**Pressure**

$$P = \frac{F}{A}$$

A cylinder has a mass of 10 kg and a radius of 0.5 m. Calculate the pressure it exerts on the ground.

Force exerted by a body due to its weight

$$F = mg$$

$$F = 10 \times 9.8 = 98\ N$$

$$A = \pi r^2 = 3.14 \times 0.5 \times 0.5 = 0.785\ m^2$$

$$P = \frac{F}{A} = \frac{98}{0.785} = 125\ Pa$$

**Density**

$$\rho = \frac{m}{V}$$

Density of a body is the mass per unit volume.

**Pressure in a liquid**

$$P = \rho g h$$

$$P = \frac{F}{A} = \frac{mg}{A} = \frac{\rho V g}{A} = \frac{\rho A h g}{A} = \rho g h$$

**Pressure in a gas**

$$P = \frac{2}{3}\frac{E_k}{V}$$

$$P = \frac{F}{A} = \frac{mg}{A} = \frac{\rho V g}{A} = \frac{\rho A h g}{A} = \rho g h$$

$$P = \frac{2}{3}\frac{E_k}{V}$$

**Pressure in a liquid**

$$P = \rho g h$$

$$P = \frac{F}{A} = \frac{mg}{A} = \frac{\rho V g}{A} = \frac{\rho A h g}{A} = \rho g h$$

$$P = \frac{2}{3}\frac{E_k}{V}