

Pressure & Hydraulics – Quick Questions

1. A force of 200 N acts on an area of 4 m^2 .

a) What pressure is produced?

b) What would the pressure be if the same force acted on half the area?

2. What force is produced if:

a) a pressure of 1000 Pa acts on an area of 0.2 m^2 ?

b) a pressure of 2 kPa acts on an area of 0.2 m^2 ?

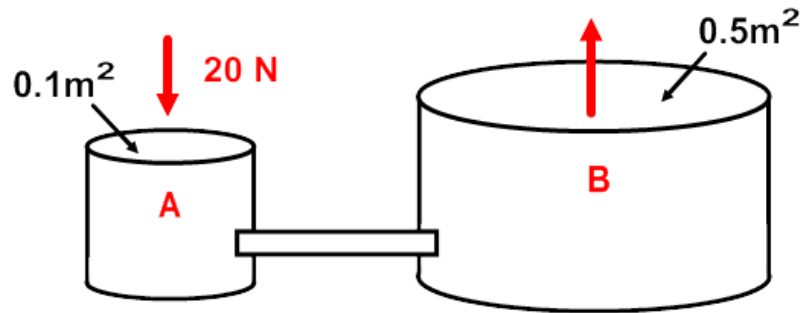
3. Explain why diggers have caterpillar tracks rather than Wheels.

4. A rectangular block of mass 30 kg measures $0.1 \text{ m} \times 0.4 \text{ m} \times 1.5 \text{ m}$.

a) Calculate the weight of the block. Assume that $g = 10 \text{ N/kg}$.

b) Draw a diagram to show the orientation of the block when it exerts maximum pressure on the ground. Calculate this pressure.

c) Draw another diagram showing the position of minimum pressure. Calculate this pressure.



5. The diagram shows a simple hydraulic jack.

a) What is the pressure at A?

b) What is the pressure at B?

c) What is the output force?

d) Why can the jack be called a *force multiplier*?

6. For this jack, what would be the effect of:

a) increasing the area of the output piston?

b) decreasing the area of the input piston?