**Worksheet 10.1: Pressure**

**Pressure: P = F/A (memorize area of circle, and rectangle)**

1. A force of 23,450 N is exerted on a rectangular window that measures 2.30 m by 0.980 m. What is the pressure? (1.04E4 Pa)
2. What is the force of 2100. psi over a circular flange with a radius of 8.5 inches? (476658 lbs ≈ 4.8E5 lbs)
3. What is the total area in m2 of some snowshoes, if a 75 kg person does not exert a pressure greater than 1.2 x 103 Pa? (0.61 m2)

**Pressure conversions**

**Converting units of pressure.**

**1.00 atm = 1.013x105 Pa = 101.3 kPa = 760. Torr = 14.7 psi**

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| 4. Convert 450. Torr to Pa. (6.00E4 Pa) | 7. Convert 35 psi to Pa. (2.4E5 Pa) |
| 5. Convert 3.20 ATM to Pa. (3.24E5 Pa) | 8. Convert 16.7 kPa to Pa. (1.67E4 Pa) |
| 6. Convert 835 Torr to psi (16.2 psi) | 9. Convert 2350 Pa to psi (0.341 psi) |

**Gauge and absolute pressure: P = PG + 1 atm**

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| 10. What is 0.45 atm gauge in absolute? (1.45 atm) | 14. What is 3.60 atm absolute in gauge? (2.60 atm) |
| 11. What is 34.0 psi gauge in absolute? (48.7 psi) | 15. What is 45.0 psi absolute in gauge (30.3 psi) |
| 12. What is 4.50 psi absolute in gauge? (-10.2 psi) | 16. What is 34,500 Pa gauge in absolute? (1.358E5 Pa) |
| 13. What is 3.415 x 105 Pa in absolute in gauge? (2.402E5 Pa) |  |

**Gauge and unit conversions (on the assessments)**

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| 17. What is 12.0 psi gauge in Pa absolute? (1.84E5 Pa) | 22. What is 34,500 Pa absolute in atm gauge? (-0.659 atm) |
| 18. What is 78.0 kPa absolute in Torr gauge? (-175 Torr) | 23. What is 1.30 atm gauge in kPa absolute? (233 kPa) |
| 19. What is 34.5 psi gauge in atm absolute? (3.35 atm) | 24. What is 7810 Pa absolute in kPa gauge? (-93.5 kPa) |
| 20. What is 0.835 atm absolute in Torr gauge? (-125 Torr) | 25. What is -34.9 kPa gauge in psi absolute? (9.64 psi) |
| 21. What is 8.45 psi gauge in kPa absolute? (160. kPa) | 26. What is 512,000 Pa absolute in Torr gauge? (3081 Torr) |