

Name: _____

Period: ____

Pressure

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

$$F = AP$$

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

$$1.00 \text{ atm} = 760 \text{ mm Hg} = 1.01325 \times 10^5 \text{ Pa}$$

(1) Complete the following table.

Atmospheres (atm)	Millimeters of Mercury (mm Hg)	Pascals (Pa)
2.25		
	850	
		1.34×10^5
0.31		
		560
	340	
45		
		4.05×10^4
	0.22	
100		

(2) Calculate the pressure when 50 N of force is applied over 0.40 m^2 .

(3) What is the force applied if a surface of 100 m^2 experiences a pressure of $1.25 \times 10^5 \text{ Pa}$?

(4) Calculate the force applied on the inside of a tire if 2.04 atm of pressure is spread over 0.45 m^2 .

(5) What is the area of a surface that experiences a pressure of $3.4 \times 10^3 \text{ Pa}$ when a force of 1500 N is applied?

(6) Determine the force exerted on blood vessel with a surface area of $1.0 \times 10^{-4} \text{ m}^2$ and a blood pressure of 110 mm Hg.

(7) Calculate the pressure exerted on a person's feet if a 500 N force (their body weight) is applied over 350 cm^2 (the surface area of both their feet).

Answers:

(1)

Atmospheres (atm)	Millimeters of Mercury (mm Hg)	Pascals (Pa)
2.25	1.71×10^3	2.28×10^5
1.12	850	1.13×10^5
1.32	1.01×10^3	1.34×10^5
0.31	2.4×10^2	3.1×10^4
5.53×10^{-3}	4.20	560
.447	340	4.53×10^4
45	3.4×10^4	4.6×10^6
0.400	304	4.05×10^4
2.89×10^{-4}	0.22	29
100	7.60×10^4	1.01×10^7

(2) 1.3×10^2 Pa

(3) 1.25×10^7 N

(4) 9.30×10^4 N

(5) 0.44 m^2

(6) 1.5 N

(7) 1.43×10^4 Pa