AS 90940
Mechanics Test Yourself (Pressure)

Print and then fold the sheet on the dotted line to hide the answers. Then answer the questions and open it up to mark your work. You will need a calculator. Good luck!

State the formula for pressure.		P = F/A
What TWO units can pressure be measured in?		Nm^{-2} or Pa
A girl has a mass of 50 kg. What is her weight?		500 N
If a force of 10 N acts over an area of 5 m^2 what is the pressure?		2 Nm^{-2} or 2 Pa
If a pressure of 5 Nm^{-2} acts on an area of 4 m^2 what force is exerted?		20 N
Which exerts more pressure, a man wearing boots or snowshoes?		Boots
A box weighs 100 N and exerts a pressure of 50 Nm^{-2}. What is its area?		2 m^2
A 20,000 N elephant and each of its four feet have an area of 0.05 m^2. What pressure does it exert on the ground?		100000 Nm^{-2} or 100000 Pa
A ladder might help you to rescue someone from an icy pond as increasing the contact area _____ the pressure.		decreases
Heavy lorries may need eight rear wheels because increasing the ____ _____ decreases the pressure they exert on the road.		contact area
You can lie on a bed of nails as there are a _____ number of nails and so the force is spread over a large contact area.		large
It hurts to carry a heavy parcel by its string because the force is spread over a _____ contact area.		small
Would you rather be pummelled by a herd of elephants or a group of angry women wearing high heels?		herd of elephants (but you might disagree!)
A block measures 8 cm x 5 cm x 4 cm. On which face will it exert least pressure?		8 cm x 5 cm face (largest area)
An office safe has a weight of 500 N. If the area of the base is 1.25 m^2, what is the pressure on the floor?		400 Nm^{-2} or 400 Pa

A physics teacher has a weight of 700N. If her rather large feet have an area of 0.025 square metres each, what pressure does she exert on the ground?		14000 Nm^{-2} or 14000 Pa
Pressure is inversely _____ to area of contact.		related / proportional
Pressure is "force per unit _____".		area
It is better to attach a bungee cord to wide padding than to wrap it directly round ankles as padding does not ____ the force BUT will increase the _____ the force acts on.		change/alter/ decrease (contact) area
Which has a bigger contact area, walking boots or snowshoes?		snowshoes
Camels need to be able to walk around on sand without sinking into it. This means that they need to reduce their _____ on the ground, which is achieved by having big feet.		pressure
60% of a tyre of area 0.25 m x 0.20 m is incontact with the ground. What is the contact area of this tyre?		60/100 x (0.25 x 0.20) = 0.03 m^2
A 600N girl puts on snowshoes. Is her force on the snow more, less or the same as when she wears boots?		Same (it's her pressure that is less)
_____ is inversely related to area of contact.		pressure
Pascal is the unit of pressure. Explain what 'one pascal' means		Force of 1N acting on an area of 1 m^2
A board exerts a pressure of 880 pascals on the ground and has a mass of 88 kg. What is its area in contact with the ground?		1 m^2 (880 N/880 Pa)
A crate has dimensions 1.5 m × 0.75 m × 1.2 m. On which face will it exert the most pressure?		0.75 m x 1.2 m (its smallest area)
A box has a contact area of 0.9 m^2 and and its weight is 1150 N. What is the pressure?		1278 Nm^{-2} (or Pa)
Jan's skis are 1.60 m long, and 0.10 m wide. The combined mass of Jan and her ski gear is 80 kg. What pressure does she exert when standing on 2 feet?		2500 Nm^{-2} (or Pa)
Ron standing on both feet wearing tramping boots, and Jan is standing on both feet wearing skis. Jan weighs slightly more than Ron. Which person sinks deeper into the soft snow?		Ron (slightly less F but a lot less A)
Tom rides a bike with standard tyres, and Zach rides one with fatter tyres. If the mass of Zach and his bike is the same as Tom and his bike, why does Zach exert less pressure?		fatter tyre has larger area; area ↑, pressure ↓.
The combined mass of a boat and its crew is 420 kg; It exerts a pressure of 323 Pa on the water. Calculate the area of the boat in contact with the water.		13.0 m^2 (F/P = 4200/323)