

4.5 Review Questions

1. A car has a mass of 1000 kg. If each of its four tires has 300 cm^2 touching the ground, what is the pressure in the tires (in N/cm^2)?
2. If one were to try lying on a bed of nails, why wouldn't it be prudent to start with one nail and work your way up to many?
3. A block's dimensions are 2 cm x 5 cm x 20 cm. Its weight is 300 N.
 - a. What is the greatest possible pressure the block can exert while sitting on a table?
 - b. What is the least possible pressure the block can exert while sitting on a table?
4. The tires on a bike have a pressure of 80 lb/in^2 . A person sits on the bike and makes 0.25 square inches of each tire to touch the ground. How much does the person weigh?
5. Which exerts more pressure on the ground, the foot of a 7 ton elephant or the high heel of a 130 lb. woman?
6. A three-wheeler has a mass of 1500 Kg. If each of its three tires has 100 cm^2 touching the ground, what pressure is in the tires?
7. A block has the dimensions 5 cm x 12 cm x 8 cm. Its mass is 25 Kg.
 - a. What is the least possible pressure the block can exert while on the ground?
 - b. What is the most possible pressure the block can exert while on the ground?
8. Why would you want a sharp knife to cut bread?