

Pressure and Gas Laws*Practice Sheet # 27*

1. *Directions:* Use the following equations to solve each problem. Answer with the appropriate unites.

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

- Calculate the pressure when 50.0 N of force is applied over an area of 0.440 m².
- What is the force applied if a surface with an area of 10.0 m² experiences a pressure of 18.0 Pa?
- What is the area of a surface that experiences a force of 15 N when a pressure of 30 Pa is applied?
- What is the pressure if 1.20 x 10⁴ N of force is applied to an area of 30.0 m²?
- Determine the force experienced if an area of 6.0 m² is under a pressure of 4.0 x 10⁴ Pa?
- Find the area of a force of 8.0 x 10⁴ N creates a pressure of 4000 Pa.
- Calculate the pressure exerted on a person's feet if a 700 N force (their body weight) is applied over 350 cm² (the surface area of both of their feet).

2. *Directions:* Complete the following table: 1.00 atm=760 mm Hg = 101325 Pa

Atmospheres (atm)	Millimeters of Mercury (mm Hg)	Pascals (Pa)
0.300		
	8.36	
		4.56 x 10 ⁴
2.25		
	418	
		6.08 x 10 ⁵
10.0		

Name: _____ Per _____

	304	
		1.24×10^5

- Determine the force exerted on blood vessels with a surface area of $1.0 \times 10^{-4} \text{ m}^2$ and a blood pressure of 110 mm Hg.
- Calculate the force applied on the inside of a tire if 2.04 atm of pressure is spread over 0.45 m^2

Dalton's Law

Direction: Write an appropriate equation for each problem. Solve the equation and give the answer with appropriate units.

$$P_{Total} = P_1 + P_2 + P_3 \dots$$

- A mixture contains carbon dioxide with a partial pressure of 385 mm Hg and oxygen with a partial pressure of 235 mm Hg.
- A mixture contains ammonia with a partial pressure of $1.5 \times 10^4 \text{ Pa}$ and water with a partial pressure of $4.0 \times 10^4 \text{ Pa}$. What is the total pressure of the mixture?
- A mixture of helium and neon has a total pressure of 3.50 atm. If the partial pressure of helium is 1.25 atm, what is the partial pressure of neon?
- A mixture containing nitrogen, oxygen, and argon has a total pressure of 760 mm Hg. The pressure of nitrogen gas is 593 mm Hg and the pressure of the oxygen is 159 mm Hg. What is the pressure of the argon?