

Name: \_\_\_\_\_

Class: \_\_\_\_\_

# Pressure

Pressure is the amount of force exerted per unit area on a surface that is perpendicular to the force. In mathematical terms:

$$Pressure = \frac{Force}{Area}$$

Pressure is measured in Pascals, where 1 Pascal is 1 Newton per square meter. More commonly used is the Kilopascal, which is 1000 Newtons per square meter.

For example, if a person has a weight of 490 N (50 kg x 9.8 N/kg – this is gravitational force) and their feet take up an area of 400 cm<sup>2</sup>, then the pressure they exert on the ground may be calculated as follows:

$$Force = 490 \text{ N}$$

$$Area = 400 \text{ cm}^2 = 0.04 \text{ m}^2$$

$$Pressure = ?$$

$$Pressure = \frac{Force}{Area}$$

$$Pressure = \frac{490N}{0.04m^2}$$

$$Pressure = 12250 \frac{N}{m^2}$$

$$Pressure = 12.25kPa$$

∴ The pressure on the ground would be 12.25 kPa.

Complete the following questions related to pressure.

1. A block, resting on the ground, has a cross sectional area of 2 m<sup>2</sup> is being pushed with a force of 100 N. What is the pressure exerted by the block on the ground?

