Comments and Errors
Solution Manual, Chemical Principles, 7th Edition
(Also includes Self-Test errors)

L.35 in the textbook question:

In the third reaction step the compound "$FeBr_2$" needs to be "Fe_3Br_8".

1A.15

Typo. Answer is n = 3 to n = 1 as energy is emitted.

1B.27

Solution manual states $\Delta v = 5.0\ m.s^{-1}$

Velocity was given as $5.00 \pm 5.0\ m.s^{-1}$

Therefore $\Delta v = 10.0\ m.s^{-1}$

With the correction, the final answer is: $\Delta x = 6.7 \times 10^{-37}\ m$

4F.11

First calculate the decrease in entropy resulting from the decrease in volume. Then calculate the increase in entropy resulting from the increase in temperature. Then add these to get the net entropy change. Assume ideal behavior and 1 mol N_2 gas.

$$\begin{aligned}\Delta S &= nR\ln\frac{V_2}{V_1}\\ &= (1.00\ \text{mol})(8.314\ \text{J.K}^{-1}.\text{mol}^{-1})\ln\frac{0.500\ \text{L}}{3.00\ \text{L}}\\ &= -14.897\ \ \text{J.K}^{-1} \qquad (-14.9\ \ \text{J.K}^{-1}\ \text{using 3 sig. fig.})\end{aligned}$$

$$\begin{aligned}\Delta S &= n\text{C}_\text{v}\ln\frac{T_2}{T_1}\ \text{where}\ \text{C}_\text{v} = \frac{5}{2}\text{R for a diatomic ideal gas}\\ &= (1.00\ \text{mol})\frac{5}{2}(8.314\ \text{J.K}^{-1}.\text{mol}^{-1})\ln\frac{301.25\ \text{K}}{291.65\ \text{K}}\\ &= 0.673\ \ \text{J.K}^{-1}\end{aligned}$$

Net change in entropy, $\Delta S_{net} = (-14.897 + 0.673)\ J.K^{-1} = -14.2\ J.K^{-1}$

(Rounding off at the end using 3 sig. fig.)

5G.3 (b) In the given balanced chemical equation the coefficient in front of N_2 should be 5. This also changes K in the answer.

6D.5 (d) % protonation = $(1.09 \times 10^{-4})/(0.0073) \times 100\%$, which should = 1.5%, but the answer is incorrectly typed as 2.5%.

6.65 Typo. Should read: At pH = 0 (not "At pH = 1")

The normal pH scale is 0-14.

Everything else is correct.

7D.5 Typo. 37 ^{o}C = 310 K.

Typo. -0.59 should be = 0.59

Everything else is correct. These were typeset errors. Not calculation errors.

Self-test 4A.1A

Water expands when it freezes. How much work does 100. g of water do when it freezes at 0 C and pushes back the metal wall of a pipe that exerts an opposing pressure of 1070 atm? The densities of water and ice at 0 C are 1.00 g.cm^{-3} and 0.92 g.cm^{-3}, respectively.

Given:	P = 1070 atm	mass of water = 100. g
	density of $H_2O(l)$ = 1.00 g.cm^{-3}	Density of $H_2O(s)$ = 0.92 g.cm^{-3}

Use densities to convert mass to volume for both 100.g of liquid water and 100.g of ice.

Then subtract the two values to find the associated change in volume as the water freezes to ice, ΔV

Volume $H_2O(l)$: 100g/1.00 g.cm^{-3} = 100 cm^3

Volume $H_2O(s)$: 100g/0.92 g.cm^{-3} = 108.7 cm^3

ΔV = V(final, ice) – V(initial, water) = 108.7 cm^3 – 100 cm^3 = 8.7 cm^3

Use work equation and do necessary unit conversions:

$w = -P\Delta V$

w = -(1070 atm)(8.7 cm^3)(1 mL/1 cm^3)(1 L/1000 mL)(101.325 J/ 1 L.atm) = -943 J = -0.94 kJ