Chapter 7 Practice Problem Key

**7.41** a. The volume decreases from **X** to (a) with the same number of gas particles; the pressure increases.

b. The volume remains the same, but the number of particles decreases; the pressure decreases.

c. The volume remains the same, but the number of particles increases; the pressure increases.

**7.49** Use Boyle’s law to solve the problem as in Example 7.2.



**7.55** Use Gay–Lussac’s law to fill in the table as in Sample Problem 7.4.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | *P*1 | *T*1 | *P*2 | *T*2 |
| a. | 3.25 atm | 298 K | **4.34 atm** | 398 K |
| b. | 550 mm Hg | 273 K | **350 mm Hg** | –100. oC |
| c. | 0.50 atm | 250 oC | 955 mm Hg | **1,300 K** |

**7.67** Convert moles and grams to volume at STP as in Sample Problem 7.7.







**7.71** Use the ideal gas law to solve the problem as in Example 7.6.



**7.79** If the overall pressure is three times as great, the partial pressure is three times higher.

593 mm Hg × 3 = 1,780 mm Hg

**7.81** Water is a liquid at room temperature because it is capable of hydrogen bonding and these strong intermolecular attractive forces give it a higher boiling point than H2S, which can’t hydrogen bond.

**7.95** Use the definitions from Answer 7.31 to classify each solid.

a. KI: ionic d. diamond: network

b. CO2: molecular e. the plastic polyethylene: amorphous

c. bronze, an alloy of Cu and Sn: metallic

**7.101** a. Melting 100 g of ice is endothermic: energy is absorbed.

b. Freezing 25 g of water is exothermic: energy is released.

c. Condensing 20 g of steam is exothermic: energy is released.

d. Vaporizing 30 g of water is endothermic: energy is absorbed.

**7.107**

