Pressure: formula

<u>Task 1</u>. Complete with the missing words.

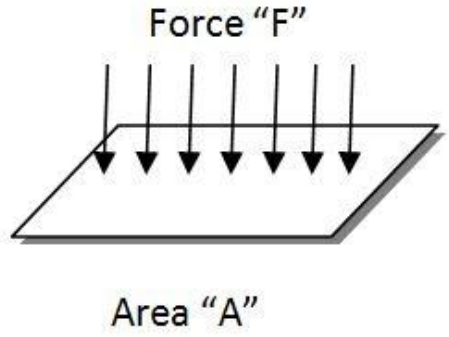
<u>Definition of pressure:</u>

Pressure is the relationship between the _____ and the _____ where this force is applied (surface: area of the object).

Pressure is defined as the force divided by the area perpendicular to the force over which the force is applied.

<u>Formula</u>

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



<u>Unit of measurement</u>

Pressure is measured in **Pascals (Pa)**

$$[Pa] = \frac{[\quad]}{[\quad]}$$

The pressure of 1 Pa is very little: an apple on a hand makes a pressure of 1000 Pa.

<u>Task 2.</u> Solve the following guided exercises.

Exercise 1.

A block with length of p = 1.5 m, width l = 1 m, height t = 0.5 m and mass m = 300 kg lays on the table. What is the pressure at the bottom surface of the block?

Draw here the block with all info

<u>GUIDED SOLUTION</u>

- The bottom **area** of the block is:

  A=_____

- The **weight** of the block as a **force** is:

  W=_____

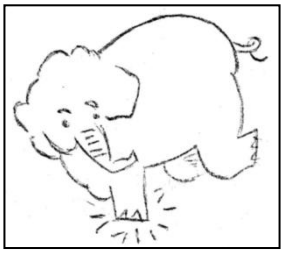
- So the **pressure** is:
  P=_____

Exercise 2.

What pressure is exerted on the ground by an elephant weighing 40 000N stands on one foot of area 1000 cm^2.

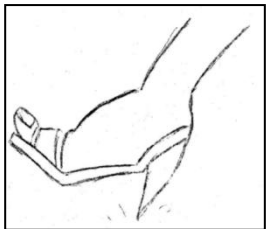
<u>GUIDED SOLUTION</u>

- Convert area from cm^2 to m^2: 1000 cm^2=_____ m^2
- Formula first: P=_____
- Then put in numbers: P=_____



Sketch by the author

<u>TASK3.</u> Now try these on your own!



Sketch by the author

Exercise 1

Find the pressure exerted by a girl weighing 400 N standing on one's stiletto heel of area 1 cm^2.

Exercise 2

A block of metal of dimensions 0,5m x 0,6m x 1,0m has density of 2,70 g/cm^3. Calculate the maximum pressure acting on the ground. [Remember to calculate the mass using density]