

Pressure ($P = F/A$) – GCSE Physics

Ramped Questions

1. A student weighing 500 N stands is wearing trainers. The total area of the soles touching the floor is 0.05 m^2 . Calculate the pressure exerted on the floor.
2. A large dog exerts a force of 400 N on the ground through its four paws. The total area of the paws is 0.02 m^2 . Calculate the pressure on the ground.
3. A delivery box weighing 250 N rests on a warehouse floor. The base of the box has an area of 0.10 m^2 . Calculate the pressure exerted by the box.
4. A tractor exerts a force of 20 000 N on the ground. The total contact area of its tyres is 2.5 m^2 . Calculate the pressure exerted by the tractor.
5. A woman wearing stiletto heels exerts a force of 600 N. The total area of the heel tips touching the floor is 0.0004 m^2 . Calculate the pressure on the floor.
6. A drawing pin is pushed into a noticeboard with a force of 12 N. The tip has an area of 0.0000015 m^2 . Calculate the pressure exerted by the tip.
7. A mountain bike tyre exerts a pressure of 80 000 Pa on the ground. The contact area of the tyre is 0.015 m^2 . Calculate the force exerted by the tyre.
8. An elephant exerts a force of 40 000 N on the ground. The pressure beneath its feet is 200 000 Pa. Calculate the total area of its feet touching the ground.
9. A hydraulic press exerts a force of 120 000 N. The pressure produced is 3 000 000 Pa. Calculate the area over which the force acts.
10. Engineers are designing the foundations of a skyscraper. The building exerts a force of 50 000 000 N on the ground. The maximum safe pressure for the soil is 250 000 Pa. Calculate the minimum area required for the foundations.

