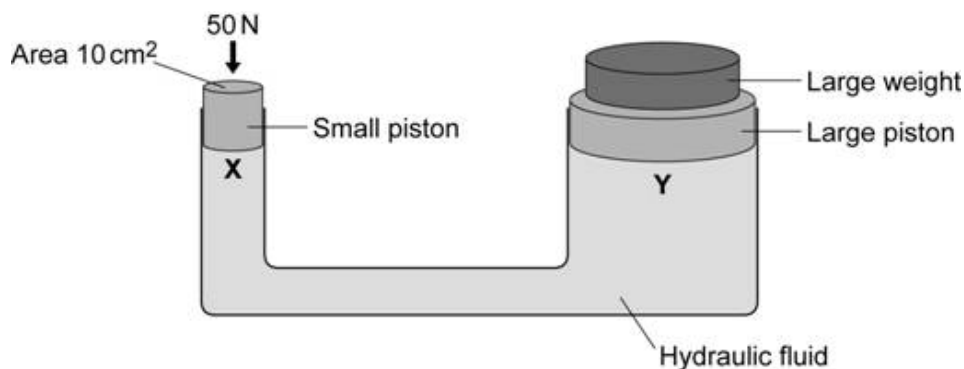


- Q1.** The diagram shows a simple hydraulic jack. The jack is designed to lift a large weight using a much smaller force.



- (a) Complete the following sentence.

A hydraulic jack is an example of a multiplier.

(1)

- (b) Calculate the pressure, in N/cm^2 , created on the small piston by the force of 50 N pushing downwards.

Write down the equation you use, and then show clearly how you work out your answer.

.....

.....

.....

.....

.....

.....

Pressure = N/cm^2

(2)

- (c) Complete the following sentence.

The pressure at Y will be the pressure at X.

(1)

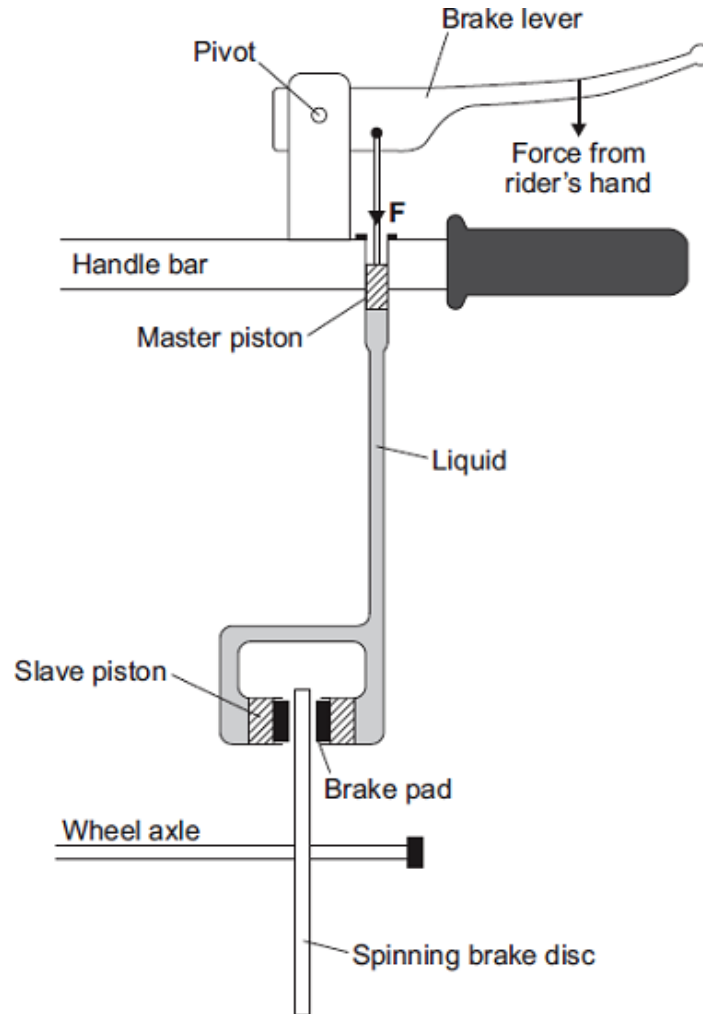
(Total 4 marks)

Q2. Mountain bike riders use brakes to slow down.



© Ljupco Smokovski/Shutterstock

Some mountain bikes use liquid-filled pipes to transmit the force from the rider's hand on the brake lever to the brake pads. These brakes are called hydraulic brakes.



(a) Draw a ring around the correct answer to complete each sentence.

(i) Liquids can be used to transmit the forces in a brake system,

because liquids

are incompressible.

can flow.

take the shape of the container.

(1)

(ii) The pressure in the liquid is transmitted

against force **F** only.

downwards only.

in all directions.

(1)

- (b) When the rider's hand pulls on the brake lever, the force **F** applied to the liquid by the master piston is 80 N. The cross-sectional area of this piston is 50 mm².

Calculate the pressure, in N/mm², exerted on the liquid by the master piston.

Use the correct equation from the Physics Equations Sheet.

.....

Pressure = N/mm²

(2)

- (c) The unit N/mm² is **not** the usual unit of pressure.

Which unit is usually used when calculating pressure?

Draw a ring around the correct answer.

N

Nm²

Pa

(1)

- (d) The rider applies a larger force to the brake lever. How would this increase in force affect the pressure in the liquid?

.....

(1)

(Total 6 marks)

