

HOMEWORK PROBLEMS:

Convert the following Celsius temperatures to Kelvin temperatures:

1a. 23°C **Answer:** $23^{\circ}\text{C} + 273 = 296 \text{ K}$

1b. -90°C **Answer:** $-90^{\circ}\text{C} + 273 = 183 \text{ K}$

1c. 25°C **Answer:** $25^{\circ}\text{C} + 273 = 298 \text{ K}$

Convert the following Kelvin temperatures to Celsius temperatures:

1d. 86 K **Answer:** $86 \text{ K} - 273 = -187^{\circ}\text{C}$

1e. 191 K **Answer:** $191 \text{ K} - 273 = -82^{\circ}\text{C}$

1f. 894 K **Answer:** $894 \text{ K} - 273 = 621^{\circ}\text{C}$

1g. Change the pressure of 74.5 cm Hg into atmospheres.

$$\text{Answer: } \frac{74.5 \text{ cm Hg}}{1 \text{ cm Hg}} \times \frac{10 \text{ mm Hg}}{1 \text{ cm Hg}} \times \frac{1 \text{ atm}}{760 \text{ mm Hg}} = 0.980 \text{ atm}$$

1h. What is the pressure of 97.5 kPa in atmospheres.

$$\text{Answer: } \frac{97.5 \text{ kPa}}{101.325 \text{ kPa}} \times \frac{1 \text{ atm}}{101.325 \text{ kPa}} = 0.962 \text{ atm}$$

1i. Convert 750 torr into atmospheres.

$$\text{Answer: } \frac{750 \text{ torr}}{1 \text{ torr}} \times \frac{1 \text{ mm Hg}}{1 \text{ torr}} \times \frac{1 \text{ atm}}{760 \text{ mm Hg}} = 0.987 \text{ atm}$$