# Pressure conversion

In the U.S. we still use pounds per square inch as a unit of pressure. Determine the conversion from this unit to Pascals. Using the fact that $1.0132 \times 10^5$ Pa is 1 atm determine the number of lb./in.$^2$ in 1 atm.

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Solution: for the first part

$$P\left(\frac{lb.}{in.^2}\right) = \frac{F}{A} = \frac{(0.452\ kg/lb)\left(9.8\frac{m}{s^2}\right)}{(0.0254\ m/inch)^2} = 6865 Pa$$

Next we convert to atm

$$P(atm) = \left(\frac{1\frac{lb.}{in.^2}}{6865\ Pa}\right)\left(\frac{1.01325 \times 10^5\ Pa}{1\ atm}\right)$$

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For the second part we conclude that

$$1\ atm\ = 14.75\ \frac{lb.}{in.^2}$$