Problem 7

(II) Add $\left(9.2 \times 10^3 \text{ s}\right) + \left(8.3 \times 10^4 \text{ s}\right) + \left(0.008 \times 10^6 \text{ s}\right)$.

Solution

Make it so that each term has the same power of 10 and then factor.

$$\begin{aligned}\left(9.2 \times 10^3 \text{ s}\right) + \left(8.3 \times 10^4 \text{ s}\right) + \left(0.008 \times 10^6 \text{ s}\right) &= \left(9.2 \times 10^3 \text{ s}\right) + \left(83 \times 10^3 \text{ s}\right) + \left(8 \times 10^3 \text{ s}\right) \\ &= (9.2 + 83 + 8) \times 10^3 \text{ s} \\ &\approx \left(1.00 \times 10^2\right) \times 10^3 \text{ s} \\ &\approx 1.00 \times 10^5 \text{ s}\end{aligned}$$

Note that $9.2 + 83 + 8 = 100.2$ is rounded to the ones place (100, with three significant figures) because of 83 and 8, which both have uncertainty in the ones place.