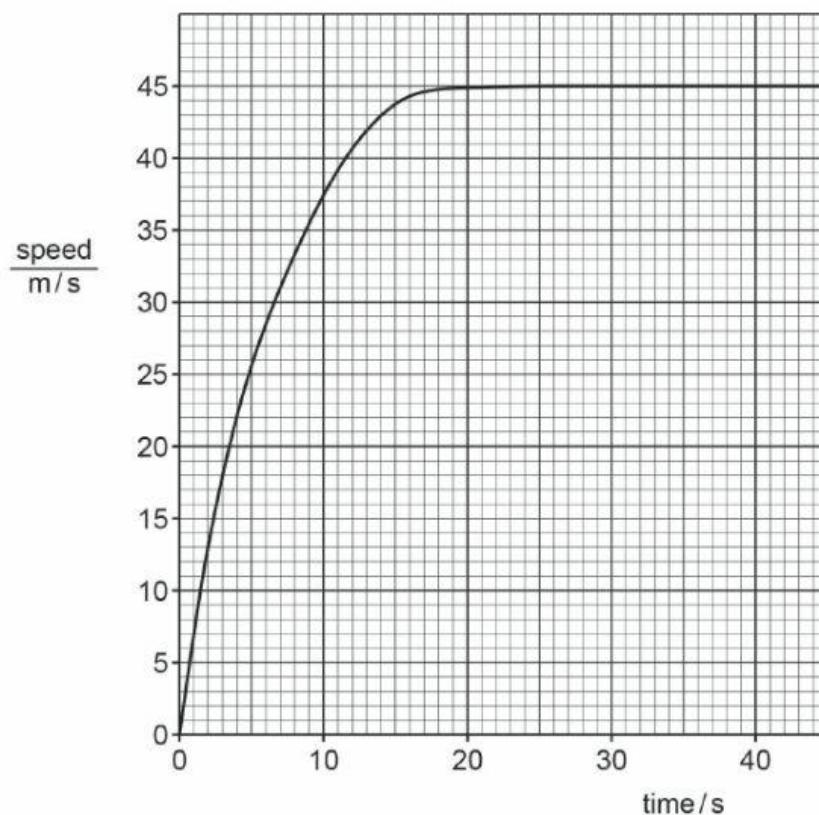
The power produced in releasing the second wheel nut is ..... the power produced in releasing the first wheel nut.

[2]

[Total: 2]

2 A box is attached to a parachute. The box and the parachute are falling through the air.

The graph is the speed–time graph for the box **before** the parachute is opened.



Calculate the distance the box moves between time = 30 s and time = 40 s.

$$\text{distance} = \dots \text{m} \quad [3]$$

[Total: 3]

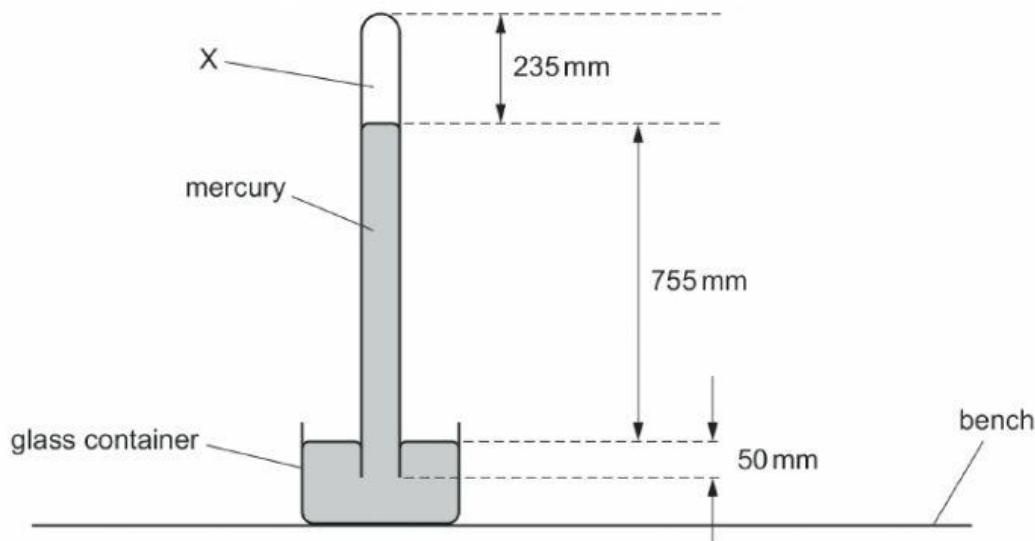
3 The mass of an empty beaker is 400 g.

Calculate the weight of the empty beaker.

$$\text{weight} = \dots \text{N} \quad [4]$$

[Total: 4]

4 The diagram shows a mercury barometer.



The total weight of the mercury barometer is 38 N.

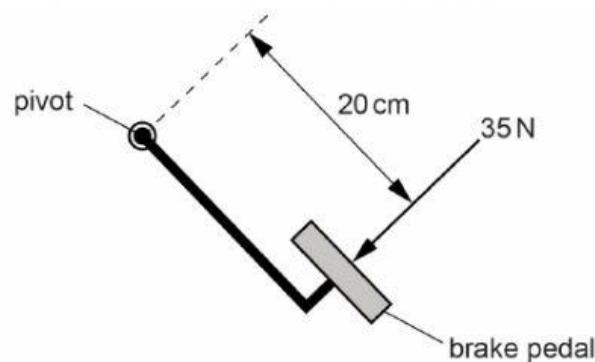
The area of the glass container in contact with the bench is  $200 \text{ cm}^2$ .

Calculate the pressure of the mercury barometer on the bench.

$$\text{pressure} = \dots \text{ N/cm}^2 \quad [3]$$

[Total: 3]

5 The diagram shows the force applied to a brake pedal by a driver's foot.



Calculate the moment of the force about the pivot. Include the unit.

moment = ..... unit .....

[4]

[Total: 4]