

Revision Questions on Pressure

- 1) A box weighs 100 N and its base has an area of 2 m^2 . What pressure does it exert on the ground?
- 2) If atmospheric pressure is $100\,000 \text{ N/m}^2$, what force is exerted on a wall of area 10 m^2 ?

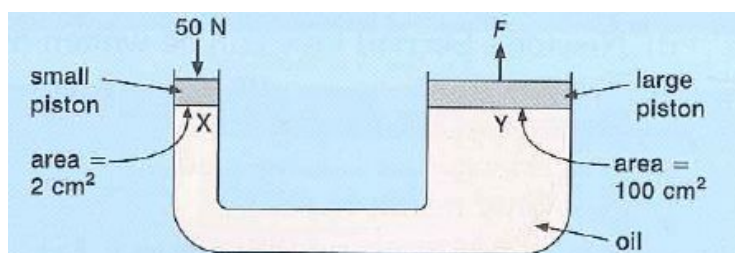
- 3) The diagram shows side and front views of a car tyre in contact with the road.



A tyre company stated that the area of the tyre in contact with the road was about the same as the area of the sole of one of your shoes.

- a) Describe (with a diagram) how you would estimate the area of sole of your shoe. [3]
- b) The car weighs 12 000 N. What is the force acting on one tyre if the weight of the car is evenly distributed amongst the tyres? [1]
- c) If the area of contact of the tyre is 80 cm^2 (0.008 m^2), calculate the pressure of the air in the tyre. [2]

- 4)



The diagram above shows the principle of the hydraulic car jack.

- a) If a force of 50 N is applied to the small piston, calculate the pressure produced in the oil at X. [2]
- b) What is the pressure exerted by the oil at Y? [1]
- c) Calculate the upward force, F , acting on the large piston. [1]