13.4: Procedures

Each person will determine the pressure on their own feet.

1. Predict whether the pressure your body exerts on one of your feet, as you walk is greater or less than normal atmospheric pressure. Record your prediction.
2. Draw a table in which to record the data for your foot/feet. **Do not fill in data until you have read the instructions for obtaining that data.**

Table 13.4.1: Foot/Feet Data

Calculated Area (1 Foot)	% of Contact (1 Foot)	Net Area of Contact (1 Foot)	Net Area of Contact (Both Feet)

3. Remove one shoe and trace an outline of your foot on the paper. Sketch a rectangle that encases the tracing of your foot. Measure and calculate the area of the rectangle you sketched. Record this area as the *Calculated Area*.
4. Estimate the percentage of the area you calculated that is actually in contact with the paper (is actually touching the paper). Unless you have completely flat feet, not all of your foot touches inside the sketched outline of your foot. Record the percentage of the rectangle that you estimate your foot is actually touching as the *% of Contact*.
5. Calculate the *Net Area of Contact* by multiplying the decimal of the percentage you estimated and the *Calculated Area* from your data table. Record the value of your *Net Area of Contact* for your 1 foot, in your table.

   Example 70%: (0.7)(Calculated Area) = Net Area of Contact for 1 foot

6. Assume your feet are identical, and calculate the net area of contact when you stand on two feet. Record this value in your data table.
7. Draw another table in which to record pressure calculations. Read the instructions for obtaining data.

Table 13.4.2: Pressure Calculations

	Pressure (lbs/in^2)	Comparison to Air
1 Foot		
Both Feet		

8. Use your weight in pounds and the *Net Area of Contact* to calculate the pressure on one foot as if you were taking a step. Also calculate the amount of pressure on both feet as you stand on the floor. Record these values in the *pressure calculations* table.
9. Use a ratio to compare the pressure on your foot to normal atmospheric pressure from air, and the pressure on both feet to normal atmospheric pressure. Calculate the value of each ratio and record this as the *Comparison to Air* value

   Example: $\frac{3lbs/in^2}{7lbs/in^2} = 0.42$

Contributors and Attributions

- Template:ContribCCPhySc101L