

# SPH4U-R WS#1

$$\begin{aligned} 1.) \text{ error} &= \left| \frac{9.72 - 9.81}{9.81} \right| \times 100\% \\ &= 0.009174... \times 100\% \\ &= 0.917\% \end{aligned}$$

$$\begin{aligned} 2.) \text{ a) diff} &= \frac{|5.78 \times 10^{-34} - 7.29 \times 10^{-34}|}{\left( \frac{5.78 \times 10^{-34} + 7.29 \times 10^{-34}}{2} \right)} \\ &= \frac{1.51 \times 10^{-34}}{6.535 \times 10^{-34}} \times 100\% \\ &= 0.230... \times 100\% \\ &= 23.1\% \end{aligned}$$

$$\begin{aligned} \text{b) error} &= \left| \frac{5.78 \times 10^{-34} - 6.63 \times 10^{-34}}{6.63 \times 10^{-34}} \right| \times 100\% \\ &= 0.1282... \times 100\% \\ &= 12.8\% \end{aligned}$$

$$\begin{aligned} \text{error} &= \left| \frac{7.29 \times 10^{-34} - 6.63 \times 10^{-34}}{6.63 \times 10^{-34}} \right| \times 100\% \\ &= 0.09954... \times 100\% \\ &= 9.95\% \end{aligned}$$

$$\begin{aligned} 7.) \quad 1 \text{ ga} &= 2.5 \times 10^{-9} \text{ m} \\ x &= 1.0 \times 10^{-7} \text{ m} \end{aligned}$$

$$\begin{aligned} \frac{1}{x} &= \frac{2.5 \times 10^{-9}}{1.0 \times 10^{-7}} \\ 2.5 \times 10^{-9} x &= \frac{1.0 \times 10^{-7}}{2.5 \times 10^{-9}} \end{aligned}$$

$$\boxed{x = 40 \text{ or } 4.0 \times 10^1 \text{ atoms}}$$

$$\begin{aligned} 8.) \quad \text{Volume} &= 10 \text{ cm} \times 1.2 \text{ cm} \times 15.6 \text{ cm} \\ &= 187.2 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} 1 \text{ cm}^3 &= 2.7 \text{ g} \\ 187.2 \text{ cm}^3 &= x \end{aligned}$$

$$x = 505.44 \text{ g or } 0.50544 \text{ kg}$$

$$\begin{aligned} 1.0 \text{ kg} &= 2.2 \times 10^{25} \text{ atoms} \\ 0.50544 \text{ kg} &= x \end{aligned}$$

$$\begin{aligned} x &= 1.1119... \times 10^{25} \\ \boxed{x} &= 1.1 \times 10^{25} \text{ atoms} \end{aligned}$$

$$\begin{aligned} 9.) \quad 1 \text{ star} &= 2.0 \times 10^{30} \text{ kg} \\ 1.0 \times 10^{11} \text{ stars} &= x \end{aligned}$$

$$\boxed{x = 2.0 \times 10^{41} \text{ kg}}$$

$$\begin{aligned} 10.) \quad 1 \text{ s} &= 2.500 \\ 600 \text{ s} &= x \end{aligned}$$

$$x = 1500 \text{ C}$$

$$\begin{aligned} 1 \text{ C} &= 6.24 \times 10^{18} \text{ e/s} \\ 1500 \text{ C} &= x \end{aligned}$$

$$\boxed{x = 9.36 \times 10^{21} \text{ e/s}}$$