Gauge pressure

Most pressure gauges compare to Atmospheric
(i.e. this room is at 0 Gauge)
Absolute p is 1 atm more

$P = P_{gauge} + 1\ atm$

$1\ atm = 1.013 \times 10^5\ Pa = 101.3\ kPa = 760\ Torr = 14.7\ psi$

Example – What is the absolute pressure (In Torr and Pa) if you have a gauge pressure of 312 Torr?

312 + 760 = 1072 Torr absolute

$(1.013 \times 10^5$ Pa/atm)(1072 Torr)/(760 Torr/atm) =

1.43E5 Pa

1072 Torr absolute

1.43E5 Pa

What is the absolute pressure if you read 35 psi gauge? Answer in psi (1 atm = 14.7 psi) and Pascals

$P = P_{gauge} + 1\ atm$

$P = 35\ psi + 14.7\ psi = 49.7\ psi$

$1.013E5 * 49.7/14.7 = 3.42E5\ Pa$

49.7 psi, 3.42E5 Pa

If you have an absolute pressure of 812 Torr, what is the gauge pressure? Answer in Torr (1 atm = 760 Torr)

$P = P_{gauge} + 1\ atm$
$812 = P_{gauge} + 760\ Torr$
$P_{gauge} = 52\ Torr$

52 Torr

What is the absolute pressure if the gauge pressure is 2.17×10^5 Pa
(1 atm = 1.013×10^5 Pa = 101.3 kPa)

$P = P_{gauge} + 1$ atm

$P = 2.17 \times 10^5$ Pa + 1.013×10^5 Pa

3.18×10^5 Pa

If you have an absolute pressure of 42.0 kPa, what is the gauge pressure in kPa?
(1 atm = 1.013 x 10^5 Pa = 101.3 kPa)

$P = P_{gauge} + 1$ atm
42.0 kPa = p_{gauge} + 101.3 kPa

-59.3 kPa